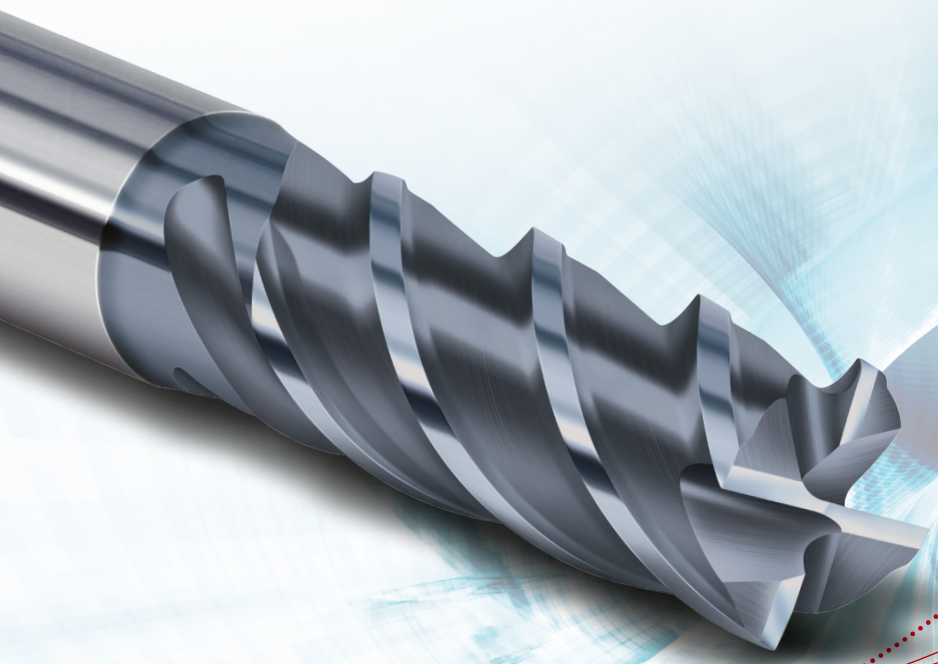
passion
for precision

fraisa

High-performance milling tools



Products

- Largest range of European-made, solid-carbide milling tools
- Leading innovator: 6 % of turnover reinvested in R&D
- Trendsetter in HSC, HPC, HDC and MFC
  (HSC: High Speed Cutting; HPC: High Performance Cutting;
  HDC: High Dynamic Cutting; MFC: Multi-functional Cutting)
- Perfection is our passion

ArCut X milling process:
www.fraisa.com/qr/env4

PRODUCTS

FRAISA ReTool®

- Industrial tool reconditioning with performance guarantee for FRAISA and third-party tools
- Largest European service centre for solid-carbide milling tools in Willich, Germany
- Over 30 years' experience in tool reconditioning and more than 5.5 million reconditioned tools. State-of-the-art CNC grinding centres and own systems for cutting-edge preparation and coating
- Cost savings thanks to producibility, 100% performance and maximum substrate retention
- Environmentally significant savings of 50,000 kg of tungsten and 5,000 kg of cobalt every year thanks to industrial tool reconditioning and recycling of tools that can no longer be reconditioned

FRAISA ReTool®:
www.fraisa.com/qr/env7

FRAISA ReTool®

Logistics

- Trendsetter in ToolCare® tool management systems:
  19 years' experience, 1,000 installed systems, Version 2.1
- ToolCareSecure: 100 % ability to deliver – guaranteed!
- ToolCareConcept: order special tools like standard production items
- E-shop: simple ordering process at any time of the day or night
- Next-day delivery to anywhere in Europe

ToolCare 2.1:
www.fraisa.com/qr/env5

Mein Warenkorb (17/17)
ToolCare 2.0
WebShop
ToolExpert HelixRamp | ToolExpert HDC
Bohrwerkzeuge 11
Fräswerkzeuge 60
Gewindewerkzeuge 28
Fraisa Test Messe Fremdwerkzeuge 3
ID/EAN:
Menge:
OK
5000
2 (Maschine 2)
ausbuchen
einbuchen
Auftrag:
4711Bohrstange
fraisa

LOGISTICS

Application technology

- 44 years' experience in milling technology data
- ToolSchool: 16 years of added value thanks to extensive Know-how transfer and training for more than 24,000 clients
- Accurate and dependable application information for each individual FRAISA tool
- ToolExpert: online access to application data for all FRAISA milling tools and strategies
- Unique presentation of application data directly in the catalogue

ToolExpert 2.0:
www.fraisa.com/qr/enw24

APPLICATION

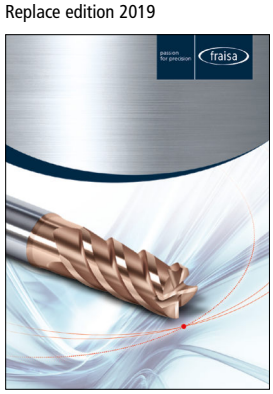
Personal customer contact

- Outstanding expertise thanks to regular and intensive professional training of our own customer service representatives
- Customer contact exclusively through in-house representatives and FRAISA-qualified sales partners
- FRAISA customer service representatives are experienced milling technology specialists
- National sales and distribution companies in Germany, France, Italy, Hungary, the USA, China and Switzerland
- Short communication channels from the customer service representatives to company management thanks to our medium-sized structure and transparent organisation

ToolSchool:
www.fraisa.com/qr/env8

CUSTOMER CONTACT

Replace edition 2019



The raw material surcharges are included in the price.

End milling tools for steel, stainless steel, titanium and nickel
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End milling tools for 3D machining
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End milling tools for aluminium and copper
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End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, cylindrical

Normal version

N° 8504 / 8604	**HX-NVS**	X-Generation X	Roughing HPC Roughing HDC Finishing	d_1 3 – 20 r	**HRC** 56->60	**HSS**		31
N° 8500 / 8600	**NX-NVDS**	X-Generation X	Roughing HPC Roughing HDC Finishing	d_1 4 – 20 r	**Rm** 850-1500	**HRC** 48-56	**Ti** Titanium	33
N° 15222 / 15322	**NX-NVD**	X-Generation X	Roughing HPC Roughing HDC Finishing	d_1 3 – 20 45°	**Rm** 850-1500	**HRC** 48-56	**Ti** Titanium	35
N° 8700 / 8800	**ZX-NV**	X-Generation X	Roughing Finishing	d_1 3 – 20 r	**Ni-/Mn-** Alloys	**Ti** Titanium		37
N° 8705 / 8805	**ZX-NV5**	X-Generation X	Roughing Finishing	d_1 6 – 20 r	**Ni-/Mn-** Alloys	**Ti** Titanium		39
N° 5214 / 5314 ToolSchool	**SX-N**	X-Generation X	Roughing Finishing	d_1 3 – 16 45°	**Inox** Stainless			41
N° 8101 / 8201	**MFC** (MB-NVDS)	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 4 – 20 r	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	43
N° 8102 / 8202	**MFC** (MB-NVDS)	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 4 – 20 r	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	45
N° 8105 / 8205	**MFC** (MB-NVDS)	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 6 – 20 r	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	47
N° 8100 / 8200	**NB-NVDS**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 4 – 20 r	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	49
N° 8304 / 8404	**NB-NVS**	Base-X B	Roughing Finishing	d_1 2 – 20 r	**Rm** <850-1100	**Inox** Stainless		51
N° 15207 / 15307	**NB-NVD**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 3 – 20 45°	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	53
N° 8300 / 8400	**E-Cut** **new!**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 1 – 20 r	**Rm** <850-1500	**Inox** Stainless		55
N° 8305 / 8405	**E-Cut** **new!**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 4 – 20 r	**Rm** <850-1500	**Inox** Stainless		57
N° 5240 / 5340 ToolSchool		Base-X B	Roughing Finishing	d_1 2 – 20 45°	**Rm** <850-1100			59

End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, cylindrical

Normal version

N° 5255 / 5355		Base-X B	Roughing / Finishing	d_1 3 – 20, 45°	**Rm** <850-1100	**Inox** Stainless	**Ti** Titanium	61
N° 8303 / 8403	**E-Cut** **new!**	Base-X B	Roughing HPC / Roughing HDC / Finishing	d_1 1 – 20, r	**Rm** <850-1500	**Inox** Stainless		63
N° 15233 / 15333	**NV3**	Base-X B	Roughing / Finishing	d_1 3 – 20, 45°	**Rm** <850-1300			65
N° 15234 / 15334 ToolSchool	**NV3**	Base-X B	Roughing / Finishing	d_1 3 – 20, 45°	**Rm** <850-1100	**Inox** Stainless		67
N° 5230 / 5330 ToolSchool		Base-X B	Roughing / Finishing	d_1 2 – 25, 45°	**Rm** <850-1100			69
N° 5200 / 5300		Base-X B	Roughing / Finishing	d_1 2 – 20, 45°	**Rm** <850-1100			73
N° 45217 / 45317	**NF-NV**	Favora® F	Roughing / Finishing	d_1 1 – 25, 45°	**Rm** <850-1100	**Inox** Stainless		75
N° 45255 / 45355		Favora® F	Roughing / Finishing	d_1 3 – 20, 45°	**Rm** <850-1100	**Inox** Stainless	**Ti** Titanium	77
N° 45233 / 45333	**NF-NV3**	Favora® F	Roughing / Finishing	d_1 2 – 20, 45°	**Rm** <850-1100	**Inox** Stainless		79
N° 0110		HSS	Roughing / Finishing	d_1 1 – 40, 90°	**Rm** <850-1100			83
N° 0780		HSS	Roughing / Finishing	d_1 1 – 25, 90°	**Rm** <850-1100			87

End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, cylindrical

Normal version with neck

N° 15242 / 15342

NX-VD — X-Generation X — Roughing / Finishing — d_1 4 – 20 — 45° — **Rm** 850-1500 — **HRC** 48-56 — **Ti** Titanium — 91

N° 5248 / 5348 ToolSchool

HX — X-Generation X — Roughing / Finishing — d_1 3 – 25 — 45° — **Rm** 1300-1500 — **HRC** 48-56 — 93

N° 5244 / 5344 ToolSchool

HX-H — X-Generation X — Roughing / Finishing — d_1 3 – 20 — 45° — **HRC** 48-60 — 95

N° 5218 / 5318

SX — X-Generation X — Roughing / Finishing — d_1 3 – 20 — 45° — **Inox** Stainless — 97

N° 5215 / 5315

SX-3 — X-Generation X — Roughing / Finishing — d_1 3 – 16 — 45° — **Inox** Stainless — 99

N° 5225 / 5325

NB-V — Base-X B — Roughing / Finishing — d_1 3 – 20 — 45° — **Rm** <850-1300 — **Inox** Stainless — 101

End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, cylindrical

Medium length version

N° 8514 / 8614	**HX-NVS** new!	X-Generation X	Roughing HPC, Roughing HDC, Finishing	d_1 3 – 20, r	**HRC** 56- >60	**HSS**		103
N° 15223 / 15323	**NX-NVD**	X-Generation X	Roughing HPC, Roughing HDC, Finishing	d_1 4 – 20, 45°	**Rm** 850-1500	**HRC** 48-56	**Ti** Titanium	105
N° 8111 / 8211	**MFC** (MB-NVDS)	Base-X B	Roughing HPC, Roughing HDC, Finishing	d_1 4 – 20, r	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	107
N° 8112 / 8212	**MFC** (MB-NVDS)	Base-X B	Roughing HPC, Roughing HDC, Finishing	d_1 4 – 20, r	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	109
N° 8115 / 8215	**MFC** (MB-NVDS)	Base-X B	Roughing HPC, Roughing HDC, Finishing	d_1 6 – 20, r	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	111
N° 15210 / 15310	**NB-NVD**	Base-X B	Roughing HPC, Roughing HDC, Finishing	d_1 6 – 20, 45°	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	113
N° 15208 / 15308	**NB-NVD**	Base-X B	Roughing HPC, Roughing HDC, Finishing	d_1 4 – 20, 45°	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	115
N° 8310 / 8410	**E-Cut** new!	Base-X B	Roughing HPC, Roughing HDC, Finishing	d_1 2 – 20, r	**Rm** <850-1500	**Inox** Stainless		117
N° 15243 / 15343 ToolSchool		Base-X B	Roughing, Finishing	d_1 2 – 25, 45°	**Rm** <850-1100			119
N° 8315 / 8415	**E-Cut** new!	Base-X B	Roughing HPC, Roughing HDC, Finishing	d_1 4 – 20, r	**Rm** <850-1500	**Inox** Stainless		121
N° 8313 / 8413	**E-Cut** new!	Base-X B	Roughing HPC, Roughing HDC, Finishing	d_1 2 – 20, r	**Rm** <850-1500	**Inox** Stainless		123
N° 5332 ToolSchool		Base-X B	Roughing, Finishing	d_1 2 – 20, 45°	**Rm** <850-1100			125
N° 45222 / 45322	**NF-NV**	Favora® F	Roughing, Finishing	d_1 2 – 25, 45°	**Rm** <850-1100	**Inox** Stainless		127
N° 45234 / 45334	**NF-NV3**	Favora® F	Roughing, Finishing	d_1 3 – 20, 45°	**Rm** <850-1100	**Inox** Stainless		129

End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, cylindrical

Medium length version with neck

N° 15259 / 15359	**NX-VD**	X-Generation X	Roughing / Finishing	d_1 4 – 16, 45°	**Rm** 850-1500	**HRC** 48-56	**Ti** Titanium	131
N° 5251 / 5351 ToolSchool	**HX**	X-Generation X	Roughing / Finishing	d_1 6 – 20, 45°	**Rm** 1300-1500	**HRC** 48-56		133
N° 5219 / 5319	**SX**	X-Generation X	Roughing / Finishing	d_1 6 – 16, 45°	**Inox** Stainless			135
N° 15225 / 15325	**NB-V**	Base-X B	Roughing / Finishing	d_1 6 – 16, 45°	**Rm** <850-1300			137
N° 15299 / 15399	**NV3**	Base-X B	Roughing / Finishing	d_1 3 – 16, 45°	**Rm** <850-1300			139
N° 15294 / 15394 ToolSchool	**NV3**	Base-X B	Roughing / Finishing	d_1 3 – 16, 45°	**Rm** <850-1100	**Inox** Stainless		141
N° 5333 ToolSchool		Base-X B	Roughing / Finishing	d_1 3 – 16, 45°	**Rm** <850-1100			143

End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, cylindrical

Long version

N° 15245 / 15345 ToolSchool

N° 45223 / 45323

N° 0200

NF-NV

Base-X **B**
Roughing
Finishing
d_1 6 – 20
45°
Rm <850-1100

Favora® **F**
Roughing
Finishing
d_1 6 – 20
45°
Rm <850-1100
Inox Stainless

HSS
Roughing
Finishing
d_1 2 – 40
90°
Rm <850-1100

145 147 149

Long version with neck

N° 5393 ToolSchool

Base-X **B**
Roughing
Finishing
d_1 3 – 16
45°
Rm <850-1100

151

Extra-long version

N° 15247 / 15347 ToolSchool

Base-X **B**
Roughing
Finishing
d_1 6 – 20
45°
Rm <850-1100

153

5.2xd version

N° 8121 / 8221 **MFC** (MB-NVDS)

Base-X **B**
Roughing HPC
Roughing HDC
Finishing
d_1 6 – 20
r
Rm <850-1500
HRC 48-56
Inox / **Ti**

155

N° 8320 / 8420 **E-Cut** **new!**

Base-X **B**
Roughing HPC
Roughing HDC
Finishing
d_1 3 – 20
r
Rm <850-1500
Inox Stainless

157

N° 8323 / 8423 **E-Cut** **new!**

Base-X **B**
Roughing HPC
Roughing HDC
Finishing
d_1 3 – 20
r
Rm <850-1500
Inox Stainless

159

End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, cylindrical

Short version

N° 5249 / 5349	**HX**	X-Generation **X**	Roughing / Finishing	d_1 1 – 16	45°	**Rm** 1300-1500	**HRC** 48-60		161
N° 5213 / 5313	**SX**	X-Generation **X**	Roughing / Finishing	d_1 3 – 16	45°	**Inox** Stainless			163
N° 5229 / 5329	**Cut-V**	Base-X **B**	Roughing / Finishing	d_1 3 – 16	45°	**Rm** <850-1100	**Inox** Stainless		165
N° 5026 / 5036		Base-X **B**	Roughing / Finishing	d_1 1.5 – 10	90°	**Rm** <850-1100	**Inox** Stainless		167
N° 5299 / 5400		Base-X **B**	Roughing / Finishing	d_1 1 – 6	45°	**Rm** <850-1100			169
N° 0700		**HSS**	Roughing / Finishing	d_1 1 – 25	90°	**Rm** <850-1100			171

End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, with corner radius

Normal version

N° 8507 / 8607	**HX-RNVS** **new!**	X-Generation X	Roughing HPC Roughing HDC Finishing	r 0.2, 0.5, 1.0, 1.5, 2.0, 2.5 3.0	**HRC** 56- >60	**HSS**		175
N° 5259 / 5359 ToolSchool	**HX-RN**	X-Generation X	Roughing Finishing	r 0.2, 0.5	**Rm** 1300-1500	**HRC** 48-60		179
N° 15257 / 15357 ToolSchool	**HX-RN**	X-Generation X	Roughing Finishing	r 1.0, 2.0	**Rm** 1300-1500	**HRC** 48-60		181
N° 15268 / 15368	**NX-RNVD**	X-Generation X	Roughing Finishing	r 0.2, 0.5 1.0, 1.5, 2.0, 2.5, 4.0	**Rm** 850-1500	**HRC** 48-56	**Ti** Titanium	183
N° 8720 / 8820	**ZX-RNV**	X-Generation X	Roughing Finishing	r 0.4, 0.5, 0.8, 1.0, 1.5, 2.0, 2.5, 4.0	**Ni-/Mn-** Alloys	**Ti** Titanium		187
N° 15212 / 15312 ToolSchool	**SX-RN**	X-Generation X	Roughing Finishing	r 0.5, 1.0, 1.5	**Inox** Stainless			193
N° 8107 / 8207	**MFC-R** (MB-RNVDS)	Base-X B	Roughing HPC Roughing HDC Finishing	r 0.2, 0.5, 1.0, 1.5, 2.0, 2.5	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	195
N° 15226 / 15326	**NB-RNV**	Base-X B	Roughing Finishing	r 0.5, 1.0, 1.5, 2.0, 2.5, 4.0	**Rm** <850-1300	**Inox** Stainless		199
N° 5234 / 5334		Base-X B	Roughing Finishing	r 0.2, 0.5	**Rm** <850-1100			203
N° 45219 / 45319	**NF-RNV**	Favora® F	Roughing Finishing	r 0.2, 0.5, 0.8, 1.0, 1.5, 2.0, 2.5, 4.0	**Rm** <850-1100	**Inox** Stainless		205

Normal version with neck

N° 5253 / 5353 ToolSchool	**HX-R**	X-Generation X	Roughing Finishing	r 1.0	**Rm** 1300-1500	**HRC** 48-60		211
N° 5256 / 5356 ToolSchool	**HX-R**	X-Generation X	Roughing Finishing	r 1.5, 2.0, 2.5, 3.0, 3.5, 4.0	**Rm** 1300-1500	**HRC** 48-60		213

Medium length version with neck

N° 5257 / 5357	**HX-R**	X-Generation X	Roughing Finishing	r 1.5, 2.0, 2.5, 3.0, 3.5	**Rm** 1300-1500	**HRC** 48-60		215

End milling tools for steel, stainless steel, titanium and nickel
Profiled, cylindrical

Normal version

N° 5279 / 5379	**NX-FP**	X-Generation X	Roughing / Finishing	d_1 6 – 20, 45°	**Rm** <850-1300			217
N° 8302 / 8402	**SupraCarb®**	Base-X B	Roughing / Finishing	d_1 4 – 20, r	**Rm** <850-1100	**Inox** Stainless		219
N° 15236 / 15336	**SupraCarb®**	Base-X B	Roughing / Finishing	d_1 3 – 20, 45°	**Rm** <850-1100	**Inox** Stainless		221
N° 45371	**NF-RP**	Favora® F	Roughing / Finishing	d_1 3 – 20, 45°	**Rm** <850-1100			223
N° 0619	**Supracut**	HSS	Roughing / Finishing	d_1 5 – 25, 45°	**Rm** 850-1300			225
N° 0540	**Supracut FP**	HSS	Roughing / Finishing	d_1 6 – 25, 45°	**Rm** <850-1300	**Inox** Stainless		227
N° 0610		HSS	Roughing / Finishing	d_1 5 – 40, 45°	**Rm** <850-1100			229
N° 0609		HSS	Roughing / Finishing	d_1 6 – 32, 45°	**Rm** <850-1100	**Inox** Stainless		233
N° 0695		HSS	Roughing / Finishing	d_1 8 – 32, 45°	**Rm** <850-1100	**Inox** Stainless		235

End milling tools for steel, stainless steel, titanium and nickel
Profiled, cylindrical

Medium length version

N° 5173 ToolSchool

NX-FP — X-Generation X — Roughing, Finishing — d_1 6 – 20 — 45° — **Rm** <850-1300 — 237

N° 15238 / 15338

SupraCarb® — Base-X B — Roughing, Finishing — d_1 6 – 20 — 45° — **Rm** <850-1100 — **Inox** Stainless — 239

N° 45372

NF-RP — Favora® F — Roughing, Finishing — d_1 3 – 20 — 45° — **Rm** <850-1100 — 241

N° 0659

Supracut — HSS — Roughing, Finishing — d_1 6 – 25 — 45° — **Rm** 850-1300 — 243

N° 0650

HSS — Roughing, Finishing — d_1 5 – 32 — 45° — **Rm** <850-1100 — 245

Medium length version with neck

N° 5174 ToolSchool

NX-FP — X-Generation X — Roughing, Finishing — d_1 6 – 20 — 45° — **Rm** <850-1300 — 247

N° 15239 / 15339

SupraCarb® — Base-X B — Roughing, Finishing — d_1 6 – 20 — 45° — **Rm** <850-1100 — **Inox** Stainless — 249

End milling tools for steel, stainless steel, titanium and nickel
Profiled, cylindrical

Short version

N° 15260 / 15360

SupraCarb®

Base-X **B** | Roughing / Finishing | d_1 3 – 16 | 45° | **Rm** <850-1100 | **Inox** Stainless | 251

Long version

N° 15248 / 15348

SupraCarb®

Base-X **B** | Roughing / Finishing | d_1 6 – 20 | 45° | **Rm** <850-1100 | **Inox** Stainless | 253

N° 0665

HSS | Roughing / Finishing | d_1 5 – 40 | 45° | **Rm** <850-1100 | 255

Extra-long version with neck

N° 0621

Supracut

HSS | Roughing / Finishing | d_1 6 – 25 | 45° | **Rm** 850-1300 | 257

End milling tools for steel, stainless steel, titanium and nickel
Finishing, cylindrical

Normal version

N° 15250

Multicut XF

X-Generation **X** | Roughing / Finishing | d_1 3 – 20 | 45° | **Rm** <850-1500 | **HRC** 48-60 | **Inox** Stainless | 259

N° 8301 / 8401

E-Cut

new!

Base-X **B** | Roughing / Finishing | d_1 3 – 20 | r | **Rm** <850-1500 | **Inox** Stainless | 261

N° 5260 / 5360 ToolSchool

Multicut N

Base-X **B** | Roughing / Finishing | d_1 6 – 20 | 45° | **Rm** 850-1300 | 263

N° 45260 / 45360

Favora® **F** | Roughing / Finishing | d_1 6 – 20 | 45° | **Rm** 850-1300 | 265

Medium length version

N° 15251

Multicut XF

X-Generation **X** | Roughing / Finishing | d_1 3 – 20 | 45° | **Rm** 850-1500 | **HRC** 48-60 | **Inox** Stainless | 267

N° 8311

E-Cut

new!

Base-X **B** | Roughing / Finishing | d_1 3 – 20 | r | **Rm** <850-1500 | **Inox** Stainless | 269

N° 5265 ToolSchool

Multicut N

Base-X **B** | Roughing / Finishing | d_1 6 – 20 | 45° | **Rm** 850-1300 | 271

N° 45262 / 45362

Favora® **F** | Roughing / Finishing | d_1 6 – 20 | 45° | **Rm** 850-1300 | 273

Long version

N° 15254

Multicut XF

X-Generation **X** | Roughing / Finishing | d_1 6 – 20 | 45° | **Rm** 850-1500 | **HRC** 48-60 | **Inox** Stainless | 275

N° 5268 ToolSchool

Multicut N

Base-X **B** | Roughing / Finishing | d_1 10 – 25 | 45° | **Rm** 850-1300 | 277

5.2xd version

N° 8521

Multicut XF

new!

X-Generation **X** | Roughing / Finishing | d_1 6 – 20 | 45° | **Rm** 850-1500 | **HRC** 48-60 | **Inox** Stainless | 279

N° 8321

E-Cut

new!

Base-X **B** | Roughing / Finishing | d_1 6 – 20 | r | **Rm** <850-1500 | **Inox** Stainless | 281

End milling tools for steel, stainless steel, titanium and nickel
Micro, cylindrical

Shank ø 6mm

N° 6500	MicroX	X-Generation X	1xd	d_1 0.1 – 2.0 45°	Rm 850-1500	HRC 48-60	Ti Titanium	283
N° 6501	MicroX	X-Generation X	2xd	d_1 0.1 – 2.0 45°	Rm 850-1500	HRC 48-60	Ti Titanium	285
N° 6502	MicroX	X-Generation X	3xd	d_1 0.1 – 3.0 45°	Rm 850-1500	HRC 48-60	Ti Titanium	287
N° 6503	MicroX	X-Generation X	4xd	d_1 0.1 – 2.0 45°	Rm 850-1500	HRC 48-60	Ti Titanium	289
N° 6504	MicroX	X-Generation X	5xd	d_1 0.1 – 3.0 45°	Rm 850-1500	HRC 48-60	Ti Titanium	291
N° 6505	MicroX	X-Generation X	6xd	d_1 0.2 – 2.0 45°	Rm 850-1500	HRC 48-60	Ti Titanium	293
N° 6506	MicroX	X-Generation X	8xd	d_1 0.2 – 3.0 45°	Rm 850-1500	HRC 48-60	Ti Titanium	295
N° 6508	MicroX	X-Generation X	10xd	d_1 0.2 – 3.0 45°	Rm 850-1500	HRC 48-60	Ti Titanium	297

End milling tools for steel, stainless steel, titanium and nickel
Micro, cylindrical

Shank ø 3mm

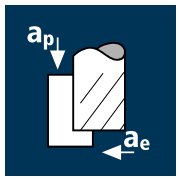
N° 15711 ToolSchool	Microcut-C1H		X-Generation X	1xd	d_1 0.2 – 3.0 45°	Rm 850-1500	HRC 48-60	Ti Titanium	299
N° 5722 ToolSchool	Microcut-C3H		X-Generation X	3xd	d_1 0.5 – 3.0 45°	Rm 850-1500	HRC 48-60	Ti Titanium	301
N° 5724 ToolSchool	Microcut-C5H		X-Generation X	5xd	d_1 0.5 – 3.0 45°	Rm 850-1500	HRC 48-60	Ti Titanium	303
N° 5712	Microcut-C3		Base-X B	3xd	d_1 0.2 – 3.0 45°	Rm <850-1500	Inox Stainless	Ti Titanium	305
N° 15752	Microcut-C3		Base-X B	3xd	d_1 0.5 – 3.0 90°	Rm <850-1500	Inox Stainless	Ti Titanium	307
N° 5714	Microcut-C5		Base-X B	5xd	d_1 0.5 – 3.0 45°	Rm <850-1500	Inox Stainless	Ti Titanium	309
N° 15754	Microcut-C5		Base-X B	5xd	d_1 0.5 – 3.0 90°	Rm <850-1500	Inox Stainless	Ti Titanium	311
N° 5716	Microcut-C8		Base-X B	8xd	d_1 0.5 – 3.0 45°	Rm <850-1500	Inox Stainless	Ti Titanium	313
N° 5717	Microcut-C10		Base-X B	10xd	d_1 0.5 – 3.0 45°	Rm <850-1500	Inox Stainless	Ti Titanium	315
N° 5721	Microcut-C12		Base-X B	12xd	d_1 1.0 – 3.0 45°	Rm <850-1300			317
N° 5723	Microcut-C15		Base-X B	15xd	d_1 1.0 – 3.0 45°	Rm <850-1300			319
N° 15725	Microcut-C20		Base-X B	20xd	d_1 1.0 – 3.0 45°	Rm <850-1100			321
N° 45709	Micro C1.5		Favora® F	1.5xd	d_1 0.1 – 2.9 90°	Rm <850	Inox Stainless	CuZn Gold Pl	323
N° 5710 / 45710			Favora® F	3xd	d_1 0.3 – 3.0 90°	Rm <850-1100			327
N° 45713	Micro C3		Favora® F	3xd	d_1 0.4 – 2.9 90°	Rm <850	Inox Stainless	CuZn Gold Pl	331

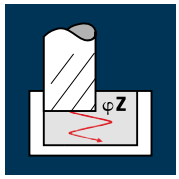
End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, cylindrical

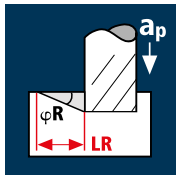
Short-shank version

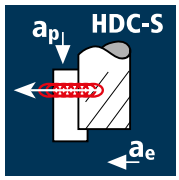
N° 15232	**Cut-X V**	Base-X **B**	Roughing / Finishing	d_1 1.5 – 10, 90°	**Rm** <850-1100	**Inox** Stainless	**Al CuZn Gold**	335
N° 5236 / 5336	**Cut-X**	Base-X **B**	Roughing / Finishing	d_1 1.5 – 10, 90°	**Rm** <850-1100	**Inox** Stainless		339
N° 5335	**Cut-X**	Base-X **B**	Roughing / Finishing	d_1 2 – 10, 45°	**Rm** <850-1100	**Inox** Stainless		341
N° 5237 / 5337	**Cut-X multi**	Base-X **B**	Roughing / Finishing	d_1 3 – 10, 90°	**Rm** <850-1300	**Inox** Stainless		343
N° 5336 / 45336		Favora® **F**	Roughing / Finishing	d_1 1.5 – 10, 90°	**Rm** <850-1100	**Inox** Stainless		345
N° 0400		**HSS**	Roughing / Finishing	d_1 1 – 10, 90°	**Rm** <850			347
N° 0410		**HSS**	Roughing / Finishing	d_1 2 – 10, 90°	**Rm** <850			351

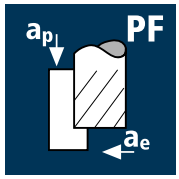
Application











Cutting data HX-NVS

Always up to date

The new cylindrical HX-NVS end mill has been developed for HPC and HDC rough machining of hardened steels (>55 HRC). The cutting data for the HX-NVS tools can be found in the latest product brochure and in our cutting data calculator ToolExpert.

Scan this QR code to start the cutting data calculator ToolExpert 2.0

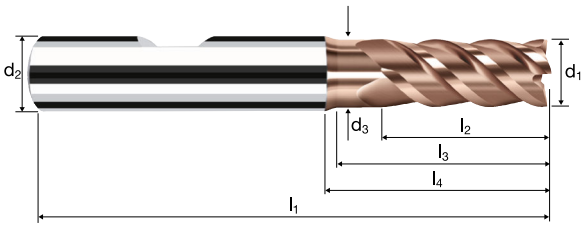
Cylindrical end mills HX-NVS

Smooth-edged, normal version with short neck
High-performance penetration edge

HM
XA

λ 45°
γ -10°

r



Roughing HPC

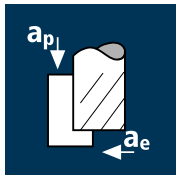
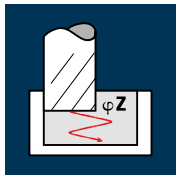
Roughing HDC

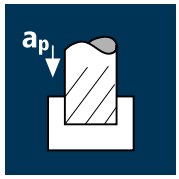
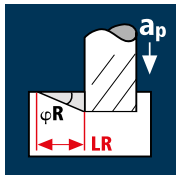
Finishing

HRC 48-56 | HRC 56-60 | HRC > 60 | HSS

Example: **Order-N°.** Coating **H** Article-N°. **8604** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	DURO-Si H8604	DURO-Si H8504
180	3.00	6.00	2.80	57	8.00	14.00	20.37	0.100	4.5°	4		●
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.100	3.0°	4		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.150	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	4		●
450	10.00	10.00	9.20	72	22.00	27.99	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	26.00	33.29	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	38.00	48.23	53.00	0.200	0.0°	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]	φZ [°]
	Steel 850 - 1100 N/mm²	4.00	4	150	0.030	6.000	1.600	11935	1430	13.8	20°
		5.00	4	150	0.035	7.500	2.000	9550	1335	20.1	20°
		6.00	4	150	0.040	9.000	2.400	7960	1275	27.5	20°
		8.00	4	150	0.050	12.000	3.200	5970	1195	45.8	20°
		10.00	4	150	0.065	15.000	4.000	4775	1240	74.5	20°
		12.00	4	150	0.075	18.000	4.800	3980	1195	103.1	20°
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.8	20°
		20.00	4	150	0.100	30.000	8.000	2385	955	229.2	20°
	Steel 1100 - 1300 N/mm²	4.00	4	115	0.030	6.000	1.600	9150	1100	10.5	18°
		5.00	4	115	0.035	7.500	2.000	7320	1025	15.4	18°
		6.00	4	115	0.040	9.000	2.400	6100	975	21.1	18°
		8.00	4	115	0.050	12.000	3.200	4575	915	35.1	18°
		10.00	4	115	0.065	15.000	4.000	3660	950	57.1	18°
		12.00	4	115	0.075	18.000	4.800	3050	915	79.1	18°
		16.00	4	115	0.085	24.000	6.400	2290	780	119.5	18°
		20.00	4	115	0.100	30.000	8.000	1830	730	175.7	18°
	Hardened tool steel 52 - 56 HRC	4.00	4	50	0.015	6.000	1.600	3980	240	2.3	15°
		5.00	4	50	0.020	7.500	2.000	3185	255	3.8	15°
		6.00	4	50	0.025	9.000	2.400	2655	265	5.7	15°
		8.00	4	50	0.030	12.000	3.200	1990	240	9.2	15°
		10.00	4	50	0.035	15.000	4.000	1590	225	13.4	15°
		12.00	4	50	0.045	18.000	4.800	1325	240	20.6	15°
		16.00	4	50	0.055	24.000	6.400	995	220	33.6	15°
		20.00	4	50	0.070	30.000	8.000	795	225	53.5	15°
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	60	0.020	6.000	1.600	4775	380	3.7	12°
		5.00	4	60	0.025	7.500	2.000	3820	380	5.7	12°
		6.00	4	60	0.030	9.000	2.400	3185	380	8.3	12°
		8.00	4	60	0.040	12.000	3.200	2385	380	14.7	12°
		10.00	4	60	0.045	15.000	4.000	1910	345	20.6	12°
		12.00	4	60	0.055	18.000	4.800	1590	350	30.3	12°
		16.00	4	60	0.065	24.000	6.400	1195	310	47.7	12°
		20.00	4	60	0.080	30.000	8.000	955	305	73.3	12°

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]	φR [°]	LR [mm]
	Steel 850 - 1100 N/mm²	4.00	4	120	0.025	5.000	4.000	9550	955	19.1	32°	8.0
		5.00	4	120	0.025	6.250	5.000	7640	765	23.9	32°	10.0
		6.00	4	120	0.030	7.500	6.000	6365	765	34.4	32°	12.0
		8.00	4	120	0.040	10.000	8.000	4775	765	61.1	32°	16.0
		10.00	4	120	0.050	12.500	10.000	3820	765	95.5	32°	20.0
		12.00	4	120	0.055	15.000	12.000	3185	700	126.1	32°	24.0
		16.00	4	120	0.065	20.000	16.000	2385	620	198.6	32°	32.0
		20.00	4	120	0.075	25.000	20.000	1910	575	286.5	32°	40.0
	Steel 1100 - 1300 N/mm²	4.00	4	90	0.025	5.000	4.000	7160	715	14.3	28°	9.4
		5.00	4	90	0.025	6.250	5.000	5730	575	17.9	28°	11.8
		6.00	4	90	0.030	7.500	6.000	4775	575	25.8	28°	14.1
		8.00	4	90	0.040	10.000	8.000	3580	575	45.8	28°	18.8
		10.00	4	90	0.050	12.500	10.000	2865	575	71.6	28°	23.5
		12.00	4	90	0.055	15.000	12.000	2385	525	94.5	28°	28.2
		16.00	4	90	0.065	20.000	16.000	1790	465	149.0	28°	37.6
		20.00	4	90	0.075	25.000	20.000	1430	430	214.9	28°	47.0
	Hardened tool steel 52 - 56 HRC	4.00	4	40	0.010	5.000	4.000	3185	125	2.5	24°	11.2
		5.00	4	40	0.015	6.250	5.000	2545	155	4.8	24°	14.0
		6.00	4	40	0.020	7.500	6.000	2120	170	7.6	24°	16.8
		8.00	4	40	0.025	10.000	8.000	1590	160	12.7	24°	22.5
		10.00	4	40	0.025	12.500	10.000	1275	125	15.9	24°	28.1
		12.00	4	40	0.035	15.000	12.000	1060	150	26.7	24°	33.7
		16.00	4	40	0.040	20.000	16.000	795	125	40.7	24°	44.9
		20.00	4	40	0.055	25.000	20.000	635	140	70.0	24°	56.2
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	50	0.015	5.000	4.000	3980	240	4.8	19°	14.5
		5.00	4	50	0.020	6.250	5.000	3185	255	8.0	19°	18.2
		6.00	4	50	0.025	7.500	6.000	2655	265	11.9	19°	21.8
		8.00	4	50	0.030	10.000	8.000	1990	240	19.1	19°	29.0
		10.00	4	50	0.035	12.500	10.000	1590	225	27.9	19°	36.3
		12.00	4	50	0.040	15.000	12.000	1325	210	38.2	19°	43.6
		16.00	4	50	0.050	20.000	16.000	995	200	63.7	19°	58.1
		20.00	4	50	0.060	25.000	20.000	795	190	95.5	19°	72.6

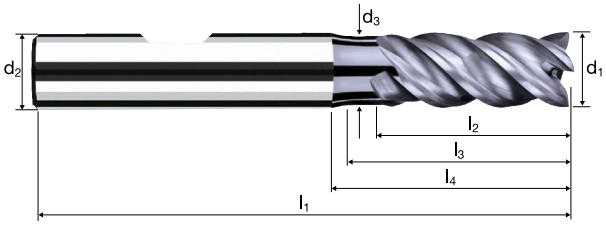
Cylindrical end mills NX-NVDS

Smooth-edged, normal version with short neck
High-performance penetration edge

HM MG10	λ 45° γ -20°

r

Vario



Roughing HPC

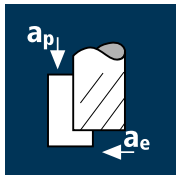
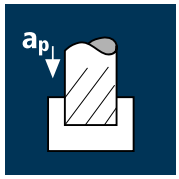
Roughing HDC

Finishing

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60			Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8600** ø-Code **220**

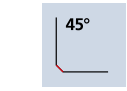
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8600	POLYCHROM P8500
220	4.00	6.00	3.70	57	8.00	16.00	20.82	0.100	3.0°	4		●
260	5.00	6.00	4.60	57	10.00	18.00	21.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	57	12.00	18.15	20.00	0.100	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	4		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	39.00	48.23	53.00	0.200	0.0°	4		●

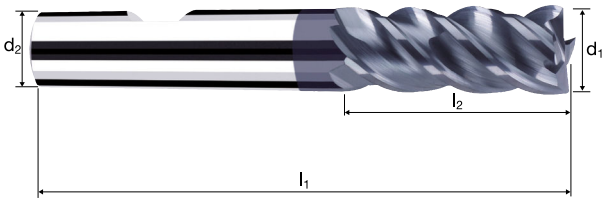
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel 850 - 1100 N/mm²	4.00	4	150	0.030	6.000	1.600	11935	1430	13.8
		5.00	4	150	0.035	7.500	2.000	9550	1335	20.1
		6.00	4	150	0.040	9.000	2.400	7960	1275	27.5
		8.00	4	150	0.050	12.000	3.200	5970	1195	45.8
		10.00	4	150	0.065	15.000	4.000	4775	1240	74.5
		12.00	4	150	0.075	18.000	4.800	3980	1195	103.1
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.8
		20.00	4	150	0.100	30.000	8.000	2385	955	229.2
	Steel 1100 - 1300 N/mm²	4.00	4	115	0.030	6.000	1.600	9150	1100	10.5
		5.00	4	115	0.035	7.500	2.000	7320	1025	15.4
		6.00	4	115	0.040	9.000	2.400	6100	975	21.1
		8.00	4	115	0.050	12.000	3.200	4575	915	35.1
		10.00	4	115	0.065	15.000	4.000	3660	950	57.1
		12.00	4	115	0.075	18.000	4.800	3050	915	79.1
		16.00	4	115	0.085	24.000	6.400	2290	780	119.5
		20.00	4	115	0.100	30.000	8.000	1830	730	175.7
	Hardened tool steel 52 - 56 HRC	4.00	4	50	0.015	6.000	1.600	3980	240	2.3
		5.00	4	50	0.020	7.500	2.000	3185	255	3.8
		6.00	4	50	0.025	9.000	2.400	2655	265	5.7
		8.00	4	50	0.030	12.000	3.200	1990	240	9.2
		10.00	4	50	0.035	15.000	4.000	1590	225	13.4
		12.00	4	50	0.045	18.000	4.800	1325	240	20.6
		16.00	4	50	0.055	24.000	6.400	995	220	33.6
		20.00	4	50	0.070	30.000	8.000	795	225	53.5
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	60	0.020	6.000	1.600	4775	380	3.7
		5.00	4	60	0.025	7.500	2.000	3820	380	5.7
		6.00	4	60	0.030	9.000	2.400	3185	380	8.3
		8.00	4	60	0.040	12.000	3.200	2385	380	14.7
		10.00	4	60	0.045	15.000	4.000	1910	345	20.6
		12.00	4	60	0.055	18.000	4.800	1590	350	30.3
		16.00	4	60	0.065	24.000	6.400	1195	310	47.7
		20.00	4	60	0.080	30.000	8.000	955	305	73.3
	Steel 850 - 1100 N/mm²	4.00	4	120	0.025	5.000	4.000	9550	955	19.1
		5.00	4	120	0.025	6.250	5.000	7640	765	23.9
		6.00	4	120	0.030	7.500	6.000	6365	765	34.4
		8.00	4	120	0.040	10.000	8.000	4775	765	61.1
		10.00	4	120	0.050	12.500	10.000	3820	765	95.5
		12.00	4	120	0.055	15.000	12.000	3185	700	126.1
		16.00	4	120	0.065	20.000	16.000	2385	620	198.6
		20.00	4	120	0.075	25.000	20.000	1910	575	286.5
	Steel 1100 - 1300 N/mm²	4.00	4	90	0.025	5.000	4.000	7160	715	14.3
		5.00	4	90	0.025	6.250	5.000	5730	575	17.9
		6.00	4	90	0.030	7.500	6.000	4775	575	25.8
		8.00	4	90	0.040	10.000	8.000	3580	575	45.8
		10.00	4	90	0.050	12.500	10.000	2865	575	71.6
		12.00	4	90	0.055	15.000	12.000	2385	525	94.5
		16.00	4	90	0.065	20.000	16.000	1790	465	149.0
		20.00	4	90	0.075	25.000	20.000	1430	430	214.9
	Hardened tool steel 52 - 56 HRC	4.00	4	40	0.010	5.000	4.000	3185	125	2.5
		5.00	4	40	0.015	6.250	5.000	2545	155	4.8
		6.00	4	40	0.020	7.500	6.000	2120	170	7.6
		8.00	4	40	0.025	10.000	8.000	1590	160	12.7
		10.00	4	40	0.025	12.500	10.000	1275	125	15.9
		12.00	4	40	0.035	15.000	12.000	1060	150	26.7
		16.00	4	40	0.040	20.000	16.000	795	125	40.7
		20.00	4	40	0.055	25.000	20.000	635	140	70.0
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	50	0.015	5.000	4.000	3980	240	4.8
		5.00	4	50	0.020	6.250	5.000	3185	255	8.0
		6.00	4	50	0.025	7.500	6.000	2655	265	11.9
		8.00	4	50	0.030	10.000	8.000	1990	240	19.1
		10.00	4	50	0.035	12.500	10.000	1590	225	27.9
		12.00	4	50	0.040	15.000	12.000	1325	210	38.2
		16.00	4	50	0.050	20.000	16.000	995	200	63.7
		20.00	4	50	0.060	25.000	20.000	795	190	95.5

Cylindrical end mills NX-NVD

Smooth-edged, normal version

HM MG10	λ 45° γ -20°





Roughing HPC

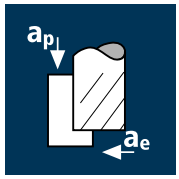
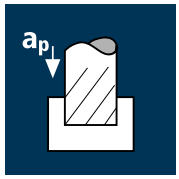
Roughing HDC

Finishing

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60			Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15322** ø-Code **180**

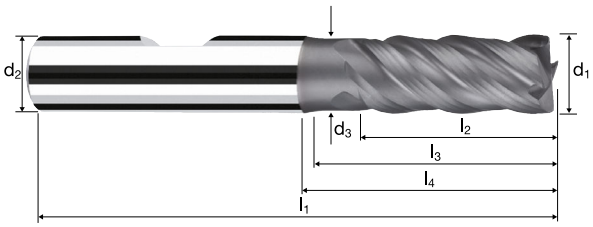
											POLYCHROM
											P15322
											P15222
	Ø Code	d_1 e8	d_2 h6		l_1	l_2	l_4	45°	α	z	
new!	180	3.00	6.00		57	8.00	15.56	0.10	6.0°	4	●
	220	4.00	6.00		57	8.00	14.59	0.10	4.5°	4	●
	260	5.00	6.00		57	10.00	14.72	0.15	2.5°	4	●
	300	6.00	6.00		57	12.00	-	0.15	0.0°	4	●
	391	8.00	8.00		63	19.00	-	0.15	0.0°	4	●
	450	10.00	10.00		72	23.00	-	0.20	0.0°	4	●
	501	12.00	12.00		83	27.00	-	0.20	0.0°	4	●
	610	16.00	16.00		92	32.00	-	0.20	0.0°	4	●
	682	20.00	20.00		104	39.00	-	0.20	0.0°	4	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718] P	3.00	4	35	0.010	5.400	1.800	3715	150	1.4
		4.00	4	35	0.015	7.200	2.400	2785	165	2.9
		5.00	4	35	0.020	9.000	3.000	2230	180	4.8
		6.00	4	35	0.020	10.800	3.600	1855	150	5.8
		8.00	4	35	0.030	14.400	4.800	1395	165	11.6
		10.00	4	35	0.035	18.000	6.000	1115	155	16.8
		12.00	4	35	0.045	21.600	7.200	930	165	26.0
		16.00	4	35	0.050	28.800	9.600	695	140	38.5
		20.00	4	35	0.060	36.000	12.000	555	135	57.8
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718] P	3.00	4	25	0.010	5.400	1.800	2655	105	1.0
		4.00	4	25	0.010	7.200	2.400	1990	80	1.4
		5.00	4	25	0.015	9.000	3.000	1590	95	2.6
		6.00	4	25	0.015	10.800	3.600	1325	80	3.1
		8.00	4	25	0.025	14.400	4.800	995	100	6.9
		10.00	4	25	0.030	18.000	6.000	795	95	10.3
		12.00	4	25	0.035	21.600	7.200	665	95	14.4
		16.00	4	25	0.040	28.800	9.600	495	80	22.0
		20.00	4	25	0.050	36.000	12.000	400	80	34.4
	Manganese steel Mn >5% [1.3964 / Nitronic] [1.3401 / X120Mn12] P	3.00	4	40	0.010	5.400	1.800	4245	170	1.7
		4.00	4	40	0.015	7.200	2.400	3185	190	3.3
		5.00	4	40	0.020	9.000	3.000	2545	205	5.5
		6.00	4	40	0.020	10.800	3.600	2120	170	6.6
		8.00	4	40	0.030	14.400	4.800	1590	190	13.2
		10.00	4	40	0.035	18.000	6.000	1275	180	19.3
		12.00	4	40	0.045	21.600	7.200	1060	190	29.7
		16.00	4	40	0.050	28.800	9.600	795	160	44.0
		20.00	4	40	0.060	36.000	12.000	635	155	66.0
	Heat resistant steel Duplex steel [1.4462] [17-4 PH] P	3.00	4	50	0.015	5.400	1.800	5305	320	3.1
		4.00	4	50	0.020	7.200	2.400	3980	320	5.5
		5.00	4	50	0.030	9.000	3.000	3185	380	10.3
		6.00	4	50	0.035	10.800	3.600	2655	370	14.4
		8.00	4	50	0.045	14.400	4.800	1990	360	24.8
		10.00	4	50	0.055	18.000	6.000	1590	350	37.8
		12.00	4	50	0.065	21.600	7.200	1325	345	53.6
		16.00	4	50	0.070	28.800	9.600	995	280	77.0
		20.00	4	50	0.085	36.000	12.000	795	270	116.9
	PM high-speed steel annealed [Böhler S390] [ASP 2023] P	3.00	4	80	0.010	5.400	1.800	8490	340	3.3
		4.00	4	80	0.015	7.200	2.400	6365	380	6.6
		5.00	4	80	0.020	9.000	3.000	5095	405	11.0
		6.00	4	80	0.020	10.800	3.600	4245	340	13.2
		8.00	4	80	0.030	14.400	4.800	3185	380	26.4
		10.00	4	80	0.035	18.000	6.000	2545	355	38.5
		12.00	4	80	0.045	21.600	7.200	2120	380	59.4
		16.00	4	80	0.050	28.800	9.600	1590	320	88.0
		20.00	4	80	0.060	36.000	12.000	1275	305	132.0
	Titanium alloys > 300 HB [Ti6Al4V] I P	3.00	4	70	0.010	5.400	1.800	7425	295	2.9
		4.00	4	70	0.015	7.200	2.400	5570	335	5.8
		5.00	4	70	0.015	9.000	3.000	4455	265	7.2
		6.00	4	70	0.020	10.800	3.600	3715	295	11.6
		8.00	4	70	0.025	14.400	4.800	2785	280	19.3
		10.00	4	70	0.035	18.000	6.000	2230	310	33.7
		12.00	4	70	0.040	21.600	7.200	1855	295	46.2
		16.00	4	70	0.045	28.800	9.600	1395	250	69.3
		20.00	4	70	0.055	36.000	12.000	1115	245	105.9
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718] P	3.00	4	25	0.010	4.200	3.000	2655	105	1.3
		4.00	4	25	0.010	5.600	4.000	1990	80	1.8
		5.00	4	25	0.015	7.000	5.000	1590	95	3.3
		6.00	4	25	0.015	8.400	6.000	1325	80	4.0
		8.00	4	25	0.025	11.200	8.000	995	100	8.9
		10.00	4	25	0.030	14.000	10.000	795	95	13.4
		12.00	4	25	0.035	16.800	12.000	665	95	18.7
		16.00	4	25	0.040	22.400	16.000	495	80	28.5
		20.00	4	25	0.050	28.000	20.000	400	80	44.6
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718] P	3.00	4	20	0.005	4.200	3.000	2120	40	0.5
		4.00	4	20	0.010	5.600	4.000	1590	65	1.4
		5.00	4	20	0.010	7.000	5.000	1275	50	1.8
		6.00	4	20	0.015	8.400	6.000	1060	65	3.2
		8.00	4	20	0.020	11.200	8.000	795	65	5.7
		10.00	4	20	0.020	14.000	10.000	635	50	7.1
		12.00	4	20	0.025	16.800	12.000	530	55	10.7
		16.00	4	20	0.030	22.400	16.000	400	50	17.1
		20.00	4	20	0.040	28.000	20.000	320	50	28.5

Cylindrical end mills ZX-NV

Smooth-edged, normal version with short neck

HM MG10	λ 40° γ 5°



Roughing

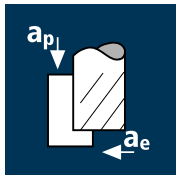
Finishing

Inox Stainless | Ti Titanium | Nickel-Alloys Mangan-Steels HSS

Example: **Order-N°.** Coating **P** Article-N°. **8800** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	TICUT I8800	TICUT I8700	POLYCHROM P8800	POLYCHROM P8700
180	3.00	6.00	2.80	57	8.00	14.00	20.37	0.100	4.5°	4	●	I	●	
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.100	3.0°	4	●	I	●	
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.150	1.5°	4	●	I	●	
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.150	0.0°	4	●	I	●	
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	4	●	I	●	
450	10.00	10.00	9.20	72	22.00	27.99	31.00	0.200	0.0°	4	●	I	●	
501	12.00	12.00	11.00	83	26.00	33.29	37.00	0.200	0.0°	4	●	I	●	
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.300	0.0°	4	●	I	●	
682	20.00	20.00	19.00	104	38.00	48.23	53.00	0.300	0.0°	4	●	I	●	

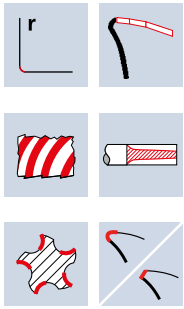
I Availability and delivery dates on request

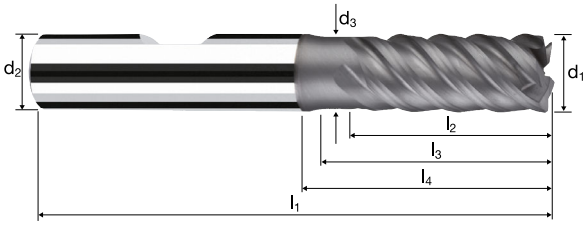
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718]	6.00	5	45	0.020	10.800	1.200	2385	240	3.1
		8.00	5	45	0.030	14.400	1.600	1790	270	6.2
		10.00	5	45	0.035	18.000	2.000	1430	250	9.0
		12.00	5	45	0.045	21.600	2.400	1195	270	13.9
		16.00	5	45	0.050	28.800	3.200	895	225	20.6
		20.00	5	45	0.060	36.000	4.000	715	215	30.9
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	6.00	5	30	0.015	10.800	1.200	1590	120	1.5
		8.00	5	30	0.025	14.400	1.600	1195	150	3.4
		10.00	5	30	0.030	18.000	2.000	955	145	5.2
		12.00	5	30	0.035	21.600	2.400	795	140	7.2
		16.00	5	30	0.040	28.800	3.200	595	120	11.0
		20.00	5	30	0.050	36.000	4.000	475	120	17.2
	Manganese steel Mn >5% [1.3964 / Nitronic] [1.3401 / X120Mn12]	6.00	5	50	0.020	10.800	1.200	2655	265	3.4
		8.00	5	50	0.030	14.400	1.600	1990	300	6.9
		10.00	5	50	0.035	18.000	2.000	1590	280	10.0
		12.00	5	50	0.045	21.600	2.400	1325	300	15.5
		16.00	5	50	0.050	28.800	3.200	995	250	22.9
		20.00	5	50	0.060	36.000	4.000	795	240	34.4
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	6.00	5	60	0.035	10.800	1.200	3185	555	7.2
		8.00	5	60	0.045	14.400	1.600	2385	535	12.4
		10.00	5	60	0.055	18.000	2.000	1910	525	18.9
		12.00	5	60	0.065	21.600	2.400	1590	515	26.8
		16.00	5	60	0.070	28.800	3.200	1195	420	38.5
		20.00	5	60	0.085	36.000	4.000	955	405	58.4
	PM high-speed steel annealed [Böhler S390] [ASP 2023]	6.00	5	90	0.020	10.800	1.200	4775	475	6.2
		8.00	5	90	0.030	14.400	1.600	3580	535	12.4
		10.00	5	90	0.035	18.000	2.000	2865	500	18.0
		12.00	5	90	0.045	21.600	2.400	2385	535	27.8
		16.00	5	90	0.050	28.800	3.200	1790	450	41.3
		20.00	5	90	0.060	36.000	4.000	1430	430	61.9
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	5	85	0.020	10.800	1.200	4510	450	5.8
		8.00	5	85	0.025	14.400	1.600	3380	425	9.7
		10.00	5	85	0.035	18.000	2.000	2705	475	17.0
		12.00	5	85	0.040	21.600	2.400	2255	450	23.4
		16.00	5	85	0.045	28.800	3.200	1690	380	35.1
		20.00	5	85	0.055	36.000	4.000	1355	370	53.6

Cylindrical end mills ZX-NV5

Smooth-edged, normal version with short neck

HM MG10	λ 40° γ 5°





Roughing

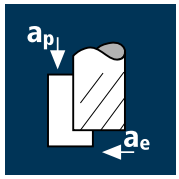
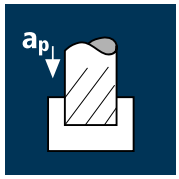
Finishing

Inox Stainless | Ti Titanium | Nickel-Alloys Mangan-Steels HSS

Example: **Order-N°.** Coating **P** Article-N°. **8805** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	z	TICUT I8805	TICUT I8705	POLYCHROM P8805	POLYCHROM P8705
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.150	5	●	I	●	
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	5	●	I	●	
450	10.00	10.00	9.20	72	22.00	27.99	31.00	0.200	5	●	I	●	
501	12.00	12.00	11.00	83	26.00	33.29	37.00	0.200	5	●	I	●	
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.300	5	●	I	●	
682	20.00	20.00	19.00	104	38.00	48.23	53.00	0.300	5	●	I	●	

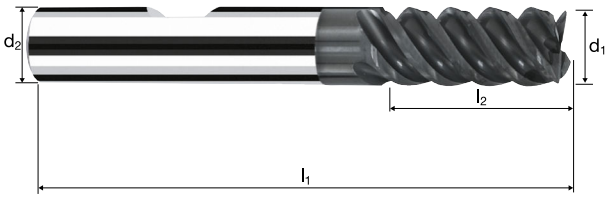
I Availability and delivery dates on request

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Stainless steel [Cr-Ni/1.4301]	3.00	4	80	0.010	4.500	1.200	8490	340	1.8
		4.00	4	80	0.015	6.000	1.600	6365	380	3.7
		5.00	4	80	0.020	7.500	2.000	5095	405	6.1
		6.00	4	80	0.025	9.000	2.400	4245	425	9.2
		8.00	4	80	0.035	12.000	3.200	3185	445	17.1
		10.00	4	80	0.045	15.000	4.000	2545	460	27.5
		12.00	4	80	0.050	18.000	4.800	2120	425	36.7
		16.00	4	80	0.075	24.000	3.200	1590	475	36.7
	Stainless steel [Cr-Ni-Mo-.../1.4429]	3.00	4	40	0.010	4.500	1.200	4245	170	0.9
		4.00	4	40	0.015	6.000	1.600	3185	190	1.8
		5.00	4	40	0.020	7.500	2.000	2545	205	3.1
		6.00	4	40	0.025	9.000	2.400	2120	210	4.6
		8.00	4	40	0.035	12.000	3.200	1590	225	8.6
		10.00	4	40	0.045	15.000	4.000	1275	230	13.8
		12.00	4	40	0.050	18.000	4.800	1060	210	18.3
		16.00	4	40	0.075	24.000	3.200	795	240	18.3
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3.00	4	25	0.010	4.500	1.200	2655	105	0.6
		4.00	4	25	0.015	6.000	1.600	1990	120	1.1
		5.00	4	25	0.020	7.500	2.000	1590	125	1.9
		6.00	4	25	0.020	9.000	2.400	1325	105	2.3
		8.00	4	25	0.030	12.000	3.200	995	120	4.6
		10.00	4	25	0.035	15.000	4.000	795	110	6.7
		12.00	4	25	0.040	18.000	4.800	665	105	9.2
		16.00	4	25	0.060	24.000	3.200	495	120	9.2
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	3.00	4	15	0.010	4.500	1.200	1590	65	0.3
		4.00	4	15	0.015	6.000	1.600	1195	70	0.7
		5.00	4	15	0.020	7.500	2.000	955	75	1.1
		6.00	4	15	0.020	9.000	2.400	795	65	1.4
		8.00	4	15	0.030	12.000	3.200	595	70	2.8
		10.00	4	15	0.035	15.000	4.000	475	65	4.0
		12.00	4	15	0.040	18.000	4.800	400	65	5.5
		16.00	4	15	0.060	24.000	3.200	300	70	5.5
	Stainless steel [Cr-Ni/1.4301]	3.00	4	60	0.010	1.500	3.000	6365	255	1.1
		4.00	4	60	0.015	2.000	4.000	4775	285	2.3
		5.00	4	60	0.020	2.500	5.000	3820	305	3.8
		6.00	4	60	0.030	3.000	6.000	3185	380	6.9
		8.00	4	60	0.040	4.000	8.000	2385	380	12.2
		10.00	4	60	0.055	5.000	10.000	1910	420	21.0
		12.00	4	60	0.055	6.000	12.000	1590	350	25.2
		16.00	4	60	0.085	4.000	16.000	1195	405	26.0
	Stainless steel [Cr-Ni-Mo-.../1.4429]	3.00	4	30	0.010	1.500	3.000	3185	125	0.6
		4.00	4	30	0.015	2.000	4.000	2385	145	1.1
		5.00	4	30	0.020	2.500	5.000	1910	155	1.9
		6.00	4	30	0.030	3.000	6.000	1590	190	3.4
		8.00	4	30	0.040	4.000	8.000	1195	190	6.1
		10.00	4	30	0.055	5.000	10.000	955	210	10.5
		12.00	4	30	0.055	6.000	12.000	795	175	12.6
		16.00	4	30	0.085	4.000	16.000	595	205	13.0
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3.00	4	20	0.015	1.500	3.000	2120	125	0.6
		4.00	4	20	0.020	2.000	4.000	1590	125	1.0
		5.00	4	20	0.025	2.500	5.000	1275	125	1.6
		6.00	4	20	0.025	3.000	6.000	1060	105	1.9
		8.00	4	20	0.035	4.000	8.000	795	110	3.6
		10.00	4	20	0.045	5.000	10.000	635	115	5.7
		12.00	4	20	0.050	6.000	12.000	530	105	7.6
		16.00	4	20	0.075	4.000	16.000	400	120	7.6
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	3.00	4	10	0.015	1.500	3.000	1060	65	0.3
		4.00	4	10	0.020	2.000	4.000	795	65	0.5
		5.00	4	10	0.025	2.500	5.000	635	65	0.8
		6.00	4	10	0.025	3.000	6.000	530	55	1.0
		8.00	4	10	0.035	4.000	8.000	400	55	1.8
		10.00	4	10	0.045	5.000	10.000	320	55	2.9
		12.00	4	10	0.050	6.000	12.000	265	55	3.8
		16.00	4	10	0.075	4.000	16.000	200	60	3.8

Cylindrical end mills SX-N

Smooth-edged, normal version

HM MG10	λ 55° γ 15°



Roughing

Finishing

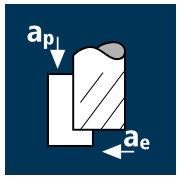
ToolSchool

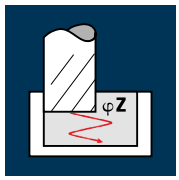
Rm < 850	Rm 850-1100						Inox Stainless	Ti Titanium	Nickel-Alloys Tool Steel

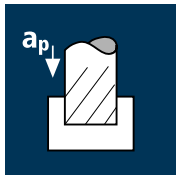
Example: **Order-N°.** Coating **P** Article-N°. **5314** ø-Code **180**

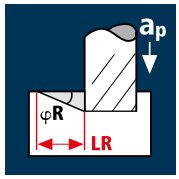
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P5314	POLYCHROM P5214
180	3.00	6.00	57	8.00	15.76	0.10	6.0°	4		●
220	4.00	6.00	57	11.00	16.89	0.10	4.0°	4		●
260	5.00	6.00	57	13.00	17.02	0.15	2.0°	4		●
300	6.00	6.00	57	13.00	-	0.15	0.0°	4		●
391	8.00	8.00	63	19.00	-	0.15	0.0°	4		●
450	10.00	10.00	72	22.00	-	0.20	0.0°	4		●
501	12.00	12.00	83	26.00	-	0.20	0.0°	4		●
610	16.00	16.00	92	32.00	-	0.20	0.0°	4		●

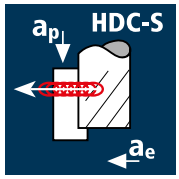
Application

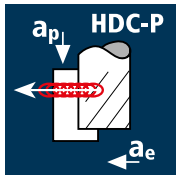


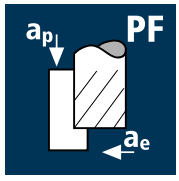


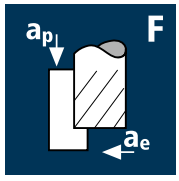












Cutting data calculator ToolExpert MFC

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The MFC multi-functionality with eleven specific applications in 12 groups of materials provides a range of applications with over 85,000 cutting parameters.

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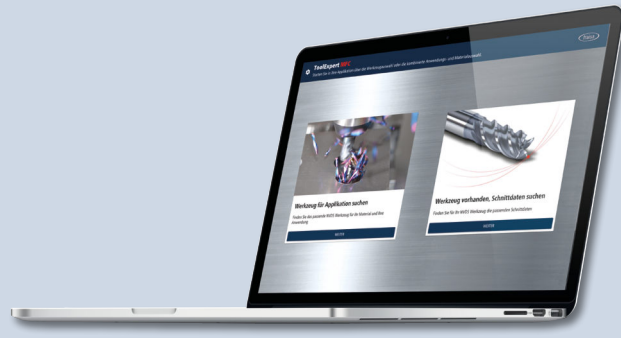


This way to the new cutting data calculator **ToolExpert MFC** or the FRAISA website **www.fraisa.com/en/toolexpert-mfc**

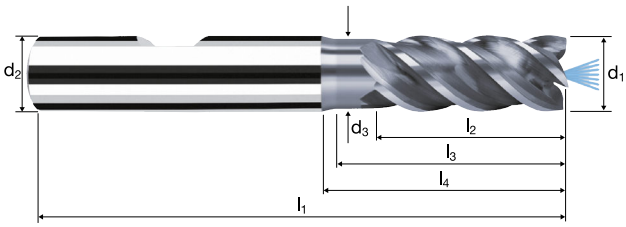
Cylindrical end mills MFC (MB-NVDS)

Smooth-edged, normal version with short neck
High-performance penetration edge with central air/cooling channel

HM MG10	λ 45° γ 10°

r

Vario



Roughing HPC | Roughing HDC | Finishing

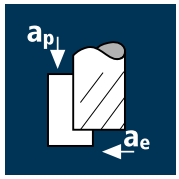
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

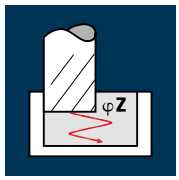
Example: **Order-N°.** Coating **P** Article-N°. **8201** ø-Code **220**

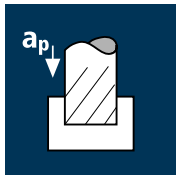
Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8201	POLYCHROM P8101
220	4.00	6.00	3.70	57	8.00	16.00	20.82	0.100	3.0°	4		●
260	5.00	6.00	4.60	57	10.00	18.00	21.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	57	12.00	18.15	20.00	0.100	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	4		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	4		●
503*	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
612*	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	39.00	48.23	53.00	0.200	0.0°	4		●
684*	20.00	20.00	19.00	104	39.00	48.23	53.00	0.200	0.0°	4		●

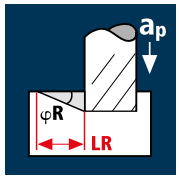
* with chip breaker

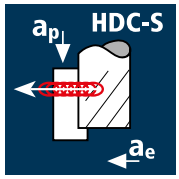
Application

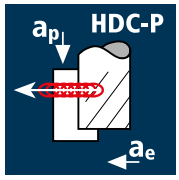


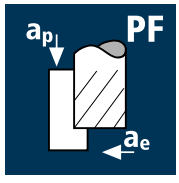


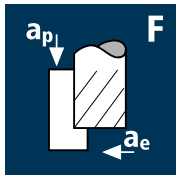












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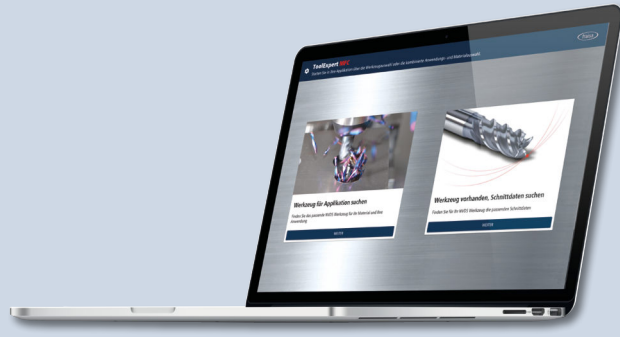

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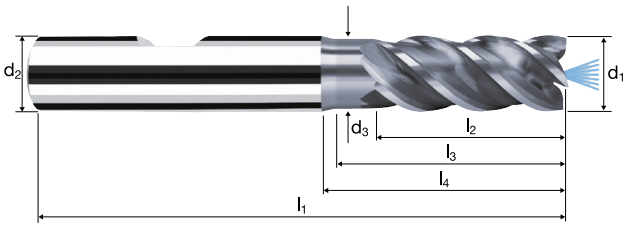
Cylindrical end mills MFC (MB-NVDS)

Smooth-edged, normal version with short neck
High-performance penetration edge with central air/cooling channel

HM MG10	λ 45° γ 0°

r

Vario



Roughing HPC | Roughing HDC | Finishing

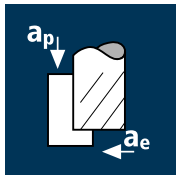
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

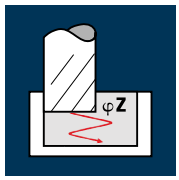
Example: **Order-N°.** Coating **P** Article-N°. **8202** ø-Code **220**

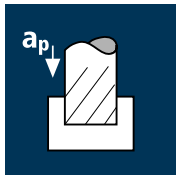
Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8202	POLYCHROM P8102
220	4.00	6.00	3.70	57	8.00	16.00	20.82	0.100	3.0°	4		●
260	5.00	6.00	4.60	57	10.00	18.00	21.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	57	12.00	18.15	20.00	0.100	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	4		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
612*	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	39.00	48.23	53.00	0.200	0.0°	4		●
684*	20.00	20.00	19.00	104	39.00	48.23	53.00	0.200	0.0°	4		●

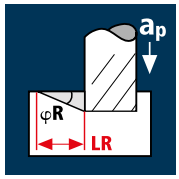
* with chip breaker

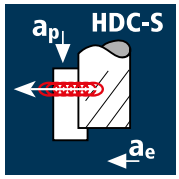
Application

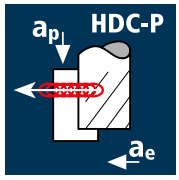


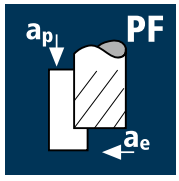


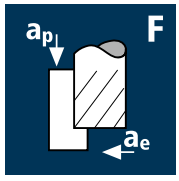












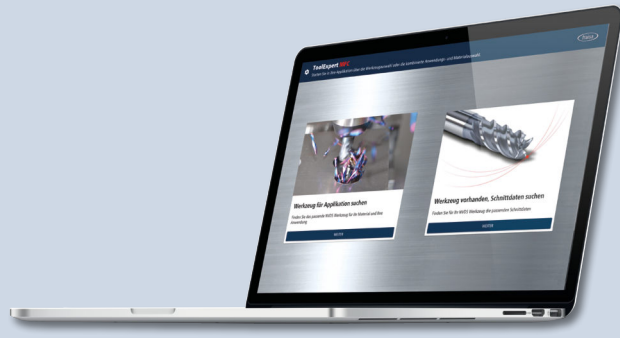
Cutting data calculator ToolExpert MFC

Quick, simple, reliable:
ToolExpert MFC

The MFC multi-functionality with eleven specific applications in 12 groups of materials provides a range of applications with over 85,000 cutting parameters.

Due to this exceptional data volume, ToolExpert MFC replaces the previously used cutting data page.

ToolExpert MFC is regularly updated to include the latest application knowledge.



This way to the new cutting data calculator **ToolExpert MFC** or the FRAISA website **www.fraisa.com/en/toolexpert-mfc**

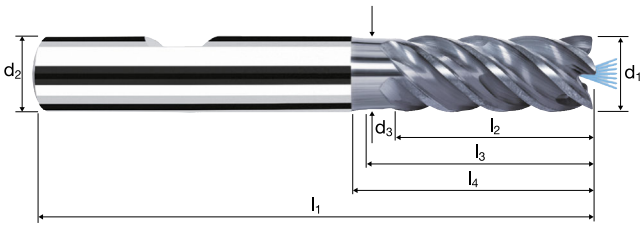
Cylindrical end mills MFC (MB-NVDS)

Smooth-edged, normal version with short neck
High-performance penetration edge with central air/cooling channel

HM MG10	λ 45° γ 0°

r

Vario



Roughing HPC

Roughing HDC

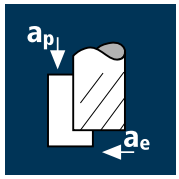
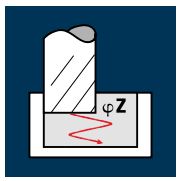
Finishing

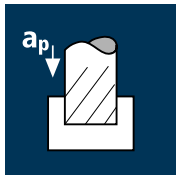
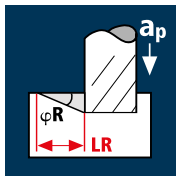
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8205** ø-Code **300**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r	z	POLYCHROM P8205	POLYCHROM P8105
300	6.00	6.00	5.50	57	12.00	18.15	20.00	0.100	5		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	5		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	5		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	5		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	5		●
612*	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	5		●
682	20.00	20.00	19.00	104	39.00	48.23	53.00	0.200	5		●
684*	20.00	20.00	19.00	104	39.00	48.23	53.00	0.200	5		●

* with chip breaker

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]	φZ [°]
	Steel < 850 N/mm²	4.00	4	180	0.035	6.000	1.600	14325	2005	19.3	20°
		5.00	4	180	0.040	7.500	2.000	11460	1835	27.5	20°
		6.00	4	180	0.050	9.000	2.400	9550	1910	41.3	20°
		8.00	4	180	0.060	12.000	3.200	7160	1720	66.0	20°
		10.00	4	180	0.075	15.000	4.000	5730	1720	103.1	20°
		12.00	4	180	0.085	18.000	4.800	4775	1625	140.3	20°
		16.00	4	180	0.095	24.000	6.400	3580	1360	209.0	20°
		20.00	4	180	0.110	30.000	8.000	2865	1260	302.5	20°
	Steel 850 - 1100 N/mm²	4.00	4	150	0.030	6.000	1.600	11935	1430	13.8	18°
		5.00	4	150	0.035	7.500	2.000	9550	1335	20.1	18°
		6.00	4	150	0.040	9.000	2.400	7960	1275	27.5	18°
		8.00	4	150	0.050	12.000	3.200	5970	1195	45.8	18°
		10.00	4	150	0.065	15.000	4.000	4775	1240	74.5	18°
		12.00	4	150	0.075	18.000	4.800	3980	1195	103.1	18°
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.8	18°
		20.00	4	150	0.100	30.000	8.000	2385	955	229.2	18°
	Cold work tool steel (12% Cr), high alloyed [1.2379]	4.00	4	70	0.030	6.000	1.600	5570	670	6.4	12°
		5.00	4	70	0.035	7.500	2.000	4455	625	9.4	12°
		6.00	4	70	0.040	9.000	2.400	3715	595	12.8	12°
		8.00	4	70	0.050	12.000	3.200	2785	555	21.4	12°
		10.00	4	70	0.060	15.000	4.000	2230	535	32.1	12°
		12.00	4	70	0.075	18.000	4.800	1855	555	48.1	12°
		16.00	4	70	0.085	24.000	6.400	1395	475	72.7	12°
		20.00	4	70	0.095	30.000	8.000	1115	425	101.6	12°
	Stainless steel [Cr-Ni/1.4301]	4.00	4	90	0.020	6.000	1.600	7160	575	5.5	12°
		5.00	4	90	0.025	7.500	2.000	5730	575	8.6	12°
		6.00	4	90	0.030	9.000	2.400	4775	575	12.4	12°
		8.00	4	90	0.035	12.000	3.200	3580	500	19.3	12°
		10.00	4	90	0.045	15.000	4.000	2865	515	30.9	12°
		12.00	4	90	0.055	18.000	4.800	2385	525	45.4	12°
		16.00	4	90	0.065	24.000	6.400	1790	465	71.5	12°
		20.00	4	90	0.080	30.000	8.000	1430	460	110.0	12°

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]	φR [°]	LR [mm]
	Steel < 850 N/mm²	4.00	4	145	0.025	5.000	4.000	11540	1155	23.1	32°	8.0
		5.00	4	145	0.030	6.250	5.000	9230	1110	34.6	32°	10.0
		6.00	4	145	0.040	7.500	6.000	7690	1230	55.4	32°	12.0
		8.00	4	145	0.045	10.000	8.000	5770	1040	83.1	32°	16.0
		10.00	4	145	0.055	12.500	10.000	4615	1015	126.9	32°	20.0
		12.00	4	145	0.065	15.000	12.000	3845	1000	180.0	32°	24.0
		16.00	4	145	0.070	20.000	16.000	2885	810	258.5	32°	32.0
		20.00	4	145	0.085	25.000	20.000	2310	785	392.3	32°	40.0
	Steel 850 - 1100 N/mm²	4.00	4	120	0.020	5.000	4.000	9550	765	15.3	29°	9.0
		5.00	4	120	0.025	6.250	5.000	7640	765	23.9	29°	11.3
		6.00	4	120	0.030	7.500	6.000	6365	765	34.4	29°	13.5
		8.00	4	120	0.040	10.000	8.000	4775	765	61.1	29°	18.0
		10.00	4	120	0.050	12.500	10.000	3820	765	95.5	29°	22.6
		12.00	4	120	0.055	15.000	12.000	3185	700	126.1	29°	27.1
		16.00	4	120	0.065	20.000	16.000	2385	620	198.6	29°	36.1
		20.00	4	120	0.075	25.000	20.000	1910	575	286.5	29°	45.1
	Cold work tool steel (12% Cr), high alloyed [1.2379]	4.00	4	55	0.025	5.000	4.000	4375	440	8.8	19°	14.5
		5.00	4	55	0.025	6.250	5.000	3500	350	10.9	19°	18.2
		6.00	4	55	0.030	7.500	6.000	2920	350	15.8	19°	21.8
		8.00	4	55	0.040	10.000	8.000	2190	350	28.0	19°	29.0
		10.00	4	55	0.045	12.500	10.000	1750	315	39.4	19°	36.3
		12.00	4	55	0.055	15.000	12.000	1460	320	57.8	19°	43.6
		16.00	4	55	0.065	20.000	16.000	1095	285	91.0	19°	58.1
		20.00	4	55	0.070	25.000	20.000	875	245	122.5	19°	72.6
	Stainless steel [Cr-Ni/1.4301]	4.00	4	70	0.015	5.000	4.000	5570	335	6.7	14°	20.1
		5.00	4	70	0.020	6.250	5.000	4455	355	11.1	14°	25.1
		6.00	4	70	0.025	7.500	6.000	3715	370	16.7	14°	30.1
		8.00	4	70	0.025	10.000	8.000	2785	280	22.3	14°	40.1
		10.00	4	70	0.035	12.500	10.000	2230	310	39.0	14°	50.1
		12.00	4	70	0.040	15.000	12.000	1855	295	53.5	14°	60.2
		16.00	4	70	0.050	20.000	16.000	1395	280	89.1	14°	80.2
		20.00	4	70	0.060	25.000	20.000	1115	265	133.7	14°	100.3

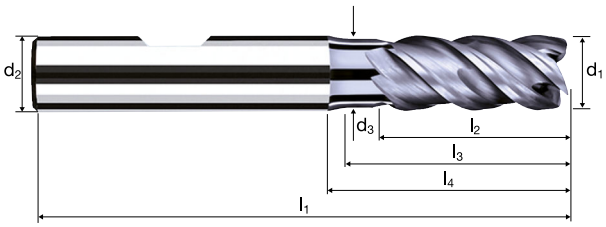
Cylindrical end mills NB-NVDS

Smooth-edged, normal version with short neck
High-performance penetration edge

HM MG10	λ 45° γ 0°

r

Vario



Roughing HPC

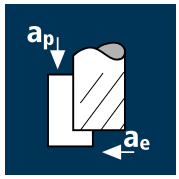
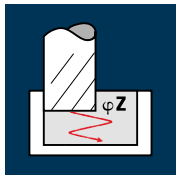
Roughing HDC

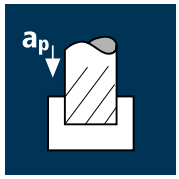
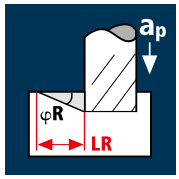
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **8200** ø-Code **220**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8200	POLYCHROM P8100
220	4.00	6.00	3.70	57	8.00	16.00	20.82	0.100	3.0°	4		●
260	5.00	6.00	4.60	57	10.00	18.00	21.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	57	12.00	18.15	20.00	0.100	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	4		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	39.00	48.23	53.00	0.200	0.0°	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel < 850 N/mm²	3.00	4	150	0.018	4.500	1.200	15915	1145	6.2	16°
		4.00	4	150	0.022	6.000	1.600	11935	1050	10.1	16°
		5.00	4	150	0.028	7.500	2.000	9550	1070	16.0	16°
		6.00	4	150	0.035	9.000	2.400	7960	1115	24.1	16°
		8.00	4	150	0.045	12.000	3.200	5970	1075	41.3	16°
		10.00	4	150	0.060	15.000	4.000	4775	1145	68.8	16°
		12.00	4	150	0.065	18.000	4.800	3980	1035	89.4	16°
		16.00	4	150	0.075	24.000	6.400	2985	895	137.5	16°
		20.00	4	150	0.090	30.000	8.000	2385	860	206.3	16°
	Steel 850 - 1100 N/mm²	3.00	4	125	0.015	4.500	1.200	13265	795	4.3	15°
		4.00	4	125	0.018	6.000	1.600	9945	715	6.9	15°
		5.00	4	125	0.024	7.500	2.000	7960	765	11.5	15°
		6.00	4	125	0.030	9.000	2.400	6630	795	17.2	15°
		8.00	4	125	0.040	12.000	3.200	4975	795	30.6	15°
		10.00	4	125	0.055	15.000	4.000	3980	875	52.5	15°
		12.00	4	125	0.060	18.000	4.800	3315	795	68.8	15°
		16.00	4	125	0.070	24.000	6.400	2485	695	107.0	15°
		20.00	4	125	0.080	30.000	8.000	1990	635	152.8	15°
	Stainless steel [Cr-Ni/1.4301]	3.00	4	85	0.013	4.500	1.200	9020	470	2.5	9°
		4.00	4	85	0.016	6.000	1.600	6765	435	4.2	9°
		5.00	4	85	0.020	7.500	2.000	5410	435	6.5	9°
		6.00	4	85	0.025	9.000	2.400	4510	450	9.7	9°
		8.00	4	85	0.035	12.000	3.200	3380	475	18.2	9°
		10.00	4	85	0.045	15.000	4.000	2705	485	29.2	9°
		12.00	4	85	0.050	18.000	4.800	2255	450	39.0	9°
		16.00	4	85	0.060	24.000	6.400	1690	405	62.3	9°
		20.00	4	85	0.070	30.000	8.000	1355	380	90.9	9°
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3.00	4	45	0.013	4.500	1.200	4775	250	1.3	7°
		4.00	4	45	0.016	6.000	1.600	3580	230	2.2	7°
		5.00	4	45	0.020	7.500	2.000	2865	230	3.4	7°
		6.00	4	45	0.025	9.000	2.400	2385	240	5.2	7°
		8.00	4	45	0.035	12.000	3.200	1790	250	9.6	7°
		10.00	4	45	0.045	15.000	4.000	1430	260	15.5	7°
		12.00	4	45	0.050	18.000	4.800	1195	240	20.6	7°
		16.00	4	45	0.060	24.000	6.400	895	215	33.0	7°
		20.00	4	45	0.070	30.000	8.000	715	200	48.1	7°

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Steel < 850 N/mm²	3.00	4	120	0.014	1.800	3.000	12730	715	3.9	26°	3.7
		4.00	4	120	0.018	2.800	4.000	9550	690	7.7	26°	5.7
		5.00	4	120	0.022	4.000	5.000	7640	670	13.4	26°	8.2
		6.00	4	120	0.028	6.000	6.000	6365	715	25.7	26°	12.3
		8.00	4	120	0.036	8.000	8.000	4775	690	44.0	26°	16.4
		10.00	4	120	0.048	10.000	10.000	3820	735	73.3	26°	20.5
		12.00	4	120	0.052	12.000	12.000	3185	660	95.3	26°	24.6
		16.00	4	120	0.060	16.000	16.000	2385	575	146.7	26°	32.8
		20.00	4	120	0.072	20.000	20.000	1910	550	220.0	26°	41.0
	Steel 850 - 1100 N/mm²	3.00	4	100	0.011	1.800	3.000	10610	465	2.5	24°	4.0
		4.00	4	100	0.014	2.800	4.000	7960	445	5.0	24°	6.3
		5.00	4	100	0.020	4.000	5.000	6365	510	10.2	24°	9.0
		6.00	4	100	0.024	6.000	6.000	5305	510	18.3	24°	13.5
		8.00	4	100	0.032	8.000	8.000	3980	510	32.6	24°	18.0
		10.00	4	100	0.044	10.000	10.000	3185	560	56.0	24°	22.5
		12.00	4	100	0.048	12.000	12.000	2655	510	73.3	24°	27.0
		16.00	4	100	0.056	16.000	16.000	1990	445	114.1	24°	35.9
		20.00	4	100	0.064	20.000	20.000	1590	405	163.0	24°	44.9
	Stainless steel [Cr-Ni/1.4301]	3.00	4	70	0.010	1.800	3.000	7425	295	1.6	11°	9.3
		4.00	4	70	0.013	2.800	4.000	5570	290	3.2	11°	14.4
		5.00	4	70	0.016	4.000	5.000	4455	285	5.7	11°	20.6
		6.00	4	70	0.020	6.000	6.000	3715	295	10.7	11°	30.9
		8.00	4	70	0.028	8.000	8.000	2785	310	20.0	11°	41.2
		10.00	4	70	0.036	10.000	10.000	2230	320	32.1	11°	51.4
		12.00	4	70	0.040	12.000	12.000	1855	295	42.8	11°	61.7
		16.00	4	70	0.048	16.000	16.000	1395	265	68.4	11°	82.3
		20.00	4	70	0.056	20.000	20.000	1115	250	99.8	11°	102.9
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3.00	4	35	0.010	1.800	3.000	3715	150	0.8	10°	10.2
		4.00	4	35	0.013	2.800	4.000	2785	145	1.6	10°	15.9
		5.00	4	35	0.016	4.000	5.000	2230	145	2.9	10°	22.7
		6.00	4	35	0.020	6.000	6.000	1855	150	5.3	10°	34.0
		8.00	4	35	0.028	8.000	8.000	1395	155	10.0	10°	45.4
		10.00	4	35	0.036	10.000	10.000	1115	160	16.0	10°	56.7
		12.00	4	35	0.040	12.000	12.000	930	150	21.4	10°	68.1
		16.00	4	35	0.048	16.000	16.000	695	135	34.2	10°	90.7
		20.00	4	35	0.056	20.000	20.000	555	125	49.9	10°	113.4

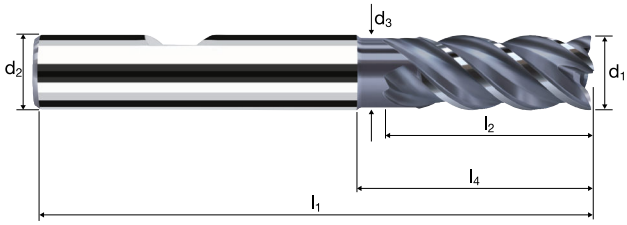
Cylindrical end mills NB-NVS

Smooth-edged, normal version with short neck
High-performance penetration edge

HM MG10	λ 45° γ 15°

r

Vario



Roughing

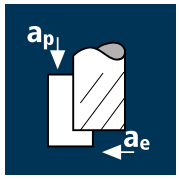
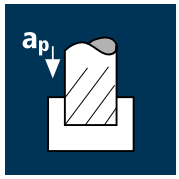
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Copper Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8404** ø-Code **140**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8404	POLYCHROM P8304
140	2.00	6.00	1.90	57	7.00	10.00	18.31	0.050	7.0°	4		●
160	2.50	6.00	2.30	57	8.00	10.00	17.56	0.050	6.5°	4		●
178*	3.00	3.00	2.80	45	8.00	13.56	14.00	0.050	0.0°	4		●
180	3.00	6.00	2.80	57	8.00	14.00	20.63	0.050	4.5°	4		●
200	3.50	6.00	3.20	57	8.00	14.00	19.88	0.050	4.0°	4		●
218*	4.00	4.00	3.70	50	11.00	15.47	16.00	0.100	0.0°	4		●
220	4.00	6.00	3.70	57	11.00	16.00	20.95	0.100	3.0°	4		●
240	4.50	6.00	4.10	57	12.00	16.00	20.20	0.100	2.5°	4		●
258*	5.00	5.00	4.60	50	13.00	15.40	16.00	0.100	0.0°	4		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.100	1.5°	4		●
280	5.50	6.00	5.00	57	13.00	20.00	22.52	0.100	1.0°	4		●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.100	0.0°	4		●
331	7.00	8.00	6.40	63	16.00	24.00	27.64	0.100	1.5°	4		●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	0.150	0.0°	4		●
420	9.00	10.00	8.20	72	19.00	26.00	30.02	0.200	1.5°	4		●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	0.200	0.0°	4		●

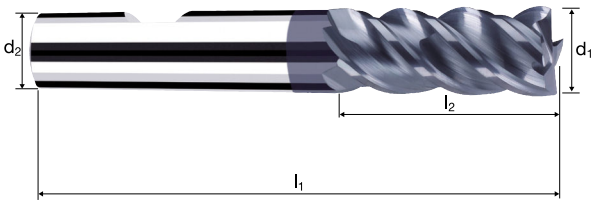
* without clamping flat only

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	4.00	4	180	0.035	6.000	1.600	14325	2005	19.3
		5.00	4	180	0.040	7.500	2.000	11460	1835	27.5
		6.00	4	180	0.050	9.000	2.400	9550	1910	41.3
		8.00	4	180	0.060	12.000	3.200	7160	1720	66.0
		10.00	4	180	0.075	15.000	4.000	5730	1720	103.1
		12.00	4	180	0.085	18.000	4.800	4775	1625	140.3
		16.00	4	180	0.095	24.000	6.400	3580	1360	209.0
		20.00	4	180	0.110	30.000	8.000	2865	1260	302.5
	Steel 850 - 1100 N/mm²	4.00	4	150	0.030	6.000	1.600	11935	1430	13.8
		5.00	4	150	0.035	7.500	2.000	9550	1335	20.1
		6.00	4	150	0.040	9.000	2.400	7960	1275	27.5
		8.00	4	150	0.050	12.000	3.200	5970	1195	45.8
		10.00	4	150	0.065	15.000	4.000	4775	1240	74.5
		12.00	4	150	0.075	18.000	4.800	3980	1195	103.1
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.8
		20.00	4	150	0.100	30.000	8.000	2385	955	229.2
	Cold work tool steel (12% Cr), high alloyed [1.2379]	4.00	4	70	0.030	6.000	1.600	5570	670	6.4
		5.00	4	70	0.035	7.500	2.000	4455	625	9.4
		6.00	4	70	0.040	9.000	2.400	3715	595	12.8
		8.00	4	70	0.050	12.000	3.200	2785	555	21.4
		10.00	4	70	0.060	15.000	4.000	2230	535	32.1
		12.00	4	70	0.075	18.000	4.800	1855	555	48.1
		16.00	4	70	0.085	24.000	6.400	1395	475	72.7
		20.00	4	70	0.095	30.000	8.000	1115	425	101.6
	Stainless steel [Cr-Ni/1.4301]	4.00	4	90	0.020	6.000	1.600	7160	575	5.5
		5.00	4	90	0.025	7.500	2.000	5730	575	8.6
		6.00	4	90	0.030	9.000	2.400	4775	575	12.4
		8.00	4	90	0.035	12.000	3.200	3580	500	19.3
		10.00	4	90	0.045	15.000	4.000	2865	515	30.9
		12.00	4	90	0.055	18.000	4.800	2385	525	45.4
		16.00	4	90	0.065	24.000	6.400	1790	465	71.5
		20.00	4	90	0.080	30.000	8.000	1430	460	110.0
	Steel < 850 N/mm²	4.00	4	145	0.025	5.000	4.000	11540	1155	23.1
		5.00	4	145	0.030	6.250	5.000	9230	1110	34.6
		6.00	4	145	0.040	7.500	6.000	7690	1230	55.4
		8.00	4	145	0.045	10.000	8.000	5770	1040	83.1
		10.00	4	145	0.055	12.500	10.000	4615	1015	126.9
		12.00	4	145	0.065	15.000	12.000	3845	1000	180.0
		16.00	4	145	0.070	20.000	16.000	2885	810	258.5
		20.00	4	145	0.085	25.000	20.000	2310	785	392.3
	Steel 850 - 1100 N/mm²	4.00	4	120	0.020	5.000	4.000	9550	765	15.3
		5.00	4	120	0.025	6.250	5.000	7640	765	23.9
		6.00	4	120	0.030	7.500	6.000	6365	765	34.4
		8.00	4	120	0.040	10.000	8.000	4775	765	61.1
		10.00	4	120	0.050	12.500	10.000	3820	765	95.5
		12.00	4	120	0.055	15.000	12.000	3185	700	126.1
		16.00	4	120	0.065	20.000	16.000	2385	620	198.6
		20.00	4	120	0.075	25.000	20.000	1910	575	286.5
	Cold work tool steel (12% Cr), high alloyed [1.2379]	4.00	4	55	0.025	5.000	4.000	4375	440	8.8
		5.00	4	55	0.025	6.250	5.000	3500	350	10.9
		6.00	4	55	0.030	7.500	6.000	2920	350	15.8
		8.00	4	55	0.040	10.000	8.000	2190	350	28.0
		10.00	4	55	0.045	12.500	10.000	1750	315	39.4
		12.00	4	55	0.055	15.000	12.000	1460	320	57.8
		16.00	4	55	0.065	20.000	16.000	1095	285	91.0
		20.00	4	55	0.070	25.000	20.000	875	245	122.5
	Stainless steel [Cr-Ni/1.4301]	4.00	4	70	0.015	5.000	4.000	5570	335	6.7
		5.00	4	70	0.020	6.250	5.000	4455	355	11.1
		6.00	4	70	0.025	7.500	6.000	3715	370	16.7
		8.00	4	70	0.025	10.000	8.000	2785	280	22.3
		10.00	4	70	0.035	12.500	10.000	2230	310	39.0
		12.00	4	70	0.040	15.000	12.000	1855	295	53.5
		16.00	4	70	0.050	20.000	16.000	1395	280	89.1
		20.00	4	70	0.060	25.000	20.000	1115	265	133.7

Cylindrical end mills NB-NVD

Smooth-edged, normal version

HM MG10	λ 45° γ 0°



Roughing HPC

Roughing HDC

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **15307** ø-Code **180**

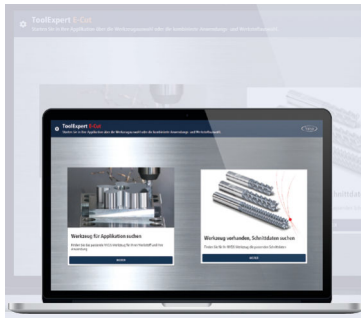
	Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P15307	POLYCHROM P15207
new!	180	3.00	6.00	57	8.00	15.56	0.10	6.0°	4	●	
	220	4.00	6.00	57	8.00	14.59	0.10	4.5°	4	●	
	260	5.00	6.00	57	10.00	14.72	0.15	2.5°	4	●	
	300	6.00	6.00	57	12.00	-	0.15	0.0°	4	●	
	391	8.00	8.00	63	19.00	-	0.15	0.0°	4	●	
	450	10.00	10.00	72	23.00	-	0.20	0.0°	4	●	
	501	12.00	12.00	83	27.00	-	0.20	0.0°	4	●	
	610	16.00	16.00	92	32.00	-	0.20	0.0°	4	●	
	682	20.00	20.00	104	39.00	-	0.20	0.0°	4	●	

ToolExpert E-Cut

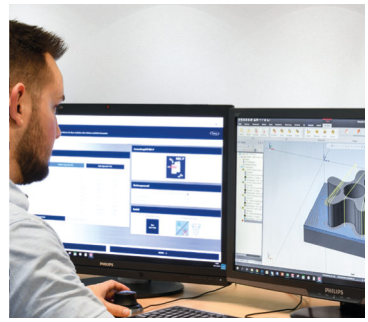
FRAISA's cutting data calculator **ToolExpert E-Cut** provides tool and material-specific cutting data for production and is the basis for precision use of **FRAISA E-Cut** tools.

This innovative software solution is **very user-friendly**: simply select the material, application and tool and the software provides you with the right cutting data. **ToolExpert E-Cut** can then transfer the tool geometry data straight to your CAM system.

Fast, safe and reliable.



Selecting the material, application and tool to obtain the right cutting data



Transferring the cutting data and tool geometry data to the CAM system

To complement existing solutions and for all future applications

EASY TO USE
EFFECTIVE
ECONOMIC

Try out our ToolExpert E-Cut now online – it's simple

www.fraisa.com

Cylindrical end mills E-Cut

Smooth-edged, normal version with short neck

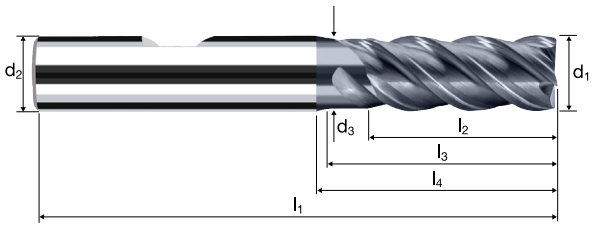
HM
MG10

λ 45°
γ 10°

r

Vario

new!



Roughing HPC | Roughing HDC | Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8400** ø-Code **100**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8400	POLYCHROM P8300
100	1.00	6.00	0.95	57	3.00	5.00	14.82	0.050	10.0°	4		●
140	2.00	6.00	1.90	57	5.00	8.00	16.05	0.050	7.5°	4		●
180	3.00	6.00	2.80	57	8.00	14.00	20.37	0.050	4.5°	4		●
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.100	3.0°	4		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.100	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	4		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	4		●
570	14.00	14.00	13.00	83	28.00	32.97	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	40.00	48.23	53.00	0.250	0.0°	4		●

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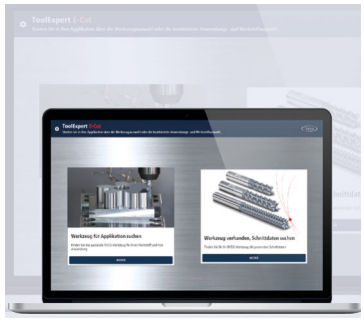
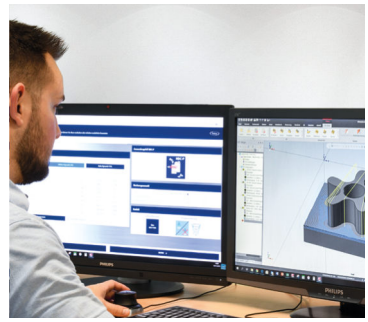
Fast, safe and reliable.



Selecting the material, application and tool to obtain the right cutting data



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Smooth-edged, normal version with short neck

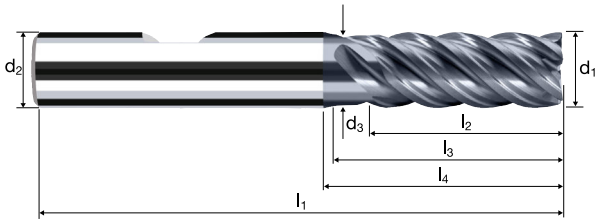
HM
MG10

λ 45°
γ 10°

r

Vario

new!

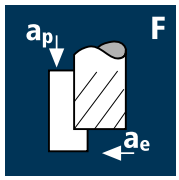


Roughing HPC | Roughing HDC | Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8405** ø-Code **220**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8405	POLYCHROM P8305
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.100	3.0°	5		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.100	1.5°	5		●
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.100	0.0°	5		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	5		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	5		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	5		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	5		●
682	20.00	20.00	19.00	104	40.00	48.23	53.00	0.250	0.0°	5		●

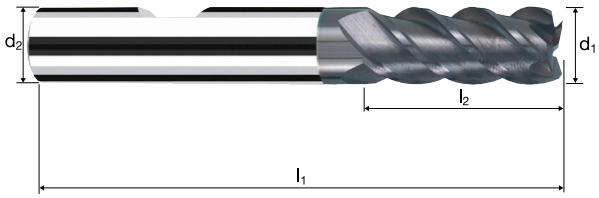
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	3.00	4	160	0.010	4.500	0.300	16975	680
		4.00	4	160	0.015	6.000	0.400	12730	765
		5.00	4	160	0.015	7.500	0.500	10185	610
		6.00	4	160	0.020	9.000	0.600	8490	680
		8.00	4	160	0.025	12.000	0.800	6365	635
		10.00	4	160	0.035	15.000	1.000	5095	715
		12.00	4	160	0.040	18.000	1.200	4245	680
		16.00	4	160	0.055	24.000	1.600	3185	700
		20.00	4	160	0.065	30.000	2.000	2545	660
	Steel 850 - 1100 N/mm²	3.00	4	100	0.010	4.500	0.300	10610	425
		4.00	4	100	0.015	6.000	0.400	7960	475
		5.00	4	100	0.015	7.500	0.500	6365	380
		6.00	4	100	0.020	9.000	0.600	5305	425
		8.00	4	100	0.025	12.000	0.800	3980	400
		10.00	4	100	0.035	15.000	1.000	3185	445
		12.00	4	100	0.040	18.000	1.200	2655	425
		16.00	4	100	0.055	24.000	1.600	1990	440
		20.00	4	100	0.065	30.000	2.000	1590	415
	Steel 1100 - 1300 N/mm²	3.00	4	75	0.010	4.500	0.300	7960	320
		4.00	4	75	0.015	6.000	0.400	5970	360
		5.00	4	75	0.015	7.500	0.500	4775	285
		6.00	4	75	0.020	9.000	0.600	3980	320
		8.00	4	75	0.025	12.000	0.800	2985	300
		10.00	4	75	0.035	15.000	1.000	2385	335
		12.00	4	75	0.040	18.000	1.200	1990	320
		16.00	4	75	0.055	24.000	1.600	1490	330
		20.00	4	75	0.065	30.000	2.000	1195	310
	Stainless steel [Cr-Ni/1.4301]	3.00	4	90	0.010	4.500	0.300	9550	380
		4.00	4	90	0.015	6.000	0.400	7160	430
		5.00	4	90	0.015	7.500	0.500	5730	345
		6.00	4	90	0.020	9.000	0.600	4775	380
		8.00	4	90	0.025	12.000	0.800	3580	360
		10.00	4	90	0.035	15.000	1.000	2865	400
		12.00	4	90	0.040	18.000	1.200	2385	380
		16.00	4	90	0.055	24.000	1.600	1790	395
		20.00	4	90	0.065	30.000	2.000	1430	370
	Cast iron (lamellar / spheroidal)	3.00	4	120	0.010	4.500	0.300	12730	510
		4.00	4	120	0.015	6.000	0.400	9550	575
		5.00	4	120	0.015	7.500	0.500	7640	460
		6.00	4	120	0.020	9.000	0.600	6365	510
		8.00	4	120	0.025	12.000	0.800	4775	475
		10.00	4	120	0.035	15.000	1.000	3820	535
		12.00	4	120	0.040	18.000	1.200	3185	510
		16.00	4	120	0.055	24.000	1.600	2385	525
		20.00	4	120	0.065	30.000	2.000	1910	495
	Unalloyed copper	3.00	4	230	0.010	4.500	0.300	24405	975
		4.00	4	230	0.015	6.000	0.400	18305	1100
		5.00	4	230	0.015	7.500	0.500	14640	880
		6.00	4	230	0.020	9.000	0.600	12200	975
		8.00	4	230	0.025	12.000	0.800	9150	915
		10.00	4	230	0.035	15.000	1.000	7320	1025
		12.00	4	230	0.040	18.000	1.200	6100	975
		16.00	4	230	0.055	24.000	1.600	4575	1005
		20.00	4	230	0.065	30.000	2.000	3660	950
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	3.00	4	95	0.010	4.500	0.300	10080	405
		4.00	4	95	0.015	6.000	0.400	7560	455
		5.00	4	95	0.015	7.500	0.500	6050	365
		6.00	4	95	0.020	9.000	0.600	5040	405
		8.00	4	95	0.025	12.000	0.800	3780	380
		10.00	4	95	0.035	15.000	1.000	3025	425
		12.00	4	95	0.040	18.000	1.200	2520	405
		16.00	4	95	0.055	24.000	1.600	1890	415
		20.00	4	95	0.065	30.000	2.000	1510	395
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3.00	4	50	0.010	4.500	0.300	5305	210
		4.00	4	50	0.015	6.000	0.400	3980	240
		5.00	4	50	0.015	7.500	0.500	3185	190
		6.00	4	50	0.020	9.000	0.600	2655	210
		8.00	4	50	0.025	12.000	0.800	1990	200
		10.00	4	50	0.035	15.000	1.000	1590	225
		12.00	4	50	0.040	18.000	1.200	1325	210
		16.00	4	50	0.055	24.000	1.600	995	220
		20.00	4	50	0.065	30.000	2.000	795	205

Cylindrical end mills

Smooth-edged, normal version

HM MG10	λ 45° γ 15°

45°



Roughing

Finishing

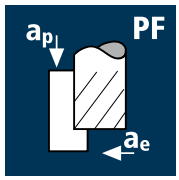
ToolSchool

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **5340** ø-Code **140**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P5340	POLYCHROM P5240
140	2.00	6.00	54	7.00	16.12	0.10	7.5°	4		●
160	2.50	6.00	54	8.00	16.69	0.10	6.5°	4		●
178*	3.00	3.00	45	8.00	-	0.10	0.0°	4		●
180	3.00	6.00	57	8.00	15.76	0.10	6.0°	4		●
218*	4.00	4.00	50	11.00	-	0.10	0.0°	4		●
220	4.00	6.00	57	11.00	17.39	0.10	3.5°	4		●
258*	5.00	5.00	50	13.00	-	0.15	0.0°	4		●
260	5.00	6.00	57	13.00	17.52	0.15	2.0°	4		●
300	6.00	6.00	57	13.00	-	0.15	0.0°	4		●
331	7.00	8.00	63	16.00	20.52	0.15	1.5°	4		●
391	8.00	8.00	63	19.00	-	0.15	0.0°	4		●
420	9.00	10.00	72	19.00	23.52	0.20	1.5°	4		●
450	10.00	10.00	72	22.00	-	0.20	0.0°	4		●
501	12.00	12.00	83	26.00	-	0.20	0.0°	4		●
570	14.00	14.00	83	26.00	-	0.20	0.0°	4		●
610	16.00	16.00	92	32.00	-	0.20	0.0°	4		●
640	18.00	18.00	92	32.00	-	0.20	0.0°	4		●
682	20.00	20.00	104	38.00	-	0.20	0.0°	4		●

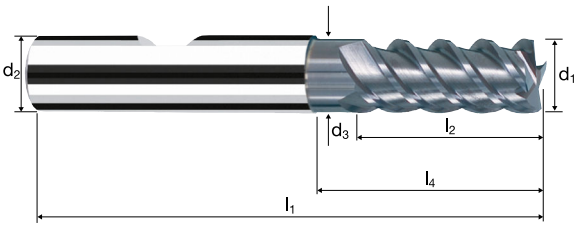
* without clamping flat only

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel < 850 N/mm²	4.00	4	160	0.015	6.000	1.000	12730	765
		6.00	4	160	0.020	9.000	1.500	8490	680
		8.00	4	160	0.025	12.000	2.000	6365	635
		10.00	4	160	0.035	15.000	2.500	5095	715
		12.00	4	160	0.040	18.000	3.000	4245	680
		14.00	4	160	0.045	21.000	3.500	3640	655
		16.00	4	160	0.055	24.000	4.000	3185	700
		18.00	4	160	0.060	27.000	4.500	2830	680
		20.00	4	160	0.065	30.000	5.000	2545	660
	Steel 850 - 1100 N/mm²	4.00	4	100	0.015	6.000	1.000	7960	475
		6.00	4	100	0.020	9.000	1.500	5305	425
		8.00	4	100	0.025	12.000	2.000	3980	400
		10.00	4	100	0.035	15.000	2.500	3185	445
		12.00	4	100	0.040	18.000	3.000	2655	425
		14.00	4	100	0.045	21.000	3.500	2275	410
		16.00	4	100	0.055	24.000	4.000	1990	440
		18.00	4	100	0.060	27.000	4.500	1770	425
		20.00	4	100	0.065	30.000	5.000	1590	415
	Steel 1100 - 1300 N/mm²	4.00	4	75	0.015	6.000	0.400	5970	360
		6.00	4	75	0.020	9.000	0.600	3980	320
		8.00	4	75	0.025	12.000	0.800	2985	300
		10.00	4	75	0.035	15.000	1.000	2385	335
		12.00	4	75	0.040	18.000	1.200	1990	320
		14.00	4	75	0.045	21.000	1.400	1705	305
		16.00	4	75	0.055	24.000	1.600	1490	330
		18.00	4	75	0.060	27.000	1.800	1325	320
		20.00	4	75	0.065	30.000	2.000	1195	310
	Stainless steel [Cr-Ni/1.4301]	4.00	4	90	0.015	6.000	1.000	7160	430
		6.00	4	90	0.020	9.000	1.500	4775	380
		8.00	4	90	0.025	12.000	2.000	3580	360
		10.00	4	90	0.035	15.000	2.500	2865	400
		12.00	4	90	0.040	18.000	3.000	2385	380
		14.00	4	90	0.045	21.000	3.500	2045	370
		16.00	4	90	0.055	24.000	4.000	1790	395
		18.00	4	90	0.060	27.000	4.500	1590	380
		20.00	4	90	0.065	30.000	5.000	1430	370
	Cast iron (lamellar / spheroidal)	4.00	4	120	0.015	6.000	1.000	9550	575
		6.00	4	120	0.020	9.000	1.500	6365	510
		8.00	4	120	0.025	12.000	2.000	4775	475
		10.00	4	120	0.035	15.000	2.500	3820	535
		12.00	4	120	0.040	18.000	3.000	3185	510
		14.00	4	120	0.045	21.000	3.500	2730	490
		16.00	4	120	0.055	24.000	4.000	2385	525
		18.00	4	120	0.060	27.000	4.500	2120	510
		20.00	4	120	0.065	30.000	5.000	1910	495
	Unalloyed copper	4.00	4	230	0.015	6.000	1.000	18305	1100
		6.00	4	230	0.020	9.000	1.500	12200	975
		8.00	4	230	0.025	12.000	2.000	9150	915
		10.00	4	230	0.035	15.000	2.500	7320	1025
		12.00	4	230	0.040	18.000	3.000	6100	975
		14.00	4	230	0.045	21.000	3.500	5230	940
		16.00	4	230	0.055	24.000	4.000	4575	1005
		18.00	4	230	0.060	27.000	4.500	4065	975
		20.00	4	230	0.065	30.000	5.000	3660	950
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	4.00	4	95	0.015	6.000	1.000	7560	455
		6.00	4	95	0.020	9.000	1.500	5040	405
		8.00	4	95	0.025	12.000	2.000	3780	380
		10.00	4	95	0.035	15.000	2.500	3025	425
		12.00	4	95	0.040	18.000	3.000	2520	405
		14.00	4	95	0.045	21.000	3.500	2160	390
		16.00	4	95	0.055	24.000	4.000	1890	415
		18.00	4	95	0.060	27.000	4.500	1680	405
		20.00	4	95	0.065	30.000	5.000	1510	395
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	4.00	4	50	0.015	6.000	1.000	3980	240
		6.00	4	50	0.020	9.000	1.500	2655	210
		8.00	4	50	0.025	12.000	2.000	1990	200
		10.00	4	50	0.035	15.000	2.500	1590	225
		12.00	4	50	0.040	18.000	3.000	1325	210
		14.00	4	50	0.045	21.000	3.500	1135	205
		16.00	4	50	0.055	24.000	4.000	995	220
		18.00	4	50	0.060	27.000	4.500	885	210
		20.00	4	50	0.065	30.000	5.000	795	205

Cylindrical end mills

Smooth-edged, normal version with short neck

HM MG10	λ 55° γ 15°



Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Inox Stainless	Ti Titanium	GG(G) Gold / Platinum

Example: **Order-N°.** Coating **T** Article-N°. **5355** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P5355 / P5255	TRIBO T5355 / T5255
180	3.00	6.00	2.80	57	8.00	14.00	20.63	0.10	4.5°	4	●	●
220	4.00	6.00	3.70	57	11.00	16.00	20.95	0.10	3.0°	4	●	●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.15	1.5°	4	●	●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.15	0.0°	4	●	●
331*	7.00	8.00	-	63	16.00	-	20.02	0.15	1.5°	4	●	●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	0.15	0.0°	4	●	●
420*	9.00	10.00	-	72	19.00	-	23.02	0.20	1.5°	4	●	●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	0.20	0.0°	4	●	●
470*	11.00	12.00	-	83	26.00	-	30.52	0.20	1.0°	4	●	●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	0.20	0.0°	4	●	●
570	14.00	14.00	13.00	83	26.00	36.13	37.00	0.20	0.0°	4	●	●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	0.20	0.0°	4	●	●
640	18.00	18.00	17.00	92	32.00	42.13	43.00	0.20	0.0°	4	●	●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	0.20	0.0°	4	●	●

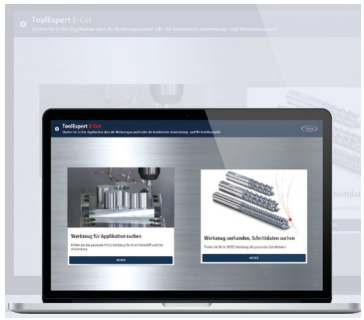
* without short neck only

ToolExpert E-Cut

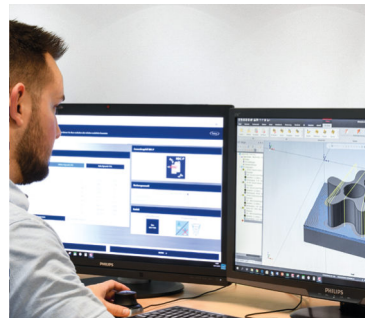
FRAISA's cutting data calculator **ToolExpert E-Cut** provides tool and material-specific cutting data for production and is the basis for precision use of **FRAISA E-Cut** tools.

This innovative software solution is **very user-friendly**: simply select the material, application and tool and the software provides you with the right cutting data. **ToolExpert E-Cut** can then transfer the tool geometry data straight to your CAM system.

Fast, safe and reliable.



Selecting the material, application and tool to obtain the right cutting data



Transferring the cutting data and tool geometry data to the CAM system

To complement existing solutions and for all future applications

EASY TO USE
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ECONOMIC

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Cylindrical end mills E-Cut

Smooth-edged, normal version with short neck

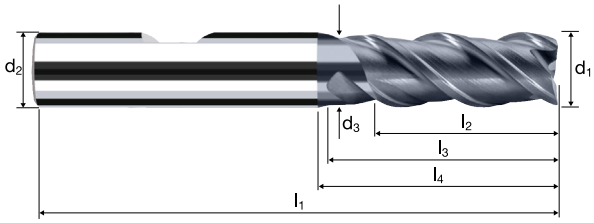
HM
MG10

λ 45°
γ 10°

r

Vario

new!

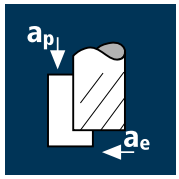
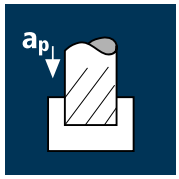


Roughing HPC | Roughing HDC | Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8403** ø-Code **100**

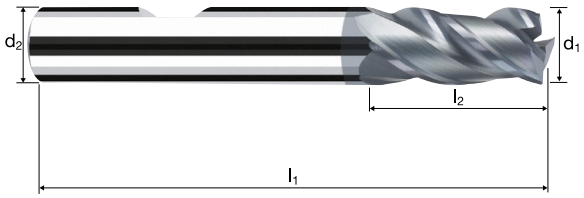
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8403	POLYCHROM P8303
100	1.00	6.00	0.95	57	3.00	5.00	14.82	0.050	10.0°	3		●
140	2.00	6.00	1.90	57	5.00	8.00	16.05	0.050	7.5°	3		●
180	3.00	6.00	2.80	57	8.00	14.00	20.37	0.050	4.5°	3		●
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.100	3.0°	3		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.100	1.5°	3		●
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.100	0.0°	3		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	3		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	3		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	3		●
570	14.00	14.00	13.00	83	28.00	32.97	37.00	0.200	0.0°	3		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	3		●
682	20.00	20.00	19.00	104	40.00	48.23	53.00	0.250	0.0°	3		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	3	190	0.015	4.500	1.400	20160	905	5.7
		4.00	3	190	0.015	6.000	1.800	15120	680	7.3
		5.00	3	190	0.020	7.500	2.250	12095	725	12.2
		6.00	3	190	0.040	9.000	2.700	10080	1210	29.4
		8.00	3	190	0.050	12.000	3.600	7560	1135	49.0
		10.00	3	190	0.065	15.000	4.500	6050	1180	79.6
		12.00	3	190	0.075	18.000	5.400	5040	1135	110.2
		16.00	3	190	0.100	24.000	7.200	3780	1135	196.0
		20.00	3	190	0.125	30.000	9.000	3025	1135	306.2
	Steel 850 - 1100 N/mm²	3.00	3	140	0.015	4.500	1.400	14855	670	4.2
		4.00	3	140	0.015	6.000	1.800	11140	500	5.4
		5.00	3	140	0.020	7.500	2.250	8915	535	9.0
		6.00	3	140	0.040	9.000	2.700	7425	890	21.7
		8.00	3	140	0.050	12.000	3.600	5570	835	36.1
		10.00	3	140	0.065	15.000	4.500	4455	870	58.7
		12.00	3	140	0.075	18.000	5.400	3715	835	81.2
		16.00	3	140	0.100	24.000	7.200	2785	835	144.4
		20.00	3	140	0.125	30.000	9.000	2230	835	225.6
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	3	70	0.010	4.500	1.350	7425	225	1.4
		4.00	3	70	0.015	6.000	1.800	5570	250	2.7
		5.00	3	70	0.015	7.500	2.250	4455	200	3.4
		6.00	3	70	0.035	9.000	2.700	3715	390	9.5
		8.00	3	70	0.045	12.000	3.600	2785	375	16.2
		10.00	3	70	0.055	15.000	4.500	2230	370	24.8
		12.00	3	70	0.065	18.000	5.400	1855	360	35.2
		16.00	3	70	0.085	24.000	7.200	1395	355	61.4
		20.00	3	70	0.110	30.000	9.000	1115	370	99.3
	Stainless steel [Cr-Ni/1.4301]	3.00	3	90	0.005	4.500	1.350	9550	145	0.9
		4.00	3	90	0.010	6.000	1.800	7160	215	2.3
		5.00	3	90	0.010	7.500	2.250	5730	170	2.9
		6.00	3	90	0.025	9.000	2.700	4775	360	8.7
		8.00	3	90	0.030	12.000	3.600	3580	320	13.9
		10.00	3	90	0.040	15.000	4.500	2865	345	23.2
		12.00	3	90	0.045	18.000	5.400	2385	320	31.3
		16.00	3	90	0.060	24.000	7.200	1790	320	55.7
		20.00	3	90	0.080	30.000	9.000	1430	345	92.8
	Steel < 850 N/mm²	3.00	3	155	0.015	4.500	3.000	16445	740	10.0
		4.00	3	155	0.015	6.000	4.000	12335	555	13.3
		5.00	3	155	0.025	7.500	5.000	9870	740	27.8
		6.00	3	155	0.030	9.000	6.000	8225	740	40.0
		8.00	3	155	0.040	12.000	8.000	6165	740	71.0
		10.00	3	155	0.050	15.000	10.000	4935	740	111.0
		12.00	3	155	0.060	18.000	12.000	4110	740	159.9
		16.00	3	155	0.080	16.000	16.000	3085	740	189.5
		20.00	3	155	0.100	20.000	20.000	2465	740	296.0
	Steel 850 - 1100 N/mm²	3.00	3	105	0.015	4.500	3.000	11140	500	6.8
		4.00	3	105	0.015	6.000	4.000	8355	375	9.0
		5.00	3	105	0.025	7.500	5.000	6685	500	18.8
		6.00	3	105	0.030	9.000	6.000	5570	500	27.1
		8.00	3	105	0.040	12.000	8.000	4180	500	48.1
		10.00	3	105	0.050	15.000	10.000	3340	500	75.2
		12.00	3	105	0.060	18.000	12.000	2785	500	108.3
		16.00	3	105	0.080	16.000	16.000	2090	500	128.3
		20.00	3	105	0.100	20.000	20.000	1670	500	200.5
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	3	55	0.010	4.500	3.000	5835	175	2.4
		4.00	3	55	0.015	6.000	4.000	4375	195	4.7
		5.00	3	55	0.015	7.500	5.000	3500	160	5.9
		6.00	3	55	0.030	9.000	6.000	2920	265	14.2
		8.00	3	55	0.040	12.000	8.000	2190	265	25.2
		10.00	3	55	0.050	15.000	10.000	1750	265	39.4
		12.00	3	55	0.060	18.000	12.000	1460	265	56.7
		16.00	3	55	0.080	16.000	16.000	1095	265	67.2
		20.00	3	55	0.100	20.000	20.000	875	265	105.0
	Stainless steel [Cr-Ni/1.4301]	3.00	3	75	0.010	1.500	3.000	7960	240	1.1
		4.00	3	75	0.015	2.000	4.000	5970	270	2.1
		5.00	3	75	0.015	2.500	5.000	4775	215	2.7
		6.00	3	75	0.025	3.000	6.000	3980	300	5.4
		8.00	3	75	0.035	4.000	8.000	2985	315	10.0
		10.00	3	75	0.045	5.000	10.000	2385	320	16.1
		12.00	3	75	0.050	6.000	12.000	1990	300	21.5
		16.00	3	75	0.070	8.000	16.000	1490	315	40.1
		20.00	3	75	0.085	10.000	20.000	1195	305	60.9

Cylindrical end mills NV3

Smooth-edged, normal version

HM MG10	λ 40° γ 0°
45°	
Vario	



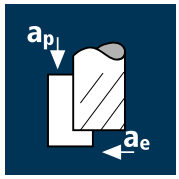
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15333** ø-Code **180**

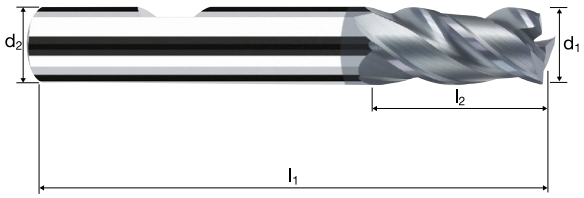
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P15333	POLYCHROM P15233
180	3.00	6.00	57	7.00	14.96	0.10	6.0°	3		●
220	4.00	6.00	57	8.00	14.59	0.10	4.5°	3		●
260	5.00	6.00	57	10.00	14.72	0.15	2.5°	3		●
300	6.00	6.00	57	10.00	-	0.15	0.0°	3		●
391	8.00	8.00	63	16.00	-	0.15	0.0°	3		●
450	10.00	10.00	72	19.00	-	0.20	0.0°	3		●
501	12.00	12.00	83	22.00	-	0.20	0.0°	3		●
610	16.00	16.00	92	26.00	-	0.20	0.0°	3		●
682	20.00	20.00	104	32.00	-	0.20	0.0°	3		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Stainless steel [Cr-Ni/1.4301]	3.00	3	105	0.010	4.500	2.100	11140	335	3.2
		4.00	3	105	0.015	6.000	2.800	8355	375	6.3
		5.00	3	105	0.020	7.500	3.500	6685	400	10.5
		6.00	3	105	0.020	9.000	4.200	5570	335	12.6
		8.00	3	105	0.030	12.000	5.600	4180	375	25.3
		10.00	3	105	0.035	15.000	7.000	3340	350	36.8
		12.00	3	105	0.045	18.000	8.400	2785	375	56.9
		16.00	3	105	0.055	24.000	9.600	2090	345	79.4
		20.00	3	105	0.070	30.000	12.000	1670	350	126.3
	Stainless steel [Cr-Ni-Mo-.../1.4429]	3.00	3	50	0.010	4.500	2.100	5305	160	1.5
		4.00	3	50	0.015	6.000	2.800	3980	180	3.0
		5.00	3	50	0.020	7.500	3.500	3185	190	5.0
		6.00	3	50	0.020	9.000	4.200	2655	160	6.0
		8.00	3	50	0.030	12.000	5.600	1990	180	12.0
		10.00	3	50	0.035	15.000	7.000	1590	165	17.5
		12.00	3	50	0.045	18.000	8.400	1325	180	27.1
		16.00	3	50	0.055	24.000	9.600	995	165	37.8
		20.00	3	50	0.070	30.000	12.000	795	165	60.2
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3.00	3	45	0.010	4.500	2.100	4775	145	1.4
		4.00	3	45	0.010	6.000	2.800	3580	105	1.8
		5.00	3	45	0.015	7.500	3.500	2865	130	3.4
		6.00	3	45	0.015	9.000	4.200	2385	105	4.1
		8.00	3	45	0.020	12.000	5.600	1790	105	7.2
		10.00	3	45	0.025	15.000	7.000	1430	105	11.3
		12.00	3	45	0.030	18.000	8.400	1195	105	16.2
		16.00	3	45	0.040	24.000	9.600	895	105	24.8
		20.00	3	45	0.055	30.000	12.000	715	120	42.5
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	3.00	3	15	0.010	4.500	2.100	1590	50	0.5
		4.00	3	15	0.010	6.000	2.800	1195	35	0.6
		5.00	3	15	0.015	7.500	3.500	955	45	1.1
		6.00	3	15	0.015	9.000	4.200	795	35	1.4
		8.00	3	15	0.020	12.000	5.600	595	35	2.4
		10.00	3	15	0.025	15.000	7.000	475	35	3.8
		12.00	3	15	0.030	18.000	8.400	400	35	5.4
		16.00	3	15	0.040	24.000	9.600	300	35	8.3
		20.00	3	15	0.055	30.000	12.000	240	40	14.2
	Stainless steel [Cr-Ni/1.4301]	3.00	3	85	0.010	4.800	3.000	9020	270	3.9
		4.00	3	85	0.015	6.400	4.000	6765	305	7.8
		5.00	3	85	0.015	8.000	5.000	5410	245	9.7
		6.00	3	85	0.020	9.600	6.000	4510	270	15.6
		8.00	3	85	0.025	12.800	8.000	3380	255	26.0
		10.00	3	85	0.030	16.000	10.000	2705	245	39.0
		12.00	3	85	0.040	19.200	12.000	2255	270	62.3
		16.00	3	85	0.050	22.400	16.000	1690	255	90.9
		20.00	3	85	0.065	28.000	20.000	1355	265	147.7
	Stainless steel [Cr-Ni-Mo-.../1.4429]	3.00	3	40	0.010	4.800	3.000	4245	125	1.8
		4.00	3	40	0.015	6.400	4.000	3185	145	3.7
		5.00	3	40	0.015	8.000	5.000	2545	115	4.6
		6.00	3	40	0.020	9.600	6.000	2120	125	7.3
		8.00	3	40	0.025	12.800	8.000	1590	120	12.2
		10.00	3	40	0.030	16.000	10.000	1275	115	18.3
		12.00	3	40	0.040	19.200	12.000	1060	125	29.3
		16.00	3	40	0.050	22.400	16.000	795	120	42.8
		20.00	3	40	0.065	28.000	20.000	635	125	69.5
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3.00	3	35	0.005	4.800	3.000	3715	55	0.8
		4.00	3	35	0.010	6.400	4.000	2785	85	2.1
		5.00	3	35	0.010	8.000	5.000	2230	65	2.7
		6.00	3	35	0.015	9.600	6.000	1855	85	4.8
		8.00	3	35	0.020	12.800	8.000	1395	85	8.6
		10.00	3	35	0.025	16.000	10.000	1115	85	13.4
		12.00	3	35	0.030	19.200	12.000	930	85	19.3
		16.00	3	35	0.040	22.400	16.000	695	85	29.9
		20.00	3	35	0.045	28.000	20.000	555	75	42.1
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	3.00	3	10	0.005	4.800	3.000	1060	15	0.2
		4.00	3	10	0.010	6.400	4.000	795	25	0.6
		5.00	3	10	0.010	8.000	5.000	635	20	0.8
		6.00	3	10	0.015	9.600	6.000	530	25	1.4
		8.00	3	10	0.020	12.800	8.000	400	25	2.4
		10.00	3	10	0.025	16.000	10.000	320	25	3.8
		12.00	3	10	0.030	19.200	12.000	265	25	5.5
		16.00	3	10	0.040	22.400	16.000	200	25	8.6
		20.00	3	10	0.045	28.000	20.000	160	20	12.0

Cylindrical end mills NV3

Smooth-edged, normal version

HM MG10	λ 40° γ 10°
45°	
Vario	



Roughing

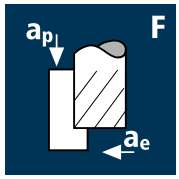
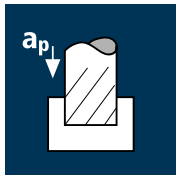
Finishing

ToolSchool

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	Nickel-Alloys Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15334** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P15334	POLYCHROM P15234
180	3.00	6.00	57	7.00	14.96	0.10	6.0°	3		●
220	4.00	6.00	57	8.00	14.59	0.10	4.5°	3		●
260	5.00	6.00	57	10.00	14.72	0.15	2.5°	3		●
300	6.00	6.00	57	10.00	-	0.15	0.0°	3		●
391	8.00	8.00	63	16.00	-	0.15	0.0°	3		●
450	10.00	10.00	72	19.00	-	0.20	0.0°	3		●
501	12.00	12.00	83	22.00	-	0.20	0.0°	3		●
610	16.00	16.00	92	26.00	-	0.20	0.0°	3		●
682	20.00	20.00	104	32.00	-	0.20	0.0°	3		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	2.00	3	115	0.005	3.000	0.200	18305	275	0.2
		2.50	3	115	0.010	3.750	0.250	14640	440	0.4
		3.00	3	115	0.010	4.500	0.300	12200	365	0.5
		3.50	3	115	0.010	5.250	0.350	10460	315	0.6
		4.00	3	115	0.015	6.000	0.400	9150	410	1.0
		5.00	3	115	0.015	7.500	0.500	7320	330	1.2
		6.00	3	115	0.020	9.000	0.600	6100	365	2.0
		7.00	3	115	0.025	10.500	0.700	5230	390	2.9
		8.00	3	115	0.025	12.000	0.800	4575	345	3.3
	Steel 850 - 1100 N/mm²	2.00	3	75	0.005	3.000	0.200	11935	180	0.1
		2.50	3	75	0.010	3.750	0.250	9550	285	0.3
		3.00	3	75	0.010	4.500	0.300	7960	240	0.3
		3.50	3	75	0.010	5.250	0.350	6820	205	0.4
		4.00	3	75	0.015	6.000	0.400	5970	270	0.6
		5.00	3	75	0.015	7.500	0.500	4775	215	0.8
		6.00	3	75	0.020	9.000	0.600	3980	240	1.3
		7.00	3	75	0.025	10.500	0.700	3410	255	1.9
		8.00	3	75	0.025	12.000	0.800	2985	225	2.1
	Stainless steel [Cr-Ni/1.4301]	2.00	3	60	0.005	3.000	0.200	9550	145	0.1
		2.50	3	60	0.010	3.750	0.250	7640	230	0.2
		3.00	3	60	0.010	4.500	0.300	6365	190	0.3
		3.50	3	60	0.010	5.250	0.350	5455	165	0.3
		4.00	3	60	0.015	6.000	0.400	4775	215	0.5
		5.00	3	60	0.015	7.500	0.500	3820	170	0.6
		6.00	3	60	0.020	9.000	0.600	3185	190	1.0
		7.00	3	60	0.025	10.500	0.700	2730	205	1.5
		8.00	3	60	0.025	12.000	0.800	2385	180	1.7
	Cast iron (lamellar / spheroidal)	2.00	3	150	0.005	3.000	0.200	23875	360	0.2
		2.50	3	150	0.010	3.750	0.250	19100	575	0.5
		3.00	3	150	0.010	4.500	0.300	15915	475	0.6
		3.50	3	150	0.010	5.250	0.350	13640	410	0.8
		4.00	3	150	0.015	6.000	0.400	11935	535	1.3
		5.00	3	150	0.015	7.500	0.500	9550	430	1.6
		6.00	3	150	0.020	9.000	0.600	7960	475	2.6
		7.00	3	150	0.025	10.500	0.700	6820	510	3.8
		8.00	3	150	0.025	12.000	0.800	5970	450	4.3
	Steel < 850 N/mm²	2.00	3	85	0.005	1.000	2.000	13530	205	0.4
		2.50	3	85	0.005	1.250	2.500	10825	160	0.5
		3.00	3	85	0.010	1.500	3.000	9020	270	1.2
		3.50	3	85	0.010	1.750	3.500	7730	230	1.4
		4.00	3	85	0.010	2.000	4.000	6765	205	1.6
		5.00	3	85	0.015	2.500	5.000	5410	245	3.0
		6.00	3	85	0.015	3.000	6.000	4510	205	3.7
		7.00	3	85	0.020	3.500	7.000	3865	230	5.7
		8.00	3	85	0.020	4.000	8.000	3380	205	6.5
	Steel 850 - 1100 N/mm²	2.00	3	60	0.005	1.000	2.000	9550	145	0.3
		2.50	3	60	0.005	1.250	2.500	7640	115	0.4
		3.00	3	60	0.010	1.500	3.000	6365	190	0.9
		3.50	3	60	0.010	1.750	3.500	5455	165	1.0
		4.00	3	60	0.010	2.000	4.000	4775	145	1.1
		5.00	3	60	0.015	2.500	5.000	3820	170	2.1
		6.00	3	60	0.015	3.000	6.000	3185	145	2.6
		7.00	3	60	0.020	3.500	7.000	2730	165	4.0
		8.00	3	60	0.020	4.000	8.000	2385	145	4.6
	Stainless steel [Cr-Ni/1.4301]	2.00	3	40	0.005	1.000	2.000	6365	95	0.2
		2.50	3	40	0.005	1.250	2.500	5095	75	0.2
		3.00	3	40	0.010	1.500	3.000	4245	125	0.6
		3.50	3	40	0.010	1.750	3.500	3640	110	0.7
		4.00	3	40	0.010	2.000	4.000	3185	95	0.8
		5.00	3	40	0.015	2.500	5.000	2545	115	1.4
		6.00	3	40	0.015	3.000	6.000	2120	95	1.7
		7.00	3	40	0.020	3.500	7.000	1820	110	2.7
		8.00	3	40	0.020	4.000	8.000	1590	95	3.1
	Cast iron (lamellar / spheroidal)	2.00	3	105	0.005	1.000	2.000	16710	250	0.5
		2.50	3	105	0.010	1.250	2.500	13370	400	1.3
		3.00	3	105	0.010	1.500	3.000	11140	335	1.5
		3.50	3	105	0.010	1.750	3.500	9550	285	1.8
		4.00	3	105	0.010	2.000	4.000	8355	250	2.0
		5.00	3	105	0.015	2.500	5.000	6685	300	3.8
		6.00	3	105	0.020	3.000	6.000	5570	335	6.0
		7.00	3	105	0.020	3.500	7.000	4775	285	7.0
		8.00	3	105	0.025	4.000	8.000	4180	315	10.0

Cylindrical end mills

Smooth-edged, normal version

HM MG10	λ 45° γ 15°

Roughing

Finishing

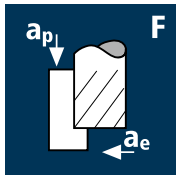
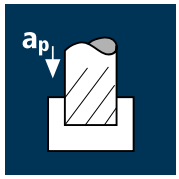
ToolSchool

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **5330** ø-Code **138**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	5330	POLYCHROM P5330
									5230	P5230
138*	2.00	2.00	42	6.00	-	0.10	0.0°	3	●	●
140	2.00	6.00	54	6.00	15.32	0.10	8.0°	3	●	●
158*	2.50	2.50	42	7.00	-	0.10	0.0°	3	●	●
160	2.50	6.00	54	6.00	14.89	0.10	7.5°	3	●	●
178*	3.00	3.00	45	7.00	-	0.10	0.0°	3	●	●
180	3.00	6.00	57	7.00	14.96	0.10	6.0°	3	●	●
198*	3.50	3.50	50	7.00	-	0.10	0.0°	3	●	●
200	3.50	6.00	57	7.00	14.02	0.10	5.5°	3	●	●
218*	4.00	4.00	50	8.00	-	0.10	0.0°	3	●	●
220	4.00	6.00	57	8.00	14.59	0.10	4.5°	3	●	●
238*	4.50	4.50	50	8.00	-	0.15	0.0°	3	●	●
240	4.50	6.00	57	8.00	13.66	0.15	3.5°	3	●	●
258*	5.00	5.00	50	10.00	-	0.15	0.0°	3	●	●
260	5.00	6.00	57	10.00	14.72	0.15	2.5°	3	●	●
278*	5.50	5.50	57	10.00	-	0.15	0.0°	3	●	●
280	5.50	6.00	57	10.00	13.79	0.15	1.5°	3	●	●
300	6.00	6.00	57	10.00	-	0.15	0.0°	3	●	●
322	6.50	8.00	63	13.00	18.66	0.15	2.5°	3	●	●
331	7.00	8.00	63	13.00	17.72	0.15	2.0°	3	●	●
362	7.50	8.00	63	16.00	19.79	0.15	1.0°	3	●	●
391	8.00	8.00	63	16.00	-	0.15	0.0°	3	●	●

* without clamping flat only

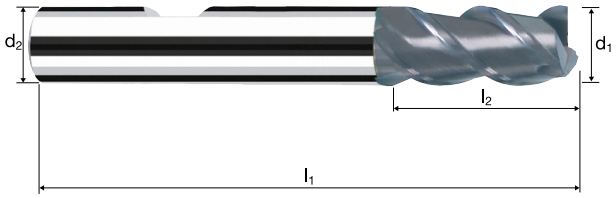
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	9.00	3	115	0.030	13.500	0.900	4065	365	4.4
		10.00	3	115	0.035	15.000	1.000	3660	385	5.8
		12.00	3	115	0.040	18.000	1.200	3050	365	7.9
		14.00	3	115	0.045	21.000	1.400	2615	355	10.4
		16.00	3	115	0.055	24.000	1.600	2290	375	14.5
		18.00	3	115	0.060	27.000	1.800	2035	365	17.8
		20.00	3	115	0.065	30.000	2.000	1830	355	21.4
		22.00	3	115	0.075	33.000	2.200	1665	375	27.2
		25.00	3	115	0.085	37.500	2.500	1465	375	35.0
	Steel 850 - 1100 N/mm²	9.00	3	75	0.030	13.500	0.900	2655	240	2.9
		10.00	3	75	0.035	15.000	1.000	2385	250	3.8
		12.00	3	75	0.040	18.000	1.200	1990	240	5.2
		14.00	3	75	0.045	21.000	1.400	1705	230	6.8
		16.00	3	75	0.055	24.000	1.600	1490	245	9.5
		18.00	3	75	0.060	27.000	1.800	1325	240	11.6
		20.00	3	75	0.065	30.000	2.000	1195	235	14.0
		22.00	3	75	0.075	33.000	2.200	1085	245	17.7
		25.00	3	75	0.085	37.500	2.500	955	245	22.8
	Stainless steel [Cr-Ni/1.4301]	9.00	3	60	0.030	13.500	0.900	2120	190	2.3
		10.00	3	60	0.035	15.000	1.000	1910	200	3.0
		12.00	3	60	0.040	18.000	1.200	1590	190	4.1
		14.00	3	60	0.045	21.000	1.400	1365	185	5.4
		16.00	3	60	0.055	24.000	1.600	1195	195	7.6
		18.00	3	60	0.060	27.000	1.800	1060	190	9.3
		20.00	3	60	0.065	30.000	2.000	955	185	11.2
		22.00	3	60	0.075	33.000	2.200	870	195	14.2
		25.00	3	60	0.085	37.500	2.500	765	195	18.3
	Cast iron (lamellar / spheroidal)	9.00	3	150	0.030	13.500	0.900	5305	475	5.8
		10.00	3	150	0.035	15.000	1.000	4775	500	7.5
		12.00	3	150	0.040	18.000	1.200	3980	475	10.3
		14.00	3	150	0.045	21.000	1.400	3410	460	13.5
		16.00	3	150	0.055	24.000	1.600	2985	490	18.9
		18.00	3	150	0.060	27.000	1.800	2655	475	23.2
		20.00	3	150	0.065	30.000	2.000	2385	465	27.9
		22.00	3	150	0.075	33.000	2.200	2170	490	35.5
		25.00	3	150	0.085	37.500	2.500	1910	485	45.7
	Steel < 850 N/mm²	9.00	3	85	0.025	4.500	9.000	3005	225	9.1
		10.00	3	85	0.030	5.000	10.000	2705	245	12.2
		12.00	3	85	0.035	6.000	12.000	2255	235	17.0
		14.00	3	85	0.040	7.000	14.000	1935	230	22.7
		16.00	3	85	0.045	8.000	16.000	1690	230	29.2
		18.00	3	85	0.050	9.000	18.000	1505	225	36.5
		20.00	3	85	0.055	10.000	20.000	1355	225	44.6
		22.00	3	85	0.060	11.000	22.000	1230	220	53.6
		25.00	3	85	0.070	12.500	25.000	1080	225	71.0
	Steel 850 - 1100 N/mm²	9.00	3	60	0.025	4.500	9.000	2120	160	6.4
		10.00	3	60	0.025	5.000	10.000	1910	145	7.2
		12.00	3	60	0.030	6.000	12.000	1590	145	10.3
		14.00	3	60	0.035	7.000	14.000	1365	145	14.0
		16.00	3	60	0.040	8.000	16.000	1195	145	18.3
		18.00	3	60	0.045	9.000	18.000	1060	145	23.2
		20.00	3	60	0.050	10.000	20.000	955	145	28.6
		22.00	3	60	0.055	11.000	22.000	870	145	34.7
		25.00	3	60	0.065	12.500	25.000	765	150	46.6
	Stainless steel [Cr-Ni/1.4301]	9.00	3	40	0.025	4.500	9.000	1415	105	4.3
		10.00	3	40	0.025	5.000	10.000	1275	95	4.8
		12.00	3	40	0.030	6.000	12.000	1060	95	6.9
		14.00	3	40	0.035	7.000	14.000	910	95	9.4
		16.00	3	40	0.040	8.000	16.000	795	95	12.2
		18.00	3	40	0.045	9.000	18.000	705	95	15.5
		20.00	3	40	0.050	10.000	20.000	635	95	19.1
		22.00	3	40	0.055	11.000	22.000	580	95	23.1
		25.00	3	40	0.065	12.500	25.000	510	100	31.0
	Cast iron (lamellar / spheroidal)	9.00	3	105	0.030	4.500	9.000	3715	335	13.5
		10.00	3	105	0.030	5.000	10.000	3340	300	15.0
		12.00	3	105	0.035	6.000	12.000	2785	290	21.1
		14.00	3	105	0.045	7.000	14.000	2385	320	31.6
		16.00	3	105	0.050	8.000	16.000	2090	315	40.1
		18.00	3	105	0.055	9.000	18.000	1855	305	49.6
		20.00	3	105	0.060	10.000	20.000	1670	300	60.2
		22.00	3	105	0.065	11.000	22.000	1520	295	71.7
		25.00	3	105	0.075	12.500	25.000	1335	300	94.0

Cylindrical end mills

Smooth-edged, normal version

HM MG10	λ 45° γ 15°

45°



Roughing

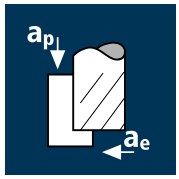
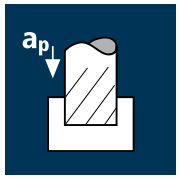
Finishing

ToolSchool

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **5330** ø-Code **410**

										5330	POLYCHROM P5330
										5230	P5230
Ø Code	d_1 e8	d_2 h6		l_1	l_2	l_4	45°	α	z		
410	8.50	10.00		72	16.00	21.66	0.20	2.5°	3	●	●
420	9.00	10.00		72	16.00	20.72	0.20	1.5°	3	●	●
430	9.50	10.00		72	19.00	22.79	0.20	1.0°	3	●	●
450	10.00	10.00		72	19.00	-	0.20	0.0°	3	●	●
470	11.00	12.00		83	22.00	27.22	0.20	1.5°	3	●	●
501	12.00	12.00		83	22.00	-	0.20	0.0°	3	●	●
540	13.00	14.00		83	22.00	27.22	0.20	1.5°	3	●	●
570	14.00	14.00		83	22.00	-	0.20	0.0°	3	●	●
581	15.00	16.00		92	26.00	31.22	0.20	1.0°	3	●	●
610	16.00	16.00		92	26.00	-	0.20	0.0°	3	●	●
640	18.00	18.00		92	26.00	-	0.20	0.0°	3	●	●
682	20.00	20.00		104	32.00	-	0.20	0.0°	3	●	●
710	22.00	20.00		104	38.00	-	0.25	0.0°	3	●	●
772	25.00	25.00		121	45.00	-	0.25	0.0°	3	●	●

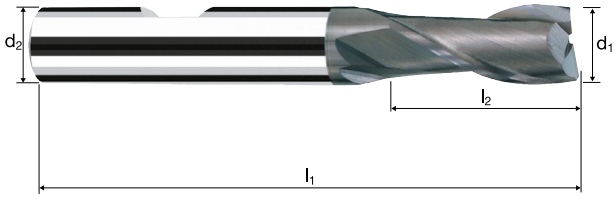
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	2	115	0.010	3.000	1.400	12200	245	1.0
		4.00	2	115	0.015	4.000	1.800	9150	275	2.0
		5.00	2	115	0.020	5.000	2.300	7320	295	3.4
		6.00	2	115	0.025	6.000	2.700	6100	305	4.9
		8.00	2	115	0.030	8.000	3.600	4575	275	7.9
		10.00	2	115	0.040	10.000	4.500	3660	295	13.2
		12.00	2	115	0.050	12.000	5.400	3050	305	19.8
		16.00	2	115	0.065	16.000	7.200	2290	295	34.3
		20.00	2	115	0.080	20.000	9.000	1830	295	52.7
	Steel 850 - 1100 N/mm²	3.00	2	75	0.010	3.000	1.400	7960	160	0.7
		4.00	2	75	0.015	4.000	1.800	5970	180	1.3
		5.00	2	75	0.020	5.000	2.300	4775	190	2.2
		6.00	2	75	0.020	6.000	2.700	3980	160	2.6
		8.00	2	75	0.030	8.000	3.600	2985	180	5.2
		10.00	2	75	0.035	10.000	4.500	2385	165	7.5
		12.00	2	75	0.045	12.000	5.400	1990	180	11.6
		16.00	2	75	0.060	16.000	7.200	1490	180	20.6
		20.00	2	75	0.070	20.000	9.000	1195	165	30.1
	Stainless steel [Cr-Ni/1.4301]	3.00	2	40	0.010	3.000	1.400	4245	85	0.4
		4.00	2	40	0.015	4.000	1.800	3185	95	0.7
		5.00	2	40	0.020	5.000	2.300	2545	100	1.2
		6.00	2	40	0.020	6.000	2.700	2120	85	1.4
		8.00	2	40	0.030	8.000	3.600	1590	95	2.8
		10.00	2	40	0.035	10.000	4.500	1275	90	4.0
		12.00	2	40	0.045	12.000	5.400	1060	95	6.2
		16.00	2	40	0.060	16.000	7.200	795	95	11.0
		20.00	2	40	0.070	20.000	9.000	635	90	16.0
	Cast iron (lamellar / spheroidal)	3.00	2	150	0.015	3.000	1.400	15915	475	2.0
		4.00	2	150	0.020	4.000	1.800	11935	475	3.4
		5.00	2	150	0.020	5.000	2.300	9550	380	4.4
		6.00	2	150	0.025	6.000	2.700	7960	400	6.4
		8.00	2	150	0.035	8.000	3.600	5970	420	12.0
		10.00	2	150	0.045	10.000	4.500	4775	430	19.3
		12.00	2	150	0.055	12.000	5.400	3980	440	28.4
		16.00	2	150	0.070	16.000	7.200	2985	420	48.1
		20.00	2	150	0.090	20.000	9.000	2385	430	77.3
	Steel < 850 N/mm²	3.00	2	85	0.010	0.750	3.000	9020	180	0.4
		4.00	2	85	0.010	1.000	4.000	6765	135	0.5
		5.00	2	85	0.015	1.250	5.000	5410	160	1.0
		6.00	2	85	0.015	1.500	6.000	4510	135	1.2
		8.00	2	85	0.020	2.000	8.000	3380	135	2.2
		10.00	2	85	0.030	2.500	10.000	2705	160	4.1
		12.00	2	85	0.035	3.000	12.000	2255	160	5.7
		16.00	2	85	0.045	4.000	16.000	1690	150	9.7
		20.00	2	85	0.055	5.000	20.000	1355	150	14.9
	Steel 850 - 1100 N/mm²	3.00	2	60	0.010	0.750	3.000	6365	125	0.3
		4.00	2	60	0.010	1.000	4.000	4775	95	0.4
		5.00	2	60	0.015	1.250	5.000	3820	115	0.7
		6.00	2	60	0.015	1.500	6.000	3185	95	0.9
		8.00	2	60	0.020	2.000	8.000	2385	95	1.5
		10.00	2	60	0.025	2.500	10.000	1910	95	2.4
		12.00	2	60	0.030	3.000	12.000	1590	95	3.4
		16.00	2	60	0.040	4.000	16.000	1195	95	6.1
		20.00	2	60	0.050	5.000	20.000	955	95	9.5
	Stainless steel [Cr-Ni/1.4301]	3.00	2	30	0.010	0.750	3.000	3185	65	0.1
		4.00	2	30	0.010	1.000	4.000	2385	50	0.2
		5.00	2	30	0.015	1.250	5.000	1910	55	0.4
		6.00	2	30	0.015	1.500	6.000	1590	50	0.4
		8.00	2	30	0.020	2.000	8.000	1195	50	0.8
		10.00	2	30	0.025	2.500	10.000	955	50	1.2
		12.00	2	30	0.030	3.000	12.000	795	50	1.7
		16.00	2	30	0.040	4.000	16.000	595	50	3.1
		20.00	2	30	0.050	5.000	20.000	475	50	4.8
	Cast iron (lamellar / spheroidal)	3.00	2	105	0.010	1.500	3.000	11140	225	1.0
		4.00	2	105	0.010	2.000	4.000	8355	165	1.3
		5.00	2	105	0.015	2.500	5.000	6685	200	2.5
		6.00	2	105	0.020	3.000	6.000	5570	225	4.0
		8.00	2	105	0.025	4.000	8.000	4180	210	6.7
		10.00	2	105	0.030	5.000	10.000	3340	200	10.0
		12.00	2	105	0.035	6.000	12.000	2785	195	14.0
		16.00	2	105	0.050	8.000	16.000	2090	210	26.7
		20.00	2	105	0.060	10.000	20.000	1670	200	40.1

Cylindrical end mills

Smooth-edged, normal version

HM MG10	λ 30° γ 12°

45°



Roughing

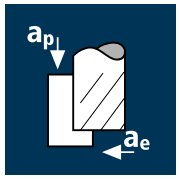
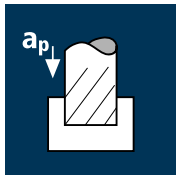
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **5300** ø-Code **138**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P5300	POLYCHROM P5200
138*	2.00	2.00	42	6.00	-	0.10	0.0°	2		●
140	2.00	6.00	54	6.00	15.32	0.10	8.0°	2		●
158*	2.50	2.50	42	7.00	-	0.10	0.0°	2		●
160	2.50	6.00	54	6.00	14.89	0.10	7.5°	2		●
178*	3.00	3.00	45	7.00	-	0.10	0.0°	2		●
180	3.00	6.00	57	7.00	14.96	0.10	6.0°	2		●
200	3.50	6.00	57	7.00	14.02	0.10	5.5°	2		●
218*	4.00	4.00	50	8.00	-	0.10	0.0°	2		●
220	4.00	6.00	57	8.00	14.59	0.10	4.5°	2		●
240	4.50	6.00	57	8.00	13.66	0.15	3.5°	2		●
258*	5.00	5.00	50	10.00	-	0.15	0.0°	2		●
260	5.00	6.00	57	10.00	14.72	0.15	2.5°	2		●
280	5.50	6.00	57	10.00	13.79	0.15	1.5°	2		●
300	6.00	6.00	57	10.00	-	0.15	0.0°	2		●
331	7.00	8.00	63	13.00	17.72	0.15	2.0°	2		●
391	8.00	8.00	63	16.00	-	0.15	0.0°	2		●
420	9.00	10.00	72	16.00	20.72	0.20	1.5°	2		●
450	10.00	10.00	72	19.00	-	0.20	0.0°	2		●
501	12.00	12.00	83	22.00	-	0.20	0.0°	2		●
610	16.00	16.00	92	26.00	-	0.20	0.0°	2		●
682	20.00	20.00	104	32.00	-	0.20	0.0°	2		●

* without clamping flat only

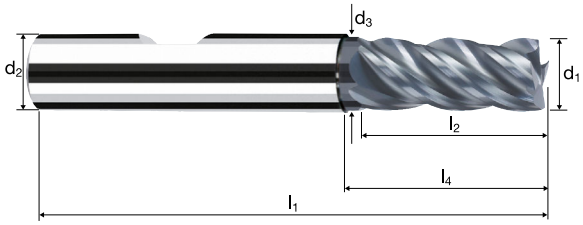
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	4	170	0.015	4.500	0.750	18040	1080	3.7
		4.00	4	170	0.020	6.000	1.200	13530	1080	7.8
		5.00	4	170	0.025	7.500	1.750	10825	1080	14.2
		6.00	4	170	0.030	9.000	2.400	9020	1080	23.4
		8.00	4	170	0.040	12.000	3.200	6765	1080	41.6
		10.00	4	170	0.050	15.000	4.000	5410	1080	64.9
		12.00	4	170	0.060	18.000	4.800	4510	1080	93.5
		16.00	4	170	0.075	24.000	6.400	3380	1015	155.8
		20.00	4	170	0.095	30.000	8.000	2705	1030	246.8
	Steel 850 - 1100 N/mm²	3.00	4	120	0.015	4.500	0.750	12730	765	2.6
		4.00	4	120	0.020	6.000	1.200	9550	765	5.5
		5.00	4	120	0.025	7.500	1.750	7640	765	10.0
		6.00	4	120	0.030	9.000	2.400	6365	765	16.5
		8.00	4	120	0.040	12.000	3.200	4775	765	29.3
		10.00	4	120	0.050	15.000	4.000	3820	765	45.8
		12.00	4	120	0.060	18.000	4.800	3185	765	66.0
		16.00	4	120	0.075	24.000	6.400	2385	715	110.0
		20.00	4	120	0.095	30.000	8.000	1910	725	174.2
	Stainless steel [Cr-Ni/1.4301]	3.00	4	80	0.010	4.500	0.750	8490	340	1.1
		4.00	4	80	0.015	6.000	1.200	6365	380	2.8
		5.00	4	80	0.020	7.500	1.750	5095	405	5.3
		6.00	4	80	0.025	9.000	2.400	4245	425	9.2
		8.00	4	80	0.030	12.000	3.200	3185	380	14.7
		10.00	4	80	0.040	15.000	4.000	2545	405	24.4
		12.00	4	80	0.050	18.000	4.800	2120	425	36.7
		16.00	4	80	0.060	24.000	6.400	1590	380	58.7
		20.00	4	80	0.075	30.000	8.000	1275	380	91.7
	Cast iron (lamellar / spheroidal)	3.00	4	135	0.015	4.500	0.750	14325	860	2.9
		4.00	4	135	0.020	6.000	1.200	10745	860	6.2
		5.00	4	135	0.025	7.500	1.750	8595	860	11.3
		6.00	4	135	0.030	9.000	2.400	7160	860	18.6
		8.00	4	135	0.040	12.000	3.200	5370	860	33.0
		10.00	4	135	0.050	15.000	4.000	4295	860	51.6
		12.00	4	135	0.060	18.000	4.800	3580	860	74.3
		16.00	4	135	0.085	24.000	6.400	2685	915	140.3
		20.00	4	135	0.105	30.000	8.000	2150	900	216.6
	Steel < 850 N/mm²	3.00	4	135	0.010	1.800	3.000	14325	575	3.1
		4.00	4	135	0.015	2.800	4.000	10745	645	7.2
		5.00	4	135	0.020	4.000	5.000	8595	690	13.8
		6.00	4	135	0.025	6.000	6.000	7160	715	25.8
		8.00	4	135	0.030	8.000	8.000	5370	645	41.3
		10.00	4	135	0.040	10.000	10.000	4295	690	68.8
		12.00	4	135	0.045	12.000	12.000	3580	645	92.8
		16.00	4	135	0.055	8.000	16.000	2685	590	75.6
		20.00	4	135	0.070	10.000	20.000	2150	600	120.3
	Steel 850 - 1100 N/mm²	3.00	4	95	0.010	1.800	3.000	10080	405	2.2
		4.00	4	95	0.015	2.800	4.000	7560	455	5.1
		5.00	4	95	0.020	4.000	5.000	6050	485	9.7
		6.00	4	95	0.025	6.000	6.000	5040	505	18.1
		8.00	4	95	0.030	8.000	8.000	3780	455	29.0
		10.00	4	95	0.040	10.000	10.000	3025	485	48.4
		12.00	4	95	0.045	12.000	12.000	2520	455	65.3
		16.00	4	95	0.055	8.000	16.000	1890	415	53.2
		20.00	4	95	0.070	10.000	20.000	1510	425	84.7
	Stainless steel [Cr-Ni/1.4301]	3.00	4	65	0.008	1.300	3.000	6895	220	0.9
		4.00	4	65	0.010	2.000	4.000	5175	205	1.7
		5.00	4	65	0.015	2.800	5.000	4140	250	3.5
		6.00	4	65	0.020	4.200	6.000	3450	275	7.0
		8.00	4	65	0.025	8.000	8.000	2585	260	16.6
		10.00	4	65	0.030	10.000	10.000	2070	250	24.8
		12.00	4	65	0.040	12.000	12.000	1725	275	39.7
		16.00	4	65	0.045	8.000	16.000	1295	235	29.8
		20.00	4	65	0.055	10.000	20.000	1035	230	45.5
	Cast iron (lamellar / spheroidal)	3.00	4	115	0.010	1.800	3.000	12200	490	2.6
		4.00	4	115	0.015	2.800	4.000	9150	550	6.1
		5.00	4	115	0.025	4.000	5.000	7320	730	14.6
		6.00	4	115	0.025	6.000	6.000	6100	610	22.0
		8.00	4	115	0.035	8.000	8.000	4575	640	41.0
		10.00	4	115	0.040	10.000	10.000	3660	585	58.6
		12.00	4	115	0.050	12.000	12.000	3050	610	87.9
		16.00	4	115	0.065	8.000	16.000	2290	595	76.1
		20.00	4	115	0.080	10.000	20.000	1830	585	117.1

Cylindrical end mills NF-NV

Smooth-edged, normal version with short neck

Favora® F

HM MG10	λ 40° γ 6°
45°	
Vario	



Roughing

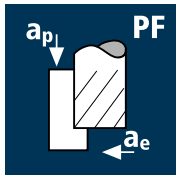
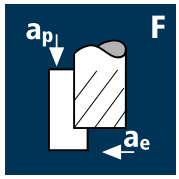
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **45317** ø-Code **100**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P45317	POLYCHROM P45217
100	1.00	6.00	0.95	57	5.00	7.00	17.08	0.07	9.5°	4	●	
140	2.00	6.00	1.90	57	7.00	10.00	18.31	0.10	7.5°	4	●	
178*	3.00	3.00	-	45	8.00	-	-	0.10	0.0°	4	●	
180	3.00	6.00	2.80	57	8.00	14.00	20.63	0.10	4.5°	4	●	
218*	4.00	4.00	-	50	11.00	-	-	0.10	0.0°	4	●	
220	4.00	6.00	3.70	57	11.00	16.00	20.95	0.10	3.0°	4	●	
258*	5.00	5.00	-	50	13.00	-	-	0.15	0.0°	4	●	
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.15	1.5°	4	●	
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.15	0.0°	4	●	
391	8.00	8.00	7.40	63	19.00	25.29	26.00	0.15	0.0°	4	●	
450	10.00	10.00	9.20	72	22.00	30.20	31.00	0.20	0.0°	4	●	
501	12.00	12.00	11.00	83	26.00	36.13	37.00	0.20	0.0°	4	●	
570	14.00	14.00	13.00	83	26.00	36.13	37.00	0.20	0.0°	4	●	
610	16.00	16.00	15.00	92	32.00	42.13	43.00	0.20	0.0°	4	●	
682	20.00	20.00	19.00	104	38.00	52.13	53.00	0.20	0.0°	4	●	
772	25.00	25.00	24.00	121	45.00	63.13	64.00	0.25	0.0°	4	●	

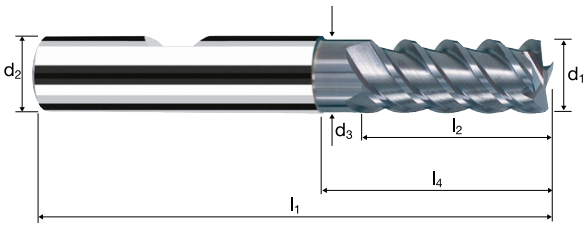
* without clamping flat only, without short neck

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	4.00	4	160	0.015	6.000	1.000	12730	765
		6.00	4	160	0.020	9.000	1.500	8490	680
		8.00	4	160	0.025	12.000	2.000	6365	635
		10.00	4	160	0.035	15.000	2.500	5095	715
		12.00	4	160	0.040	18.000	3.000	4245	680
		14.00	4	160	0.045	21.000	3.500	3640	655
		16.00	4	160	0.055	24.000	4.000	3185	700
		18.00	4	160	0.060	27.000	4.500	2830	680
		20.00	4	160	0.065	30.000	5.000	2545	660
	Steel 850 - 1100 N/mm²	4.00	4	120	0.015	6.000	1.000	9550	575
		6.00	4	120	0.020	9.000	1.500	6365	510
		8.00	4	120	0.025	12.000	2.000	4775	475
		10.00	4	120	0.035	15.000	2.500	3820	535
		12.00	4	120	0.040	18.000	3.000	3185	510
		14.00	4	120	0.045	21.000	3.500	2730	490
		16.00	4	120	0.055	24.000	4.000	2385	525
		18.00	4	120	0.060	27.000	4.500	2120	510
		20.00	4	120	0.065	30.000	5.000	1910	495
	Stainless steel [Cr-Ni/1.4301]	4.00	4	90	0.015	6.000	1.000	7160	430
		6.00	4	90	0.020	9.000	1.500	4775	380
		8.00	4	90	0.025	12.000	2.000	3580	360
		10.00	4	90	0.035	15.000	2.500	2865	400
		12.00	4	90	0.040	18.000	3.000	2385	380
		14.00	4	90	0.045	21.000	3.500	2045	370
		16.00	4	90	0.055	24.000	4.000	1790	395
		18.00	4	90	0.060	27.000	4.500	1590	380
		20.00	4	90	0.065	30.000	5.000	1430	370
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	50	0.015	6.000	1.000	3980	240
		6.00	4	50	0.020	9.000	1.500	2655	210
		8.00	4	50	0.025	12.000	2.000	1990	200
		10.00	4	50	0.035	15.000	2.500	1590	225
		12.00	4	50	0.040	18.000	3.000	1325	210
		14.00	4	50	0.045	21.000	3.500	1135	205
		16.00	4	50	0.055	24.000	4.000	995	220
		18.00	4	50	0.060	27.000	4.500	885	210
		20.00	4	50	0.065	30.000	5.000	795	205
	Steel < 850 N/mm²	4.00	4	170	0.010	6.000	0.100	13530	540
		6.00	4	170	0.015	9.000	0.100	9020	540
		8.00	4	170	0.025	12.000	0.150	6765	675
		10.00	4	170	0.030	15.000	0.150	5410	650
		12.00	4	170	0.035	18.000	0.200	4510	630
		14.00	4	170	0.040	21.000	0.200	3865	620
		16.00	4	170	0.045	24.000	0.250	3380	610
		18.00	4	170	0.050	27.000	0.250	3005	600
		20.00	4	170	0.055	30.000	0.300	2705	595
	Steel 850 - 1100 N/mm²	4.00	4	140	0.010	6.000	0.100	11140	445
		6.00	4	140	0.015	9.000	0.100	7425	445
		8.00	4	140	0.025	12.000	0.150	5570	555
		10.00	4	140	0.030	15.000	0.150	4455	535
		12.00	4	140	0.035	18.000	0.200	3715	520
		14.00	4	140	0.040	21.000	0.200	3185	510
		16.00	4	140	0.045	24.000	0.250	2785	500
		18.00	4	140	0.050	27.000	0.250	2475	495
		20.00	4	140	0.055	30.000	0.300	2230	490
	Stainless steel [Cr-Ni/1.4301]	4.00	4	100	0.010	6.000	0.100	7960	320
		6.00	4	100	0.015	9.000	0.100	5305	320
		8.00	4	100	0.025	12.000	0.150	3980	400
		10.00	4	100	0.030	15.000	0.150	3185	380
		12.00	4	100	0.035	18.000	0.200	2655	370
		14.00	4	100	0.040	21.000	0.200	2275	365
		16.00	4	100	0.045	24.000	0.250	1990	360
		18.00	4	100	0.050	27.000	0.250	1770	355
		20.00	4	100	0.055	30.000	0.300	1590	350
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	60	0.010	6.000	0.100	4775	190
		6.00	4	60	0.015	9.000	0.100	3185	190
		8.00	4	60	0.025	12.000	0.150	2385	240
		10.00	4	60	0.030	15.000	0.150	1910	230
		12.00	4	60	0.035	18.000	0.200	1590	225
		14.00	4	60	0.040	21.000	0.200	1365	220
		16.00	4	60	0.045	24.000	0.250	1195	215
		18.00	4	60	0.050	27.000	0.250	1060	210
		20.00	4	60	0.055	30.000	0.300	955	210

Cylindrical end mills

Smooth-edged, normal version with short neck

HM MG10	λ 55° γ 15°



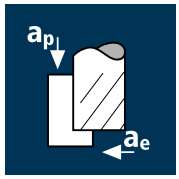
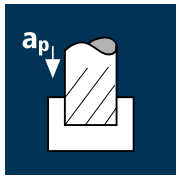
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Coating **P** Article-N°. **45355** ø-Code **180**

												POLYCHROM
												P45355
												P45255
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z		
180	3.00	6.00	2.80	57	8.00	14.00	20.63	0.10	4.5°	4		●
220	4.00	6.00	3.70	57	11.00	16.00	20.95	0.10	3.0°	4		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.15	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.15	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	0.15	0.0°	4		●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	0.20	0.0°	4		●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	0.20	0.0°	4		●
570	14.00	14.00	13.00	83	26.00	36.13	37.00	0.20	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	0.20	0.0°	4		●
640	18.00	18.00	17.00	92	32.00	42.13	43.00	0.20	0.0°	4		●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	0.20	0.0°	4		●

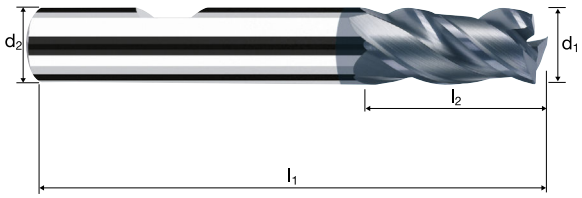
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	2.00	3	165	0.005	3.000	1.300	26260	395	1.5
		3.00	3	165	0.010	4.500	1.950	17505	525	4.6
		4.00	3	165	0.015	6.000	2.600	13130	590	9.2
		5.00	3	165	0.020	7.500	3.250	10505	630	15.4
		6.00	3	165	0.020	9.000	3.900	8755	525	18.4
		7.00	3	165	0.025	10.500	4.550	7505	565	26.9
		8.00	3	165	0.030	12.000	5.200	6565	590	36.9
		9.00	3	165	0.030	13.500	5.850	5835	525	41.5
		10.00	3	165	0.035	15.000	6.500	5250	550	53.8
	Steel 850 - 1100 N/mm²	2.00	3	110	0.005	3.000	1.300	17505	265	1.0
		3.00	3	110	0.010	4.500	1.950	11670	350	3.1
		4.00	3	110	0.015	6.000	2.600	8755	395	6.1
		5.00	3	110	0.020	7.500	3.250	7005	420	10.2
		6.00	3	110	0.020	9.000	3.900	5835	350	12.3
		7.00	3	110	0.025	10.500	4.550	5000	375	17.9
		8.00	3	110	0.030	12.000	5.200	4375	395	24.6
		9.00	3	110	0.030	13.500	5.850	3890	350	27.7
		10.00	3	110	0.035	15.000	6.500	3500	370	35.8
	Stainless steel [Cr-Ni/1.4301]	2.00	3	80	0.005	3.000	1.300	12730	190	0.7
		3.00	3	80	0.010	4.500	1.950	8490	255	2.2
		4.00	3	80	0.010	6.000	2.600	6365	190	3.0
		5.00	3	80	0.015	7.500	3.250	5095	230	5.6
		6.00	3	80	0.015	9.000	3.900	4245	190	6.7
		7.00	3	80	0.020	10.500	4.550	3640	220	10.4
		8.00	3	80	0.020	12.000	5.200	3185	190	11.9
		9.00	3	80	0.025	13.500	5.850	2830	210	16.8
		10.00	3	80	0.025	15.000	6.500	2545	190	18.6
	Cast iron (lamellar / spheroidal)	2.00	3	130	0.005	3.000	1.300	20690	310	1.2
		3.00	3	130	0.010	4.500	1.950	13795	415	3.6
		4.00	3	130	0.015	6.000	2.600	10345	465	7.3
		5.00	3	130	0.020	7.500	3.250	8275	495	12.1
		6.00	3	130	0.020	9.000	3.900	6895	415	14.5
		7.00	3	130	0.025	10.500	4.550	5910	445	21.2
		8.00	3	130	0.030	12.000	5.200	5175	465	29.0
		9.00	3	130	0.030	13.500	5.850	4600	415	32.7
		10.00	3	130	0.035	15.000	6.500	4140	435	42.4
	Steel < 850 N/mm²	2.00	3	130	0.005	2.800	2.000	20690	310	1.7
		3.00	3	130	0.010	4.200	3.000	13795	415	5.2
		4.00	3	130	0.015	5.600	4.000	10345	465	10.4
		5.00	3	130	0.015	7.000	5.000	8275	370	13.0
		6.00	3	130	0.020	8.400	6.000	6895	415	20.9
		7.00	3	130	0.025	9.800	7.000	5910	445	30.4
		8.00	3	130	0.025	11.200	8.000	5175	390	34.8
		9.00	3	130	0.030	12.600	9.000	4600	415	46.9
		10.00	3	130	0.030	14.000	10.000	4140	370	52.1
	Steel 850 - 1100 N/mm²	2.00	3	85	0.005	2.800	2.000	13530	205	1.1
		3.00	3	85	0.010	4.200	3.000	9020	270	3.4
		4.00	3	85	0.015	5.600	4.000	6765	305	6.8
		5.00	3	85	0.015	7.000	5.000	5410	245	8.5
		6.00	3	85	0.020	8.400	6.000	4510	270	13.6
		7.00	3	85	0.025	9.800	7.000	3865	290	19.9
		8.00	3	85	0.025	11.200	8.000	3380	255	22.7
		9.00	3	85	0.030	12.600	9.000	3005	270	30.7
		10.00	3	85	0.030	14.000	10.000	2705	245	34.1
	Stainless steel [Cr-Ni/1.4301]	2.00	3	65	0.005	2.800	2.000	10345	155	0.9
		3.00	3	65	0.005	4.200	3.000	6895	105	1.3
		4.00	3	65	0.010	5.600	4.000	5175	155	3.5
		5.00	3	65	0.010	7.000	5.000	4140	125	4.3
		6.00	3	65	0.015	8.400	6.000	3450	155	7.8
		7.00	3	65	0.015	9.800	7.000	2955	135	9.1
		8.00	3	65	0.020	11.200	8.000	2585	155	13.9
		9.00	3	65	0.020	12.600	9.000	2300	140	15.6
		10.00	3	65	0.025	14.000	10.000	2070	155	21.7
	Cast iron (lamellar / spheroidal)	2.00	3	110	0.005	2.800	2.000	17505	265	1.5
		3.00	3	110	0.010	4.200	3.000	11670	350	4.4
		4.00	3	110	0.015	5.600	4.000	8755	395	8.8
		5.00	3	110	0.015	7.000	5.000	7005	315	11.0
		6.00	3	110	0.020	8.400	6.000	5835	350	17.6
		7.00	3	110	0.025	9.800	7.000	5000	375	25.7
		8.00	3	110	0.025	11.200	8.000	4375	330	29.4
		9.00	3	110	0.030	12.600	9.000	3890	350	39.7
		10.00	3	110	0.030	14.000	10.000	3500	315	44.1

Cylindrical end mills NF-NV3

Smooth-edged, normal version

Favora® F

HM MG10	λ 40° γ 6°
45°	
Vario	



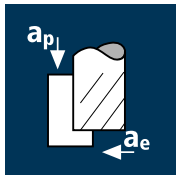
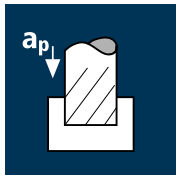
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **45333** ø-Code **140**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P45333	POLYCHROM P45233
140	2.00	6.00	54	6.00	15.32	0.10	8.0°	3		●
160	2.50	6.00	54	6.00	14.89	0.10	7.5°	3		●
180	3.00	6.00	57	7.00	14.96	0.10	6.0°	3		●
200	3.50	6.00	57	7.00	14.02	0.10	5.5°	3		●
220	4.00	6.00	57	8.00	14.59	0.10	4.5°	3		●
240	4.50	6.00	57	8.00	13.66	0.15	3.5°	3		●
260	5.00	6.00	57	10.00	14.72	0.15	2.5°	3		●
280	5.50	6.00	57	10.00	13.79	0.15	1.5°	3		●
300	6.00	6.00	57	10.00	-	0.15	0.0°	3		●
322	6.50	8.00	63	13.00	18.66	0.15	2.5°	3		●
331	7.00	8.00	63	13.00	17.72	0.15	2.0°	3		●
362	7.50	8.00	63	16.00	19.79	0.15	1.0°	3		●
391	8.00	8.00	63	16.00	-	0.15	0.0°	3		●
410	8.50	10.00	72	16.00	21.66	0.20	2.5°	3		●
420	9.00	10.00	72	16.00	20.72	0.20	1.5°	3		●
430	9.50	10.00	72	19.00	22.79	0.20	1.0°	3		●
450	10.00	10.00	72	19.00	-	0.20	0.0°	3		●

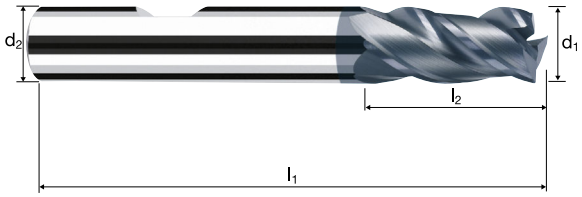
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	11.00	3	165	0.040	16.500	7.150	4775	575	67.6
		12.00	3	165	0.045	18.000	7.440	4375	590	79.1
		13.00	3	165	0.045	19.500	7.800	4040	545	83.0
		14.00	3	165	0.050	21.000	8.120	3750	565	96.0
		15.00	3	165	0.055	22.500	8.400	3500	580	109.2
		16.00	3	165	0.055	24.000	8.800	3285	540	114.4
		20.00	3	165	0.070	30.000	11.000	2625	550	182.0
	Steel 850 - 1100 N/mm²	11.00	3	110	0.040	16.500	7.150	3185	380	45.1
		12.00	3	110	0.045	18.000	7.440	2920	395	52.8
		13.00	3	110	0.045	19.500	7.800	2695	365	55.3
		14.00	3	110	0.050	21.000	8.120	2500	375	64.0
		15.00	3	110	0.055	22.500	8.400	2335	385	72.8
		16.00	3	110	0.055	24.000	8.800	2190	360	76.3
		20.00	3	110	0.070	30.000	11.000	1750	370	121.3
	Stainless steel [Cr-Ni/1.4301]	11.00	3	80	0.030	16.500	7.150	2315	210	24.6
		12.00	3	80	0.030	18.000	7.440	2120	190	25.6
		13.00	3	80	0.035	19.500	7.800	1960	205	31.3
		14.00	3	80	0.035	21.000	8.120	1820	190	32.6
		15.00	3	80	0.040	22.500	8.400	1700	205	38.5
		16.00	3	80	0.040	24.000	8.800	1590	190	40.3
		20.00	3	80	0.055	30.000	11.000	1275	210	69.3
	Cast iron (lamellar / spheroidal)	11.00	3	130	0.040	16.500	7.150	3760	450	53.3
		12.00	3	130	0.045	18.000	7.440	3450	465	62.3
		13.00	3	130	0.045	19.500	7.800	3185	430	65.4
		14.00	3	130	0.050	21.000	8.120	2955	445	75.6
		15.00	3	130	0.055	22.500	8.400	2760	455	86.0
		16.00	3	130	0.055	24.000	8.800	2585	425	90.1
		20.00	3	130	0.070	30.000	11.000	2070	435	143.4
	Steel < 850 N/mm²	11.00	3	130	0.035	15.400	11.000	3760	395	66.9
		12.00	3	130	0.040	16.200	12.000	3450	415	80.4
		13.00	3	130	0.040	17.030	13.000	3185	380	84.6
		14.00	3	130	0.045	17.990	14.000	2955	400	100.5
		15.00	3	130	0.050	18.750	15.000	2760	415	116.4
		16.00	3	130	0.050	19.200	16.000	2585	390	119.2
		20.00	3	130	0.065	22.000	20.000	2070	405	177.5
	Steel 850 - 1100 N/mm²	11.00	3	85	0.035	15.400	11.000	2460	260	43.8
		12.00	3	85	0.040	16.200	12.000	2255	270	52.6
		13.00	3	85	0.040	17.030	13.000	2080	250	55.3
		14.00	3	85	0.045	17.990	14.000	1935	260	65.7
		15.00	3	85	0.050	18.750	15.000	1805	270	76.1
		16.00	3	85	0.050	19.200	16.000	1690	255	77.9
		20.00	3	85	0.065	22.000	20.000	1355	265	116.1
	Stainless steel [Cr-Ni/1.4301]	11.00	3	65	0.025	15.400	11.000	1880	140	23.9
		12.00	3	65	0.030	16.200	12.000	1725	155	30.2
		13.00	3	65	0.030	17.030	13.000	1590	145	31.7
		14.00	3	65	0.035	17.990	14.000	1480	155	39.1
		15.00	3	65	0.035	18.750	15.000	1380	145	40.7
		16.00	3	65	0.040	19.200	16.000	1295	155	47.7
		20.00	3	65	0.045	22.000	20.000	1035	140	61.4
	Cast iron (lamellar / spheroidal)	11.00	3	110	0.035	15.400	11.000	3185	335	56.6
		12.00	3	110	0.040	16.200	12.000	2920	350	68.1
		13.00	3	110	0.040	17.030	13.000	2695	325	71.6
		14.00	3	110	0.045	17.990	14.000	2500	340	85.0
		15.00	3	110	0.050	18.750	15.000	2335	350	98.5
		16.00	3	110	0.050	19.200	16.000	2190	330	100.8
		20.00	3	110	0.065	22.000	20.000	1750	340	150.2

Cylindrical end mills NF-NV3

Smooth-edged, normal version

Favora® F

HM MG10	λ 40° γ 6°
45°	
Vario	



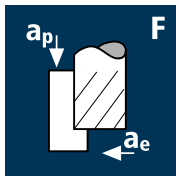
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **45333** ø-Code **470**

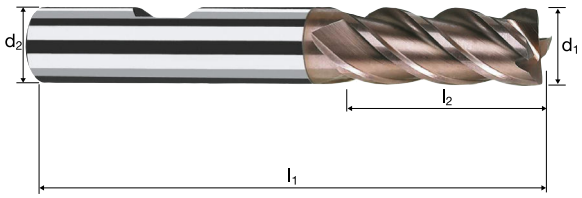
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P45333	POLYCHROM P45233
470	11.00	12.00	83	22.00	27.22	0.20	1.5°	3		●
501	12.00	12.00	83	22.00	-	0.20	0.0°	3		●
540	13.00	14.00	83	22.00	27.22	0.20	1.5°	3		●
570	14.00	14.00	83	22.00	-	0.20	0.0°	3		●
581	15.00	16.00	92	26.00	31.22	0.20	1.0°	3		●
610	16.00	16.00	92	26.00	-	0.20	0.0°	3		●
682	20.00	20.00	104	32.00	-	0.20	0.0°	3		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	2.00	4	65	0.005	3.000	0.050	10345	205
		4.00	4	65	0.010	6.000	0.100	5175	205
		5.00	4	65	0.015	7.500	0.150	4140	250
		6.00	4	65	0.015	9.000	0.150	3450	205
		8.00	4	65	0.025	12.000	0.200	2585	260
		10.00	4	65	0.030	15.000	0.250	2070	250
		12.00	4	65	0.035	18.000	0.300	1725	240
		16.00	4	65	0.045	24.000	0.400	1295	235
	Steel 850 - 1100 N/mm²	2.00	4	54	0.005	3.000	0.050	8595	170
		4.00	4	54	0.010	6.000	0.100	4295	170
		5.00	4	54	0.015	7.500	0.150	3440	205
		6.00	4	54	0.015	9.000	0.150	2865	170
		8.00	4	54	0.025	12.000	0.200	2150	215
		10.00	4	54	0.030	15.000	0.250	1720	205
		12.00	4	54	0.035	18.000	0.300	1430	200
		16.00	4	54	0.045	24.000	0.400	1075	195
	Steel 1100 - 1300 N/mm²	2.00	4	42	0.005	3.000	0.050	6685	135
		4.00	4	42	0.010	6.000	0.100	3340	135
		5.00	4	42	0.015	7.500	0.150	2675	160
		6.00	4	42	0.015	9.000	0.150	2230	135
		8.00	4	42	0.025	12.000	0.200	1670	165
		10.00	4	42	0.030	15.000	0.250	1335	160
		12.00	4	42	0.035	18.000	0.300	1115	155
		16.00	4	42	0.045	24.000	0.400	835	150
	Cold work tool steel (12% Cr), high alloyed [1.2379]	2.00	4	30	0.005	3.000	0.050	4775	95
		4.00	4	30	0.010	6.000	0.100	2385	95
		5.00	4	30	0.015	7.500	0.150	1910	115
		6.00	4	30	0.015	9.000	0.150	1590	95
		8.00	4	30	0.025	12.000	0.200	1195	120
		10.00	4	30	0.030	15.000	0.250	955	115
		12.00	4	30	0.035	18.000	0.300	795	110
		16.00	4	30	0.045	24.000	0.400	595	105
	Cast iron (lamellar / spheroidal)	2.00	4	50	0.005	3.000	0.050	7960	160
		4.00	4	50	0.010	6.000	0.100	3980	160
		5.00	4	50	0.015	7.500	0.150	3185	190
		6.00	4	50	0.015	9.000	0.150	2655	160
		8.00	4	50	0.025	12.000	0.200	1990	200
		10.00	4	50	0.030	15.000	0.250	1590	190
		12.00	4	50	0.035	18.000	0.300	1325	185
		16.00	4	50	0.045	24.000	0.400	995	180
	Stainless steel [Cr-Ni/1.4301]	2.00	4	26	0.005	3.000	0.050	4140	85
		4.00	4	26	0.010	6.000	0.100	2070	85
		5.00	4	26	0.015	7.500	0.150	1655	100
		6.00	4	26	0.015	9.000	0.150	1380	85
		8.00	4	26	0.025	12.000	0.200	1035	105
		10.00	4	26	0.030	15.000	0.250	830	100
		12.00	4	26	0.035	18.000	0.300	690	95
		16.00	4	26	0.045	24.000	0.400	515	95
	Unalloyed copper	2.00	4	80	0.005	3.000	0.050	12730	255
		4.00	4	80	0.010	6.000	0.100	6365	255
		5.00	4	80	0.015	7.500	0.150	5095	305
		6.00	4	80	0.015	9.000	0.150	4245	255
		8.00	4	80	0.025	12.000	0.200	3185	320
		10.00	4	80	0.030	15.000	0.250	2545	305
		12.00	4	80	0.035	18.000	0.300	2120	295
		16.00	4	80	0.045	24.000	0.400	1590	285
	Wrought aluminium Si < 6%	2.00	4	100	0.005	3.000	0.050	15915	320
		4.00	4	100	0.010	6.000	0.100	7960	320
		5.00	4	100	0.015	7.500	0.150	6365	380
		6.00	4	100	0.015	9.000	0.150	5305	320
		8.00	4	100	0.025	12.000	0.200	3980	400
		10.00	4	100	0.030	15.000	0.250	3185	380
		12.00	4	100	0.035	18.000	0.300	2655	370
		16.00	4	100	0.045	24.000	0.400	1990	360

Cylindrical end mills

Smooth-edged, normal version

HSS-E Co8	λ 40° γ 15°
90°	



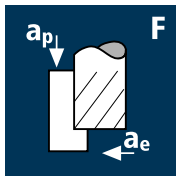
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **0110** ø-Code **100**

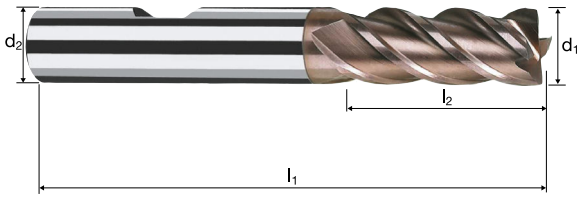
Ø Code	d_1 k8	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U0110
100	1.00	6.00	49	5.00	12.48	3.0°	4	●
120	1.50	6.00	50	6.00	12.99	3.0°	4	●
140	2.00	6.00	51	7.00	13.61	2.5°	4	●
160	2.50	6.00	52	8.00	15.50	2.0°	4	●
180	3.00	6.00	52	8.00	15.50	2.0°	4	●
200	3.50	6.00	54	10.00	17.50	1.5°	4	●
220	4.00	6.00	55	11.00	18.50	1.5°	4	●
240	4.50	6.00	55	11.00	18.50	1.0°	4	●
260	5.00	6.00	57	13.00	20.50	1.0°	4	●
280	5.50	6.00	57	13.00	20.50	1.0°	4	●
300	6.00	6.00	57	13.00	-	0.0°	4	●
342	7.00	10.00	66	16.00	25.50	1.5°	4	●
391	8.00	8.00	63	19.00	-	0.0°	4	●
420	9.00	10.00	69	19.00	28.50	0.5°	4	●
450	10.00	10.00	72	22.00	-	0.0°	4	●
470	11.00	12.00	79	22.00	33.50	0.5°	4	●
501	12.00	12.00	83	26.00	-	0.0°	4	●
570	14.00	12.00	83	26.00	-	0.0°	4	●
581	15.00	12.00	83	26.00	-	0.0°	4	●
610	16.00	16.00	92	32.00	-	0.0°	4	●
640	18.00	16.00	92	32.00	-	0.0°	4	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	20.00	4	65	0.055	30.000	0.500	1035	230
		22.00	4	65	0.065	33.000	0.550	940	245
		24.00	4	65	0.070	36.000	0.600	860	240
		25.00	4	65	0.070	37.500	0.650	830	230
		28.00	6	65	0.080	42.000	0.700	740	355
		30.00	6	65	0.085	45.000	0.750	690	350
		32.00	6	65	0.090	48.000	0.800	645	350
		36.00	6	65	0.105	54.000	0.900	575	360
		40.00	6	65	0.115	60.000	1.000	515	355
	Steel 850 - 1100 N/mm²	20.00	4	54	0.055	30.000	0.500	860	190
		22.00	4	54	0.065	33.000	0.550	780	205
		24.00	4	54	0.070	36.000	0.600	715	200
		25.00	4	54	0.070	37.500	0.650	690	195
		28.00	6	54	0.080	42.000	0.700	615	295
		30.00	6	54	0.085	45.000	0.750	575	290
		32.00	6	54	0.090	48.000	0.800	535	290
		36.00	6	54	0.105	54.000	0.900	475	300
		40.00	6	54	0.115	60.000	1.000	430	295
	Steel 1100 - 1300 N/mm²	20.00	4	42	0.055	30.000	0.500	670	145
		22.00	4	42	0.065	33.000	0.550	610	160
		24.00	4	42	0.070	36.000	0.600	555	155
		25.00	4	42	0.070	37.500	0.650	535	150
		28.00	6	42	0.080	42.000	0.700	475	230
		30.00	6	42	0.085	45.000	0.750	445	225
		32.00	6	42	0.090	48.000	0.800	420	225
		36.00	6	42	0.105	54.000	0.900	370	235
		40.00	6	42	0.115	60.000	1.000	335	230
	Cold work tool steel (12% Cr), high alloyed [1.2379]	20.00	4	30	0.055	30.000	0.500	475	105
		22.00	4	30	0.065	33.000	0.550	435	115
		24.00	4	30	0.070	36.000	0.600	400	110
		25.00	4	30	0.070	37.500	0.650	380	105
		28.00	6	30	0.080	42.000	0.700	340	165
		30.00	6	30	0.085	45.000	0.750	320	160
		32.00	6	30	0.090	48.000	0.800	300	160
		36.00	6	30	0.105	54.000	0.900	265	165
		40.00	6	30	0.115	60.000	1.000	240	165
	Cast iron (lamellar / spheroidal)	20.00	4	50	0.055	30.000	0.500	795	175
		22.00	4	50	0.065	33.000	0.550	725	190
		24.00	4	50	0.070	36.000	0.600	665	185
		25.00	4	50	0.070	37.500	0.650	635	180
		28.00	6	50	0.080	42.000	0.700	570	275
		30.00	6	50	0.085	45.000	0.750	530	270
		32.00	6	50	0.090	48.000	0.800	495	270
		36.00	6	50	0.105	54.000	0.900	440	280
		40.00	6	50	0.115	60.000	1.000	400	275
	Stainless steel [Cr-Ni/1.4301]	20.00	4	26	0.055	30.000	0.500	415	90
		22.00	4	26	0.065	33.000	0.550	375	100
		24.00	4	26	0.070	36.000	0.600	345	95
		25.00	4	26	0.070	37.500	0.650	330	95
		28.00	6	26	0.080	42.000	0.700	295	140
		30.00	6	26	0.085	45.000	0.750	275	140
		32.00	6	26	0.090	48.000	0.800	260	140
		36.00	6	26	0.105	54.000	0.900	230	145
		40.00	6	26	0.115	60.000	1.000	205	145
	Unalloyed copper	20.00	4	80	0.055	30.000	0.500	1275	280
		22.00	4	80	0.065	33.000	0.550	1155	300
		24.00	4	80	0.070	36.000	0.600	1060	295
		25.00	4	80	0.070	37.500	0.650	1020	285
		28.00	6	80	0.080	42.000	0.700	910	435
		30.00	6	80	0.085	45.000	0.750	850	435
		32.00	6	80	0.090	48.000	0.800	795	430
		36.00	6	80	0.105	54.000	0.900	705	445
		40.00	6	80	0.115	60.000	1.000	635	440
	Wrought aluminium Si < 6%	20.00	4	100	0.055	30.000	0.500	1590	350
		22.00	4	100	0.065	33.000	0.550	1445	375
		24.00	4	100	0.070	36.000	0.600	1325	370
		25.00	4	100	0.070	37.500	0.650	1275	355
		28.00	6	100	0.080	42.000	0.700	1135	545
		30.00	6	100	0.085	45.000	0.750	1060	540
		32.00	6	100	0.090	48.000	0.800	995	535
		36.00	6	100	0.105	54.000	0.900	885	555
		40.00	6	100	0.115	60.000	1.000	795	550

Cylindrical end mills

Smooth-edged, normal version

HSS-E Co8	λ 40° γ 15°
90°	



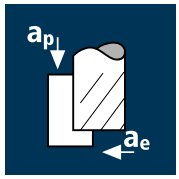
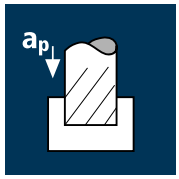
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **0110** ø-Code **682**

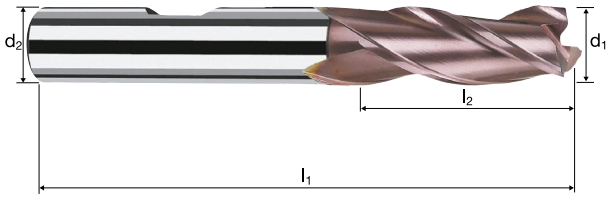
Ø Code	d_1 k8	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U0110
682	20.00	20.00	104	38.00	-	0.0°	4	●
690	21.00	20.00	104	38.00	-	0.0°	4	●
710	22.00	20.00	104	38.00	-	0.0°	4	●
741	24.00	20.00	111	45.00	-	0.0°	4	●
772	25.00	25.00	121	45.00	-	0.0°	4	●
800	28.00	25.00	121	45.00	-	0.0°	6	●
810	30.00	25.00	121	45.00	-	0.0°	6	●
832	32.00	32.00	133	53.00	-	0.0°	6	●
860	36.00	32.00	133	53.00	-	0.0°	6	●
881	40.00	32.00	143	63.00	-	0.0°	6	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	3	64	0.010	4.500	0.200	6790	205	0.2
		4.00	3	64	0.010	6.000	0.300	5095	155	0.3
		5.00	3	64	0.015	7.500	0.350	4075	185	0.5
		6.00	3	64	0.020	9.000	0.400	3395	205	0.7
		7.00	3	64	0.020	10.500	0.500	2910	175	0.9
		8.00	3	64	0.025	12.000	0.550	2545	190	1.3
		10.00	3	64	0.030	15.000	0.700	2035	185	1.9
		12.00	3	64	0.045	18.000	0.850	1700	230	3.5
		14.00	3	64	0.055	21.000	1.000	1455	240	5.0
	Steel 850 - 1100 N/mm²	3.00	3	52	0.010	4.500	0.200	5515	165	0.1
		4.00	3	52	0.010	6.000	0.300	4140	125	0.2
		5.00	3	52	0.015	7.500	0.350	3310	150	0.4
		6.00	3	52	0.020	9.000	0.400	2760	165	0.6
		7.00	3	52	0.020	10.500	0.500	2365	140	0.7
		8.00	3	52	0.025	12.000	0.550	2070	155	1.0
		10.00	3	52	0.030	15.000	0.700	1655	150	1.6
		12.00	3	52	0.045	18.000	0.850	1380	185	2.8
		14.00	3	52	0.055	21.000	1.000	1180	195	4.1
	Stainless steel [Cr-Ni/1.4301]	3.00	3	26	0.010	4.500	0.200	2760	85	0.1
		4.00	3	26	0.010	6.000	0.300	2070	60	0.1
		5.00	3	26	0.015	7.500	0.350	1655	75	0.2
		6.00	3	26	0.020	9.000	0.400	1380	85	0.3
		7.00	3	26	0.020	10.500	0.500	1180	70	0.4
		8.00	3	26	0.025	12.000	0.550	1035	80	0.5
		10.00	3	26	0.030	15.000	0.700	830	75	0.8
		12.00	3	26	0.045	18.000	0.850	690	95	1.4
		14.00	3	26	0.055	21.000	1.000	590	100	2.0
	Cast iron (lamellar / spheroidal)	3.00	3	45	0.010	4.500	0.200	4775	145	0.1
		4.00	3	45	0.010	6.000	0.300	3580	105	0.2
		5.00	3	45	0.015	7.500	0.350	2865	130	0.3
		6.00	3	45	0.020	9.000	0.400	2385	145	0.5
		7.00	3	45	0.020	10.500	0.500	2045	125	0.6
		8.00	3	45	0.025	12.000	0.550	1790	135	0.9
		10.00	3	45	0.030	15.000	0.700	1430	130	1.4
		12.00	3	45	0.045	18.000	0.850	1195	160	2.5
		14.00	3	45	0.055	21.000	1.000	1025	170	3.5
	Steel < 850 N/mm²	3.00	3	60	0.010	1.500	3.000	6365	190	0.9
		4.00	3	60	0.010	2.000	4.000	4775	145	1.1
		5.00	3	60	0.015	2.500	5.000	3820	170	2.1
		6.00	3	60	0.020	3.000	6.000	3185	190	3.4
		7.00	3	60	0.020	3.500	7.000	2730	165	4.0
		8.00	3	60	0.025	4.000	8.000	2385	180	5.7
		10.00	3	60	0.030	5.000	10.000	1910	170	8.6
		12.00	3	60	0.045	6.000	12.000	1590	215	15.5
		14.00	3	60	0.055	7.000	14.000	1365	225	22.1
	Steel 850 - 1100 N/mm²	3.00	3	50	0.010	1.500	3.000	5305	160	0.7
		4.00	3	50	0.010	2.000	4.000	3980	120	1.0
		5.00	3	50	0.015	2.500	5.000	3185	145	1.8
		6.00	3	50	0.020	3.000	6.000	2655	160	2.9
		7.00	3	50	0.020	3.500	7.000	2275	135	3.3
		8.00	3	50	0.025	4.000	8.000	1990	150	4.8
		10.00	3	50	0.030	5.000	10.000	1590	145	7.2
		12.00	3	50	0.045	6.000	12.000	1325	180	12.9
		14.00	3	50	0.055	7.000	14.000	1135	190	18.4
	Stainless steel [Cr-Ni/1.4301]	3.00	3	23	0.010	1.500	3.000	2440	75	0.3
		4.00	3	23	0.010	2.000	4.000	1830	55	0.4
		5.00	3	23	0.015	2.500	5.000	1465	65	0.8
		6.00	3	23	0.020	3.000	6.000	1220	75	1.3
		7.00	3	23	0.020	3.500	7.000	1045	65	1.5
		8.00	3	23	0.025	4.000	8.000	915	70	2.2
		10.00	3	23	0.030	5.000	10.000	730	65	3.3
		12.00	3	23	0.045	6.000	12.000	610	80	5.9
		14.00	3	23	0.055	7.000	14.000	525	85	8.5
	Cast iron (lamellar / spheroidal)	3.00	3	40	0.010	1.500	3.000	4245	125	0.6
		4.00	3	40	0.010	2.000	4.000	3185	95	0.8
		5.00	3	40	0.015	2.500	5.000	2545	115	1.4
		6.00	3	40	0.020	3.000	6.000	2120	125	2.3
		7.00	3	40	0.020	3.500	7.000	1820	110	2.7
		8.00	3	40	0.025	4.000	8.000	1590	120	3.8
		10.00	3	40	0.030	5.000	10.000	1275	115	5.7
		12.00	3	40	0.045	6.000	12.000	1060	145	10.3
		14.00	3	40	0.055	7.000	14.000	910	150	14.7

Cylindrical end mills

Smooth-edged, normal version

HSS-E Co8	λ 30° γ 15°
90°	



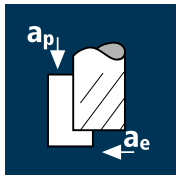
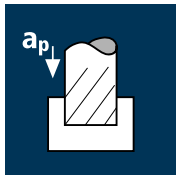
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **0780** ø-Code **100**

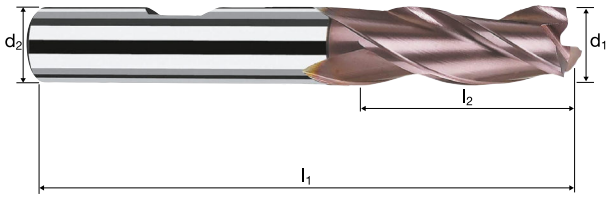
Ø Code	d_1 f8	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U0780
100	1.00	6.00	49	5.00	12.48	10.5°	3	●
120	1.50	6.00	50	6.00	12.99	10.0°	3	●
140	2.00	6.00	51	7.00	13.61	8.5°	3	●
160	2.50	6.00	52	8.00	15.50	6.5°	3	●
180	3.00	6.00	52	8.00	15.50	6.0°	3	●
200	3.50	6.00	54	10.00	17.50	4.5°	3	●
220	4.00	6.00	55	11.00	18.50	3.5°	3	●
240	4.50	6.00	55	11.00	18.50	2.5°	3	●
260	5.00	6.00	57	13.00	20.50	1.5°	3	●
280	5.50	6.00	57	13.00	20.50	1.0°	3	●
300	6.00	6.00	57	13.00	-	0.0°	3	●
322	6.50	10.00	66	16.00	25.50	4.0°	3	●
342	7.00	10.00	66	16.00	25.50	3.5°	3	●
391	8.00	8.00	63	19.00	-	0.0°	3	●
402	8.00	10.00	69	19.00	28.50	2.5°	3	●
420	9.00	10.00	69	19.00	28.50	1.5°	3	●
450	10.00	10.00	72	22.00	-	0.0°	3	●
470	11.00	12.00	79	22.00	33.50	1.0°	3	●
501	12.00	12.00	83	26.00	-	0.0°	3	●
540	13.00	12.00	83	26.00	-	0.0°	3	●
570	14.00	12.00	83	26.00	-	0.0°	3	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	15.00	3	64	0.060	22.500	1.050	1360	245	5.8
		16.00	3	64	0.060	24.000	1.100	1275	230	6.1
		18.00	3	64	0.070	27.000	1.250	1130	240	8.0
		20.00	3	64	0.080	30.000	1.400	1020	245	10.3
		22.00	3	64	0.085	33.000	1.550	925	235	12.1
		25.00	3	64	0.100	37.500	1.750	815	245	16.0
	Steel 850 - 1100 N/mm²	15.00	3	52	0.060	22.500	1.050	1105	200	4.7
		16.00	3	52	0.060	24.000	1.100	1035	185	4.9
		18.00	3	52	0.070	27.000	1.250	920	195	6.5
		20.00	3	52	0.080	30.000	1.400	830	200	8.3
		22.00	3	52	0.085	33.000	1.550	750	190	9.8
		25.00	3	52	0.100	37.500	1.750	660	200	13.0
	Stainless steel [Cr-Ni/1.4301]	15.00	3	26	0.060	22.500	1.050	550	100	2.3
		16.00	3	26	0.060	24.000	1.100	515	95	2.5
		18.00	3	26	0.070	27.000	1.250	460	95	3.3
		20.00	3	26	0.080	30.000	1.400	415	100	4.2
		22.00	3	26	0.085	33.000	1.550	375	95	4.9
		25.00	3	26	0.100	37.500	1.750	330	100	6.5
	Cast iron (lamellar / spheroidal)	15.00	3	45	0.060	22.500	1.050	955	170	4.1
		16.00	3	45	0.060	24.000	1.100	895	160	4.3
		18.00	3	45	0.070	27.000	1.250	795	165	5.6
		20.00	3	45	0.080	30.000	1.400	715	170	7.2
		22.00	3	45	0.085	33.000	1.550	650	165	8.5
		25.00	3	45	0.100	37.500	1.750	575	170	11.3
	Steel < 850 N/mm²	15.00	3	60	0.060	7.500	15.000	1275	230	25.8
		16.00	3	60	0.065	8.000	16.000	1195	235	29.8
		18.00	3	60	0.070	9.000	18.000	1060	225	36.1
		20.00	3	60	0.080	10.000	20.000	955	230	45.8
		22.00	3	60	0.085	11.000	22.000	870	220	53.6
		25.00	3	60	0.100	12.500	25.000	765	230	71.6
	Steel 850 - 1100 N/mm²	15.00	3	50	0.060	7.500	15.000	1060	190	21.5
		16.00	3	50	0.065	8.000	16.000	995	195	24.8
		18.00	3	50	0.070	9.000	18.000	885	185	30.1
		20.00	3	50	0.080	10.000	20.000	795	190	38.2
		22.00	3	50	0.085	11.000	22.000	725	185	44.6
		25.00	3	50	0.100	12.500	25.000	635	190	59.7
	Stainless steel [Cr-Ni/1.4301]	15.00	3	23	0.060	7.500	15.000	490	90	9.9
		16.00	3	23	0.065	8.000	16.000	460	90	11.4
		18.00	3	23	0.070	9.000	18.000	405	85	13.8
		20.00	3	23	0.080	10.000	20.000	365	90	17.6
		22.00	3	23	0.085	11.000	22.000	335	85	20.5
		25.00	3	23	0.100	12.500	25.000	295	90	27.5
	Cast iron (lamellar / spheroidal)	15.00	3	40	0.060	7.500	15.000	850	155	17.2
		16.00	3	40	0.065	8.000	16.000	795	155	19.9
		18.00	3	40	0.070	9.000	18.000	705	150	24.1
		20.00	3	40	0.080	10.000	20.000	635	155	30.6
		22.00	3	40	0.085	11.000	22.000	580	150	35.7
		25.00	3	40	0.100	12.500	25.000	510	155	47.7

Cylindrical end mills

Smooth-edged, normal version

HSS-E Co8	λ 30° γ 15°
90°	



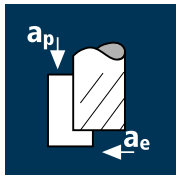
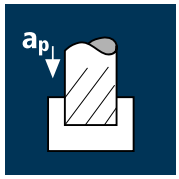
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **0780** ø-Code **581**

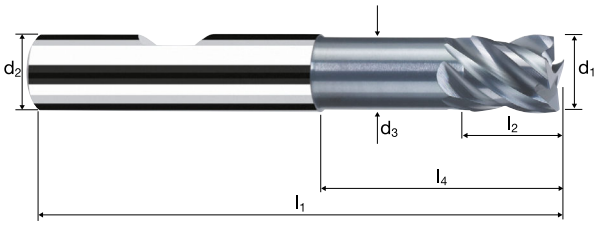
Ø Code	d_1 f8	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U0780
581	15.00	12.00	83	26.00	-	0.0°	3	●
610	16.00	16.00	92	32.00	-	0.0°	3	●
640	18.00	16.00	92	32.00	-	0.0°	3	●
671	20.00	16.00	98	38.00	-	0.0°	3	●
682	20.00	20.00	104	38.00	-	0.0°	3	●
710	22.00	20.00	104	38.00	-	0.0°	3	●
772	25.00	25.00	121	45.00	-	0.0°	3	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel 850 - 1100 N/mm²	4.00	4	150	0.030	4.000	2.600	11935	1430	14.9
		5.00	4	150	0.040	5.000	3.250	9550	1530	24.8
		6.00	4	150	0.045	6.000	3.900	7960	1430	33.5
		8.00	4	150	0.060	8.000	5.200	5970	1430	59.6
		10.00	4	150	0.075	10.000	6.500	4775	1430	93.1
		12.00	4	150	0.090	12.000	7.800	3980	1430	134.1
		16.00	4	150	0.100	16.000	10.400	2985	1195	198.6
		20.00	4	150	0.125	20.000	13.000	2385	1195	310.4
	Steel 1100 - 1300 N/mm²	4.00	4	115	0.025	4.000	2.600	9150	915	9.5
		5.00	4	115	0.035	5.000	3.250	7320	1025	16.7
		6.00	4	115	0.040	6.000	3.900	6100	975	22.8
		8.00	4	115	0.055	8.000	5.200	4575	1005	41.9
		10.00	4	115	0.065	10.000	6.500	3660	950	61.9
		12.00	4	115	0.080	12.000	7.800	3050	975	91.4
		16.00	4	115	0.090	16.000	10.400	2290	825	137.1
		20.00	4	115	0.110	20.000	13.000	1830	805	209.4
	Hardened tool steel 52 - 56 HRC	4.00	4	50	0.015	4.000	2.600	3980	240	2.5
		5.00	4	50	0.020	5.000	3.250	3185	255	4.1
		6.00	4	50	0.020	6.000	3.900	2655	210	5.0
		8.00	4	50	0.025	8.000	5.200	1990	200	8.3
		10.00	4	50	0.035	10.000	6.500	1590	225	14.5
		12.00	4	50	0.040	12.000	7.800	1325	210	19.9
		16.00	4	50	0.050	16.000	10.400	995	200	33.1
		20.00	4	50	0.060	20.000	13.000	795	190	49.7
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	60	0.015	4.000	1.600	4775	285	1.8
		5.00	4	60	0.020	5.000	2.000	3820	305	3.1
		6.00	4	60	0.020	6.000	2.300	3185	255	3.5
		8.00	4	60	0.025	8.000	3.100	2385	240	5.9
		10.00	4	60	0.035	10.000	3.900	1910	265	10.4
		12.00	4	60	0.040	12.000	4.700	1590	255	14.4
		16.00	4	60	0.050	16.000	6.200	1195	240	23.7
		20.00	4	60	0.060	20.000	7.800	955	230	35.8
	Steel 850 - 1100 N/mm²	4.00	4	120	0.020	3.600	4.000	9550	765	11.0
		5.00	4	120	0.025	4.500	5.000	7640	765	17.2
		6.00	4	120	0.035	5.400	6.000	6365	890	28.9
		8.00	4	120	0.045	7.200	8.000	4775	860	49.5
		10.00	4	120	0.055	9.000	10.000	3820	840	75.6
		12.00	4	120	0.065	10.800	12.000	3185	830	107.3
		16.00	4	120	0.075	14.400	16.000	2385	715	165.0
		20.00	4	120	0.095	18.000	20.000	1910	725	261.3
	Steel 1100 - 1300 N/mm²	4.00	4	90	0.020	3.600	4.000	7160	575	8.3
		5.00	4	90	0.025	4.500	5.000	5730	575	12.9
		6.00	4	90	0.035	5.400	6.000	4775	670	21.7
		8.00	4	90	0.045	7.200	8.000	3580	645	37.1
		10.00	4	90	0.055	9.000	10.000	2865	630	56.7
		12.00	4	90	0.065	10.800	12.000	2385	620	80.4
		16.00	4	90	0.075	14.400	16.000	1790	535	123.8
		20.00	4	90	0.095	18.000	20.000	1430	545	196.0
	Hardened tool steel 52 - 56 HRC	4.00	4	40	0.015	3.600	4.000	3185	190	2.8
		5.00	4	40	0.020	4.500	5.000	2545	205	4.6
		6.00	4	40	0.025	5.400	6.000	2120	210	6.9
		8.00	4	40	0.030	7.200	8.000	1590	190	11.0
		10.00	4	40	0.040	9.000	10.000	1275	205	18.3
		12.00	4	40	0.045	10.800	12.000	1060	190	24.8
		16.00	4	40	0.050	14.400	16.000	795	160	36.7
		20.00	4	40	0.065	18.000	20.000	635	165	59.6
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	50	0.020	3.600	4.000	3980	320	4.6
		5.00	4	50	0.025	4.500	5.000	3185	320	7.2
		6.00	4	50	0.030	5.400	6.000	2655	320	10.3
		8.00	4	50	0.040	7.200	8.000	1990	320	18.3
		10.00	4	50	0.050	9.000	10.000	1590	320	28.6
		12.00	4	50	0.060	10.800	12.000	1325	320	41.3
		16.00	4	50	0.070	14.400	16.000	995	280	64.2
		20.00	4	50	0.085	18.000	20.000	795	270	97.4

Cylindrical end mills NX-VD

Smooth-edged, normal version with neck

HM MG10	λ 45° γ -20°



Roughing

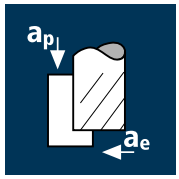
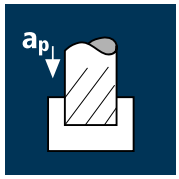
Finishing

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60			Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15342** ø-Code **220**

	POLYCHROM
	P15342
	P15242

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z		
220	4.00	6.00	3.70	57	6.00	16.00	20.95	0.10	3.0°	4		●
260	5.00	6.00	4.60	57	8.00	18.00	21.27	0.15	1.5°	4		●
300	6.00	6.00	5.50	57	9.00	19.34	20.00	0.15	0.0°	4		●
391	8.00	8.00	7.40	63	12.00	25.29	26.00	0.15	0.0°	4		●
450	10.00	10.00	9.20	72	15.00	30.20	31.00	0.20	0.0°	4		●
501	12.00	12.00	11.00	83	18.00	36.13	37.00	0.20	0.0°	4		●
610	16.00	16.00	15.00	92	24.00	42.13	43.00	0.20	0.0°	4		●
682	20.00	20.00	19.00	104	30.00	52.13	53.00	0.20	0.0°	4		●

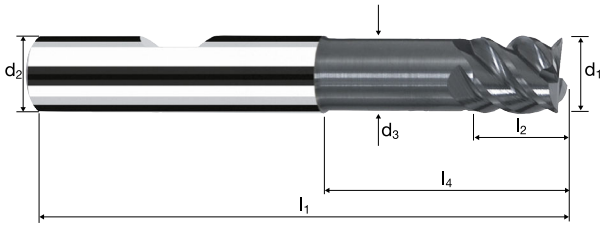
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Hardened tool steel 42 - 48 HRC	3.00	4	110	0.020	3.000	1.800	11670	935	5.0
		4.00	4	110	0.025	4.000	2.400	8755	875	8.4
		5.00	4	110	0.030	5.000	3.000	7005	840	12.6
		6.00	4	110	0.040	6.000	3.600	5835	935	20.2
		8.00	4	110	0.050	8.000	4.800	4375	875	33.6
		10.00	4	110	0.065	10.000	6.000	3500	910	54.6
		12.00	4	110	0.075	12.000	7.200	2920	875	75.6
		16.00	4	110	0.100	16.000	4.000	2190	875	56.0
		20.00	4	110	0.125	20.000	5.000	1750	875	87.5
	Hardened tool steel 48 - 52 HRC	3.00	4	70	0.015	3.000	1.800	7425	445	2.4
		4.00	4	70	0.020	4.000	2.400	5570	445	4.3
		5.00	4	70	0.030	5.000	3.000	4455	535	8.0
		6.00	4	70	0.035	6.000	3.600	3715	520	11.2
		8.00	4	70	0.045	8.000	4.800	2785	500	19.3
		10.00	4	70	0.055	10.000	6.000	2230	490	29.4
		12.00	4	70	0.065	12.000	7.200	1855	485	41.7
		16.00	4	70	0.090	16.000	4.000	1395	500	32.1
		20.00	4	70	0.110	20.000	5.000	1115	490	49.0
	Hardened tool steel 52 - 56 HRC	3.00	4	50	0.015	3.000	1.800	5305	320	1.7
		4.00	4	50	0.020	4.000	2.400	3980	320	3.1
		5.00	4	50	0.025	5.000	3.000	3185	320	4.8
		6.00	4	50	0.025	6.000	3.600	2655	265	5.7
		8.00	4	50	0.035	8.000	4.800	1990	280	10.7
		10.00	4	50	0.045	10.000	6.000	1590	285	17.2
		12.00	4	50	0.055	12.000	3.000	1325	290	10.5
		16.00	4	50	0.075	16.000	4.000	995	300	19.1
		20.00	4	50	0.090	20.000	5.000	795	285	28.6
	Hardened tool steel 56 - 60 HRC	3.00	4	25	0.010	3.000	1.800	2655	105	0.6
		4.00	4	25	0.015	4.000	2.400	1990	120	1.1
		5.00	4	25	0.015	5.000	3.000	1590	95	1.4
		6.00	4	25	0.020	6.000	3.600	1325	105	2.3
		8.00	4	25	0.025	8.000	4.800	995	100	3.8
		10.00	4	25	0.035	10.000	6.000	795	110	6.7
		12.00	4	25	0.040	12.000	3.000	665	105	3.8
		16.00	4	25	0.055	16.000	4.000	495	110	7.0
		20.00	4	25	0.065	20.000	5.000	400	105	10.3
	Hardened tool steel 42 - 48 HRC	3.00	4	95	0.015	1.500	3.000	10080	605	2.7
		4.00	4	95	0.020	2.000	4.000	7560	605	4.8
		5.00	4	95	0.025	2.500	5.000	6050	605	7.6
		6.00	4	95	0.030	3.000	6.000	5040	605	10.9
		8.00	4	95	0.040	4.000	8.000	3780	605	19.4
		10.00	4	95	0.050	5.000	10.000	3025	605	30.2
		12.00	4	95	0.060	6.000	12.000	2520	605	43.5
		16.00	4	95	0.080	4.000	16.000	1890	605	38.7
		20.00	4	95	0.100	5.000	20.000	1510	605	60.5
	Hardened tool steel 48 - 52 HRC	3.00	4	60	0.015	1.500	3.000	6365	380	1.7
		4.00	4	60	0.020	2.000	4.000	4775	380	3.1
		5.00	4	60	0.025	2.500	5.000	3820	380	4.8
		6.00	4	60	0.030	3.000	6.000	3185	380	6.9
		8.00	4	60	0.040	4.000	8.000	2385	380	12.2
		10.00	4	60	0.050	5.000	10.000	1910	380	19.1
		12.00	4	60	0.060	6.000	12.000	1590	380	27.5
		16.00	4	60	0.080	4.000	16.000	1195	380	24.4
		20.00	4	60	0.100	5.000	20.000	955	380	38.2
	Hardened tool steel 52 - 56 HRC	3.00	4	40	0.010	1.500	3.000	4245	170	0.8
		4.00	4	40	0.015	2.000	4.000	3185	190	1.5
		5.00	4	40	0.020	2.500	5.000	2545	205	2.5
		6.00	4	40	0.025	3.000	6.000	2120	210	3.8
		8.00	4	40	0.030	4.000	8.000	1590	190	6.1
		10.00	4	40	0.040	5.000	10.000	1275	205	10.2
		12.00	4	40	0.050	6.000	12.000	1060	210	15.3
		16.00	4	40	0.065	4.000	16.000	795	205	13.2
		20.00	4	40	0.080	5.000	20.000	635	205	20.4
	Hardened tool steel 56 - 60 HRC	3.00	4	20	0.009	1.500	3.000	2120	75	0.3
		4.00	4	20	0.011	2.000	4.000	1590	70	0.6
		5.00	4	20	0.014	2.500	5.000	1275	70	0.9
		6.00	4	20	0.017	3.000	6.000	1060	70	1.3
		8.00	4	20	0.023	4.000	8.000	795	75	2.3
		10.00	4	20	0.029	5.000	10.000	635	75	3.7
		12.00	4	20	0.034	6.000	12.000	530	70	5.2
		16.00	4	20	0.046	4.000	16.000	400	75	4.7
		20.00	4	20	0.057	5.000	20.000	320	75	7.3

Cylindrical end mills HX

Smooth-edged, normal version with neck

X-Generation

HM MG10	λ 55° γ -10°
45°	



Roughing

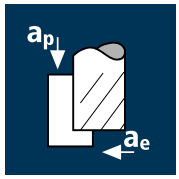
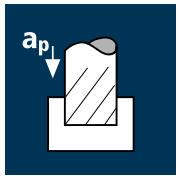
Finishing

ToolSchool

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **D** Article-N°. **5348** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P5348 P5248	DURO-S D5348 D5248
180	3.00	6.00	2.80	57	4.00	14.00	20.63	0.10	4.5°	4	●	●
220	4.00	6.00	3.70	57	5.00	16.00	20.95	0.10	3.0°	4	●	●
260	5.00	6.00	4.60	57	6.00	18.00	21.27	0.15	1.5°	4	●	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	0.15	0.0°	4	●	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	0.15	0.0°	4	●	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	0.20	0.0°	4	●	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	0.20	0.0°	4	●	●
610	16.00	16.00	15.00	92	17.00	42.13	43.00	0.20	0.0°	4	●	●
682	20.00	20.00	19.00	104	21.00	52.13	53.00	0.20	0.0°	4	●	●
772	25.00	25.00	24.00	121	26.00	63.13	64.00	0.25	0.0°	4	●	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Hardened tool steel 48 - 52 HRC	3.00	4	75	0.020	3.000	1.200	7960	635	2.3
		4.00	4	75	0.025	4.000	1.600	5970	595	3.8
		5.00	4	75	0.030	5.000	2.000	4775	575	5.7
		6.00	4	75	0.040	6.000	2.400	3980	635	9.2
		8.00	4	75	0.050	8.000	3.200	2985	595	15.3
		10.00	4	75	0.065	10.000	4.000	2385	620	24.8
		12.00	4	75	0.075	12.000	4.800	1990	595	34.4
		16.00	4	75	0.100	16.000	4.000	1490	595	38.2
		20.00	4	75	0.125	20.000	5.000	1195	595	59.7
	Hardened tool steel 52 - 56 HRC	3.00	4	60	0.015	3.000	1.200	6365	380	1.4
		4.00	4	60	0.020	4.000	1.600	4775	380	2.4
		5.00	4	60	0.030	5.000	2.000	3820	460	4.6
		6.00	4	60	0.035	6.000	2.400	3185	445	6.4
		8.00	4	60	0.045	8.000	3.200	2385	430	11.0
		10.00	4	60	0.055	10.000	4.000	1910	420	16.8
		12.00	4	60	0.065	12.000	3.000	1590	415	14.9
		16.00	4	60	0.090	16.000	4.000	1195	430	27.5
		20.00	4	60	0.110	20.000	5.000	955	420	42.0
	Hardened tool steel 56 - 60 HRC	3.00	4	30	0.015	3.000	1.200	3185	190	0.7
		4.00	4	30	0.020	4.000	1.600	2385	190	1.2
		5.00	4	30	0.025	5.000	2.000	1910	190	1.9
		6.00	4	30	0.025	6.000	2.400	1590	160	2.3
		8.00	4	30	0.035	8.000	3.200	1195	165	4.3
		10.00	4	30	0.045	10.000	4.000	955	170	6.9
		12.00	4	30	0.055	12.000	3.000	795	175	6.3
		16.00	4	30	0.075	16.000	4.000	595	180	11.5
		20.00	4	30	0.090	20.000	5.000	475	170	17.2
	Hardened tool steel > 60 HRC	3.00	4	25	0.010	3.000	1.200	2655	105	0.4
		4.00	4	25	0.010	4.000	1.600	1990	80	0.5
		5.00	4	25	0.015	5.000	2.000	1590	95	1.0
		6.00	4	25	0.015	6.000	2.400	1325	80	1.1
		8.00	4	25	0.025	8.000	3.200	995	100	2.5
		10.00	4	25	0.030	10.000	4.000	795	95	3.8
		12.00	4	25	0.035	12.000	3.000	665	95	3.3
		16.00	4	25	0.045	16.000	4.000	495	90	5.7
		20.00	4	25	0.055	20.000	5.000	400	90	8.8
	Hardened tool steel 48 - 52 HRC	3.00	4	70	0.015	1.500	3.000	7425	445	2.0
		4.00	4	70	0.020	2.000	4.000	5570	445	3.6
		5.00	4	70	0.030	2.500	5.000	4455	535	6.7
		6.00	4	70	0.035	3.000	6.000	3715	520	9.4
		8.00	4	70	0.045	4.000	8.000	2785	500	16.0
		10.00	4	70	0.055	5.000	10.000	2230	490	24.5
		12.00	4	70	0.065	6.000	12.000	1855	485	34.8
		16.00	4	70	0.090	4.000	16.000	1395	500	32.1
		20.00	4	70	0.110	5.000	20.000	1115	490	49.0
	Hardened tool steel 52 - 56 HRC	3.00	4	50	0.015	1.500	3.000	5305	320	1.4
		4.00	4	50	0.020	2.000	4.000	3980	320	2.5
		5.00	4	50	0.025	2.500	5.000	3185	320	4.0
		6.00	4	50	0.025	3.000	6.000	2655	265	4.8
		8.00	4	50	0.035	4.000	8.000	1990	280	8.9
		10.00	4	50	0.045	5.000	10.000	1590	285	14.3
		12.00	4	50	0.055	6.000	12.000	1325	290	21.0
		16.00	4	50	0.075	4.000	16.000	995	300	19.1
		20.00	4	50	0.090	5.000	20.000	795	285	28.6
	Hardened tool steel 56 - 60 HRC	3.00	4	30	0.010	1.500	3.000	3185	125	0.6
		4.00	4	30	0.013	2.000	4.000	2385	125	1.0
		5.00	4	30	0.017	2.500	5.000	1910	130	1.6
		6.00	4	30	0.020	3.000	6.000	1590	125	2.3
		8.00	4	30	0.027	4.000	8.000	1195	130	4.1
		10.00	4	30	0.033	5.000	10.000	955	125	6.3
		12.00	4	30	0.040	6.000	12.000	795	125	9.2
		16.00	4	30	0.053	4.000	16.000	595	125	8.1
		20.00	4	30	0.067	5.000	20.000	475	130	12.8
	Hardened tool steel > 60 HRC	3.00	4	20	0.008	1.500	3.000	2120	70	0.3
		4.00	4	20	0.011	2.000	4.000	1590	70	0.6
		5.00	4	20	0.013	2.500	5.000	1275	65	0.8
		6.00	4	20	0.016	3.000	6.000	1060	70	1.2
		8.00	4	20	0.021	4.000	8.000	795	65	2.1
		10.00	4	20	0.026	5.000	10.000	635	65	3.3
		12.00	4	20	0.032	6.000	12.000	530	70	4.9
		16.00	4	20	0.042	4.000	16.000	400	65	4.3
		20.00	4	20	0.053	5.000	20.000	320	65	6.7

Cylindrical end mills HX-H

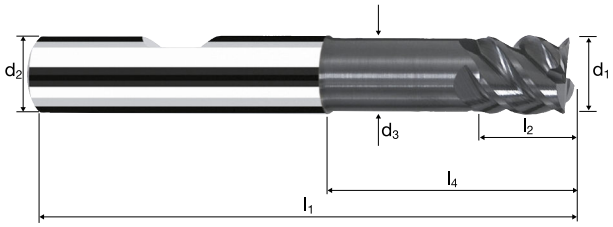
Smooth-edged, normal version with neck

X-Generation

HM
XT

λ 55°
γ -10°

45°



Roughing

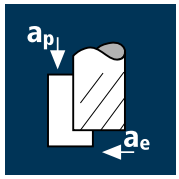
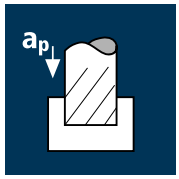
Finishing

ToolSchool

			Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			HSS

Example: **Order-N°.** Coating **D** Article-N°. **5344** ø-Code **180**

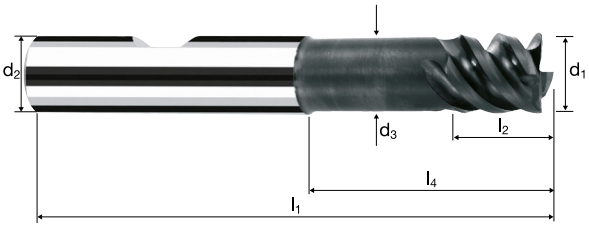
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	DURO-S D5344	DURO-S D5244
180	3.00	6.00	2.80	57	4.00	14.00	20.63	0.10	4.5°	4		●
220	4.00	6.00	3.70	57	5.00	16.00	20.95	0.10	3.0°	4		●
260	5.00	6.00	4.60	57	6.00	18.00	21.27	0.15	1.5°	4		●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	0.15	0.0°	4		●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	0.15	0.0°	4		●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	0.20	0.0°	4		●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	0.20	0.0°	4		●
610	16.00	16.00	15.00	92	17.00	42.13	43.00	0.20	0.0°	4		●
682	20.00	20.00	19.00	104	21.00	52.13	53.00	0.20	0.0°	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Stainless steel [Cr-Ni/1.4301]	3.00	4	80	0.010	3.000	1.200	8490	340	1.2
		4.00	4	80	0.015	4.000	1.600	6365	380	2.4
		5.00	4	80	0.020	5.000	2.000	5095	405	4.1
		6.00	4	80	0.030	6.000	2.400	4245	510	7.3
		8.00	4	80	0.040	8.000	3.200	3185	510	13.0
		10.00	4	80	0.055	10.000	4.000	2545	560	22.4
		12.00	4	80	0.065	12.000	4.800	2120	550	31.8
		16.00	4	80	0.085	16.000	4.000	1590	540	34.6
		20.00	4	80	0.090	20.000	5.000	1275	460	45.8
	Stainless steel [Cr-Ni-Mo-.../1.4429]	3.00	4	40	0.010	3.000	1.200	4245	170	0.6
		4.00	4	40	0.015	4.000	1.600	3185	190	1.2
		5.00	4	40	0.020	5.000	2.000	2545	205	2.0
		6.00	4	40	0.030	6.000	2.400	2120	255	3.7
		8.00	4	40	0.040	8.000	3.200	1590	255	6.5
		10.00	4	40	0.055	10.000	4.000	1275	280	11.2
		12.00	4	40	0.065	12.000	4.800	1060	275	15.9
		16.00	4	40	0.085	16.000	4.000	795	270	17.3
		20.00	4	40	0.090	20.000	5.000	635	230	22.9
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3.00	4	25	0.015	3.000	1.200	2655	160	0.6
		4.00	4	25	0.020	4.000	1.600	1990	160	1.0
		5.00	4	25	0.025	5.000	2.000	1590	160	1.6
		6.00	4	25	0.030	6.000	2.400	1325	160	2.3
		8.00	4	25	0.035	8.000	3.200	995	140	3.6
		10.00	4	25	0.045	10.000	4.000	795	145	5.7
		12.00	4	25	0.050	12.000	4.800	665	135	7.6
		16.00	4	25	0.065	16.000	4.000	495	130	8.3
		20.00	4	25	0.085	20.000	5.000	400	135	13.5
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	3.00	4	15	0.015	3.000	1.200	1590	95	0.3
		4.00	4	15	0.020	4.000	1.600	1195	95	0.6
		5.00	4	15	0.025	5.000	2.000	955	95	1.0
		6.00	4	15	0.030	6.000	2.400	795	95	1.4
		8.00	4	15	0.035	8.000	3.200	595	85	2.1
		10.00	4	15	0.045	10.000	4.000	475	85	3.4
		12.00	4	15	0.050	12.000	4.800	400	80	4.6
		16.00	4	15	0.065	16.000	4.000	300	80	5.0
		20.00	4	15	0.085	20.000	5.000	240	80	8.1
	Stainless steel [Cr-Ni/1.4301]	3.00	4	60	0.010	2.250	3.000	6365	255	1.7
		4.00	4	60	0.015	3.000	4.000	4775	285	3.4
		5.00	4	60	0.020	3.750	5.000	3820	305	5.7
		6.00	4	60	0.030	4.500	6.000	3185	380	10.3
		8.00	4	60	0.040	6.000	8.000	2385	380	18.3
		10.00	4	60	0.055	7.500	10.000	1910	420	31.5
		12.00	4	60	0.055	9.000	12.000	1590	350	37.8
		16.00	4	60	0.085	8.000	16.000	1195	405	51.9
		20.00	4	60	0.105	10.000	20.000	955	400	80.2
	Stainless steel [Cr-Ni-Mo-.../1.4429]	3.00	4	30	0.010	2.250	3.000	3185	125	0.9
		4.00	4	30	0.015	3.000	4.000	2385	145	1.7
		5.00	4	30	0.020	3.750	5.000	1910	155	2.9
		6.00	4	30	0.030	4.500	6.000	1590	190	5.2
		8.00	4	30	0.040	6.000	8.000	1195	190	9.2
		10.00	4	30	0.055	7.500	10.000	955	210	15.8
		12.00	4	30	0.065	9.000	12.000	795	205	22.3
		16.00	4	30	0.085	8.000	16.000	595	205	26.0
		20.00	4	30	0.105	10.000	20.000	475	200	40.1
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3.00	4	20	0.015	2.250	3.000	2120	125	0.9
		4.00	4	20	0.020	3.000	4.000	1590	125	1.5
		5.00	4	20	0.025	3.750	5.000	1275	125	2.4
		6.00	4	20	0.030	4.500	6.000	1060	125	3.4
		8.00	4	20	0.035	6.000	8.000	795	110	5.3
		10.00	4	20	0.045	7.500	10.000	635	115	8.6
		12.00	4	20	0.050	9.000	12.000	530	105	11.5
		16.00	4	20	0.070	8.000	16.000	400	110	14.3
		20.00	4	20	0.090	10.000	20.000	320	115	22.9
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	3.00	4	10	0.015	2.250	3.000	1060	65	0.4
		4.00	4	10	0.020	3.000	4.000	795	65	0.8
		5.00	4	10	0.025	3.750	5.000	635	65	1.2
		6.00	4	10	0.030	4.500	6.000	530	65	1.7
		8.00	4	10	0.035	6.000	8.000	400	55	2.7
		10.00	4	10	0.045	7.500	10.000	320	55	4.3
		12.00	4	10	0.050	9.000	12.000	265	55	5.7
		16.00	4	10	0.070	8.000	16.000	200	55	7.1
		20.00	4	10	0.090	10.000	20.000	160	55	11.5

Cylindrical end mills SX

Smooth-edged, normal version with neck

HM MG10	λ 55° γ 15°



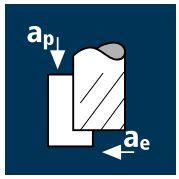
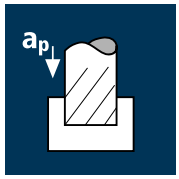
Roughing

Finishing

Rm < 850	Rm 850-1100						Inox Stainless	Ti Titanium	Nickel-Alloys Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **5318** ø-Code **180**

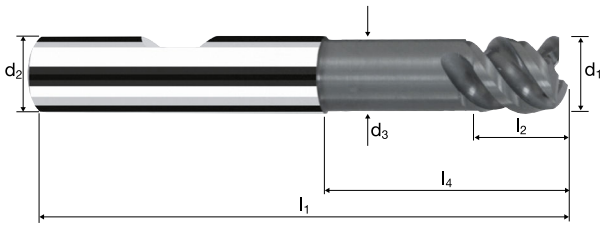
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P5318	POLYCHROM P5218
180	3.00	6.00	2.80	57	4.00	14.00	20.63	0.10	4.5°	4	●	
220	4.00	6.00	3.70	57	5.00	16.00	20.95	0.10	3.0°	4	●	
260	5.00	6.00	4.60	57	6.00	18.00	21.27	0.15	1.5°	4	●	
300	6.00	6.00	5.50	57	7.00	19.34	20.00	0.15	0.0°	4	●	
391	8.00	8.00	7.40	63	9.00	25.29	26.00	0.15	0.0°	4	●	
450	10.00	10.00	9.20	72	11.00	30.20	31.00	0.20	0.0°	4	●	
501	12.00	12.00	11.00	83	13.00	36.13	37.00	0.20	0.0°	4	●	
610	16.00	16.00	15.00	92	17.00	42.13	43.00	0.20	0.0°	4	●	
682	20.00	20.00	19.00	104	21.00	52.13	53.00	0.20	0.0°	4	●	

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Stainless steel [Cr-Ni/1.4301]	3.00	3	80	0.010	3.000	1.200	8490	255	0.9
		4.00	3	80	0.015	4.000	1.600	6365	285	1.8
		5.00	3	80	0.020	5.000	2.000	5095	305	3.1
		6.00	3	80	0.030	6.000	2.400	4245	380	5.5
		8.00	3	80	0.040	8.000	3.200	3185	380	9.8
		10.00	3	80	0.055	10.000	4.000	2545	420	16.8
		12.00	3	80	0.065	12.000	4.800	2120	415	23.8
		16.00	3	80	0.085	16.000	4.000	1590	405	26.0
	Stainless steel [Cr-Ni-Mo-.../1.4429]	3.00	3	40	0.010	3.000	1.200	4245	125	0.5
		4.00	3	40	0.015	4.000	1.600	3185	145	0.9
		5.00	3	40	0.020	5.000	2.000	2545	155	1.5
		6.00	3	40	0.030	6.000	2.400	2120	190	2.8
		8.00	3	40	0.040	8.000	3.200	1590	190	4.9
		10.00	3	40	0.055	10.000	4.000	1275	210	8.4
		12.00	3	40	0.065	12.000	4.800	1060	205	11.9
		16.00	3	40	0.085	16.000	4.000	795	205	13.0
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3.00	3	25	0.015	3.000	1.200	2655	120	0.4
		4.00	3	25	0.020	4.000	1.600	1990	120	0.8
		5.00	3	25	0.025	5.000	2.000	1590	120	1.2
		6.00	3	25	0.030	6.000	2.400	1325	120	1.7
		8.00	3	25	0.035	8.000	3.200	995	105	2.7
		10.00	3	25	0.045	10.000	4.000	795	105	4.3
		12.00	3	25	0.050	12.000	4.800	665	100	5.7
		16.00	3	25	0.060	16.000	4.000	495	90	5.7
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	3.00	3	15	0.015	3.000	1.200	1590	70	0.3
		4.00	3	15	0.020	4.000	1.600	1195	70	0.5
		5.00	3	15	0.025	5.000	2.000	955	70	0.7
		6.00	3	15	0.030	6.000	2.400	795	70	1.0
		8.00	3	15	0.035	8.000	3.200	595	65	1.6
		10.00	3	15	0.045	10.000	4.000	475	65	2.6
		12.00	3	15	0.050	12.000	4.800	400	60	3.4
		16.00	3	15	0.060	16.000	4.000	300	55	3.4
	Stainless steel [Cr-Ni/1.4301]	3.00	3	60	0.010	1.500	3.000	6365	190	0.9
		4.00	3	60	0.015	2.000	4.000	4775	215	1.7
		5.00	3	60	0.020	2.500	5.000	3820	230	2.9
		6.00	3	60	0.030	3.000	6.000	3185	285	5.2
		8.00	3	60	0.040	4.000	8.000	2385	285	9.2
		10.00	3	60	0.055	5.000	10.000	1910	315	15.8
		12.00	3	60	0.065	6.000	12.000	1590	310	22.3
		16.00	3	60	0.085	4.000	16.000	1195	305	19.5
	Stainless steel [Cr-Ni-Mo-.../1.4429]	3.00	3	30	0.010	1.500	3.000	3185	95	0.4
		4.00	3	30	0.015	2.000	4.000	2385	105	0.9
		5.00	3	30	0.020	2.500	5.000	1910	115	1.4
		6.00	3	30	0.030	3.000	6.000	1590	145	2.6
		8.00	3	30	0.040	4.000	8.000	1195	145	4.6
		10.00	3	30	0.055	5.000	10.000	955	160	7.9
		12.00	3	30	0.065	6.000	12.000	795	155	11.2
		16.00	3	30	0.085	4.000	16.000	595	150	9.7
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3.00	3	20	0.015	1.500	3.000	2120	95	0.4
		4.00	3	20	0.020	2.000	4.000	1590	95	0.8
		5.00	3	20	0.025	2.500	5.000	1275	95	1.2
		6.00	3	20	0.030	3.000	6.000	1060	95	1.7
		8.00	3	20	0.035	4.000	8.000	795	85	2.7
		10.00	3	20	0.045	5.000	10.000	635	85	4.3
		12.00	3	20	0.050	6.000	12.000	530	80	5.7
		16.00	3	20	0.060	4.000	16.000	400	70	4.6
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	3.00	3	10	0.015	1.500	3.000	1060	50	0.2
		4.00	3	10	0.020	2.000	4.000	795	50	0.4
		5.00	3	10	0.025	2.500	5.000	635	50	0.6
		6.00	3	10	0.030	3.000	6.000	530	50	0.9
		8.00	3	10	0.035	4.000	8.000	400	40	1.3
		10.00	3	10	0.045	5.000	10.000	320	45	2.1
		12.00	3	10	0.050	6.000	12.000	265	40	2.9
		16.00	3	10	0.060	4.000	16.000	200	35	2.3

Cylindrical end mills SX-3

Smooth-edged, normal version with neck

HM MG10	λ 55° γ 15°



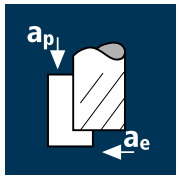
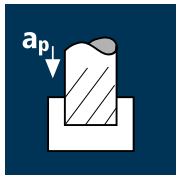
Roughing

Finishing

Rm < 850	Rm 850-1100						Inox Stainless	Ti Titanium	Nickel-Alloys Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **5315** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P5315	POLYCHROM P5215
180	3.00	6.00	2.80	57	4.00	14.00	20.63	0.10	4.5°	3		●
220	4.00	6.00	3.70	57	5.00	16.00	20.95	0.10	3.0°	3		●
260	5.00	6.00	4.60	57	6.00	18.00	21.27	0.15	1.5°	3		●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	0.15	0.0°	3		●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	0.15	0.0°	3		●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	0.20	0.0°	3		●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	0.20	0.0°	3		●
610	16.00	16.00	15.00	92	17.00	42.13	43.00	0.20	0.0°	3		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	4	190	0.020	3.000	1.400	20160	1615	6.8
		4.00	4	190	0.030	4.000	1.800	15120	1815	13.1
		5.00	4	190	0.040	5.000	2.300	12095	1935	22.3
		6.00	4	190	0.050	6.000	2.700	10080	2015	32.7
		8.00	4	190	0.065	8.000	3.600	7560	1965	56.6
		10.00	4	190	0.080	10.000	4.500	6050	1935	87.1
		12.00	4	190	0.095	12.000	5.400	5040	1915	124.1
		16.00	4	190	0.125	16.000	7.200	3780	1890	217.7
		20.00	4	190	0.155	20.000	9.000	3025	1875	337.5
	Steel 850 - 1100 N/mm²	3.00	4	140	0.020	3.000	1.400	14855	1190	5.0
		4.00	4	140	0.030	4.000	1.800	11140	1335	9.6
		5.00	4	140	0.040	5.000	2.300	8915	1425	16.4
		6.00	4	140	0.050	6.000	2.700	7425	1485	24.1
		8.00	4	140	0.065	8.000	3.600	5570	1450	41.7
		10.00	4	140	0.080	10.000	4.500	4455	1425	64.2
		12.00	4	140	0.095	12.000	5.400	3715	1410	91.4
		16.00	4	140	0.125	16.000	7.200	2785	1395	160.4
		20.00	4	140	0.155	20.000	9.000	2230	1380	248.7
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	4	70	0.020	3.000	1.400	7425	595	2.5
		4.00	4	70	0.030	4.000	1.800	5570	670	4.8
		5.00	4	70	0.035	5.000	2.300	4455	625	7.2
		6.00	4	70	0.045	6.000	2.700	3715	670	10.8
		8.00	4	70	0.060	8.000	3.600	2785	670	19.3
		10.00	4	70	0.070	10.000	4.500	2230	625	28.1
		12.00	4	70	0.085	12.000	5.400	1855	630	40.9
		16.00	4	70	0.110	16.000	7.200	1395	615	70.6
		20.00	4	70	0.140	20.000	9.000	1115	625	112.3
	Stainless steel [Cr-Ni/1.4301]	3.00	4	90	0.015	3.000	1.400	9550	575	2.4
		4.00	4	90	0.020	4.000	1.800	7160	575	4.1
		5.00	4	90	0.025	5.000	2.300	5730	575	6.6
		6.00	4	90	0.030	6.000	2.700	4775	575	9.3
		8.00	4	90	0.040	8.000	3.600	3580	575	16.5
		10.00	4	90	0.050	10.000	4.500	2865	575	25.8
		12.00	4	90	0.060	12.000	5.400	2385	575	37.1
		16.00	4	90	0.080	16.000	7.200	1790	575	66.0
		20.00	4	90	0.100	20.000	9.000	1430	575	103.1
	Steel < 850 N/mm²	3.00	4	155	0.015	2.400	3.000	16445	985	7.1
		4.00	4	155	0.020	3.200	4.000	12335	985	12.6
		5.00	4	155	0.030	4.000	5.000	9870	1185	23.7
		6.00	4	155	0.040	4.800	6.000	8225	1315	37.9
		8.00	4	155	0.050	6.400	8.000	6165	1235	63.2
		10.00	4	155	0.065	8.000	10.000	4935	1285	102.6
		12.00	4	155	0.075	9.600	12.000	4110	1235	142.1
		16.00	4	155	0.075	8.000	16.000	3085	925	118.4
		20.00	4	155	0.095	10.000	20.000	2465	935	187.5
	Steel 850 - 1100 N/mm²	3.00	4	105	0.015	2.400	3.000	11140	670	4.8
		4.00	4	105	0.020	3.200	4.000	8355	670	8.6
		5.00	4	105	0.030	4.000	5.000	6685	800	16.0
		6.00	4	105	0.040	4.800	6.000	5570	890	25.7
		8.00	4	105	0.050	6.400	8.000	4180	835	42.8
		10.00	4	105	0.065	8.000	10.000	3340	870	69.5
		12.00	4	105	0.075	9.600	12.000	2785	835	96.3
		16.00	4	105	0.075	8.000	16.000	2090	625	80.2
		20.00	4	105	0.095	10.000	20.000	1670	635	127.0
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	4	55	0.015	2.400	3.000	5835	350	2.5
		4.00	4	55	0.020	3.200	4.000	4375	350	4.5
		5.00	4	55	0.030	4.000	5.000	3500	420	8.4
		6.00	4	55	0.035	4.800	6.000	2920	410	11.8
		8.00	4	55	0.045	6.400	8.000	2190	395	20.2
		10.00	4	55	0.055	8.000	10.000	1750	385	30.8
		12.00	4	55	0.060	9.600	12.000	1460	350	40.3
		16.00	4	55	0.075	8.000	16.000	1095	330	42.0
		20.00	4	55	0.095	10.000	20.000	875	335	66.5
	Stainless steel [Cr-Ni/1.4301]	3.00	4	75	0.015	2.400	3.000	7960	475	3.4
		4.00	4	75	0.015	3.200	4.000	5970	360	4.6
		5.00	4	75	0.025	4.000	5.000	4775	475	9.5
		6.00	4	75	0.030	4.800	6.000	3980	475	13.8
		8.00	4	75	0.040	6.400	8.000	2985	475	24.4
		10.00	4	75	0.050	8.000	10.000	2385	475	38.2
		12.00	4	75	0.050	9.600	12.000	1990	400	45.8
		16.00	4	75	0.065	8.000	16.000	1490	390	49.7
		20.00	4	75	0.080	10.000	20.000	1195	380	76.4

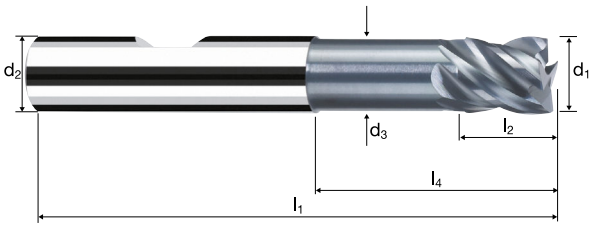
Cylindrical end mills NB-V

Smooth-edged, normal version with neck

HM MG10	λ 40° γ 0°

45°

Vario



Roughing

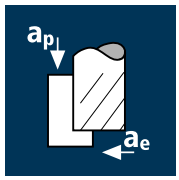
Finishing

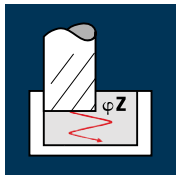
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

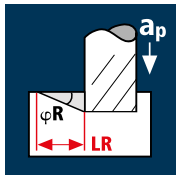
Example: **Order-N°.** Coating **P** Article-N°. **5325** ø-Code **180**

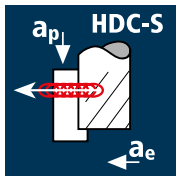
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P5325	P5225
180	3.00	6.00	2.80	57	4.00	14.00	20.63	0.10	4.5°	4		●
220	4.00	6.00	3.70	57	5.00	16.00	20.95	0.10	3.0°	4		●
260	5.00	6.00	4.60	57	6.00	18.00	21.27	0.15	1.5°	4		●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	0.15	0.0°	4		●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	0.15	0.0°	4		●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	0.20	0.0°	4		●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	0.20	0.0°	4		●
610	16.00	16.00	15.00	92	17.00	42.13	43.00	0.20	0.0°	4		●
682	20.00	20.00	19.00	104	21.00	52.13	53.00	0.20	0.0°	4		●

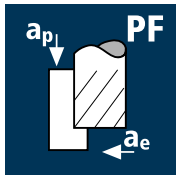
Application











Cutting data HX-NVS

Always up to date

The new cylindrical HX-NVS end mill has been developed for HPC and HDC rough machining of hardened steels (>55 HRC). The cutting data for the HX-NVS tools can be found in the latest product brochure and in our cutting data calculator ToolExpert.

Scan this QR code to start the cutting data calculator ToolExpert 2.0

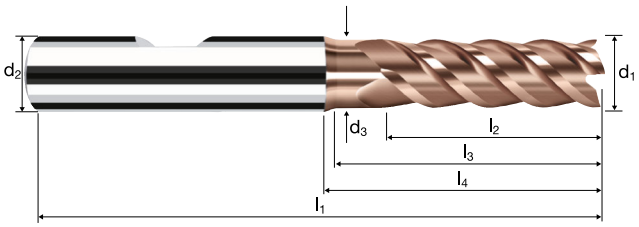
Cylindrical end mills HX-NVS

Smooth-edged, medium length version with short-neck
High-performance penetration edge

HM
XA

λ 45°
γ -10°

new!

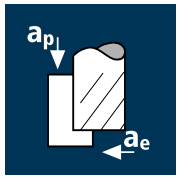
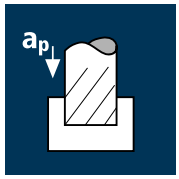


Roughing HPC | Roughing HDC | Finishing

HRC 48-56 | HRC 56-60 | HRC > 60 | HSS

Example: **Order-N°.** Coating **H** Article-N°. **8614** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	DURO-Si H8614	DURO-Si H8514
180	3.00	6.00	2.80	63	11.00	18.00	24.37	0.100	4.5°	4	●	
220	4.00	6.00	3.70	63	13.00	22.00	26.82	0.100	3.5°	4	●	
260	5.00	6.00	4.60	63	16.00	24.00	27.27	0.100	1.5°	4	●	
300	6.00	6.00	5.50	63	21.00	25.34	26.00	0.150	0.0°	4	●	
391	8.00	8.00	7.40	72	31.00	34.79	35.50	0.150	0.0°	4	●	
450	10.00	10.00	9.20	84	37.00	42.20	43.00	0.200	0.0°	4	●	
501	12.00	12.00	11.00	97	44.00	50.13	51.00	0.200	0.0°	4	●	
610	16.00	16.00	15.00	108	53.00	58.13	59.00	0.200	0.0°	4	●	
682	20.00	20.00	19.00	122	62.00	70.13	71.00	0.200	0.0°	4	●	

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 1100 - 1300 N/mm²	4.00	4	115	0.025	7.200	0.800	9150	915	5.3
		5.00	4	115	0.035	9.000	1.000	7320	1025	9.2
		6.00	4	115	0.040	10.800	1.200	6100	975	12.7
		8.00	4	115	0.055	14.400	1.600	4575	1005	23.2
		10.00	4	115	0.065	18.000	2.000	3660	950	34.3
		12.00	4	115	0.080	21.600	2.400	3050	975	50.6
		16.00	4	115	0.090	28.800	3.200	2290	825	75.9
		20.00	4	115	0.110	36.000	4.000	1830	805	116.0
	Steel 1300 - 1500 N/mm²	4.00	4	80	0.025	7.200	0.800	6365	635	3.7
		5.00	4	80	0.030	9.000	1.000	5095	610	5.5
		6.00	4	80	0.035	10.800	1.200	4245	595	7.7
		8.00	4	80	0.045	14.400	1.600	3185	575	13.2
		10.00	4	80	0.060	18.000	2.000	2545	610	22.0
		12.00	4	80	0.070	21.600	2.400	2120	595	30.8
		16.00	4	80	0.080	28.800	3.200	1590	510	46.9
		20.00	4	80	0.100	36.000	4.000	1275	510	73.3
	Hardened tool steel 52 - 56 HRC	4.00	4	50	0.015	7.200	0.800	3980	240	1.4
		5.00	4	50	0.020	9.000	1.000	3185	255	2.3
		6.00	4	50	0.020	10.800	1.200	2655	210	2.8
		8.00	4	50	0.025	14.400	1.600	1990	200	4.6
		10.00	4	50	0.035	18.000	2.000	1590	225	8.0
		12.00	4	50	0.040	21.600	2.400	1325	210	11.0
		16.00	4	50	0.050	28.800	3.200	995	200	18.3
		20.00	4	50	0.060	36.000	4.000	795	190	27.5
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	60	0.015	7.200	0.800	4775	285	1.7
		5.00	4	60	0.020	9.000	1.000	3820	305	2.8
		6.00	4	60	0.020	10.800	1.200	3185	255	3.3
		8.00	4	60	0.025	14.400	1.600	2385	240	5.5
		10.00	4	60	0.035	18.000	2.000	1910	265	9.6
		12.00	4	60	0.040	21.600	2.400	1590	255	13.2
		16.00	4	60	0.050	28.800	3.200	1195	240	22.0
		20.00	4	60	0.060	36.000	4.000	955	230	33.0
	Steel 1100 - 1300 N/mm²	4.00	4	90	0.015	6.000	4.000	7160	430	10.3
		5.00	4	90	0.015	7.500	5.000	5730	345	12.9
		6.00	4	90	0.020	9.000	6.000	4775	380	20.6
		8.00	4	90	0.025	12.000	8.000	3580	360	34.4
		10.00	4	90	0.035	15.000	10.000	2865	400	60.2
		12.00	4	90	0.040	18.000	12.000	2385	380	82.5
		16.00	4	90	0.050	24.000	16.000	1790	360	137.5
		20.00	4	90	0.060	30.000	20.000	1430	345	206.3
	Steel 1300 - 1500 N/mm²	4.00	4	65	0.010	6.000	4.000	5175	205	5.0
		5.00	4	65	0.015	7.500	5.000	4140	250	9.3
		6.00	4	65	0.020	9.000	6.000	3450	275	14.9
		8.00	4	65	0.025	12.000	8.000	2585	260	24.8
		10.00	4	65	0.030	15.000	10.000	2070	250	37.2
		12.00	4	65	0.035	18.000	12.000	1725	240	52.1
		16.00	4	65	0.045	24.000	16.000	1295	235	89.4
		20.00	4	65	0.055	30.000	20.000	1035	230	136.6
	Hardened tool steel 52 - 56 HRC	4.00	4	40	0.010	4.000	4.000	3185	125	2.0
		5.00	4	40	0.010	5.000	5.000	2545	100	2.5
		6.00	4	40	0.015	6.000	6.000	2120	125	4.6
		8.00	4	40	0.020	8.000	8.000	1590	125	8.1
		10.00	4	40	0.025	10.000	10.000	1275	125	12.7
		12.00	4	40	0.025	12.000	12.000	1060	105	15.3
		16.00	4	40	0.030	16.000	16.000	795	95	24.4
		20.00	4	40	0.040	20.000	20.000	635	100	40.7
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	50	0.010	6.000	4.000	3980	160	3.8
		5.00	4	50	0.015	7.500	5.000	3185	190	7.2
		6.00	4	50	0.020	9.000	6.000	2655	210	11.5
		8.00	4	50	0.025	12.000	8.000	1990	200	19.1
		10.00	4	50	0.030	15.000	10.000	1590	190	28.6
		12.00	4	50	0.035	18.000	12.000	1325	185	40.1
		16.00	4	50	0.045	24.000	16.000	995	180	68.8
		20.00	4	50	0.055	30.000	20.000	795	175	105.0

Cylindrical end mills NX-NVD

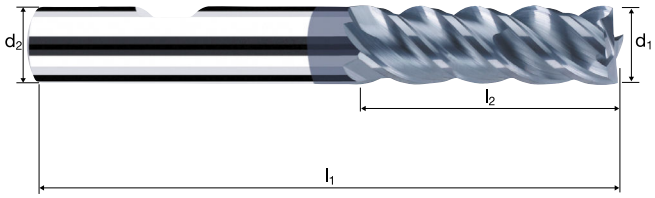
Smooth-edged, medium length version

X-Generation

HM MG10	λ 45° γ -20°

45°

Vario



Roughing HPC

Roughing HDC

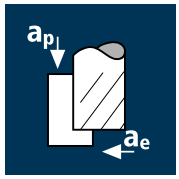
Finishing

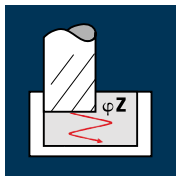
	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60			Ti Titanium	GG(G) Tool Steel

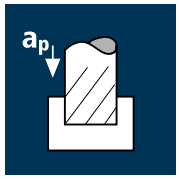
Example: **Order-N°.** Coating **P** Article-N°. **15323** ø-Code **220**

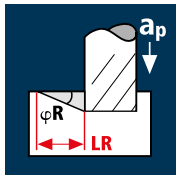
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P15323	POLYCHROM P15223
220	4.00	6.00	63	13.00	19.59	0.10	3.5°	4		●
260	5.00	6.00	63	16.00	20.72	0.15	1.5°	4		●
300	6.00	6.00	63	21.00	-	0.15	0.0°	4		●
391	8.00	8.00	72	31.00	-	0.15	0.0°	4		●
450	10.00	10.00	84	37.00	-	0.20	0.0°	4		●
501	12.00	12.00	97	44.00	-	0.20	0.0°	4		●
610	16.00	16.00	108	53.00	-	0.20	0.0°	4		●
682	20.00	20.00	122	62.00	-	0.20	0.0°	4		●

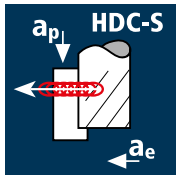
Application

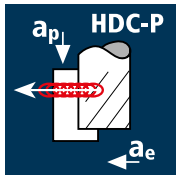


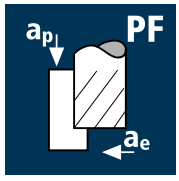


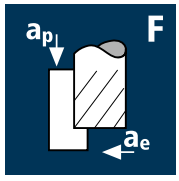












Cutting data calculator ToolExpert MFC

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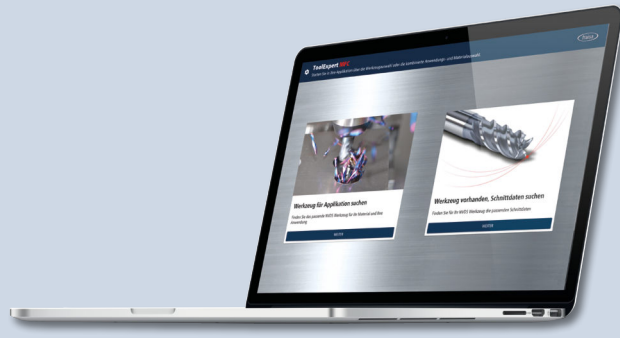


This way to the new cutting data calculator **ToolExpert MFC** or the FRAISA website **www.fraisa.com/en/toolexpert-mfc**

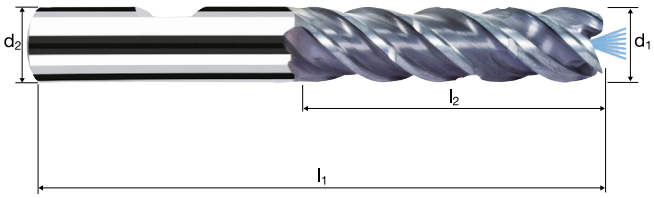
Cylindrical end mills MFC (MB-NVDS)

Smooth-edged with chip breaker, medium length version
High-performance penetration edge with central air/cooling channel

HM MG10	λ 45° γ 10°

r

Vario



Roughing HPC | Roughing HDC | Finishing

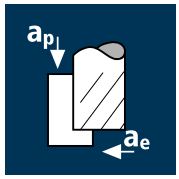
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

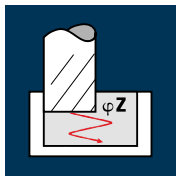
Example: **Order-N°.** Coating **P** Article-N°. **8211** ø-Code **220**

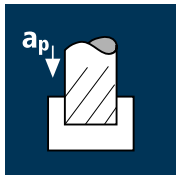
Ø Code	d_1 e8	d_2 h5	l_1	l_2	l_4	r	α	z	POLYCHROM P8211	POLYCHROM P8111
220*	4.00	6.00	63	13.00	19.59	0.100	3.5°	4		●
260*	5.00	6.00	63	16.00	20.72	0.100	1.5°	4		●
300	6.00	6.00	63	21.00	-	0.100	0.0°	4		●
391	8.00	8.00	72	31.00	-	0.150	0.0°	4		●
450	10.00	10.00	84	37.00	-	0.200	0.0°	4		●
501	12.00	12.00	97	44.00	-	0.200	0.0°	4		●
610	16.00	16.00	108	53.00	-	0.200	0.0°	4		●
682	20.00	20.00	122	62.00	-	0.200	0.0°	4		●

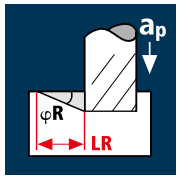
* without chip breaker only

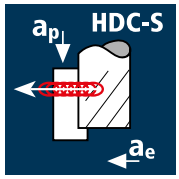
Application

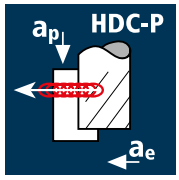


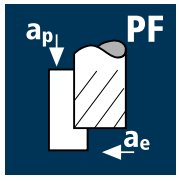


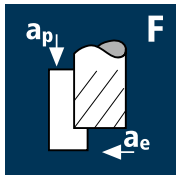












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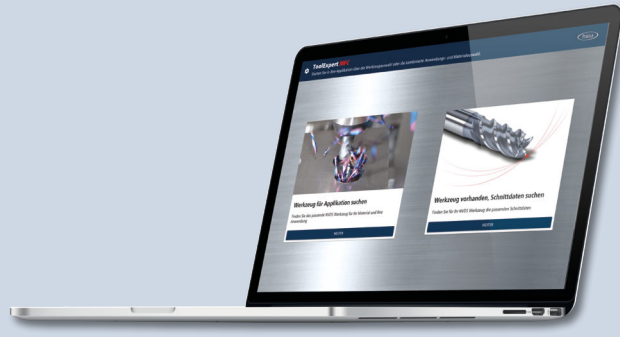

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Cylindrical end mills MFC (MB-NVDS)

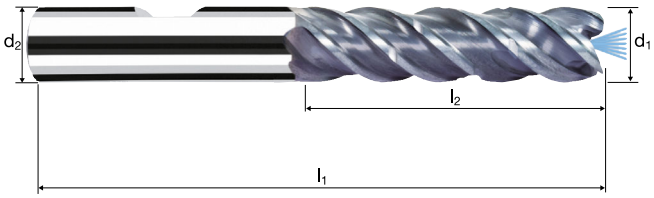
Smooth-edged with chip breaker, medium length version
High-performance penetration edge with central air/cooling channel

Base-X B

HM MG10	λ 45° γ 0°

r

Vario



Roughing HPC | Roughing HDC | Finishing

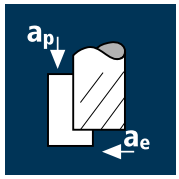
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

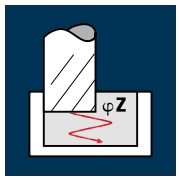
Example: **Order-N°.** Coating **P** Article-N°. **8212** ø-Code **220**

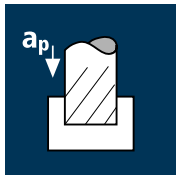
Ø Code	d_1 e8	d_2 h5	l_1	l_2	l_4	r	α	z	POLYCHROM P8212	POLYCHROM P8112
220*	4.00	6.00	63	13.00	19.59	0.100	3.5°	4		●
260*	5.00	6.00	63	16.00	20.72	0.100	1.5°	4		●
300	6.00	6.00	63	21.00	-	0.100	0.0°	4		●
391	8.00	8.00	72	31.00	-	0.150	0.0°	4		●
450	10.00	10.00	84	37.00	-	0.200	0.0°	4		●
501	12.00	12.00	97	44.00	-	0.200	0.0°	4		●
610	16.00	16.00	108	53.00	-	0.200	0.0°	4		●
682	20.00	20.00	122	62.00	-	0.200	0.0°	4		●

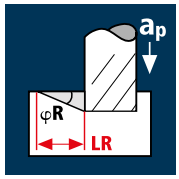
* without chip breaker only

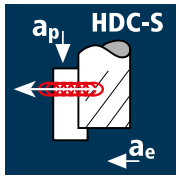
Application

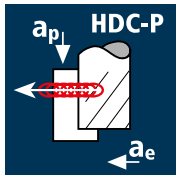


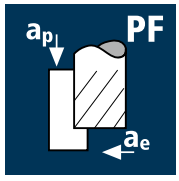


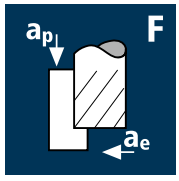












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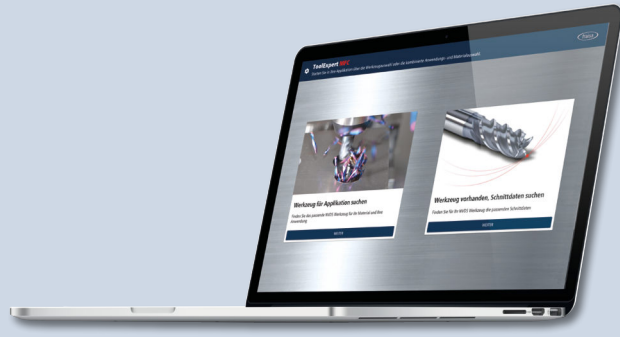

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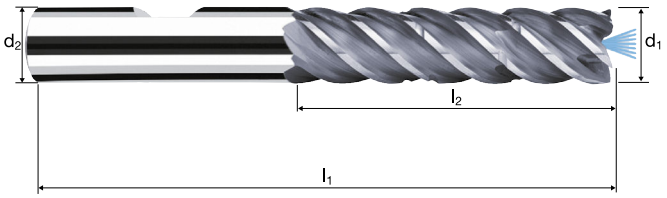
Cylindrical end mills MFC (MB-NVDS)

Smooth-edged with chip breaker, medium length version
High-performance penetration edge with central air/cooling channel

HM MG10	λ 45° γ 0°



Roughing HPC

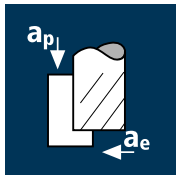
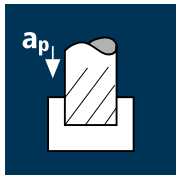
Roughing HDC

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8215** ø-Code **300**

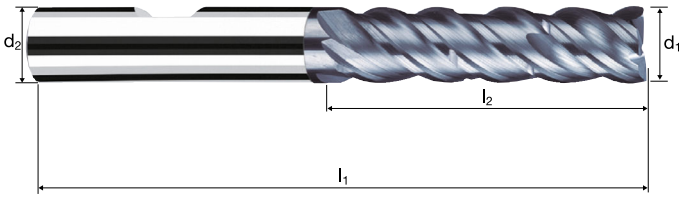
Ø Code	d_1 e8	d_2 h5	l_1	l_2	r	z	POLYCHROM P8215	POLYCHROM P8115
300	6.00	6.00	63	21.00	0.100	5		●
391	8.00	8.00	72	31.00	0.150	5		●
450	10.00	10.00	84	37.00	0.200	5		●
501	12.00	12.00	97	44.00	0.200	5		●
610	16.00	16.00	108	53.00	0.200	5		●
682	20.00	20.00	122	62.00	0.200	5		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	6.00	4	180	0.040	10.800	1.200	9550	1530	19.8
		8.00	4	180	0.050	14.400	1.600	7160	1430	33.0
		10.00	4	180	0.065	18.000	2.000	5730	1490	53.6
		12.00	4	180	0.075	21.600	2.400	4775	1430	74.3
		16.00	4	180	0.085	28.800	3.200	3580	1220	112.2
		20.00	4	180	0.105	36.000	4.000	2865	1205	173.3
	Steel 850 - 1100 N/mm²	6.00	4	140	0.040	10.800	1.200	7425	1190	15.4
		8.00	4	140	0.050	14.400	1.600	5570	1115	25.7
		10.00	4	140	0.065	18.000	2.000	4455	1160	41.7
		12.00	4	140	0.075	21.600	2.400	3715	1115	57.8
		16.00	4	140	0.085	28.800	3.200	2785	945	87.3
		20.00	4	140	0.105	36.000	4.000	2230	935	134.8
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	70	0.035	10.800	1.200	3715	520	6.7
		8.00	4	70	0.045	14.400	1.600	2785	500	11.6
		10.00	4	70	0.060	18.000	2.000	2230	535	19.3
		12.00	4	70	0.070	21.600	2.400	1855	520	27.0
		16.00	4	70	0.080	28.800	3.200	1395	445	41.1
		20.00	4	70	0.100	36.000	4.000	1115	445	64.2
	Stainless steel [Cr-Ni/1.4301]	6.00	4	85	0.025	10.800	1.200	4510	450	5.8
		8.00	4	85	0.030	14.400	1.600	3380	405	9.4
		10.00	4	85	0.040	18.000	2.000	2705	435	15.6
		12.00	4	85	0.050	21.600	2.400	2255	450	23.4
		16.00	4	85	0.055	28.800	3.200	1690	370	34.3
		20.00	4	85	0.070	36.000	4.000	1355	380	54.5
	Steel < 850 N/mm²	6.00	4	145	0.020	8.100	6.000	7690	615	29.9
		8.00	4	145	0.025	10.800	8.000	5770	575	49.8
		10.00	4	145	0.035	13.500	10.000	4615	645	87.2
		12.00	4	145	0.040	16.200	12.000	3845	615	119.6
		16.00	4	145	0.050	19.200	16.000	2885	575	177.2
		20.00	4	145	0.060	24.000	20.000	2310	555	265.9
	Steel 850 - 1100 N/mm²	6.00	4	105	0.020	8.100	6.000	5570	445	21.7
		8.00	4	105	0.025	10.800	8.000	4180	420	36.1
		10.00	4	105	0.035	13.500	10.000	3340	470	63.2
		12.00	4	105	0.040	16.200	12.000	2785	445	86.6
		16.00	4	105	0.050	19.200	16.000	2090	420	128.3
		20.00	4	105	0.060	24.000	20.000	1670	400	192.5
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	55	0.020	8.100	6.000	2920	235	11.3
		8.00	4	55	0.025	10.800	8.000	2190	220	18.9
		10.00	4	55	0.030	13.500	10.000	1750	210	28.4
		12.00	4	55	0.035	16.200	12.000	1460	205	39.7
		16.00	4	55	0.045	19.200	16.000	1095	195	60.5
		20.00	4	55	0.055	24.000	20.000	875	195	92.4
	Stainless steel [Cr-Ni/1.4301]	6.00	4	65	0.015	8.100	6.000	3450	205	10.1
		8.00	4	65	0.020	10.800	8.000	2585	205	17.9
		10.00	4	65	0.025	13.500	10.000	2070	205	27.9
		12.00	4	65	0.030	16.200	12.000	1725	205	40.2
		16.00	4	65	0.035	19.200	16.000	1295	180	55.6
		20.00	4	65	0.045	24.000	20.000	1035	185	89.4

Cylindrical end mills NB-NVD

Smooth-edged with chip breaker, medium length version

HM MG10	λ 45° γ 0°



Roughing HPC

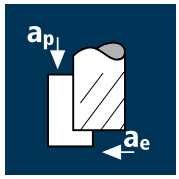
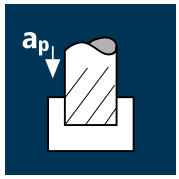
Roughing HDC

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **15310** ø-Code **300**

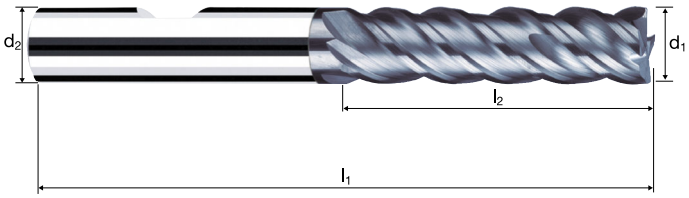
Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z	POLYCHROM P15310	POLYCHROM P15210
300	6.00	6.00	63	21.00	0.15	4		●
391	8.00	8.00	72	31.00	0.15	4		●
450	10.00	10.00	84	37.00	0.20	4		●
501	12.00	12.00	97	44.00	0.20	4		●
610	16.00	16.00	108	53.00	0.20	4		●
682	20.00	20.00	122	62.00	0.20	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	4.00	4	180	0.025	7.200	0.800	14325	1430	8.3
		5.00	4	180	0.030	9.000	1.000	11460	1375	12.4
		6.00	4	180	0.040	10.800	1.200	9550	1530	19.8
		8.00	4	180	0.050	14.400	1.600	7160	1430	33.0
		10.00	4	180	0.065	18.000	2.000	5730	1490	53.6
		12.00	4	180	0.075	21.600	2.400	4775	1430	74.3
		16.00	4	180	0.085	28.800	3.200	3580	1220	112.2
		20.00	4	180	0.105	36.000	4.000	2865	1205	173.3
	Steel 850 - 1100 N/mm²	4.00	4	140	0.025	7.200	0.800	11140	1115	6.4
		5.00	4	140	0.030	9.000	1.000	8915	1070	9.6
		6.00	4	140	0.040	10.800	1.200	7425	1190	15.4
		8.00	4	140	0.050	14.400	1.600	5570	1115	25.7
		10.00	4	140	0.065	18.000	2.000	4455	1160	41.7
		12.00	4	140	0.075	21.600	2.400	3715	1115	57.8
		16.00	4	140	0.085	28.800	3.200	2785	945	87.3
		20.00	4	140	0.105	36.000	4.000	2230	935	134.8
	Cold work tool steel (12% Cr), high alloyed [1.2379]	4.00	4	70	0.025	7.200	0.800	5570	555	3.2
		5.00	4	70	0.030	9.000	1.000	4455	535	4.8
		6.00	4	70	0.035	10.800	1.200	3715	520	6.7
		8.00	4	70	0.045	14.400	1.600	2785	500	11.6
		10.00	4	70	0.060	18.000	2.000	2230	535	19.3
		12.00	4	70	0.070	21.600	2.400	1855	520	27.0
		16.00	4	70	0.080	28.800	3.200	1395	445	41.1
		20.00	4	70	0.100	36.000	4.000	1115	445	64.2
	Stainless steel [Cr-Ni/1.4301]	4.00	4	85	0.020	7.200	0.800	6765	540	3.1
		5.00	4	85	0.020	9.000	1.000	5410	435	3.9
		6.00	4	85	0.025	10.800	1.200	4510	450	5.8
		8.00	4	85	0.030	14.400	1.600	3380	405	9.4
		10.00	4	85	0.040	18.000	2.000	2705	435	15.6
		12.00	4	85	0.050	21.600	2.400	2255	450	23.4
		16.00	4	85	0.055	28.800	3.200	1690	370	34.3
		20.00	4	85	0.070	36.000	4.000	1355	380	54.5
	Steel < 850 N/mm²	4.00	4	145	0.015	5.400	4.000	11540	690	15.0
		5.00	4	145	0.015	6.750	5.000	9230	555	18.7
		6.00	4	145	0.020	8.100	6.000	7690	615	29.9
		8.00	4	145	0.025	10.800	8.000	5770	575	49.8
		10.00	4	145	0.035	13.500	10.000	4615	645	87.2
		12.00	4	145	0.040	16.200	12.000	3845	615	119.6
		16.00	4	145	0.050	19.200	16.000	2885	575	177.2
		20.00	4	145	0.060	24.000	20.000	2310	555	265.9
	Steel 850 - 1100 N/mm²	4.00	4	105	0.015	5.400	4.000	8355	500	10.8
		5.00	4	105	0.015	6.750	5.000	6685	400	13.5
		6.00	4	105	0.020	8.100	6.000	5570	445	21.7
		8.00	4	105	0.025	10.800	8.000	4180	420	36.1
		10.00	4	105	0.035	13.500	10.000	3340	470	63.2
		12.00	4	105	0.040	16.200	12.000	2785	445	86.6
		16.00	4	105	0.050	19.200	16.000	2090	420	128.3
		20.00	4	105	0.060	24.000	20.000	1670	400	192.5
	Cold work tool steel (12% Cr), high alloyed [1.2379]	4.00	4	55	0.010	5.400	4.000	4375	175	3.8
		5.00	4	55	0.015	6.750	5.000	3500	210	7.1
		6.00	4	55	0.020	8.100	6.000	2920	235	11.3
		8.00	4	55	0.025	10.800	8.000	2190	220	18.9
		10.00	4	55	0.030	13.500	10.000	1750	210	28.4
		12.00	4	55	0.035	16.200	12.000	1460	205	39.7
		16.00	4	55	0.045	19.200	16.000	1095	195	60.5
		20.00	4	55	0.055	24.000	20.000	875	195	92.4
	Stainless steel [Cr-Ni/1.4301]	4.00	4	65	0.010	5.400	4.000	5175	205	4.5
		5.00	4	65	0.010	6.750	5.000	4140	165	5.6
		6.00	4	65	0.015	8.100	6.000	3450	205	10.1
		8.00	4	65	0.020	10.800	8.000	2585	205	17.9
		10.00	4	65	0.025	13.500	10.000	2070	205	27.9
		12.00	4	65	0.030	16.200	12.000	1725	205	40.2
		16.00	4	65	0.035	19.200	16.000	1295	180	55.6
		20.00	4	65	0.045	24.000	20.000	1035	185	89.4

Cylindrical end mills NB-NVD

Smooth-edged, medium length version

HM MG10	λ 45° γ 0°



Roughing HPC

Roughing HDC

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **15308** ø-Code **220**

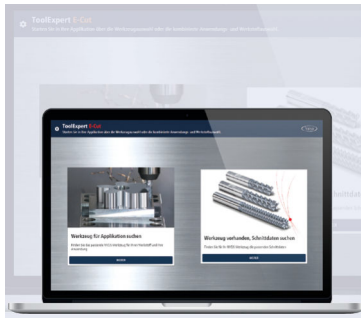
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P15308	POLYCHROM P15208
220	4.00	6.00	63	13.00	19.59	0.10	3.5°	4		●
260	5.00	6.00	63	16.00	20.72	0.15	1.5°	4		●
300	6.00	6.00	63	21.00	-	0.15	0.0°	4		●
391	8.00	8.00	72	31.00	-	0.15	0.0°	4		●
450	10.00	10.00	84	37.00	-	0.20	0.0°	4		●
501	12.00	12.00	97	44.00	-	0.20	0.0°	4		●
610	16.00	16.00	108	53.00	-	0.20	0.0°	4		●
682	20.00	20.00	122	62.00	-	0.20	0.0°	4		●

ToolExpert E-Cut

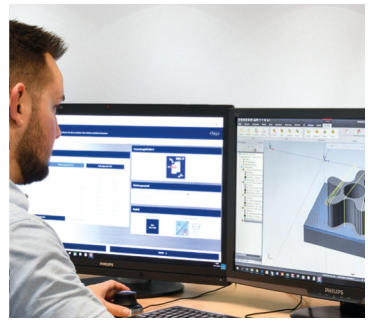
FRAISA's cutting data calculator **ToolExpert E-Cut** provides tool and material-specific cutting data for production and is the basis for precision use of **FRAISA E-Cut** tools.

This innovative software solution is **very user-friendly**: simply select the material, application and tool and the software provides you with the right cutting data. **ToolExpert E-Cut** can then transfer the tool geometry data straight to your CAM system.

Fast, safe and reliable.



Selecting the material, application and tool to obtain the right cutting data



Transferring the cutting data and tool geometry data to the CAM system

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Cylindrical end mills E-Cut

Smooth-edged with chip breaker, medium length version

HM MG10

λ 45°
γ 10°

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Vario

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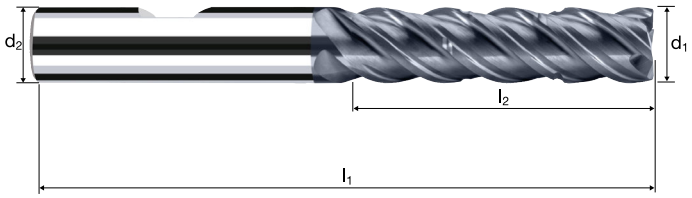


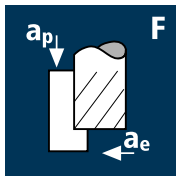
Roughing HPC | Roughing HDC | Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8410** ø-Code **140**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r	α	z	POLYCHROM P8410	POLYCHROM P8310
140*	2.00	6.00	63	7.00	17.12	0.050	7.0°	4		●
180*	3.00	6.00	63	11.00	20.26	0.050	4.5°	4		●
220*	4.00	6.00	63	13.00	21.39	0.100	3.5°	4		●
260*	5.00	6.00	63	16.00	23.52	0.100	1.5°	4		●
300	6.00	6.00	63	21.00	-	0.100	0.0°	4		●
391	8.00	8.00	72	31.00	-	0.150	0.0°	4		●
450	10.00	10.00	84	37.00	-	0.200	0.0°	4		●
501	12.00	12.00	97	44.00	-	0.200	0.0°	4		●
610	16.00	16.00	108	53.00	-	0.200	0.0°	4		●
682	20.00	20.00	122	62.00	-	0.250	0.0°	4		●

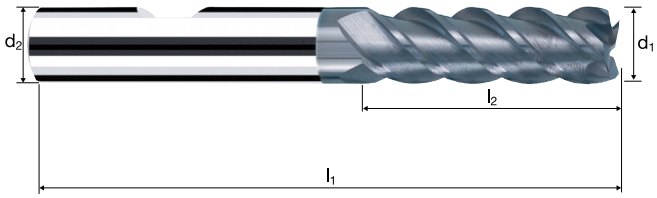
* without chip breaker only

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	2.00	4	130	0.005	4.000	0.160	20690	415
		3.00	4	130	0.010	6.000	0.240	13795	550
		4.00	4	130	0.010	8.000	0.320	10345	415
		6.00	4	130	0.015	12.000	0.480	6895	415
		8.00	4	130	0.025	16.000	0.640	5175	515
		10.00	4	130	0.030	20.000	0.800	4140	495
		12.00	4	130	0.035	24.000	0.960	3450	485
		16.00	4	130	0.045	32.000	1.280	2585	465
		20.00	4	130	0.055	40.000	1.600	2070	455
	Steel 850 - 1100 N/mm²	2.00	4	85	0.005	4.000	0.160	13530	270
		3.00	4	85	0.010	6.000	0.240	9020	360
		4.00	4	85	0.010	8.000	0.320	6765	270
		6.00	4	85	0.015	12.000	0.480	4510	270
		8.00	4	85	0.025	16.000	0.640	3380	340
		10.00	4	85	0.030	20.000	0.800	2705	325
		12.00	4	85	0.035	24.000	0.960	2255	315
		16.00	4	85	0.045	32.000	1.280	1690	305
		20.00	4	85	0.055	40.000	1.600	1355	300
	Steel 1100 - 1300 N/mm²	2.00	4	60	0.005	4.000	0.160	9550	190
		3.00	4	60	0.010	6.000	0.240	6365	255
		4.00	4	60	0.010	8.000	0.320	4775	190
		6.00	4	60	0.015	12.000	0.480	3185	190
		8.00	4	60	0.025	16.000	0.640	2385	240
		10.00	4	60	0.030	20.000	0.800	1910	230
		12.00	4	60	0.035	24.000	0.960	1590	225
		16.00	4	60	0.045	32.000	1.280	1195	215
		20.00	4	60	0.055	40.000	1.600	955	210
	Stainless steel [Cr-Ni/1.4301]	2.00	4	70	0.005	4.000	0.160	11140	225
		3.00	4	70	0.010	6.000	0.240	7425	295
		4.00	4	70	0.010	8.000	0.320	5570	225
		6.00	4	70	0.015	12.000	0.480	3715	225
		8.00	4	70	0.025	16.000	0.640	2785	280
		10.00	4	70	0.030	20.000	0.800	2230	265
		12.00	4	70	0.035	24.000	0.960	1855	260
		16.00	4	70	0.045	32.000	1.280	1395	250
		20.00	4	70	0.055	40.000	1.600	1115	245
	Cast iron (lamellar / spheroidal)	2.00	4	95	0.005	4.000	0.160	15120	300
		3.00	4	95	0.010	6.000	0.240	10080	405
		4.00	4	95	0.010	8.000	0.320	7560	300
		6.00	4	95	0.015	12.000	0.480	5040	300
		8.00	4	95	0.025	16.000	0.640	3780	380
		10.00	4	95	0.030	20.000	0.800	3025	365
		12.00	4	95	0.035	24.000	0.960	2520	355
		16.00	4	95	0.045	32.000	1.280	1890	340
		20.00	4	95	0.055	40.000	1.600	1510	335
	Unalloyed copper	2.00	4	180	0.005	4.000	0.160	28650	575
		3.00	4	180	0.010	6.000	0.240	19100	765
		4.00	4	180	0.010	8.000	0.320	14325	575
		6.00	4	180	0.015	12.000	0.480	9550	575
		8.00	4	180	0.025	16.000	0.640	7160	715
		10.00	4	180	0.030	20.000	0.800	5730	690
		12.00	4	180	0.035	24.000	0.960	4775	670
		16.00	4	180	0.045	32.000	1.280	3580	645
		20.00	4	180	0.055	40.000	1.600	2865	630
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.00	4	80	0.005	4.000	0.160	12730	255
		3.00	4	80	0.010	6.000	0.240	8490	340
		4.00	4	80	0.010	8.000	0.320	6365	255
		6.00	4	80	0.015	12.000	0.480	4245	255
		8.00	4	80	0.025	16.000	0.640	3185	320
		10.00	4	80	0.030	20.000	0.800	2545	305
		12.00	4	80	0.035	24.000	0.960	2120	295
		16.00	4	80	0.045	32.000	1.280	1590	285
		20.00	4	80	0.055	40.000	1.600	1275	280
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	2.00	4	30	0.005	4.000	0.160	4775	95
		3.00	4	30	0.010	6.000	0.240	3185	125
		4.00	4	30	0.010	8.000	0.320	2385	95
		6.00	4	30	0.015	12.000	0.480	1590	95
		8.00	4	30	0.025	16.000	0.640	1195	120
		10.00	4	30	0.030	20.000	0.800	955	115
		12.00	4	30	0.035	24.000	0.960	795	110
		16.00	4	30	0.045	32.000	1.280	595	105
		20.00	4	30	0.055	40.000	1.600	475	105

Cylindrical end mills

Smooth-edged, medium length version

HM MG10	λ 45° γ 15°



Roughing

Finishing

ToolSchool

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **15343** ø-Code **140**

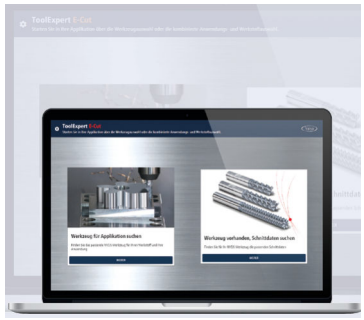
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P15343	POLYCHROM P15243
140	2.00	6.00	63	12.00	20.92	0.10	6.0°	4		●
160	2.50	6.00	63	13.00	21.49	0.10	5.0°	4		●
180	3.00	6.00	63	14.00	21.56	0.10	4.5°	4		●
220	4.00	6.00	63	17.00	23.09	0.10	3.0°	4		●
260	5.00	6.00	63	19.00	23.22	0.15	1.5°	4		●
300	6.00	6.00	63	19.00	-	0.15	0.0°	4		●
391	8.00	8.00	72	28.00	-	0.15	0.0°	4		●
450	10.00	10.00	84	34.00	-	0.20	0.0°	4		●
501	12.00	12.00	97	40.00	-	0.20	0.0°	4		●
610	16.00	16.00	108	48.00	-	0.20	0.0°	4		●
682	20.00	20.00	122	56.00	-	0.20	0.0°	4		●
772	25.00	25.00	144	70.00	-	0.25	0.0°	4		●

ToolExpert E-Cut

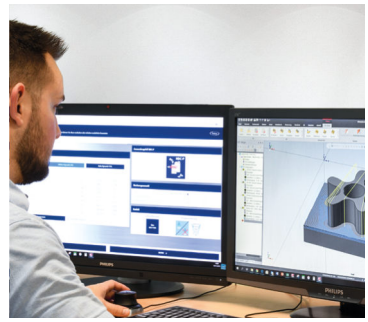
FRAISA's cutting data calculator **ToolExpert E-Cut** provides tool and material-specific cutting data for production and is the basis for precision use of **FRAISA E-Cut** tools.

This innovative software solution is **very user-friendly**: simply select the material, application and tool and the software provides you with the right cutting data. **ToolExpert E-Cut** can then transfer the tool geometry data straight to your CAM system.

Fast, safe and reliable.



Selecting the material, application and tool to obtain the right cutting data



Transferring the cutting data and tool geometry data to the CAM system

To complement existing solutions and for all future applications

EASY TO USE
EFFECTIVE
ECONOMIC

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Cylindrical end mills E-Cut

Smooth-edged with chip breaker, medium length version

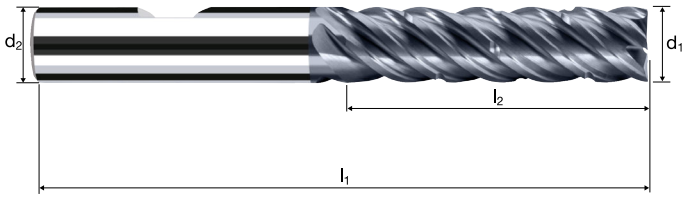
HM
MG10

λ 45°
γ 10°

r

Vario

new!



Roughing HPC | Roughing HDC | Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8415** ø-Code **220**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r	α	z	POLYCHROM P8415	POLYCHROM P8315
220*	4.00	6.00	63	13.00	21.39	0.100	3.0°	5		●
260*	5.00	6.00	63	16.00	23.52	0.100	1.5°	5		●
300	6.00	6.00	63	21.00	-	0.100	0.0°	5		●
391	8.00	8.00	72	31.00	-	0.150	0.0°	5		●
450	10.00	10.00	84	37.00	-	0.200	0.0°	5		●
501	12.00	12.00	97	44.00	-	0.200	0.0°	5		●
610	16.00	16.00	108	53.00	-	0.200	0.0°	5		●
682	20.00	20.00	122	62.00	-	0.250	0.0°	5		●

* without chip breaker only

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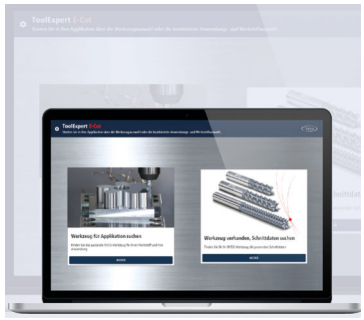
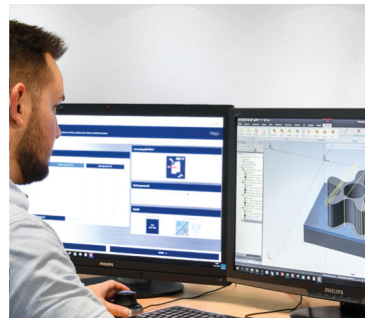
Fast, safe and reliable.



Selecting the material, application and tool to obtain the right cutting data



Transferring the cutting data and tool geometry data to the CAM system

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Cylindrical end mills E-Cut

Smooth-edged with chip breaker, medium length version

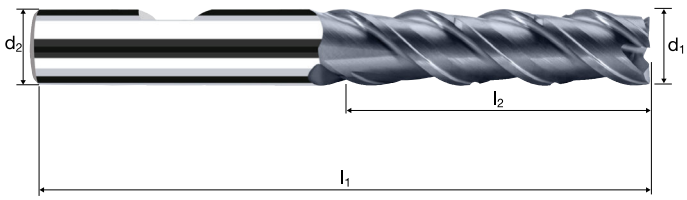
HM MG10

λ 45°
γ 10°

r

Vario

new!



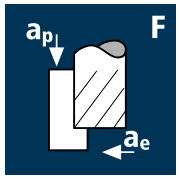
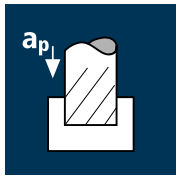
Roughing HPC | Roughing HDC | Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8413** ø-Code **140**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r	α	z	POLYCHROM P8413	POLYCHROM P8313
140*	2.00	6.00	63	7.00	17.12	0.050	7.0°	3		●
180*	3.00	6.00	63	11.00	20.26	0.050	4.5°	3		●
220*	4.00	6.00	63	13.00	21.39	0.100	3.0°	3		●
260*	5.00	6.00	63	16.00	23.52	0.100	1.5°	3		●
300	6.00	6.00	63	21.00	-	0.100	0.0°	3		●
391	8.00	8.00	72	31.00	-	0.150	0.0°	3		●
450	10.00	10.00	84	37.00	-	0.200	0.0°	3		●
501	12.00	12.00	97	44.00	-	0.200	0.0°	3		●
610	16.00	16.00	108	53.00	-	0.200	0.0°	3		●
682	20.00	20.00	122	62.00	-	0.250	0.0°	3		●

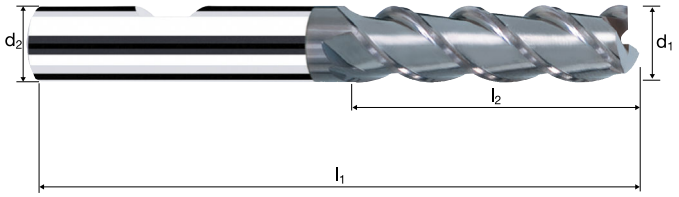
* without chip breaker only

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min-1]	v_f [mm/min]
	Steel < 850 N/mm²	2.00	3	95	0.005	5.000	0.100	15120	225
		3.00	3	95	0.010	7.500	0.150	10080	300
		4.00	3	95	0.010	10.000	0.200	7560	225
		6.00	3	95	0.015	15.000	0.300	5040	225
		8.00	3	95	0.020	20.000	0.400	3780	225
		10.00	3	95	0.025	25.000	0.500	3025	225
		12.00	3	95	0.030	30.000	0.600	2520	225
		16.00	3	95	0.040	40.000	0.800	1890	225
		20.00	3	95	0.050	50.000	1.000	1510	225
	Steel 850 - 1100 N/mm²	2.00	3	75	0.005	5.000	0.100	11935	180
		3.00	3	75	0.010	7.500	0.150	7960	240
		4.00	3	75	0.010	10.000	0.200	5970	180
		6.00	3	75	0.015	15.000	0.300	3980	180
		8.00	3	75	0.020	20.000	0.400	2985	180
		10.00	3	75	0.025	25.000	0.500	2385	180
		12.00	3	75	0.030	30.000	0.600	1990	180
		16.00	3	75	0.040	40.000	0.800	1490	180
		20.00	3	75	0.050	50.000	1.000	1195	180
	Cast iron (lamellar / spheroidal)	2.00	3	150	0.005	5.000	0.100	23875	360
		3.00	3	150	0.010	7.500	0.150	15915	475
		4.00	3	150	0.010	10.000	0.200	11935	360
		6.00	3	150	0.015	15.000	0.300	7960	360
		8.00	3	150	0.020	20.000	0.400	5970	360
		10.00	3	150	0.025	25.000	0.500	4775	360
		12.00	3	150	0.030	30.000	0.600	3980	360
		16.00	3	150	0.040	40.000	0.800	2985	360
		20.00	3	150	0.050	50.000	1.000	2385	360
	Stainless steel [Cr-Ni/1.4301]	2.00	3	40	0.005	5.000	0.100	6365	95
		3.00	3	40	0.010	7.500	0.150	4245	125
		4.00	3	40	0.010	10.000	0.200	3185	95
		6.00	3	40	0.015	15.000	0.300	2120	95
		8.00	3	40	0.020	20.000	0.400	1590	95
		10.00	3	40	0.025	25.000	0.500	1275	95
		12.00	3	40	0.030	30.000	0.600	1060	95
		16.00	3	40	0.040	40.000	0.800	795	95
		20.00	3	40	0.050	50.000	1.000	635	95
	Steel < 850 N/mm²	2.00	3	70	0.005	0.400	2.000	11140	165
		3.00	3	70	0.005	0.600	3.000	7425	110
		4.00	3	70	0.010	0.800	4.000	5570	165
		6.00	3	70	0.010	1.200	6.000	3715	110
		8.00	3	70	0.015	1.600	8.000	2785	125
		10.00	3	70	0.020	2.000	10.000	2230	135
		12.00	3	70	0.025	2.400	12.000	1855	140
		16.00	3	70	0.035	3.200	16.000	1395	145
		20.00	3	70	0.040	4.000	20.000	1115	135
	Steel 850 - 1100 N/mm²	2.00	3	60	0.005	0.400	2.000	9550	145
		3.00	3	60	0.005	0.600	3.000	6365	95
		4.00	3	60	0.010	0.800	4.000	4775	145
		6.00	3	60	0.010	1.200	6.000	3185	95
		8.00	3	60	0.015	1.600	8.000	2385	105
		10.00	3	60	0.020	2.000	10.000	1910	115
		12.00	3	60	0.025	2.400	12.000	1590	120
		16.00	3	60	0.035	3.200	16.000	1195	125
		20.00	3	60	0.040	4.000	20.000	955	115
	Cast iron (lamellar / spheroidal)	2.00	3	105	0.005	0.400	2.000	16710	250
		3.00	3	105	0.005	0.600	3.000	11140	165
		4.00	3	105	0.010	0.800	4.000	8355	250
		6.00	3	105	0.010	1.200	6.000	5570	165
		8.00	3	105	0.015	1.600	8.000	4180	190
		10.00	3	105	0.020	2.000	10.000	3340	200
		12.00	3	105	0.025	2.400	12.000	2785	210
		16.00	3	105	0.035	3.200	16.000	2090	220
		20.00	3	105	0.040	4.000	20.000	1670	200
	Stainless steel [Cr-Ni/1.4301]	2.00	3	30	0.005	0.400	2.000	4775	70
		3.00	3	30	0.005	0.600	3.000	3185	50
		4.00	3	30	0.010	0.800	4.000	2385	70
		6.00	3	30	0.010	1.200	6.000	1590	50
		8.00	3	30	0.015	1.600	8.000	1195	55
		10.00	3	30	0.020	2.000	10.000	955	55
		12.00	3	30	0.025	2.400	12.000	795	60
		16.00	3	30	0.035	3.200	16.000	595	65
		20.00	3	30	0.040	4.000	20.000	475	55

Cylindrical end mills

Smooth-edged, medium length version

HM MG10	λ 45° γ 15°



Roughing

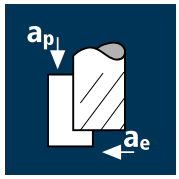
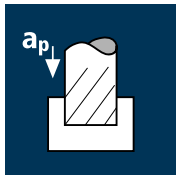
Finishing

ToolSchool

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **5332** ø-Code **140**

										5332	POLYCHROM P5332
Ø Code	d_1 e8	d_2 h6		l_1	l_2	l_4	45°	α	z		
140	2.00	6.00		63	12.00	20.92	0.10	6.0°	3		●
160	2.50	6.00		63	13.00	21.49	0.10	5.0°	3		●
180	3.00	6.00		63	14.00	21.56	0.10	4.5°	3		●
220	4.00	6.00		63	17.00	23.09	0.10	3.0°	3		●
260	5.00	6.00		63	19.00	23.22	0.15	1.5°	3		●
300	6.00	6.00		63	19.00	-	0.15	0.0°	3		●
331	7.00	8.00		72	24.00	28.22	0.15	1.5°	3		●
391	8.00	8.00		72	28.00	-	0.15	0.0°	3		●
420	9.00	10.00		84	28.00	32.22	0.20	1.0°	3		●
450	10.00	10.00		84	34.00	-	0.20	0.0°	3		●
501	12.00	12.00		97	40.00	-	0.20	0.0°	3		●
610	16.00	16.00		108	48.00	-	0.20	0.0°	3		●
682	20.00	20.00		122	56.00	-	0.20	0.0°	3		●

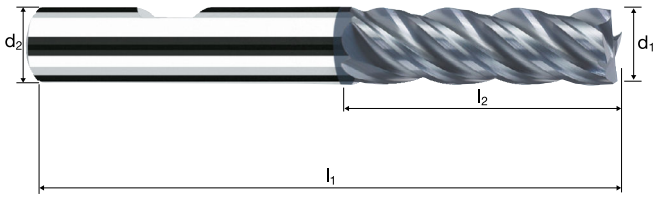
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	3.00	4	170	0.010	5.400	0.600	18040	720	2.3
		4.00	4	170	0.015	7.200	0.800	13530	810	4.7
		5.00	4	170	0.020	9.000	1.000	10825	865	7.8
		6.00	4	170	0.025	10.800	1.200	9020	900	11.7
		8.00	4	170	0.035	14.400	1.600	6765	945	21.8
		10.00	4	170	0.045	18.000	2.000	5410	975	35.1
		12.00	4	170	0.050	21.600	2.400	4510	900	46.8
		16.00	4	170	0.065	28.800	3.200	3380	880	81.0
		20.00	4	170	0.080	36.000	4.000	2705	865	124.7
	Steel 850 - 1100 N/mm²	3.00	4	120	0.010	5.400	0.600	12730	510	1.7
		4.00	4	120	0.015	7.200	0.800	9550	575	3.3
		5.00	4	120	0.020	9.000	1.000	7640	610	5.5
		6.00	4	120	0.025	10.800	1.200	6365	635	8.3
		8.00	4	120	0.035	14.400	1.600	4775	670	15.4
		10.00	4	120	0.045	18.000	2.000	3820	690	24.8
		12.00	4	120	0.050	21.600	2.400	3185	635	33.0
		16.00	4	120	0.065	28.800	3.200	2385	620	57.2
		20.00	4	120	0.080	36.000	4.000	1910	610	88.0
	Stainless steel [Cr-Ni/1.4301]	3.00	4	80	0.008	5.400	0.600	8490	270	0.9
		4.00	4	80	0.010	7.200	0.800	6365	255	1.5
		5.00	4	80	0.015	9.000	1.000	5095	305	2.8
		6.00	4	80	0.020	10.800	1.200	4245	340	4.4
		8.00	4	80	0.025	14.400	1.600	3185	320	7.3
		10.00	4	80	0.030	18.000	2.000	2545	305	11.0
		12.00	4	80	0.035	21.600	2.400	2120	295	15.4
		16.00	4	80	0.045	28.800	3.200	1590	285	26.4
		20.00	4	80	0.055	36.000	4.000	1275	280	40.3
	Cast iron (lamellar / spheroidal)	3.00	4	135	0.012	5.400	0.600	14325	690	2.2
		4.00	4	135	0.015	7.200	0.800	10745	645	3.7
		5.00	4	135	0.020	9.000	1.000	8595	690	6.2
		6.00	4	135	0.030	10.800	1.200	7160	860	11.1
		8.00	4	135	0.040	14.400	1.600	5370	860	19.8
		10.00	4	135	0.050	18.000	2.000	4295	860	30.9
		12.00	4	135	0.055	21.600	2.400	3580	790	40.8
		16.00	4	135	0.070	28.800	3.200	2685	750	69.3
		20.00	4	135	0.090	36.000	4.000	2150	775	111.4
	Steel < 850 N/mm²	3.00	4	135	0.008	1.800	3.000	14325	460	2.5
		4.00	4	135	0.010	2.800	4.000	10745	430	4.8
		5.00	4	135	0.015	4.000	5.000	8595	515	10.3
		6.00	4	135	0.020	6.000	6.000	7160	575	20.6
		8.00	4	135	0.025	8.000	8.000	5370	535	34.4
		10.00	4	135	0.035	10.000	10.000	4295	600	60.2
		12.00	4	135	0.040	12.000	12.000	3580	575	82.5
		16.00	4	135	0.050	8.000	16.000	2685	535	68.8
		20.00	4	135	0.060	10.000	20.000	2150	515	103.1
	Steel 850 - 1100 N/mm²	3.00	4	95	0.008	1.800	3.000	10080	325	1.7
		4.00	4	95	0.010	2.800	4.000	7560	300	3.4
		5.00	4	95	0.015	4.000	5.000	6050	365	7.3
		6.00	4	95	0.020	6.000	6.000	5040	405	14.5
		8.00	4	95	0.025	8.000	8.000	3780	380	24.2
		10.00	4	95	0.035	10.000	10.000	3025	425	42.3
		12.00	4	95	0.040	12.000	12.000	2520	405	58.1
		16.00	4	95	0.050	8.000	16.000	1890	380	48.4
		20.00	4	95	0.060	10.000	20.000	1510	365	72.6
	Stainless steel [Cr-Ni/1.4301]	3.00	4	65	0.006	1.800	3.000	6895	165	0.9
		4.00	4	65	0.008	2.800	4.000	5175	165	1.9
		5.00	4	65	0.012	4.000	5.000	4140	200	4.0
		6.00	4	65	0.016	4.200	6.000	3450	220	5.6
		8.00	4	65	0.018	8.000	8.000	2585	185	11.9
		10.00	4	65	0.022	10.000	10.000	2070	180	18.2
		12.00	4	65	0.025	12.000	12.000	1725	170	24.8
		16.00	4	65	0.035	8.000	16.000	1295	180	23.2
		20.00	4	65	0.040	10.000	20.000	1035	165	33.1
	Cast iron (lamellar / spheroidal)	3.00	4	115	0.010	1.800	3.000	12200	490	2.6
		4.00	4	115	0.010	2.800	4.000	9150	365	4.1
		5.00	4	115	0.015	4.000	5.000	7320	440	8.8
		6.00	4	115	0.025	6.000	6.000	6100	610	22.0
		8.00	4	115	0.030	8.000	8.000	4575	550	35.1
		10.00	4	115	0.040	10.000	10.000	3660	585	58.6
		12.00	4	115	0.040	12.000	12.000	3050	490	70.3
		16.00	4	115	0.055	8.000	16.000	2290	505	64.4
		20.00	4	115	0.070	10.000	20.000	1830	510	102.5

Cylindrical end mills NF-NV

Smooth-edged, medium length version

Favora® F

HM MG10	λ 40° γ 6°
45°	
Vario	



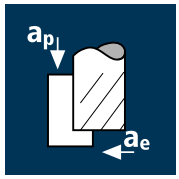
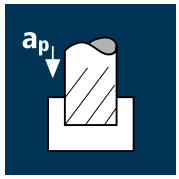
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **45322** ø-Code **140**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P45322	POLYCHROM P45222
140	2.00	6.00	63	12.00	21.42	0.10	6.0°	4		●
160	2.50	6.00	63	12.00	20.49	0.10	5.0°	4		●
180	3.00	6.00	63	13.00	20.56	0.10	4.5°	4		●
220	4.00	6.00	63	13.00	18.89	0.10	3.5°	4		●
260	5.00	6.00	63	16.00	20.02	0.15	1.5°	4		●
300	6.00	6.00	63	21.00	-	0.15	0.0°	4		●
391	8.00	8.00	72	31.00	-	0.15	0.0°	4		●
450	10.00	10.00	84	37.00	-	0.20	0.0°	4		●
501	12.00	12.00	97	44.00	-	0.20	0.0°	4		●
570	14.00	14.00	102	48.00	-	0.20	0.0°	4		●
610	16.00	16.00	108	53.00	-	0.20	0.0°	4		●
682	20.00	20.00	122	62.00	-	0.20	0.0°	4		●
772	25.00	25.00	144	72.00	-	0.25	0.0°	4		●

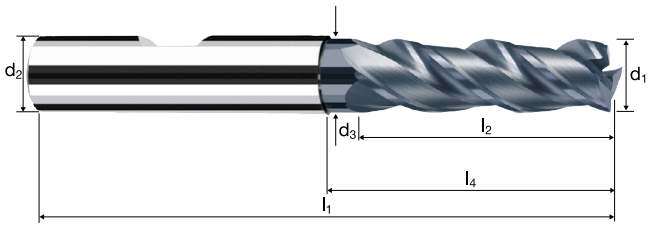
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	3.00	3	165	0.010	4.500	1.800	17505	525	4.3
		4.00	3	165	0.015	6.000	2.400	13130	590	8.5
		5.00	3	165	0.015	7.500	3.000	10505	475	10.6
		6.00	3	165	0.020	9.000	3.600	8755	525	17.0
		8.00	3	165	0.025	12.000	4.800	6565	490	28.4
		10.00	3	165	0.030	15.000	6.000	5250	475	42.5
		12.00	3	165	0.040	18.000	7.200	4375	525	68.1
		16.00	3	165	0.050	24.000	8.400	3285	490	99.3
		20.00	3	165	0.065	30.000	10.500	2625	510	161.3
	Steel 850 - 1100 N/mm²	3.00	3	110	0.010	4.500	1.800	11670	350	2.8
		4.00	3	110	0.015	6.000	2.400	8755	395	5.7
		5.00	3	110	0.015	7.500	3.000	7005	315	7.1
		6.00	3	110	0.020	9.000	3.600	5835	350	11.3
		8.00	3	110	0.025	12.000	4.800	4375	330	18.9
		10.00	3	110	0.030	15.000	6.000	3500	315	28.4
		12.00	3	110	0.040	18.000	7.200	2920	350	45.4
		16.00	3	110	0.050	24.000	8.400	2190	330	66.2
		20.00	3	110	0.065	30.000	10.500	1750	340	107.5
	Stainless steel [Cr-Ni/1.4301]	3.00	3	80	0.005	4.500	1.800	8490	125	1.0
		4.00	3	80	0.010	6.000	2.400	6365	190	2.8
		5.00	3	80	0.010	7.500	3.000	5095	155	3.4
		6.00	3	80	0.015	9.000	3.600	4245	190	6.2
		8.00	3	80	0.020	12.000	4.800	3185	190	11.0
		10.00	3	80	0.025	15.000	6.000	2545	190	17.2
		12.00	3	80	0.030	18.000	7.200	2120	190	24.8
		16.00	3	80	0.040	24.000	8.400	1590	190	38.5
		20.00	3	80	0.045	30.000	10.500	1275	170	54.1
	Cast iron (lamellar / spheroidal)	3.00	3	130	0.010	4.500	1.800	13795	415	3.4
		4.00	3	130	0.015	6.000	2.400	10345	465	6.7
		5.00	3	130	0.015	7.500	3.000	8275	370	8.4
		6.00	3	130	0.020	9.000	3.600	6895	415	13.4
		8.00	3	130	0.025	12.000	4.800	5175	390	22.3
		10.00	3	130	0.030	15.000	6.000	4140	370	33.5
		12.00	3	130	0.040	18.000	7.200	3450	415	53.6
		16.00	3	130	0.050	24.000	8.400	2585	390	78.2
		20.00	3	130	0.065	30.000	10.500	2070	405	127.1
	Steel < 850 N/mm²	3.00	3	130	0.010	2.000	3.000	13795	415	2.5
		4.00	3	130	0.015	3.100	4.000	10345	465	5.8
		5.00	3	130	0.015	4.400	5.000	8275	370	8.2
		6.00	3	130	0.020	7.800	6.000	6895	415	19.4
		8.00	3	130	0.025	10.400	8.000	5175	390	32.3
		10.00	3	130	0.025	13.000	10.000	4140	310	40.3
		12.00	3	130	0.035	15.600	12.000	3450	360	67.8
		16.00	3	130	0.045	17.600	16.000	2585	350	98.3
		20.00	3	130	0.060	22.000	20.000	2070	370	163.9
	Steel 850 - 1100 N/mm²	3.00	3	85	0.010	2.000	3.000	9020	270	1.6
		4.00	3	85	0.015	3.100	4.000	6765	305	3.8
		5.00	3	85	0.015	4.400	5.000	5410	245	5.4
		6.00	3	85	0.020	7.800	6.000	4510	270	12.7
		8.00	3	85	0.025	10.400	8.000	3380	255	21.1
		10.00	3	85	0.025	13.000	10.000	2705	205	26.4
		12.00	3	85	0.035	15.600	12.000	2255	235	44.3
		16.00	3	85	0.045	17.600	16.000	1690	230	64.3
		20.00	3	85	0.060	22.000	20.000	1355	245	107.1
	Stainless steel [Cr-Ni/1.4301]	3.00	3	65	0.005	2.000	3.000	6895	105	0.6
		4.00	3	65	0.010	3.100	4.000	5175	155	1.9
		5.00	3	65	0.010	4.400	5.000	4140	125	2.7
		6.00	3	65	0.015	7.800	6.000	3450	155	7.3
		8.00	3	65	0.020	10.400	8.000	2585	155	12.9
		10.00	3	65	0.025	13.000	10.000	2070	155	20.2
		12.00	3	65	0.025	15.600	12.000	1725	130	24.2
		16.00	3	65	0.035	17.600	16.000	1295	135	38.2
		20.00	3	65	0.040	22.000	20.000	1035	125	54.6
	Cast iron (lamellar / spheroidal)	3.00	3	110	0.010	2.000	3.000	11670	350	2.1
		4.00	3	110	0.015	3.100	4.000	8755	395	4.9
		5.00	3	110	0.015	4.400	5.000	7005	315	6.9
		6.00	3	110	0.020	7.800	6.000	5835	350	16.4
		8.00	3	110	0.025	10.400	8.000	4375	330	27.3
		10.00	3	110	0.025	13.000	10.000	3500	265	34.1
		12.00	3	110	0.035	15.600	12.000	2920	305	57.4
		16.00	3	110	0.045	17.600	16.000	2190	295	83.2
		20.00	3	110	0.060	22.000	20.000	1750	315	138.7

Cylindrical end mills NF-NV3

Smooth-edged, medium length version with short neck

Favora® F

HM MG10	λ 40° γ 6°
45°	
Vario	



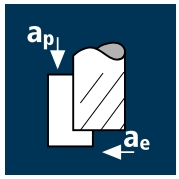
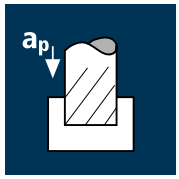
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **45334** ø-Code **180**

												POLYCHROM
												P45334
												P45234
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z		
180	3.00	6.00	2.80	63	14.00	20.00	26.63	0.10	3.5°	3		●
220	4.00	6.00	3.70	63	17.00	22.00	26.95	0.10	2.5°	3		●
260	5.00	6.00	4.60	63	19.00	24.00	27.27	0.15	1.5°	3		●
300	6.00	6.00	5.50	63	19.00	25.34	26.00	0.15	0.0°	3		●
391	8.00	8.00	7.40	72	28.00	34.29	35.00	0.15	0.0°	3		●
450	10.00	10.00	9.20	84	34.00	42.20	43.00	0.20	0.0°	3		●
501	12.00	12.00	11.00	97	40.00	50.13	51.00	0.20	0.0°	3		●
610	16.00	16.00	15.00	108	48.00	58.13	59.00	0.20	0.0°	3		●
682	20.00	20.00	19.00	122	56.00	70.13	71.00	0.20	0.0°	3		●

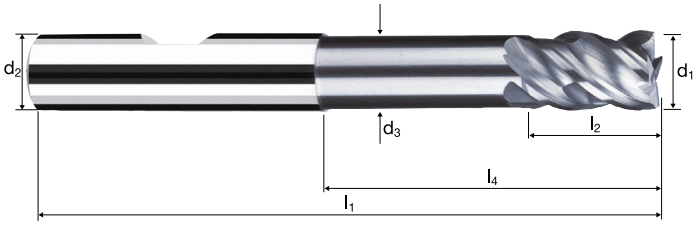
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel 850 - 1100 N/mm²	4.00	4	150	0.025	4.000	1.800	11935	1195	8.6
		5.00	4	150	0.035	5.000	2.250	9550	1335	15.0
		6.00	4	150	0.040	6.000	2.700	7960	1275	20.6
		8.00	4	150	0.055	8.000	3.600	5970	1315	37.8
		10.00	4	150	0.065	10.000	4.500	4775	1240	55.9
		12.00	4	150	0.080	12.000	5.400	3980	1275	82.5
		16.00	4	150	0.090	16.000	7.200	2985	1075	123.8
	Steel 1100 - 1300 N/mm²	4.00	4	115	0.025	4.000	1.800	9150	915	6.6
		5.00	4	115	0.035	5.000	2.250	7320	1025	11.5
		6.00	4	115	0.040	6.000	2.700	6100	975	15.8
		8.00	4	115	0.055	8.000	3.600	4575	1005	29.0
		10.00	4	115	0.065	10.000	4.500	3660	950	42.8
		12.00	4	115	0.080	12.000	5.400	3050	975	63.3
		16.00	4	115	0.090	16.000	7.200	2290	825	94.9
	Steel 1300 - 1500 N/mm²	4.00	4	80	0.025	4.000	1.800	6365	635	4.6
		5.00	4	80	0.030	5.000	2.250	5095	610	6.9
		6.00	4	80	0.035	6.000	2.700	4245	595	9.6
		8.00	4	80	0.045	8.000	3.600	3185	575	16.5
		10.00	4	80	0.060	10.000	4.500	2545	610	27.5
		12.00	4	80	0.070	12.000	5.400	2120	595	38.5
		16.00	4	80	0.080	16.000	7.200	1590	510	58.7
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	50	0.015	4.000	1.800	3980	240	1.7
		5.00	4	50	0.020	5.000	2.250	3185	255	2.9
		6.00	4	50	0.020	6.000	2.700	2655	210	3.4
		8.00	4	50	0.025	8.000	3.600	1990	200	5.7
		10.00	4	50	0.035	10.000	4.500	1590	225	10.0
		12.00	4	50	0.040	12.000	5.400	1325	210	13.8
		16.00	4	50	0.050	16.000	7.200	995	200	22.9
	Steel 850 - 1100 N/mm²	4.00	4	115	0.020	3.200	4.000	9150	730	9.4
		5.00	4	115	0.025	4.000	5.000	7320	730	14.6
		6.00	4	115	0.035	4.800	6.000	6100	855	24.6
		8.00	4	115	0.045	6.400	8.000	4575	825	42.2
		10.00	4	115	0.055	8.000	10.000	3660	805	64.4
		12.00	4	115	0.065	9.600	12.000	3050	795	91.4
		16.00	4	115	0.075	11.200	16.000	2290	685	123.0
	Steel 1100 - 1300 N/mm²	4.00	4	90	0.020	3.200	4.000	7160	575	7.3
		5.00	4	90	0.025	4.000	5.000	5730	575	11.5
		6.00	4	90	0.035	4.800	6.000	4775	670	19.3
		8.00	4	90	0.045	6.400	8.000	3580	645	33.0
		10.00	4	90	0.055	8.000	10.000	2865	630	50.4
		12.00	4	90	0.065	9.600	12.000	2385	620	71.5
		16.00	4	90	0.075	11.200	16.000	1790	535	96.3
	Steel 1300 - 1500 N/mm²	4.00	4	65	0.020	3.200	4.000	5175	415	5.3
		5.00	4	65	0.025	4.000	5.000	4140	415	8.3
		6.00	4	65	0.030	4.800	6.000	3450	415	11.9
		8.00	4	65	0.040	6.400	8.000	2585	415	21.2
		10.00	4	65	0.050	8.000	10.000	2070	415	33.1
		12.00	4	65	0.060	9.600	12.000	1725	415	47.7
		16.00	4	65	0.070	11.200	16.000	1295	360	64.9
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	40	0.015	3.200	4.000	3185	190	2.4
		5.00	4	40	0.015	4.000	5.000	2545	155	3.1
		6.00	4	40	0.020	4.800	6.000	2120	170	4.9
		8.00	4	40	0.025	6.400	8.000	1590	160	8.1
		10.00	4	40	0.035	8.000	10.000	1275	180	14.3
		12.00	4	40	0.040	9.600	12.000	1060	170	19.6
		16.00	4	40	0.045	11.200	16.000	795	145	25.7

Cylindrical end mills NX-VD

Smooth-edged, medium length version with neck

X-Generation X

HM MG10	λ 45° γ -20°



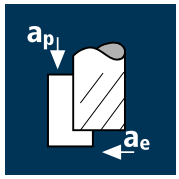
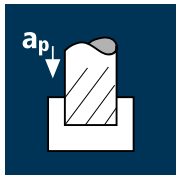
Roughing

Finishing

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60			Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15359** ø-Code **220**

												POLYCHROM
												P15359
												P15259
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z		
220	4.00	6.00	3.70	63	6.00	22.00	26.95	0.10	2.5°	4		●
260	5.00	6.00	4.60	63	8.00	24.00	27.27	0.15	1.5°	4		●
300	6.00	6.00	5.50	63	9.00	25.34	26.00	0.15	0.0°	4		●
391	8.00	8.00	7.40	72	12.00	34.29	35.00	0.15	0.0°	4		●
450	10.00	10.00	9.20	84	15.00	42.20	43.00	0.20	0.0°	4		●
501	12.00	12.00	11.00	97	18.00	50.13	51.00	0.20	0.0°	4		●
610	16.00	16.00	15.00	108	24.00	58.13	59.00	0.20	0.0°	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Hardened tool steel 42 - 48 HRC	6.00	4	90	0.035	6.000	2.400	4775	670	9.6
		8.00	4	90	0.045	8.000	3.200	3580	645	16.5
		10.00	4	90	0.055	10.000	4.000	2865	630	25.2
		12.00	4	90	0.070	12.000	4.800	2385	670	38.5
		16.00	4	90	0.090	16.000	3.200	1790	645	33.0
		20.00	4	90	0.115	20.000	4.000	1430	660	52.7
	Hardened tool steel 48 - 52 HRC	6.00	4	70	0.030	6.000	2.400	3715	445	6.4
		8.00	4	70	0.040	8.000	3.200	2785	445	11.4
		10.00	4	70	0.050	10.000	4.000	2230	445	17.8
		12.00	4	70	0.060	12.000	4.800	1855	445	25.7
		16.00	4	70	0.080	16.000	3.200	1395	445	22.8
		20.00	4	70	0.100	20.000	4.000	1115	445	35.7
	Hardened tool steel 52 - 56 HRC	6.00	4	50	0.025	6.000	2.400	2655	265	3.8
		8.00	4	50	0.035	8.000	3.200	1990	280	7.1
		10.00	4	50	0.040	10.000	4.000	1590	255	10.2
		12.00	4	50	0.050	12.000	4.800	1325	265	15.3
		16.00	4	50	0.065	16.000	3.200	995	260	13.2
		20.00	4	50	0.080	20.000	4.000	795	255	20.4
	Hardened tool steel 56 - 60 HRC	6.00	4	25	0.020	6.000	2.400	1325	105	1.5
		8.00	4	25	0.025	8.000	3.200	995	100	2.5
		10.00	4	25	0.030	10.000	4.000	795	95	3.8
		12.00	4	25	0.035	12.000	4.800	665	95	5.3
		16.00	4	25	0.050	16.000	3.200	495	100	5.1
		20.00	4	25	0.060	20.000	4.000	400	95	7.6
	Hardened tool steel 42 - 48 HRC	6.00	4	75	0.025	2.400	6.000	3980	400	5.7
		8.00	4	75	0.040	3.200	8.000	2985	475	12.2
		10.00	4	75	0.045	4.000	10.000	2385	430	17.2
		12.00	4	75	0.055	4.800	12.000	1990	440	25.2
		16.00	4	75	0.070	3.200	16.000	1490	420	21.4
		20.00	4	75	0.090	4.000	20.000	1195	430	34.4
	Hardened tool steel 48 - 52 HRC	6.00	4	60	0.025	2.400	6.000	3185	320	4.6
		8.00	4	60	0.035	3.200	8.000	2385	335	8.6
		10.00	4	60	0.045	4.000	10.000	1910	345	13.8
		12.00	4	60	0.055	4.800	12.000	1590	350	20.2
		16.00	4	60	0.070	3.200	16.000	1195	335	17.1
		20.00	4	60	0.090	4.000	20.000	955	345	27.5
	Hardened tool steel 52 - 56 HRC	6.00	4	40	0.020	2.400	6.000	2120	170	2.4
		8.00	4	40	0.030	3.200	8.000	1590	190	4.9
		10.00	4	40	0.035	4.000	10.000	1275	180	7.1
		12.00	4	40	0.045	4.800	12.000	1060	190	11.0
		16.00	4	40	0.060	3.200	16.000	795	190	9.8
		20.00	4	40	0.070	4.000	20.000	635	180	14.3
	Hardened tool steel 56 - 60 HRC	6.00	4	20	0.015	2.400	6.000	1060	65	0.9
		8.00	4	20	0.021	3.200	8.000	795	65	1.7
		10.00	4	20	0.026	4.000	10.000	635	65	2.6
		12.00	4	20	0.031	4.800	12.000	530	65	3.8
		16.00	4	20	0.041	3.200	16.000	400	65	3.3
		20.00	4	20	0.051	4.000	20.000	320	65	5.2

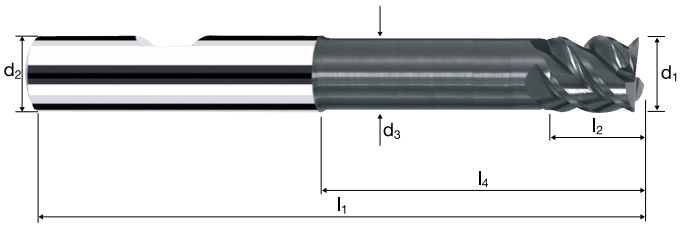
Cylindrical end mills HX

Smooth-edged, medium length version with neck

HM MG10

λ 55°
γ -10°

45°



Roughing

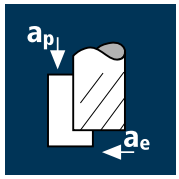
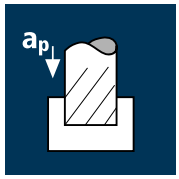
Finishing

ToolSchool

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **D** Article-N°. **5351** ø-Code **300**

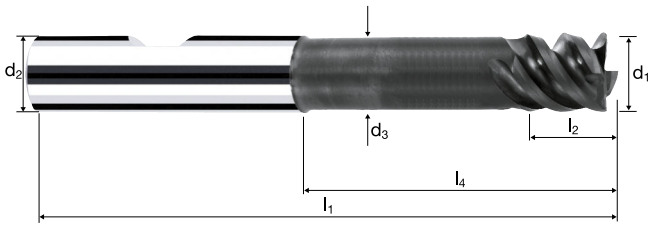
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	z	POLYCHROM P5351 P5251	DURO-S D5351 D5251
300	6.00	6.00	5.50	70	7.00	32.34	33.00	0.15	4	●	●
391	8.00	8.00	7.40	80	9.00	42.29	43.00	0.15	4	●	●
450	10.00	10.00	9.20	84	11.00	42.20	43.00	0.20	4	●	●
501	12.00	12.00	11.00	97	13.00	50.13	51.00	0.20	4	●	●
610	16.00	16.00	15.00	115	17.00	65.13	66.00	0.20	4	●	●
682	20.00	20.00	19.00	130	21.00	78.13	79.00	0.20	4	●	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Stainless steel [Cr-Ni/1.4301]	6.00	4	80	0.030	6.000	1.800	4245	510	5.5
		8.00	4	80	0.040	8.000	2.400	3185	510	9.8
		10.00	4	80	0.055	10.000	3.000	2545	560	16.8
		12.00	4	80	0.060	12.000	3.600	2120	510	22.0
		16.00	4	80	0.085	16.000	2.400	1590	540	20.8
	Stainless steel [Cr-Ni-Mo-.../1.4429]	6.00	4	40	0.030	6.000	1.800	2120	255	2.8
		8.00	4	40	0.040	8.000	2.400	1590	255	4.9
		10.00	4	40	0.055	10.000	3.000	1275	280	8.4
		12.00	4	40	0.060	12.000	3.600	1060	255	11.0
		16.00	4	40	0.085	16.000	2.400	795	270	10.4
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	6.00	4	25	0.030	6.000	1.800	1325	160	1.7
		8.00	4	25	0.035	8.000	2.400	995	140	2.7
		10.00	4	25	0.045	10.000	3.000	795	145	4.3
		12.00	4	25	0.050	12.000	3.600	665	135	5.7
		16.00	4	25	0.060	16.000	2.400	495	120	4.6
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	6.00	4	15	0.030	6.000	1.800	795	95	1.0
		8.00	4	15	0.035	8.000	2.400	595	85	1.6
		10.00	4	15	0.045	10.000	3.000	475	85	2.6
		12.00	4	15	0.050	12.000	3.600	400	80	3.4
		16.00	4	15	0.060	16.000	2.400	300	70	2.8
	Stainless steel [Cr-Ni/1.4301]	6.00	4	60	0.030	1.500	6.000	3185	380	3.4
		8.00	4	60	0.040	2.000	8.000	2385	380	6.1
		10.00	4	60	0.055	2.500	10.000	1910	420	10.5
		12.00	4	60	0.065	3.000	12.000	1590	415	14.9
		16.00	4	60	0.085	2.400	16.000	1195	405	15.6
	Stainless steel [Cr-Ni-Mo-.../1.4429]	6.00	4	30	0.030	1.500	6.000	1590	190	1.7
		8.00	4	30	0.040	2.000	8.000	1195	190	3.1
		10.00	4	30	0.055	2.500	10.000	955	210	5.3
		12.00	4	30	0.065	3.000	12.000	795	205	7.4
		16.00	4	30	0.085	2.400	16.000	595	205	7.8
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	6.00	4	20	0.030	1.500	6.000	1060	125	1.1
		8.00	4	20	0.035	2.000	8.000	795	110	1.8
		10.00	4	20	0.045	2.500	10.000	635	115	2.9
		12.00	4	20	0.050	3.000	12.000	530	105	3.8
		16.00	4	20	0.060	2.400	16.000	400	95	3.7
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	6.00	4	10	0.030	1.500	6.000	530	65	0.6
		8.00	4	10	0.035	2.000	8.000	400	55	0.9
		10.00	4	10	0.045	2.500	10.000	320	55	1.4
		12.00	4	10	0.050	3.000	12.000	265	55	1.9
		16.00	4	10	0.060	2.400	16.000	200	50	1.8

Cylindrical end mills SX

Smooth-edged, medium length version with neck

HM MG10	λ 55° γ 15°



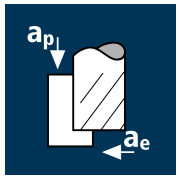
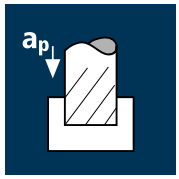
Roughing

Finishing

Rm < 850	Rm 850-1100						Inox Stainless	Ti Titanium	Nickel-Alloys Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **5319** ø-Code **300**

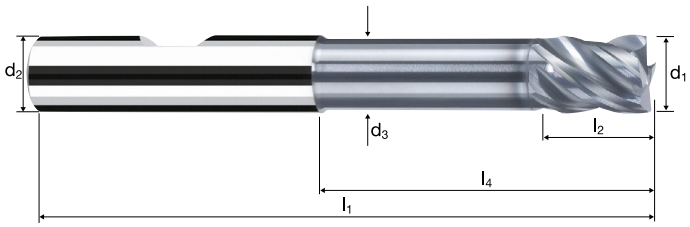
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	z	POLYCHROM P5319	POLYCHROM P5219
300	6.00	6.00	5.50	70	7.00	32.34	33.00	0.15	4		●
391	8.00	8.00	7.40	80	9.00	42.29	43.00	0.15	4		●
450	10.00	10.00	9.20	84	11.00	42.20	43.00	0.20	4		●
501	12.00	12.00	11.00	97	13.00	50.13	51.00	0.20	4		●
610	16.00	16.00	15.00	115	17.00	65.13	66.00	0.20	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	6.00	4	190	0.050	6.000	2.400	10080	2015	29.0
		8.00	4	190	0.065	8.000	3.200	7560	1965	50.3
		10.00	4	190	0.080	10.000	4.000	6050	1935	77.4
		12.00	4	190	0.095	12.000	4.800	5040	1915	110.3
		16.00	4	190	0.125	16.000	3.200	3780	1890	96.8
	Steel 850 - 1100 N/mm²	6.00	4	140	0.050	6.000	2.400	7425	1485	21.4
		8.00	4	140	0.065	8.000	3.200	5570	1450	37.1
		10.00	4	140	0.080	10.000	4.000	4455	1425	57.0
		12.00	4	140	0.095	12.000	4.800	3715	1410	81.3
		16.00	4	140	0.125	16.000	3.200	2785	1395	71.3
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	70	0.045	6.000	2.400	3715	670	9.6
		8.00	4	70	0.060	8.000	3.200	2785	670	17.1
		10.00	4	70	0.070	10.000	4.000	2230	625	25.0
		12.00	4	70	0.085	12.000	4.800	1855	630	36.4
		16.00	4	70	0.110	16.000	3.200	1395	615	31.4
	Stainless steel [Cr-Ni/1.4301]	6.00	4	90	0.030	6.000	2.400	4775	575	8.3
		8.00	4	90	0.040	8.000	3.200	3580	575	14.7
		10.00	4	90	0.050	10.000	4.000	2865	575	22.9
		12.00	4	90	0.060	12.000	4.800	2385	575	33.0
		16.00	4	90	0.080	16.000	3.200	1790	575	29.3
	Steel < 850 N/mm²	6.00	4	155	0.040	4.200	6.000	8225	1315	33.2
		8.00	4	155	0.050	5.600	8.000	6165	1235	55.3
		10.00	4	155	0.065	7.000	10.000	4935	1285	89.8
		12.00	4	155	0.075	8.400	12.000	4110	1235	124.3
		16.00	4	155	0.075	6.400	16.000	3085	925	94.7
	Steel 850 - 1100 N/mm²	6.00	4	105	0.040	4.200	6.000	5570	890	22.5
		8.00	4	105	0.050	5.600	8.000	4180	835	37.4
		10.00	4	105	0.065	7.000	10.000	3340	870	60.8
		12.00	4	105	0.075	8.400	12.000	2785	835	84.2
		16.00	4	105	0.075	6.400	16.000	2090	625	64.2
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	55	0.035	4.200	6.000	2920	410	10.3
		8.00	4	55	0.045	5.600	8.000	2190	395	17.6
		10.00	4	55	0.055	7.000	10.000	1750	385	27.0
		12.00	4	55	0.060	8.400	12.000	1460	350	35.3
		16.00	4	55	0.075	6.400	16.000	1095	330	33.6
	Stainless steel [Cr-Ni/1.4301]	6.00	4	75	0.030	4.200	6.000	3980	475	12.0
		8.00	4	75	0.040	5.600	8.000	2985	475	21.4
		10.00	4	75	0.045	7.000	10.000	2385	430	30.1
		12.00	4	75	0.050	8.400	12.000	1990	400	40.1
		16.00	4	75	0.065	6.400	16.000	1490	390	39.7

Cylindrical end mills NB-V

Smooth-edged, medium length version with neck

HM MG10	λ 40° γ 0°
45°	
Vario	



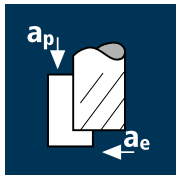
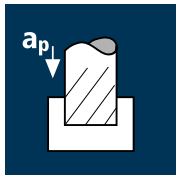
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15325** ø-Code **300**

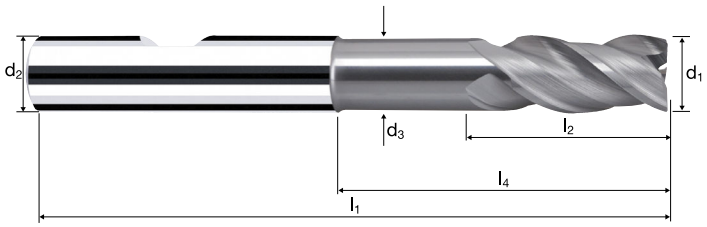
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	z	POLYCHROM P15325	POLYCHROM P15225
300	6.00	6.00	5.50	70	7.00	32.34	33.00	0.15	4		●
391	8.00	8.00	7.40	80	9.00	42.29	43.00	0.15	4		●
450	10.00	10.00	9.20	84	11.00	42.20	43.00	0.20	4		●
501	12.00	12.00	11.00	97	13.00	50.13	51.00	0.20	4		●
610	16.00	16.00	15.00	115	17.00	65.13	66.00	0.20	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	3.00	3	190	0.015	4.500	1.200	20160	905	4.9
		4.00	3	190	0.015	6.000	1.600	15120	680	6.5
		5.00	3	190	0.020	7.500	2.000	12095	725	10.9
		6.00	3	190	0.040	9.000	2.400	10080	1210	26.1
		8.00	3	190	0.050	12.000	3.200	7560	1135	43.5
		10.00	3	190	0.065	15.000	4.000	6050	1180	70.8
		12.00	3	190	0.075	18.000	4.800	5040	1135	98.0
		16.00	3	190	0.085	24.000	6.400	3780	965	148.1
	Steel 850 - 1100 N/mm²	3.00	3	140	0.015	4.500	1.200	14855	670	3.6
		4.00	3	140	0.015	6.000	1.600	11140	500	4.8
		5.00	3	140	0.020	7.500	2.000	8915	535	8.0
		6.00	3	140	0.040	9.000	2.400	7425	890	19.3
		8.00	3	140	0.050	12.000	3.200	5570	835	32.1
		10.00	3	140	0.065	15.000	4.000	4455	870	52.1
		12.00	3	140	0.075	18.000	4.800	3715	835	72.2
		16.00	3	140	0.085	24.000	6.400	2785	710	109.1
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	3	70	0.010	4.500	1.200	7425	225	1.2
		4.00	3	70	0.015	6.000	1.600	5570	250	2.4
		5.00	3	70	0.015	7.500	2.000	4455	200	3.0
		6.00	3	70	0.035	9.000	2.400	3715	390	8.4
		8.00	3	70	0.045	12.000	3.200	2785	375	14.4
		10.00	3	70	0.055	15.000	4.000	2230	370	22.1
		12.00	3	70	0.065	18.000	4.800	1855	360	31.3
		16.00	3	70	0.075	24.000	6.400	1395	315	48.1
	Stainless steel [Cr-Ni/1.4301]	3.00	3	90	0.010	4.500	1.200	9550	285	1.5
		4.00	3	90	0.010	6.000	1.600	7160	215	2.1
		5.00	3	90	0.010	7.500	2.000	5730	170	2.6
		6.00	3	90	0.030	9.000	2.400	4775	430	9.3
		8.00	3	90	0.035	12.000	3.200	3580	375	14.4
		10.00	3	90	0.045	15.000	4.000	2865	385	23.2
		12.00	3	90	0.050	18.000	4.800	2385	360	30.9
		16.00	3	90	0.060	24.000	6.400	1790	320	49.5
	Steel < 850 N/mm²	3.00	3	155	0.015	4.200	3.000	16445	740	9.3
		4.00	3	155	0.015	5.600	4.000	12335	555	12.4
		5.00	3	155	0.025	7.000	5.000	9870	740	25.9
		6.00	3	155	0.030	8.400	6.000	8225	740	37.3
		8.00	3	155	0.040	11.200	8.000	6165	740	66.3
		10.00	3	155	0.050	14.000	10.000	4935	740	103.6
		12.00	3	155	0.060	16.800	12.000	4110	740	149.2
		16.00	3	155	0.070	14.400	16.000	3085	650	149.2
	Steel 850 - 1100 N/mm²	3.00	3	105	0.015	4.200	3.000	11140	500	6.3
		4.00	3	105	0.015	5.600	4.000	8355	375	8.4
		5.00	3	105	0.025	7.000	5.000	6685	500	17.5
		6.00	3	105	0.030	8.400	6.000	5570	500	25.3
		8.00	3	105	0.040	11.200	8.000	4180	500	44.9
		10.00	3	105	0.050	14.000	10.000	3340	500	70.2
		12.00	3	105	0.060	16.800	12.000	2785	500	101.1
		16.00	3	105	0.070	14.400	16.000	2090	440	101.1
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	3	55	0.010	4.200	3.000	5835	175	2.2
		4.00	3	55	0.015	5.600	4.000	4375	195	4.4
		5.00	3	55	0.015	7.000	5.000	3500	160	5.5
		6.00	3	55	0.030	8.400	6.000	2920	265	13.2
		8.00	3	55	0.040	11.200	8.000	2190	265	23.5
		10.00	3	55	0.050	14.000	10.000	1750	265	36.8
		12.00	3	55	0.060	16.800	12.000	1460	265	52.9
		16.00	3	55	0.070	14.400	16.000	1095	230	52.9
	Stainless steel [Cr-Ni/1.4301]	3.00	3	70	0.010	4.200	3.000	7425	225	2.8
		4.00	3	70	0.010	5.600	4.000	5570	165	3.7
		5.00	3	70	0.010	7.000	5.000	4455	135	4.7
		6.00	3	70	0.025	8.400	6.000	3715	280	14.0
		8.00	3	70	0.030	11.200	8.000	2785	250	22.5
		10.00	3	70	0.040	14.000	10.000	2230	265	37.4
		12.00	3	70	0.050	16.800	12.000	1855	280	56.1
		16.00	3	70	0.055	14.400	16.000	1395	230	52.9

Cylindrical end mills NV3

Smooth-edged, medium length version with neck

HM MG10	λ 40° γ 0°
45°	
Vario	



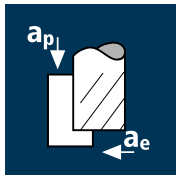
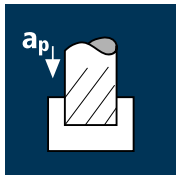
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15399** ø-Code **180**

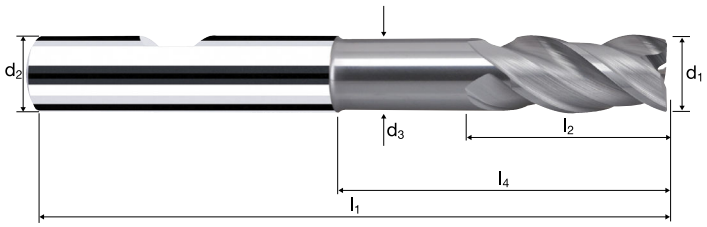
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P15399	POLYCHROM P15299
180	3.00	6.00	2.80	63	8.00	20.00	26.63	0.10	3.5°	3	●	
220	4.00	6.00	3.70	63	11.00	22.00	26.95	0.10	2.5°	3	●	
260	5.00	6.00	4.60	63	13.00	24.00	27.27	0.15	1.5°	3	●	
300	6.00	6.00	5.50	63	13.00	25.34	26.00	0.15	0.0°	3	●	
391	8.00	8.00	7.40	72	19.00	34.29	35.00	0.15	0.0°	3	●	
450	10.00	10.00	9.20	84	22.00	42.20	43.00	0.20	0.0°	3	●	
501	12.00	12.00	11.00	97	26.00	50.13	51.00	0.20	0.0°	3	●	
610	16.00	16.00	15.00	108	32.00	58.13	59.00	0.20	0.0°	3	●	

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Stainless steel [Cr-Ni/1.4301]	3.00	3	105	0.010	4.500	1.950	11140	335	2.9
		4.00	3	105	0.015	6.000	2.600	8355	375	5.9
		5.00	3	105	0.020	7.500	3.250	6685	400	9.8
		6.00	3	105	0.020	9.000	3.900	5570	335	11.7
		8.00	3	105	0.030	12.000	5.200	4180	375	23.5
		10.00	3	105	0.035	15.000	6.500	3340	350	34.2
		12.00	3	105	0.045	18.000	7.800	2785	375	52.8
		16.00	3	105	0.055	24.000	8.800	2090	345	72.8
	Stainless steel [Cr-Ni-Mo-.../1.4429]	3.00	3	50	0.010	4.500	1.950	5305	160	1.4
		4.00	3	50	0.015	6.000	2.600	3980	180	2.8
		5.00	3	50	0.020	7.500	3.250	3185	190	4.7
		6.00	3	50	0.020	9.000	3.900	2655	160	5.6
		8.00	3	50	0.030	12.000	5.200	1990	180	11.2
		10.00	3	50	0.035	15.000	6.500	1590	165	16.3
		12.00	3	50	0.045	18.000	7.800	1325	180	25.1
		16.00	3	50	0.055	24.000	8.800	995	165	34.7
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3.00	3	45	0.010	4.500	1.950	4775	145	1.3
		4.00	3	45	0.010	6.000	2.600	3580	105	1.7
		5.00	3	45	0.015	7.500	3.250	2865	130	3.1
		6.00	3	45	0.015	9.000	3.900	2385	105	3.8
		8.00	3	45	0.020	12.000	5.200	1790	105	6.7
		10.00	3	45	0.025	15.000	6.500	1430	105	10.5
		12.00	3	45	0.030	18.000	7.800	1195	105	15.1
		16.00	3	45	0.040	24.000	8.800	895	105	22.7
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	3.00	3	15	0.010	4.500	1.950	1590	50	0.4
		4.00	3	15	0.010	6.000	2.600	1195	35	0.6
		5.00	3	15	0.015	7.500	3.250	955	45	1.0
		6.00	3	15	0.015	9.000	3.900	795	35	1.3
		8.00	3	15	0.020	12.000	5.200	595	35	2.2
		10.00	3	15	0.025	15.000	6.500	475	35	3.5
		12.00	3	15	0.030	18.000	7.800	400	35	5.0
		16.00	3	15	0.040	24.000	8.800	300	35	7.6
	Stainless steel [Cr-Ni/1.4301]	3.00	3	85	0.010	4.500	3.000	9020	270	3.7
		4.00	3	85	0.015	6.000	4.000	6765	305	7.3
		5.00	3	85	0.015	7.500	5.000	5410	245	9.1
		6.00	3	85	0.020	9.000	6.000	4510	270	14.6
		8.00	3	85	0.025	12.000	8.000	3380	255	24.4
		10.00	3	85	0.030	15.000	10.000	2705	245	36.5
		12.00	3	85	0.040	18.000	12.000	2255	270	58.4
		16.00	3	85	0.050	20.800	16.000	1690	255	84.4
	Stainless steel [Cr-Ni-Mo-.../1.4429]	3.00	3	40	0.010	4.500	3.000	4245	125	1.7
		4.00	3	40	0.015	6.000	4.000	3185	145	3.4
		5.00	3	40	0.015	7.500	5.000	2545	115	4.3
		6.00	3	40	0.020	9.000	6.000	2120	125	6.9
		8.00	3	40	0.025	12.000	8.000	1590	120	11.5
		10.00	3	40	0.030	15.000	10.000	1275	115	17.2
		12.00	3	40	0.040	18.000	12.000	1060	125	27.5
		16.00	3	40	0.050	20.800	16.000	795	120	39.7
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3.00	3	35	0.005	4.500	3.000	3715	55	0.8
		4.00	3	35	0.010	6.000	4.000	2785	85	2.0
		5.00	3	35	0.010	7.500	5.000	2230	65	2.5
		6.00	3	35	0.015	9.000	6.000	1855	85	4.5
		8.00	3	35	0.020	12.000	8.000	1395	85	8.0
		10.00	3	35	0.025	15.000	10.000	1115	85	12.5
		12.00	3	35	0.030	18.000	12.000	930	85	18.0
		16.00	3	35	0.040	20.800	16.000	695	85	27.8
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	3.00	3	10	0.005	4.500	3.000	1060	15	0.2
		4.00	3	10	0.010	6.000	4.000	795	25	0.6
		5.00	3	10	0.010	7.500	5.000	635	20	0.7
		6.00	3	10	0.015	9.000	6.000	530	25	1.3
		8.00	3	10	0.020	12.000	8.000	400	25	2.3
		10.00	3	10	0.025	15.000	10.000	320	25	3.6
		12.00	3	10	0.030	18.000	12.000	265	25	5.2
		16.00	3	10	0.040	20.800	16.000	200	25	7.9

Cylindrical end mills NV3

Smooth-edged, medium length version with neck

HM MG10	λ 40° γ 10°
45°	
Vario	



Roughing

Finishing

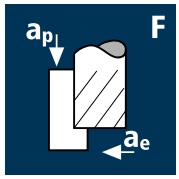
ToolSchool

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	Nickel-Alloys Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15394** ø-Code **180**

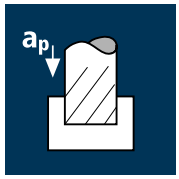
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P15394	POLYCHROM P15294
180	3.00	6.00	2.80	63	8.00	20.00	26.63	0.10	3.5°	3		●
220	4.00	6.00	3.70	63	11.00	22.00	26.95	0.10	2.5°	3		●
260	5.00	6.00	4.60	63	13.00	24.00	27.27	0.15	1.5°	3		●
300	6.00	6.00	5.50	63	13.00	25.34	26.00	0.15	0.0°	3		●
391	8.00	8.00	7.40	72	19.00	34.29	35.00	0.15	0.0°	3		●
450	10.00	10.00	9.20	84	22.00	42.20	43.00	0.20	0.0°	3		●
501	12.00	12.00	11.00	97	26.00	50.13	51.00	0.20	0.0°	3		●
610	16.00	16.00	15.00	108	32.00	58.13	59.00	0.20	0.0°	3		●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
Steel < 850 N/mm²	3.00	3	105	0.010	4.500	0.150	11140	335
	4.00	3	105	0.010	6.000	0.200	8355	250
	5.00	3	105	0.015	7.500	0.250	6685	300
	6.00	3	105	0.015	9.000	0.300	5570	250
	8.00	3	105	0.020	12.000	0.400	4180	250
	10.00	3	105	0.025	15.000	0.500	3340	250
	12.00	3	105	0.030	18.000	0.600	2785	250
	16.00	3	105	0.040	24.000	0.800	2090	250
Steel 850 - 1100 N/mm²	3.00	3	75	0.010	4.500	0.150	7960	240
	4.00	3	75	0.010	6.000	0.200	5970	180
	5.00	3	75	0.015	7.500	0.250	4775	215
	6.00	3	75	0.015	9.000	0.300	3980	180
	8.00	3	75	0.020	12.000	0.400	2985	180
	10.00	3	75	0.025	15.000	0.500	2385	180
	12.00	3	75	0.030	18.000	0.600	1990	180
	16.00	3	75	0.040	24.000	0.800	1490	180
Cast iron (lamellar / spheroidal)	3.00	3	150	0.010	4.500	0.150	15915	475
	4.00	3	150	0.010	6.000	0.200	11935	360
	5.00	3	150	0.015	7.500	0.250	9550	430
	6.00	3	150	0.015	9.000	0.300	7960	360
	8.00	3	150	0.020	12.000	0.400	5970	360
	10.00	3	150	0.025	15.000	0.500	4775	360
	12.00	3	150	0.030	18.000	0.600	3980	360
	16.00	3	150	0.040	24.000	0.800	2985	360
Stainless steel [Cr-Ni/1.4301]	3.00	3	50	0.010	4.500	0.150	5305	160
	4.00	3	50	0.010	6.000	0.200	3980	120
	5.00	3	50	0.015	7.500	0.250	3185	145
	6.00	3	50	0.015	9.000	0.300	2655	120
	8.00	3	50	0.020	12.000	0.400	1990	120
	10.00	3	50	0.025	15.000	0.500	1590	120
	12.00	3	50	0.030	18.000	0.600	1325	120
	16.00	3	50	0.040	24.000	0.800	995	120

Application



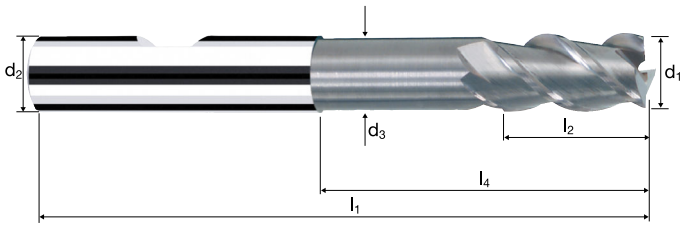
Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
Steel < 850 N/mm²	3.00	3	75	0.005	0.600	3.000	7960	120	0.2
	4.00	3	75	0.010	0.800	4.000	5970	180	0.6
	5.00	3	75	0.010	1.000	5.000	4775	145	0.7
	6.00	3	75	0.010	1.200	6.000	3980	120	0.9
	8.00	3	75	0.015	1.600	8.000	2985	135	1.7
	10.00	3	75	0.020	2.000	10.000	2385	145	2.9
	12.00	3	75	0.025	2.400	12.000	1990	150	4.3
	16.00	3	75	0.030	3.200	16.000	1490	135	6.9
Steel 850 - 1100 N/mm²	3.00	3	60	0.005	0.600	3.000	6365	95	0.2
	4.00	3	60	0.005	0.800	4.000	4775	70	0.2
	5.00	3	60	0.010	1.000	5.000	3820	115	0.6
	6.00	3	60	0.010	1.200	6.000	3185	95	0.7
	8.00	3	60	0.015	1.600	8.000	2385	105	1.4
	10.00	3	60	0.020	2.000	10.000	1910	115	2.3
	12.00	3	60	0.020	2.400	12.000	1590	95	2.8
	16.00	3	60	0.030	3.200	16.000	1195	105	5.5
Cast iron (lamellar / spheroidal)	3.00	3	105	0.005	0.600	3.000	11140	165	0.3
	4.00	3	105	0.010	0.800	4.000	8355	250	0.8
	5.00	3	105	0.010	1.000	5.000	6685	200	1.0
	6.00	3	105	0.015	1.200	6.000	5570	250	1.8
	8.00	3	105	0.020	1.600	8.000	4180	250	3.2
	10.00	3	105	0.020	2.000	10.000	3340	200	4.0
	12.00	3	105	0.025	2.400	12.000	2785	210	6.0
	16.00	3	105	0.035	3.200	16.000	2090	220	11.2
Stainless steel [Cr-Ni/1.4301]	3.00	3	35	0.005	0.600	3.000	3715	55	0.1
	4.00	3	35	0.005	0.800	4.000	2785	40	0.1
	5.00	3	35	0.010	1.000	5.000	2230	65	0.3
	6.00	3	35	0.010	1.200	6.000	1855	55	0.4
	8.00	3	35	0.015	1.600	8.000	1395	65	0.8
	10.00	3	35	0.020	2.000	10.000	1115	65	1.3
	12.00	3	35	0.020	2.400	12.000	930	55	1.6
	16.00	3	35	0.030	3.200	16.000	695	65	3.2

Cylindrical end mills

Smooth-edged, medium length version with neck

HM MG10	λ 45° γ 15°

45°



Roughing

Finishing

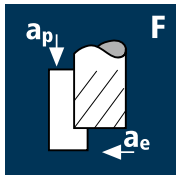
ToolSchool

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **5333** ø-Code **180**

											5333	POLYCHROM P5333
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z		
180	3.00	6.00	2.80	63	8.00	14.00	20.63	0.10	4.5°	3	●	●
220	4.00	6.00	3.70	63	11.00	16.00	20.95	0.10	3.0°	3	●	●
260	5.00	6.00	4.60	63	13.00	18.00	21.27	0.15	1.5°	3	●	●
300	6.00	6.00	5.50	63	13.00	25.34	26.00	0.15	0.0°	3	●	●
391	8.00	8.00	7.40	72	19.00	34.29	35.00	0.15	0.0°	3	●	●
450	10.00	10.00	9.20	84	22.00	42.20	43.00	0.20	0.0°	3	●	●
501	12.00	12.00	11.00	97	26.00	50.13	51.00	0.20	0.0°	3	●	●
610	16.00	16.00	15.00	108	32.00	58.13	59.00	0.20	0.0°	3	●	●

Application



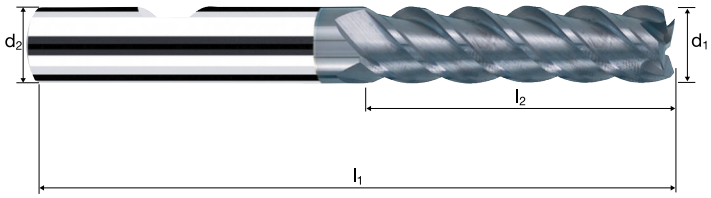
Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
Steel < 850 N/mm²	6.00	4	75	0.015	15.000	0.360	3980	240
	8.00	4	75	0.020	20.000	0.480	2985	240
	10.00	4	75	0.025	25.000	0.600	2385	240
	12.00	4	75	0.030	30.000	0.720	1990	240
	16.00	4	75	0.040	40.000	0.960	1490	240
	20.00	4	75	0.050	50.000	1.200	1195	240
Steel 850 - 1100 N/mm²	6.00	4	50	0.015	15.000	0.360	2655	160
	8.00	4	50	0.020	20.000	0.480	1990	160
	10.00	4	50	0.025	25.000	0.600	1590	160
	12.00	4	50	0.030	30.000	0.720	1325	160
	16.00	4	50	0.040	40.000	0.960	995	160
	20.00	4	50	0.050	50.000	1.200	795	160
Steel 1100 - 1300 N/mm²	6.00	4	40	0.015	15.000	0.360	2120	125
	8.00	4	40	0.020	20.000	0.480	1590	125
	10.00	4	40	0.025	25.000	0.600	1275	125
	12.00	4	40	0.030	30.000	0.720	1060	125
	16.00	4	40	0.040	40.000	0.960	795	125
	20.00	4	40	0.050	50.000	1.200	635	125
Stainless steel [Cr-Ni/1.4301]	6.00	4	45	0.015	15.000	0.360	2385	145
	8.00	4	45	0.020	20.000	0.480	1790	145
	10.00	4	45	0.025	25.000	0.600	1430	145
	12.00	4	45	0.030	30.000	0.720	1195	145
	16.00	4	45	0.040	40.000	0.960	895	145
	20.00	4	45	0.050	50.000	1.200	715	145
Cast iron (lamellar / spheroidal)	6.00	4	60	0.015	15.000	0.360	3185	190
	8.00	4	60	0.020	20.000	0.480	2385	190
	10.00	4	60	0.025	25.000	0.600	1910	190
	12.00	4	60	0.030	30.000	0.720	1590	190
	16.00	4	60	0.040	40.000	0.960	1195	190
	20.00	4	60	0.050	50.000	1.200	955	190
Unalloyed copper	6.00	4	110	0.015	15.000	0.360	5835	350
	8.00	4	110	0.020	20.000	0.480	4375	350
	10.00	4	110	0.025	25.000	0.600	3500	350
	12.00	4	110	0.030	30.000	0.720	2920	350
	16.00	4	110	0.040	40.000	0.960	2190	350
	20.00	4	110	0.050	50.000	1.200	1750	350
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	6.00	4	50	0.015	15.000	0.360	2655	160
	8.00	4	50	0.020	20.000	0.480	1990	160
	10.00	4	50	0.025	25.000	0.600	1590	160
	12.00	4	50	0.030	30.000	0.720	1325	160
	16.00	4	50	0.040	40.000	0.960	995	160
	20.00	4	50	0.050	50.000	1.200	795	160
Heat resistant steel Duplex steel [1.4462] [17-4 PH]	6.00	4	25	0.015	15.000	0.360	1325	80
	8.00	4	25	0.020	20.000	0.480	995	80
	10.00	4	25	0.025	25.000	0.600	795	80
	12.00	4	25	0.030	30.000	0.720	665	80
	16.00	4	25	0.040	40.000	0.960	495	80
	20.00	4	25	0.050	50.000	1.200	400	80

Cylindrical end mills

Smooth-edged, long version

HM MG10	λ 45° γ 15°

45°



Roughing

Finishing

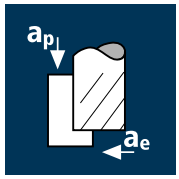
ToolSchool

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **15345** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z	POLYCHROM P15345	POLYCHROM P15245
300	6.00	6.00	70	26.00	0.15	4		●
391	8.00	8.00	80	36.00	0.15	4		●
450	10.00	10.00	100	45.00	0.20	4		●
501	12.00	12.00	110	53.00	0.20	4		●
610	16.00	16.00	123	63.00	0.20	4		●
682	20.00	20.00	141	75.00	0.20	4		●

Application



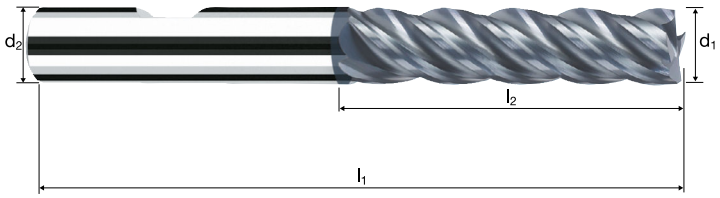
Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
Steel < 850 N/mm²	6.00	4	130	0.045	15.000	0.600	6895	1240	11.2
	8.00	4	130	0.060	20.000	0.800	5175	1240	19.9
	10.00	4	130	0.075	25.000	1.000	4140	1240	31.0
	12.00	4	130	0.090	30.000	1.200	3450	1240	44.7
	16.00	4	130	0.115	40.000	1.600	2585	1190	76.1
	20.00	4	130	0.145	50.000	2.000	2070	1200	120.0
Steel 850 - 1100 N/mm²	6.00	4	120	0.040	15.000	0.600	6365	1020	9.2
	8.00	4	120	0.050	20.000	0.800	4775	955	15.3
	10.00	4	120	0.065	25.000	1.000	3820	995	24.8
	12.00	4	120	0.080	30.000	1.200	3185	1020	36.7
	16.00	4	120	0.100	40.000	1.600	2385	955	61.1
	20.00	4	120	0.125	50.000	2.000	1910	955	95.5
Steel 1100 - 1300 N/mm²	6.00	4	100	0.035	15.000	0.600	5305	745	6.7
	8.00	4	100	0.045	20.000	0.800	3980	715	11.5
	10.00	4	100	0.060	25.000	1.000	3185	765	19.1
	12.00	4	100	0.070	30.000	1.200	2655	745	26.7
	16.00	4	100	0.090	40.000	1.600	1990	715	45.8
	20.00	4	100	0.110	50.000	2.000	1590	700	70.0
Stainless steel [Cr-Ni/1.4301]	6.00	4	80	0.025	15.000	0.450	4245	425	2.9
	8.00	4	80	0.030	20.000	0.600	3185	380	4.6
	10.00	4	80	0.040	25.000	0.750	2545	405	7.6
	12.00	4	80	0.050	30.000	0.900	2120	425	11.5
	16.00	4	80	0.060	40.000	1.200	1590	380	18.3
	20.00	4	80	0.075	50.000	1.500	1275	380	28.6
Cast iron (lamellar / spheroidal)	6.00	4	120	0.045	15.000	0.600	6365	1145	10.3
	8.00	4	120	0.060	20.000	0.800	4775	1145	18.3
	10.00	4	120	0.070	25.000	1.000	3820	1070	26.7
	12.00	4	120	0.085	30.000	1.200	3185	1080	39.0
	16.00	4	120	0.110	40.000	1.600	2385	1050	67.2
	20.00	4	120	0.135	50.000	2.000	1910	1030	103.1
Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	76	0.045	15.000	0.450	4030	725	4.9
	8.00	4	76	0.060	20.000	0.600	3025	725	8.7
	10.00	4	76	0.075	25.000	0.750	2420	725	13.6
	12.00	4	76	0.090	30.000	0.900	2015	725	19.6
	16.00	4	76	0.115	40.000	1.200	1510	695	33.4
	20.00	4	76	0.145	50.000	1.500	1210	700	52.6
Titanium alloys > 300 HB [Ti6Al4V]	6.00	4	50	0.030	15.000	0.600	2655	320	2.9
	8.00	4	50	0.035	20.000	0.800	1990	280	4.5
	10.00	4	50	0.045	25.000	1.000	1590	285	7.2
	12.00	4	50	0.055	30.000	1.200	1325	290	10.5
	16.00	4	50	0.065	40.000	1.600	995	260	16.6
	20.00	4	50	0.085	50.000	2.000	795	270	27.1
Heat resistant steel Duplex steel [1.4462] [17-4 PH]	6.00	4	40	0.025	15.000	0.450	2120	210	1.4
	8.00	4	40	0.030	20.000	0.600	1590	190	2.3
	10.00	4	40	0.040	25.000	0.750	1275	205	3.8
	12.00	4	40	0.050	30.000	0.900	1060	210	5.7
	16.00	4	40	0.060	40.000	1.200	795	190	9.2
	20.00	4	40	0.075	50.000	1.500	635	190	14.3

Cylindrical end mills NF-NV

Smooth-edged, long version

Favora® F

HM MG10	λ 40° γ 6°
45°	
Vario	



Roughing

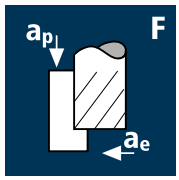
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **45323** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z	POLYCHROM P45323	POLYCHROM P45223
300	6.00	6.00	70	26.00	0.15	4	●	
391	8.00	8.00	80	36.00	0.15	4	●	
450	10.00	10.00	100	45.00	0.20	4	●	
501	12.00	12.00	110	53.00	0.20	4	●	
610	16.00	16.00	123	63.00	0.20	4	●	
682	20.00	20.00	141	75.00	0.20	4	●	

Application

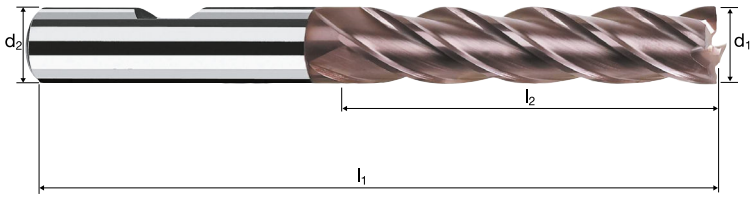


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
Steel < 850 N/mm² U	4.00	4	32	0.005	11.200	0.050	2545	50
	6.00	4	32	0.010	16.800	0.100	1700	70
	8.00	4	32	0.015	22.400	0.100	1275	75
	10.00	4	32	0.020	28.000	0.150	1020	80
	12.00	4	32	0.020	33.600	0.200	850	70
	16.00	4	32	0.030	44.800	0.250	635	75
	20.00	4	32	0.035	56.000	0.300	510	70
	30.00	6	32	0.055	84.000	0.450	340	110
	40.00	6	32	0.075	112.000	0.600	255	115
Steel 850 - 1100 N/mm² U	4.00	4	25	0.005	11.200	0.050	1990	40
	6.00	4	25	0.010	16.800	0.100	1325	55
	8.00	4	25	0.015	22.400	0.100	995	60
	10.00	4	25	0.020	28.000	0.150	795	65
	12.00	4	25	0.020	33.600	0.200	665	55
	16.00	4	25	0.030	44.800	0.250	495	60
	20.00	4	25	0.035	56.000	0.300	400	55
	30.00	6	25	0.055	84.000	0.450	265	90
	40.00	6	25	0.075	112.000	0.600	200	90
Steel 1100 - 1300 N/mm² U	4.00	4	20	0.005	11.200	0.050	1590	30
	6.00	4	20	0.010	16.800	0.100	1060	40
	8.00	4	20	0.015	22.400	0.100	795	50
	10.00	4	20	0.020	28.000	0.150	635	50
	12.00	4	20	0.020	33.600	0.200	530	40
	16.00	4	20	0.030	44.800	0.250	400	50
	20.00	4	20	0.035	56.000	0.300	320	45
	30.00	6	20	0.055	84.000	0.450	210	70
	40.00	6	20	0.075	112.000	0.600	160	70
Cold work tool steel (12% Cr), high alloyed [1.2379] U	4.00	4	18	0.005	11.200	0.050	1430	30
	6.00	4	18	0.010	16.800	0.100	955	40
	8.00	4	18	0.015	22.400	0.100	715	45
	10.00	4	18	0.020	28.000	0.150	575	45
	12.00	4	18	0.020	33.600	0.200	475	40
	16.00	4	18	0.030	44.800	0.250	360	45
	20.00	4	18	0.035	56.000	0.300	285	40
	30.00	6	18	0.055	84.000	0.450	190	65
	40.00	6	18	0.075	112.000	0.600	145	65
Cast iron (lamellar / spheroidal) U	4.00	4	24	0.005	11.200	0.050	1910	40
	6.00	4	24	0.010	16.800	0.100	1275	50
	8.00	4	24	0.015	22.400	0.100	955	55
	10.00	4	24	0.020	28.000	0.150	765	60
	12.00	4	24	0.020	33.600	0.200	635	50
	16.00	4	24	0.030	44.800	0.250	475	55
	20.00	4	24	0.035	56.000	0.300	380	55
	30.00	6	24	0.055	84.000	0.450	255	85
	40.00	6	24	0.075	112.000	0.600	190	85
Stainless steel [Cr-Ni/1.4301] U	4.00	4	15	0.005	11.200	0.050	1195	25
	6.00	4	15	0.010	16.800	0.100	795	30
	8.00	4	15	0.015	22.400	0.100	595	35
	10.00	4	15	0.020	28.000	0.150	475	40
	12.00	4	15	0.020	33.600	0.200	400	30
	16.00	4	15	0.030	44.800	0.250	300	35
	20.00	4	15	0.035	56.000	0.300	240	35
	30.00	6	15	0.055	84.000	0.450	160	55
	40.00	6	15	0.075	112.000	0.600	120	55
Unalloyed copper U	4.00	4	40	0.005	11.200	0.050	3185	65
	6.00	4	40	0.010	16.800	0.100	2120	85
	8.00	4	40	0.015	22.400	0.100	1590	95
	10.00	4	40	0.020	28.000	0.150	1275	100
	12.00	4	40	0.020	33.600	0.200	1060	85
	16.00	4	40	0.030	44.800	0.250	795	95
	20.00	4	40	0.035	56.000	0.300	635	90
	30.00	6	40	0.055	84.000	0.450	425	140
	40.00	6	40	0.075	112.000	0.600	320	145
Wrought aluminium Si < 6% U	4.00	4	50	0.005	11.200	0.050	3980	80
	6.00	4	50	0.010	16.800	0.100	2655	105
	8.00	4	50	0.015	22.400	0.100	1990	120
	10.00	4	50	0.020	28.000	0.150	1590	125
	12.00	4	50	0.020	33.600	0.200	1325	105
	16.00	4	50	0.030	44.800	0.250	995	120
	20.00	4	50	0.035	56.000	0.300	795	110
	30.00	6	50	0.055	84.000	0.450	530	175
	40.00	6	50	0.075	112.000	0.600	400	180

Cylindrical end mills

Smooth-edged, long version

HSS PM/F	λ 35° γ 15°
90°	



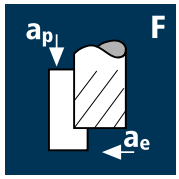
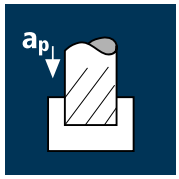
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Copper

Example: **Order-N°.** Coating **U** Article-N°. **0200** ø-Code **140**

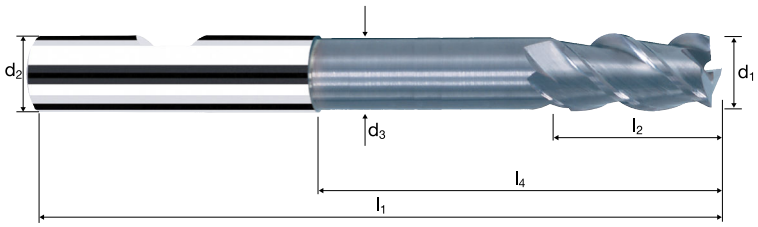
Ø Code	d_1 k8	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U0200
140	2.00	6.00	54	10.00	16.81	7.0°	4	●
160	2.50	6.00	56	12.00	19.50	5.5°	4	●
180	3.00	6.00	56	12.00	19.50	4.5°	4	●
220	4.00	6.00	63	19.00	26.50	2.5°	4	●
260	5.00	6.00	68	24.00	31.50	1.0°	4	●
300	6.00	6.00	68	24.00	-	0.0°	4	●
391	8.00	8.00	82	38.00	-	0.0°	4	●
450	10.00	10.00	95	45.00	-	0.0°	4	●
501	12.00	12.00	110	53.00	-	0.0°	4	●
570	14.00	12.00	110	53.00	-	0.0°	4	●
610	16.00	16.00	123	63.00	-	0.0°	4	●
640	18.00	16.00	123	63.00	-	0.0°	4	●
682	20.00	20.00	141	75.00	-	0.0°	4	●
772	25.00	25.00	166	90.00	-	0.0°	4	●
810	30.00	25.00	166	90.00	-	0.0°	6	●
832	32.00	32.00	186	106.00	-	0.0°	6	●
860	36.00	32.00	186	106.00	-	0.0°	6	●
881	40.00	32.00	205	125.00	-	0.0°	6	●
892	40.00	40.00	217	125.00	-	0.0°	6	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel < 850 N/mm²	3.00	3	95	0.010	4.500	0.080	10080	300	108.9
		4.00	3	95	0.010	6.000	0.100	7560	225	136.1
		5.00	3	95	0.015	7.500	0.130	6050	270	265.4
		6.00	3	95	0.015	9.000	0.150	5040	225	306.2
		8.00	3	95	0.020	12.000	0.200	3780	225	544.3
		10.00	3	95	0.025	15.000	0.250	3025	225	850.5
		12.00	3	95	0.030	18.000	0.300	2520	225	1224.7
		16.00	3	95	0.040	24.000	0.400	1890	225	2177.2
	Steel 850 - 1100 N/mm²	3.00	3	75	0.010	4.500	0.080	7960	240	85.9
		4.00	3	75	0.010	6.000	0.100	5970	180	107.4
		5.00	3	75	0.015	7.500	0.130	4775	215	209.5
		6.00	3	75	0.015	9.000	0.150	3980	180	241.7
		8.00	3	75	0.020	12.000	0.200	2985	180	429.7
		10.00	3	75	0.025	15.000	0.250	2385	180	671.4
		12.00	3	75	0.030	18.000	0.300	1990	180	966.9
		16.00	3	75	0.040	24.000	0.400	1490	180	1718.9
	Cast iron (lamellar / spheroidal)	3.00	3	150	0.010	4.500	0.080	15915	475	171.9
		4.00	3	150	0.010	6.000	0.100	11935	360	214.9
		5.00	3	150	0.015	7.500	0.130	9550	430	419.0
		6.00	3	150	0.015	9.000	0.150	7960	360	483.4
		8.00	3	150	0.020	12.000	0.200	5970	360	859.4
		10.00	3	150	0.025	15.000	0.250	4775	360	1342.9
		12.00	3	150	0.030	18.000	0.300	3980	360	1933.7
		16.00	3	150	0.040	24.000	0.400	2985	360	3437.7
	Stainless steel [Cr-Ni/1.4301]	3.00	3	40	0.010	4.500	0.080	4245	125	45.8
		4.00	3	40	0.010	6.000	0.100	3185	95	57.3
		5.00	3	40	0.015	7.500	0.130	2545	115	111.7
		6.00	3	40	0.015	9.000	0.150	2120	95	128.9
		8.00	3	40	0.020	12.000	0.200	1590	95	229.2
		10.00	3	40	0.025	15.000	0.250	1275	95	358.1
		12.00	3	40	0.030	18.000	0.300	1060	95	515.7
		16.00	3	40	0.040	24.000	0.400	795	95	916.7
	Steel < 850 N/mm²	3.00	3	70	0.005	0.300	3.000	7425	110	100.3
		4.00	3	70	0.010	0.400	4.000	5570	165	267.4
		5.00	3	70	0.010	0.500	5.000	4455	135	334.2
		6.00	3	70	0.010	0.600	6.000	3715	110	401.1
		8.00	3	70	0.015	0.800	8.000	2785	125	802.1
		10.00	3	70	0.020	1.000	10.000	2230	135	1336.9
		12.00	3	70	0.025	1.200	12.000	1855	140	2005.4
		16.00	3	70	0.030	1.600	16.000	1395	125	3208.6
	Steel 850 - 1100 N/mm²	3.00	3	60	0.005	0.300	3.000	6365	95	85.9
		4.00	3	60	0.005	0.400	4.000	4775	70	114.6
		5.00	3	60	0.010	0.500	5.000	3820	115	286.5
		6.00	3	60	0.010	0.600	6.000	3185	95	343.8
		8.00	3	60	0.015	0.800	8.000	2385	105	687.5
		10.00	3	60	0.020	1.000	10.000	1910	115	1145.9
		12.00	3	60	0.020	1.200	12.000	1590	95	1375.1
		16.00	3	60	0.030	1.600	16.000	1195	105	2750.2
	Cast iron (lamellar / spheroidal)	3.00	3	105	0.005	0.300	3.000	11140	165	150.4
		4.00	3	105	0.010	0.400	4.000	8355	250	401.1
		5.00	3	105	0.010	0.500	5.000	6685	200	501.3
		6.00	3	105	0.015	0.600	6.000	5570	250	902.4
		8.00	3	105	0.020	0.800	8.000	4180	250	1604.3
		10.00	3	105	0.020	1.000	10.000	3340	200	2005.4
		12.00	3	105	0.025	1.200	12.000	2785	210	3008.0
		16.00	3	105	0.035	1.600	16.000	2090	220	5615.0
	Stainless steel [Cr-Ni/1.4301]	3.00	3	35	0.005	0.300	3.000	3715	55	50.1
		4.00	3	35	0.005	0.400	4.000	2785	40	66.8
		5.00	3	35	0.010	0.500	5.000	2230	65	167.1
		6.00	3	35	0.010	0.600	6.000	1855	55	200.5
		8.00	3	35	0.015	0.800	8.000	1395	65	401.1
		10.00	3	35	0.020	1.000	10.000	1115	65	668.5
		12.00	3	35	0.020	1.200	12.000	930	55	802.1
		16.00	3	35	0.030	1.600	16.000	695	65	1604.3

Cylindrical end mills

Smooth-edged, long version with neck

HM MG10	λ 45° γ 15°



Roughing

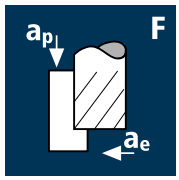
Finishing

ToolSchool

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **5393** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P5393
180	3.00	6.00	2.80	70	8.00	16.00	22.63	0.10	4.0°	3	●
220	4.00	6.00	3.70	70	11.00	18.00	22.95	0.10	3.0°	3	●
260	5.00	6.00	4.60	70	13.00	21.00	24.27	0.15	1.5°	3	●
300	6.00	6.00	5.50	70	13.00	32.34	33.00	0.15	0.0°	3	●
391	8.00	8.00	7.40	90	19.00	52.29	53.00	0.15	0.0°	3	●
450	10.00	10.00	9.20	100	22.00	58.20	59.00	0.20	0.0°	3	●
501	12.00	12.00	11.00	110	26.00	63.13	64.00	0.20	0.0°	3	●
610	16.00	16.00	15.00	123	32.00	73.13	74.00	0.20	0.0°	3	●

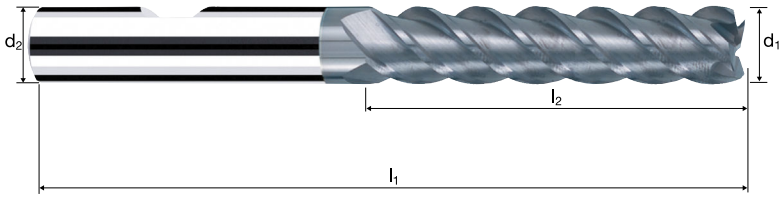
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	6.00	4	30	0.010	18.000	0.120	1590	65
		8.00	4	30	0.015	24.000	0.160	1195	70
		10.00	4	30	0.020	30.000	0.200	955	75
		12.00	4	30	0.025	36.000	0.240	795	80
		16.00	4	30	0.030	48.000	0.320	595	70
		20.00	4	30	0.040	60.000	0.400	475	75
	Steel 850 - 1100 N/mm²	6.00	4	30	0.010	18.000	0.120	1590	65
		8.00	4	30	0.015	24.000	0.160	1195	70
		10.00	4	30	0.020	30.000	0.200	955	75
		12.00	4	30	0.025	36.000	0.240	795	80
		16.00	4	30	0.030	48.000	0.320	595	70
		20.00	4	30	0.040	60.000	0.400	475	75
	Steel 1100 - 1300 N/mm²	6.00	4	20	0.010	18.000	0.120	1060	40
		8.00	4	20	0.015	24.000	0.160	795	50
		10.00	4	20	0.020	30.000	0.200	635	50
		12.00	4	20	0.025	36.000	0.240	530	55
		16.00	4	20	0.030	48.000	0.320	400	50
		20.00	4	20	0.040	60.000	0.400	320	50
	Stainless steel [Cr-Ni/1.4301]	6.00	4	25	0.010	18.000	0.120	1325	55
		8.00	4	25	0.015	24.000	0.160	995	60
		10.00	4	25	0.020	30.000	0.200	795	65
		12.00	4	25	0.025	36.000	0.240	665	65
		16.00	4	25	0.030	48.000	0.320	495	60
		20.00	4	25	0.040	60.000	0.400	400	65
	Cast iron (lamellar / spheroidal)	6.00	4	30	0.010	18.000	0.120	1590	65
		8.00	4	30	0.015	24.000	0.160	1195	70
		10.00	4	30	0.020	30.000	0.200	955	75
		12.00	4	30	0.025	36.000	0.240	795	80
		16.00	4	30	0.030	48.000	0.320	595	70
		20.00	4	30	0.040	60.000	0.400	475	75
	Unalloyed copper	6.00	4	30	0.010	18.000	0.120	1590	65
		8.00	4	30	0.015	24.000	0.160	1195	70
		10.00	4	30	0.020	30.000	0.200	955	75
		12.00	4	30	0.025	36.000	0.240	795	80
		16.00	4	30	0.030	48.000	0.320	595	70
		20.00	4	30	0.040	60.000	0.400	475	75
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	6.00	4	25	0.010	18.000	0.120	1325	55
		8.00	4	25	0.015	24.000	0.160	995	60
		10.00	4	25	0.020	30.000	0.200	795	65
		12.00	4	25	0.025	36.000	0.240	665	65
		16.00	4	25	0.030	48.000	0.320	495	60
		20.00	4	25	0.040	60.000	0.400	400	65
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	6.00	4	20	0.010	18.000	0.120	1060	40
		8.00	4	20	0.015	24.000	0.160	795	50
		10.00	4	20	0.020	30.000	0.200	635	50
		12.00	4	20	0.025	36.000	0.240	530	55
		16.00	4	20	0.030	48.000	0.320	400	50
		20.00	4	20	0.040	60.000	0.400	320	50

Cylindrical end mills

Smooth-edged, extra-long version

HM MG10	λ 45° γ 15°

45°



Roughing

Finishing

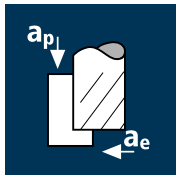
ToolSchool

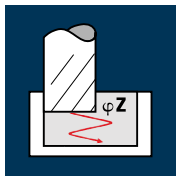
Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Copper

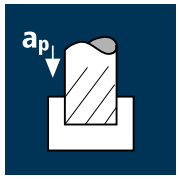
Example: **Order-N°.** Coating **P** Article-N°. **15347** ø-Code **300**

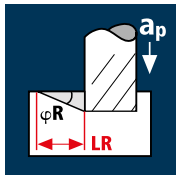
Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z	POLYCHROM P15347	POLYCHROM P15247
300	6.00	6.00	75	31.00	0.15	4	●	
391	8.00	8.00	90	45.00	0.15	4	●	
450	10.00	10.00	100	52.00	0.20	4	●	
501	12.00	12.00	120	69.00	0.20	4	●	
610	16.00	16.00	135	75.00	0.20	4	●	
682	20.00	20.00	166	100.00	0.20	4	●	

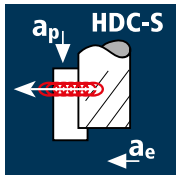
Application

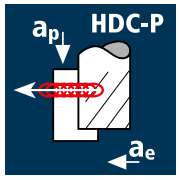


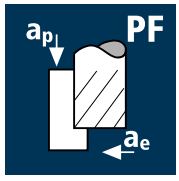


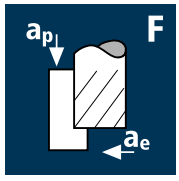












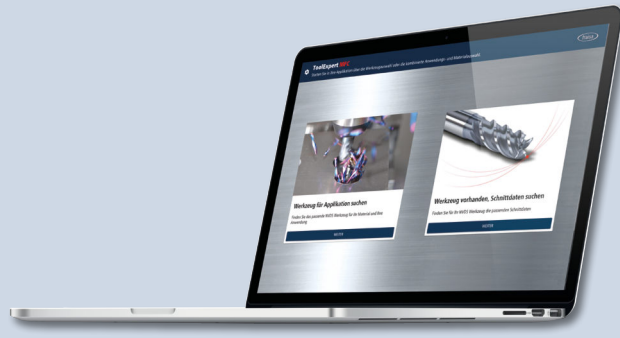
Cutting data calculator ToolExpert MFC

Quick, simple, reliable:
ToolExpert MFC

The MFC multi-functionality with eleven specific applications in 12 groups of materials provides a range of applications with over 85,000 cutting parameters.

Due to this exceptional data volume, ToolExpert MFC replaces the previously used cutting data page.

ToolExpert MFC is regularly updated to include the latest application knowledge.



This way to the new cutting data calculator **ToolExpert MFC** or the FRAISA website **www.fraisa.com/en/toolexpert-mfc**

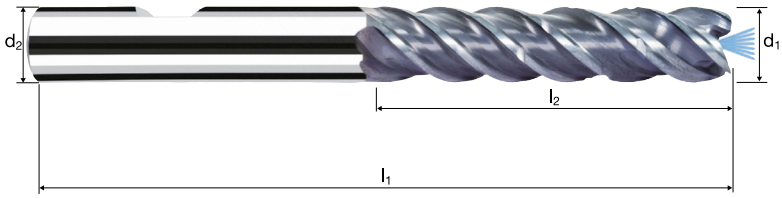
Cylindrical end mills MFC (MB-NVDS)

Smooth-edged with chip breaker, extra-long version 5.2xd
High-performance penetration edge with central air/cooling channel

HM MG10	λ 45° γ 10°

r

Vario



Roughing HPC Roughing HDC Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8221** ø-Code **300**

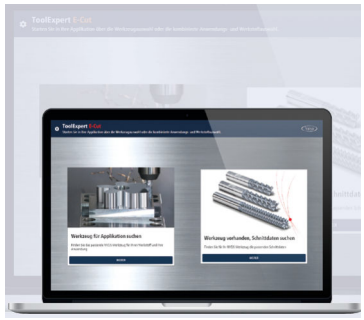
Ø Code	d_1 e8	d_2 h5	l_1	l_2	r	z	POLYCHROM P8221	POLYCHROM P8121
300	6.00	6.00	73	32.00	0.100	4		●
391	8.00	8.00	84	42.00	0.150	4		●
450	10.00	10.00	100	53.00	0.200	4		●
501	12.00	12.00	117	63.00	0.200	4		●
610	16.00	16.00	144	84.00	0.200	4		●
682	20.00	20.00	169	105.00	0.200	4		●

ToolExpert E-Cut

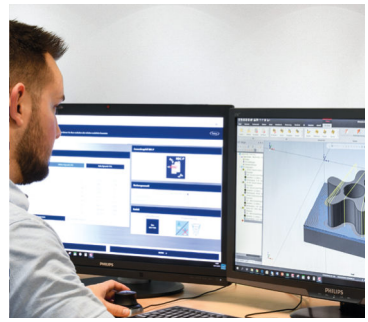
FRAISA's cutting data calculator **ToolExpert E-Cut** provides tool and material-specific cutting data for production and is the basis for precision use of **FRAISA E-Cut** tools.

This innovative software solution is **very user-friendly**: simply select the material, application and tool and the software provides you with the right cutting data. **ToolExpert E-Cut** can then transfer the tool geometry data straight to your CAM system.

Fast, safe and reliable.



Selecting the material, application and tool to obtain the right cutting data



Transferring the cutting data and tool geometry data to the CAM system

To complement existing solutions and for all future applications

EASY TO USE
EFFECTIVE
ECONOMIC

Try out our ToolExpert E-Cut now online – it's simple

www.fraisa.com

Cylindrical end mills E-Cut

Smooth-edged with chip breaker, extra-long version 5.2xd

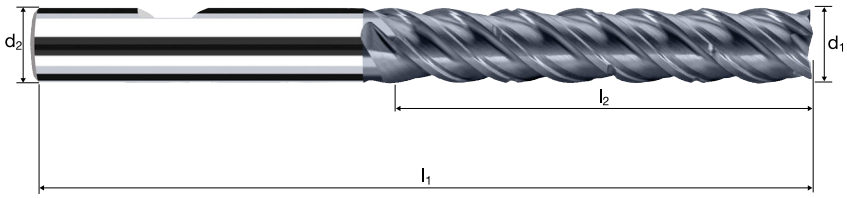
HM MG10

λ 45°
γ 10°

r

Vario

new!



Roughing HPC | Roughing HDC | Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8420** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r	α	z	POLYCHROM P8420	POLYCHROM P8320
180*	3.00	6.00	63	16.00	25.26	0.050	4.5°	4		●
220*	4.00	6.00	70	21.00	29.39	0.100	3.0°	4		●
260	5.00	6.00	73	26.00	33.52	0.100	1.5°	4		●
300	6.00	6.00	73	32.00	-	0.100	0.0°	4		●
391	8.00	8.00	84	42.00	-	0.150	0.0°	4		●
450	10.00	10.00	100	53.00	-	0.200	0.0°	4		●
501	12.00	12.00	117	63.00	-	0.200	0.0°	4		●
610	16.00	16.00	144	84.00	-	0.200	0.0°	4		●
682	20.00	20.00	169	105.00	-	0.250	0.0°	4		●

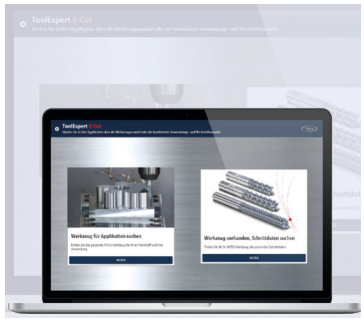
* without chip breaker only

ToolExpert E-Cut

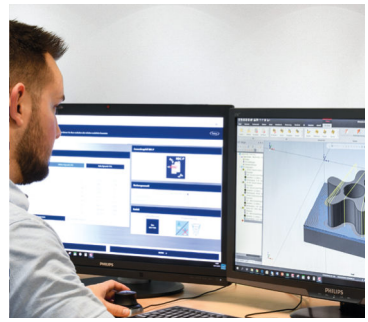
FRAISA's cutting data calculator **ToolExpert E-Cut** provides tool and material-specific cutting data for production and is the basis for precision use of **FRAISA E-Cut** tools.

This innovative software solution is **very user-friendly**: simply select the material, application and tool and the software provides you with the right cutting data. **ToolExpert E-Cut** can then transfer the tool geometry data straight to your CAM system.

Fast, safe and reliable.



Selecting the material, application and tool to obtain the right cutting data



Transferring the cutting data and tool geometry data to the CAM system

To complement existing solutions and for all future applications

EASY TO USE
EFFECTIVE
ECONOMIC

Try out our ToolExpert E-Cut now online – it's simple

www.fraisa.com

Cylindrical end mills E-Cut

Smooth-edged with chip breaker, extra-long version 5.2xd

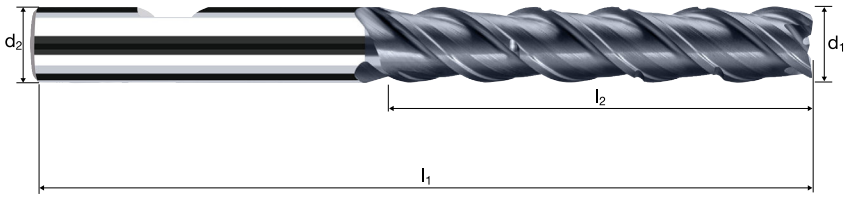
HM MG10

λ 45°
γ 10°

r

Vario

new!



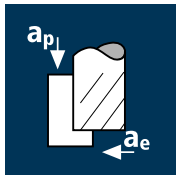
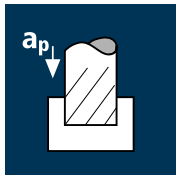
Roughing HPC | Roughing HDC | Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8423** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r	α	z	POLYCHROM P8423	POLYCHROM P8323
180*	3.00	6.00	63	16.00	25.26	0.050	4.5°	3		●
220*	4.00	6.00	70	21.00	29.39	0.100	3.0°	3		●
260	5.00	6.00	73	26.00	33.52	0.100	1.5°	3		●
300	6.00	6.00	73	32.00	-	0.100	0.0°	3		●
391	8.00	8.00	84	42.00	-	0.150	0.0°	3		●
450	10.00	10.00	100	53.00	-	0.200	0.0°	3		●
501	12.00	12.00	117	63.00	-	0.200	0.0°	3		●
610	16.00	16.00	144	84.00	-	0.200	0.0°	3		●
682	20.00	20.00	169	105.00	-	0.250	0.0°	3		●

* without chip breaker only

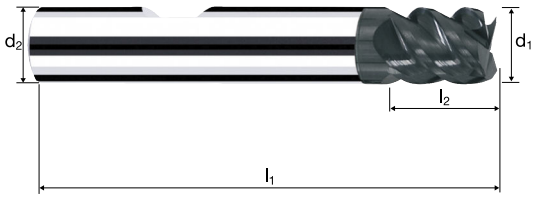
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Hardened tool steel 42 - 48 HRC	2.00	3	90	0.015	2.000	1.200	14325	645	1.5
		3.00	4	90	0.025	3.000	1.800	9550	955	5.2
		4.00	4	90	0.025	4.000	2.400	7160	715	6.9
		5.00	4	90	0.035	5.000	3.000	5730	800	12.0
		6.00	4	90	0.040	6.000	1.500	4775	765	6.9
		8.00	4	90	0.055	8.000	4.800	3580	790	30.3
		10.00	4	90	0.070	10.000	6.000	2865	800	48.1
		12.00	4	90	0.085	12.000	7.200	2385	810	70.1
		16.00	4	90	0.110	16.000	4.000	1790	790	50.4
	Hardened tool steel 48 - 52 HRC	2.00	3	70	0.010	2.000	1.200	11140	335	0.8
		3.00	4	70	0.020	3.000	1.800	7425	595	3.2
		4.00	4	70	0.025	4.000	2.400	5570	555	5.3
		5.00	4	70	0.030	5.000	3.000	4455	535	8.0
		6.00	4	70	0.035	6.000	1.500	3715	520	4.7
		8.00	4	70	0.050	8.000	4.800	2785	555	21.4
		10.00	4	70	0.060	10.000	6.000	2230	535	32.1
		12.00	4	70	0.075	12.000	7.200	1855	555	48.1
		16.00	4	70	0.100	16.000	4.000	1395	555	35.7
	Hardened tool steel 52 - 56 HRC	2.00	3	50	0.010	2.000	1.200	7960	240	0.6
		3.00	4	50	0.015	3.000	1.800	5305	320	1.7
		4.00	4	50	0.020	4.000	2.400	3980	320	3.1
		5.00	4	50	0.025	5.000	3.000	3185	320	4.8
		6.00	4	50	0.030	6.000	1.500	2655	320	2.9
		8.00	4	50	0.040	8.000	4.800	1990	320	12.2
		10.00	4	50	0.050	10.000	6.000	1590	320	19.1
		12.00	4	50	0.060	12.000	7.200	1325	320	27.5
		16.00	4	50	0.080	16.000	4.000	995	320	20.4
	Hardened tool steel 56 - 60 HRC	2.00	3	25	0.005	2.000	1.200	3980	60	0.1
		3.00	4	25	0.010	3.000	1.800	2655	105	0.6
		4.00	4	25	0.015	4.000	2.400	1990	120	1.1
		5.00	4	25	0.020	5.000	3.000	1590	125	1.9
		6.00	4	25	0.020	6.000	1.500	1325	105	1.0
		8.00	4	25	0.030	8.000	4.800	995	120	4.6
		10.00	4	25	0.035	10.000	6.000	795	110	6.7
		12.00	4	25	0.045	12.000	7.200	665	120	10.3
		16.00	4	25	0.060	16.000	4.000	495	120	7.6
	Hardened tool steel 42 - 48 HRC	2.00	3	75	0.010	1.000	2.000	11935	360	0.7
		3.00	4	75	0.015	1.500	3.000	7960	475	2.1
		4.00	4	75	0.025	2.000	4.000	5970	595	4.8
		5.00	4	75	0.025	2.500	5.000	4775	475	6.0
		6.00	4	75	0.035	3.000	6.000	3980	555	10.0
		8.00	4	75	0.045	4.000	8.000	2985	535	17.2
		10.00	4	75	0.055	5.000	10.000	2385	525	26.3
		12.00	4	75	0.070	6.000	12.000	1990	555	40.1
		16.00	4	75	0.085	4.000	16.000	1490	505	32.5
	Hardened tool steel 48 - 52 HRC	2.00	3	60	0.010	1.000	2.000	9550	285	0.6
		3.00	4	60	0.015	1.500	3.000	6365	380	1.7
		4.00	4	60	0.020	2.000	4.000	4775	380	3.1
		5.00	4	60	0.030	2.500	5.000	3820	460	5.7
		6.00	4	60	0.035	3.000	6.000	3185	445	8.0
		8.00	4	60	0.045	4.000	8.000	2385	430	13.8
		10.00	4	60	0.055	5.000	10.000	1910	420	21.0
		12.00	4	60	0.065	6.000	12.000	1590	415	29.8
		16.00	4	60	0.090	4.000	16.000	1195	430	27.5
	Hardened tool steel 52 - 56 HRC	2.00	3	40	0.010	1.000	2.000	6365	190	0.4
		3.00	4	40	0.015	1.500	3.000	4245	255	1.1
		4.00	4	40	0.020	2.000	4.000	3185	255	2.0
		5.00	4	40	0.020	2.500	5.000	2545	205	2.5
		6.00	4	40	0.025	3.000	6.000	2120	210	3.8
		8.00	4	40	0.035	4.000	8.000	1590	225	7.1
		10.00	4	40	0.045	5.000	10.000	1275	230	11.5
		12.00	4	40	0.055	6.000	12.000	1060	235	16.8
		16.00	4	40	0.070	4.000	16.000	795	225	14.3
	Hardened tool steel 56 - 60 HRC	2.00	3	20	0.006	1.000	2.000	3185	55	0.1
		3.00	4	20	0.009	1.500	3.000	2120	75	0.3
		4.00	4	20	0.013	2.000	4.000	1590	85	0.7
		5.00	4	20	0.016	2.500	5.000	1275	80	1.0
		6.00	4	20	0.019	3.000	6.000	1060	80	1.5
		8.00	4	20	0.025	4.000	8.000	795	80	2.5
		10.00	4	20	0.031	5.000	10.000	635	80	3.9
		12.00	4	20	0.038	6.000	12.000	530	80	5.8
		16.00	4	20	0.050	4.000	16.000	400	80	5.1

Cylindrical end mills HX

Smooth-edged, short version

X-Generation X

HM MG10	λ 55° γ -10°
45°	



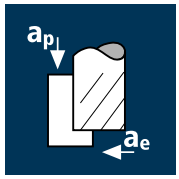
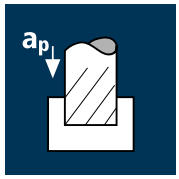
Roughing

Finishing

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **D** Article-N°. **5349** ø-Code **100**

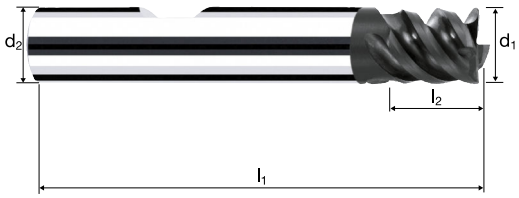
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P5349 P5249	DURO-S D5349 D5249
100	1.00	6.00	50	1.00	11.79	0.07	13.0°	3	●	●
108	1.20	6.00	50	1.20	11.82	0.07	12.5°	3	●	●
120	1.50	6.00	50	1.50	11.56	0.07	12.0°	3	●	●
140	2.00	6.00	50	2.00	11.12	0.10	11.0°	3	●	●
148	2.20	6.00	50	2.20	11.45	0.10	10.0°	3	●	●
160	2.50	6.00	50	2.50	11.19	0.10	9.5°	3	●	●
180	3.00	6.00	50	3.00	10.76	0.10	8.5°	4	●	●
220	4.00	6.00	54	4.00	9.89	0.10	6.5°	4	●	●
260	5.00	6.00	54	5.00	9.02	0.15	3.5°	4	●	●
300	6.00	6.00	54	7.00	-	0.15	0.0°	4	●	●
391	8.00	8.00	58	9.00	-	0.15	0.0°	4	●	●
450	10.00	10.00	66	11.00	-	0.20	0.0°	4	●	●
501	12.00	12.00	73	13.00	-	0.20	0.0°	4	●	●
610	16.00	16.00	82	17.00	-	0.20	0.0°	4	●	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Stainless steel [Cr-Ni/1.4301]	3.00	4	80	0.015	3.000	1.800	8490	510	2.8
		4.00	4	80	0.020	4.000	2.400	6365	510	4.9
		5.00	4	80	0.025	5.000	3.000	5095	510	7.6
		6.00	4	80	0.030	6.000	3.600	4245	510	11.0
		8.00	4	80	0.040	8.000	4.800	3185	510	19.6
		10.00	4	80	0.050	10.000	6.000	2545	510	30.6
		12.00	4	80	0.060	12.000	7.200	2120	510	44.0
		16.00	4	80	0.075	16.000	6.400	1590	475	48.9
	Stainless steel [Cr-Ni-Mo-.../1.4429]	3.00	4	40	0.015	3.000	1.800	4245	255	1.4
		4.00	4	40	0.020	4.000	2.400	3185	255	2.4
		5.00	4	40	0.025	5.000	3.000	2545	255	3.8
		6.00	4	40	0.030	6.000	3.600	2120	255	5.5
		8.00	4	40	0.040	8.000	4.800	1590	255	9.8
		10.00	4	40	0.050	10.000	6.000	1275	255	15.3
		12.00	4	40	0.060	12.000	7.200	1060	255	22.0
		16.00	4	40	0.075	16.000	6.400	795	240	24.4
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3.00	4	25	0.015	3.000	1.800	2655	160	0.9
		4.00	4	25	0.020	4.000	2.400	1990	160	1.5
		5.00	4	25	0.025	5.000	3.000	1590	160	2.4
		6.00	4	25	0.030	6.000	3.600	1325	160	3.4
		8.00	4	25	0.035	8.000	4.800	995	140	5.3
		10.00	4	25	0.045	10.000	6.000	795	145	8.6
		12.00	4	25	0.050	12.000	7.200	665	135	11.5
		16.00	4	25	0.060	16.000	6.400	495	120	12.2
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	3.00	4	15	0.015	3.000	1.800	1590	95	0.5
		4.00	4	15	0.020	4.000	2.400	1195	95	0.9
		5.00	4	15	0.025	5.000	3.000	955	95	1.4
		6.00	4	15	0.030	6.000	3.600	795	95	2.1
		8.00	4	15	0.035	8.000	4.800	595	85	3.2
		10.00	4	15	0.045	10.000	6.000	475	85	5.2
		12.00	4	15	0.050	12.000	7.200	400	80	6.9
		16.00	4	15	0.060	16.000	6.400	300	70	7.3
	Stainless steel [Cr-Ni/1.4301]	3.00	4	60	0.015	2.100	3.000	6365	380	2.4
		4.00	4	60	0.020	2.800	4.000	4775	380	4.3
		5.00	4	60	0.025	3.500	5.000	3820	380	6.7
		6.00	4	60	0.030	4.200	6.000	3185	380	9.6
		8.00	4	60	0.040	5.600	8.000	2385	380	17.1
		10.00	4	60	0.045	7.000	10.000	1910	345	24.1
		12.00	4	60	0.045	8.400	12.000	1590	285	28.9
		16.00	4	60	0.065	6.400	16.000	1195	310	31.8
	Stainless steel [Cr-Ni-Mo-.../1.4429]	3.00	4	30	0.015	2.100	3.000	3185	190	1.2
		4.00	4	30	0.020	2.800	4.000	2385	190	2.1
		5.00	4	30	0.025	3.500	5.000	1910	190	3.3
		6.00	4	30	0.030	4.200	6.000	1590	190	4.8
		8.00	4	30	0.040	5.600	8.000	1195	190	8.6
		10.00	4	30	0.045	7.000	10.000	955	170	12.0
		12.00	4	30	0.045	8.400	12.000	795	145	14.4
		16.00	4	30	0.065	6.400	16.000	595	155	15.9
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3.00	4	20	0.015	2.100	3.000	2120	125	0.8
		4.00	4	20	0.020	2.800	4.000	1590	125	1.4
		5.00	4	20	0.025	3.500	5.000	1275	125	2.2
		6.00	4	20	0.030	4.200	6.000	1060	125	3.2
		8.00	4	20	0.035	5.600	8.000	795	110	5.0
		10.00	4	20	0.045	7.000	10.000	635	115	8.0
		12.00	4	20	0.045	8.400	12.000	530	95	9.6
		16.00	4	20	0.060	6.400	16.000	400	95	9.8
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	3.00	4	10	0.015	2.100	3.000	1060	65	0.4
		4.00	4	10	0.020	2.800	4.000	795	65	0.7
		5.00	4	10	0.025	3.500	5.000	635	65	1.1
		6.00	4	10	0.030	4.200	6.000	530	65	1.6
		8.00	4	10	0.035	5.600	8.000	400	55	2.5
		10.00	4	10	0.045	7.000	10.000	320	55	4.0
		12.00	4	10	0.045	8.400	12.000	265	50	4.8
		16.00	4	10	0.060	6.400	16.000	200	50	4.9

Cylindrical end mills SX

Smooth-edged, short version

HM MG10	λ 55° γ 15°



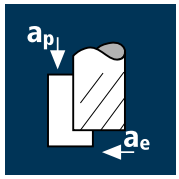
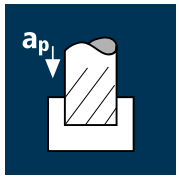
Roughing

Finishing

Rm < 850	Rm 850-1100						Inox Stainless	Ti Titanium	Nickel-Alloys Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **5313** ø-Code **180**

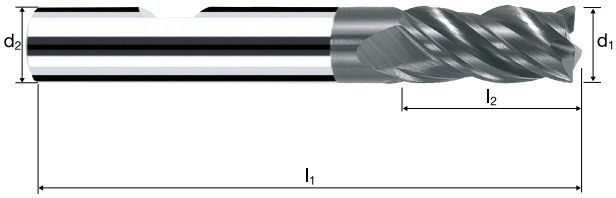
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P5313	POLYCHROM P5213
180	3.00	6.00	50	3.00	10.76	0.10	8.5°	4		●
220	4.00	6.00	54	4.00	9.89	0.10	6.5°	4		●
260	5.00	6.00	54	5.00	9.02	0.15	3.5°	4		●
300	6.00	6.00	54	7.00	-	0.15	0.0°	4		●
391	8.00	8.00	58	9.00	-	0.15	0.0°	4		●
450	10.00	10.00	66	11.00	-	0.20	0.0°	4		●
501	12.00	12.00	73	13.00	-	0.20	0.0°	4		●
610	16.00	16.00	82	17.00	-	0.20	0.0°	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	4	190	0.020	3.000	1.400	20160	1615	6.8
		4.00	4	190	0.025	4.000	1.800	15120	1510	10.9
		5.00	4	190	0.035	5.000	2.300	12095	1695	19.5
		6.00	4	190	0.040	6.000	2.700	10080	1615	26.1
		8.00	4	190	0.055	8.000	3.600	7560	1665	47.9
		10.00	4	190	0.070	10.000	4.500	6050	1695	76.2
		12.00	4	190	0.075	12.000	5.400	5040	1510	98.0
		16.00	4	190	0.100	16.000	4.000	3780	1510	96.8
	Steel 850 - 1100 N/mm²	3.00	4	140	0.020	3.000	1.400	14855	1190	5.0
		4.00	4	140	0.025	4.000	1.800	11140	1115	8.0
		5.00	4	140	0.035	5.000	2.300	8915	1250	14.3
		6.00	4	140	0.040	6.000	2.700	7425	1190	19.3
		8.00	4	140	0.055	8.000	3.600	5570	1225	35.3
		10.00	4	140	0.070	10.000	4.500	4455	1250	56.1
		12.00	4	140	0.075	12.000	5.400	3715	1115	72.2
		16.00	4	140	0.100	16.000	4.000	2785	1115	71.3
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	4	70	0.020	3.000	1.400	7425	595	2.5
		4.00	4	70	0.025	4.000	1.800	5570	555	4.0
		5.00	4	70	0.030	5.000	2.300	4455	535	6.1
		6.00	4	70	0.040	6.000	2.700	3715	595	9.6
		8.00	4	70	0.050	8.000	3.600	2785	555	16.0
		10.00	4	70	0.065	10.000	4.500	2230	580	26.1
		12.00	4	70	0.075	12.000	5.400	1855	555	36.1
		16.00	4	70	0.095	16.000	4.000	1395	530	33.9
	Stainless steel [Cr-Ni/1.4301]	3.00	4	90	0.015	3.000	1.400	9550	575	2.4
		4.00	4	90	0.020	4.000	1.800	7160	575	4.1
		5.00	4	90	0.020	5.000	2.300	5730	460	5.3
		6.00	4	90	0.030	6.000	2.700	4775	575	9.3
		8.00	4	90	0.035	8.000	3.600	3580	500	14.4
		10.00	4	90	0.045	10.000	4.500	2865	515	23.2
		12.00	4	90	0.055	12.000	5.400	2385	525	34.0
		16.00	4	90	0.065	16.000	4.000	1790	465	29.8
	Steel < 850 N/mm²	3.00	4	155	0.015	2.400	3.000	16445	985	7.1
		4.00	4	155	0.020	3.200	4.000	12335	985	12.6
		5.00	4	155	0.030	4.000	5.000	9870	1185	23.7
		6.00	4	155	0.035	4.800	6.000	8225	1150	33.2
		8.00	4	155	0.045	6.400	8.000	6165	1110	56.8
		10.00	4	155	0.055	8.000	10.000	4935	1085	86.8
		12.00	4	155	0.060	9.600	12.000	4110	985	113.7
		16.00	4	155	0.075	6.400	16.000	3085	925	94.7
	Steel 850 - 1100 N/mm²	3.00	4	105	0.015	2.400	3.000	11140	670	4.8
		4.00	4	105	0.020	3.200	4.000	8355	670	8.6
		5.00	4	105	0.030	4.000	5.000	6685	800	16.0
		6.00	4	105	0.035	4.800	6.000	5570	780	22.5
		8.00	4	105	0.045	6.400	8.000	4180	750	38.5
		10.00	4	105	0.055	8.000	10.000	3340	735	58.8
		12.00	4	105	0.060	9.600	12.000	2785	670	77.0
		16.00	4	105	0.075	6.400	16.000	2090	625	64.2
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	4	55	0.015	2.400	3.000	5835	350	2.5
		4.00	4	55	0.020	3.200	4.000	4375	350	4.5
		5.00	4	55	0.030	4.000	5.000	3500	420	8.4
		6.00	4	55	0.035	4.800	6.000	2920	410	11.8
		8.00	4	55	0.045	6.400	8.000	2190	395	20.2
		10.00	4	55	0.055	8.000	10.000	1750	385	30.8
		12.00	4	55	0.060	9.600	12.000	1460	350	40.3
		16.00	4	55	0.075	6.400	16.000	1095	330	33.6
	Stainless steel [Cr-Ni/1.4301]	3.00	4	70	0.010	2.400	3.000	7425	295	2.1
		4.00	4	70	0.015	3.200	4.000	5570	335	4.3
		5.00	4	70	0.025	4.000	5.000	4455	445	8.9
		6.00	4	70	0.030	4.800	6.000	3715	445	12.8
		8.00	4	70	0.035	6.400	8.000	2785	390	20.0
		10.00	4	70	0.045	8.000	10.000	2230	400	32.1
		12.00	4	70	0.050	9.600	12.000	1855	370	42.8
		16.00	4	70	0.060	6.400	16.000	1395	335	34.2

Cylindrical end mills Cut-V

Smooth-edged, short version

HM MG10	λ 40° γ 0°



Roughing

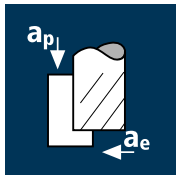
Finishing

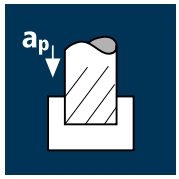
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **5329** ø-Code **180**

	POLYCHROM
	P5329
	P5229

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z		
180	3.00	6.00	50	6.00	13.56	0.10	7.0°	4		●
220	4.00	6.00	50	8.00	14.09	0.10	4.5°	4		●
260	5.00	6.00	50	9.00	13.22	0.15	2.5°	4		●
300	6.00	6.00	50	10.00	-	0.15	0.0°	4		●
391	8.00	8.00	54	13.00	-	0.15	0.0°	4		●
450	10.00	10.00	63	16.00	-	0.20	0.0°	4		●
501	12.00	12.00	73	19.00	-	0.20	0.0°	4		●
610	16.00	16.00	82	25.00	-	0.20	0.0°	4		●

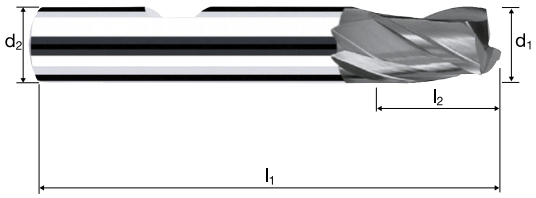
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	1.50	3	190	0.010	1.800	0.200	40320	1210
		2.00	3	190	0.015	2.400	0.200	30240	1360
		2.50	3	190	0.015	3.000	0.300	24190	1090
		3.00	3	190	0.020	3.600	0.300	20160	1210
		4.00	3	190	0.025	4.800	0.400	15120	1135
		5.00	3	190	0.035	6.000	0.500	12095	1270
		6.00	3	190	0.040	7.200	0.600	10080	1210
		8.00	3	190	0.055	9.600	0.800	7560	1245
		10.00	3	190	0.065	12.000	1.000	6050	1180
	Steel 850 - 1100 N/mm²	1.50	3	130	0.010	1.800	0.200	27585	830
		2.00	3	130	0.015	2.400	0.200	20690	930
		2.50	3	130	0.015	3.000	0.300	16550	745
		3.00	3	130	0.020	3.600	0.300	13795	830
		4.00	3	130	0.025	4.800	0.400	10345	775
		5.00	3	130	0.035	6.000	0.500	8275	870
		6.00	3	130	0.040	7.200	0.600	6895	830
		8.00	3	130	0.050	9.600	0.800	5175	775
		10.00	3	130	0.060	12.000	1.000	4140	745
	Titanium alloys > 300 HB [Ti6Al4V]	1.50	3	50	0.005	1.800	0.200	10610	160
		2.00	3	50	0.010	2.400	0.200	7960	240
		2.50	3	50	0.010	3.000	0.300	6365	190
		3.00	3	50	0.010	3.600	0.300	5305	160
		4.00	3	50	0.015	4.800	0.400	3980	180
		5.00	3	50	0.020	6.000	0.500	3185	190
		6.00	3	50	0.020	7.200	0.600	2655	160
		8.00	3	50	0.030	9.600	0.800	1990	180
		10.00	3	50	0.035	12.000	1.000	1590	165
	Stainless steel [Cr-Ni/1.4301]	1.50	3	80	0.005	1.800	0.200	16975	255
		2.00	3	80	0.010	2.400	0.200	12730	380
		2.50	3	80	0.010	3.000	0.300	10185	305
		3.00	3	80	0.015	3.600	0.300	8490	380
		4.00	3	80	0.020	4.800	0.400	6365	380
		5.00	3	80	0.025	6.000	0.500	5095	380
		6.00	3	80	0.030	7.200	0.600	4245	380
		8.00	3	80	0.040	9.600	0.800	3185	380
		10.00	3	80	0.045	12.000	1.000	2545	345

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	1.50	3	140	0.010	0.600	1.500	29710	890	0.8
		2.00	3	140	0.010	0.800	2.000	22280	670	1.1
		2.50	3	140	0.015	1.000	2.500	17825	800	2.0
		3.00	3	140	0.015	1.200	3.000	14855	670	2.4
		4.00	3	140	0.020	1.600	4.000	11140	670	4.3
		5.00	3	140	0.030	2.000	5.000	8915	800	8.0
		6.00	3	140	0.035	2.400	6.000	7425	780	11.2
		8.00	3	140	0.045	3.200	8.000	5570	750	19.3
		10.00	3	140	0.055	4.000	10.000	4455	735	29.4
	Steel 850 - 1100 N/mm²	1.50	3	85	0.010	0.600	1.500	18040	540	0.5
		2.00	3	85	0.010	0.800	2.000	13530	405	0.6
		2.50	3	85	0.015	1.000	2.500	10825	485	1.2
		3.00	3	85	0.015	1.200	3.000	9020	405	1.5
		4.00	3	85	0.020	1.600	4.000	6765	405	2.6
		5.00	3	85	0.030	2.000	5.000	5410	485	4.9
		6.00	3	85	0.035	2.400	6.000	4510	475	6.8
		8.00	3	85	0.045	3.200	8.000	3380	455	11.7
		10.00	3	85	0.050	4.000	10.000	2705	405	16.2
	Titanium alloys > 300 HB [Ti6Al4V]	1.50	3	40	0.005	0.600	1.500	8490	125	0.1
		2.00	3	40	0.005	0.800	2.000	6365	95	0.2
		2.50	3	40	0.010	1.000	2.500	5095	155	0.4
		3.00	3	40	0.010	1.200	3.000	4245	125	0.5
		4.00	3	40	0.010	1.600	4.000	3185	95	0.6
		5.00	3	40	0.015	2.000	5.000	2545	115	1.1
		6.00	3	40	0.020	2.400	6.000	2120	125	1.8
		8.00	3	40	0.025	3.200	8.000	1590	120	3.1
		10.00	3	40	0.030	4.000	10.000	1275	115	4.6
	Stainless steel [Cr-Ni/1.4301]	1.50	3	55	0.005	0.600	1.500	11670	175	0.2
		2.00	3	55	0.005	0.800	2.000	8755	130	0.2
		2.50	3	55	0.010	1.000	2.500	7005	210	0.5
		3.00	3	55	0.010	1.200	3.000	5835	175	0.6
		4.00	3	55	0.015	1.600	4.000	4375	195	1.3
		5.00	3	55	0.020	2.000	5.000	3500	210	2.1
		6.00	3	55	0.025	2.400	6.000	2920	220	3.2
		8.00	3	55	0.030	3.200	8.000	2190	195	5.0
		10.00	3	55	0.040	4.000	10.000	1750	210	8.4

Cylindrical end mills

Smooth-edged, short version

HM MG10	λ 30° γ 12°
90°	



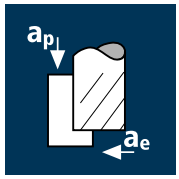
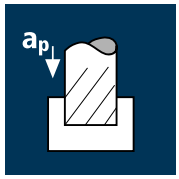
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Nickel-Alloys

Example: **Order-N°.** Coating **T** Article-N°. **5036** ø-Code **120**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	α	z	POLYCHROM P5036	TRIBO T5036 / T5026
120	1.50	6.00	50	5.00	13.92	9.0°	3	●	●
140	2.00	6.00	50	5.00	13.15	8.5°	3	●	●
160	2.50	6.00	50	5.00	12.88	8.0°	3	●	●
180	3.00	6.00	50	6.00	13.96	6.5°	3	●	●
200	3.50	6.00	50	8.00	14.34	5.0°	3	●	●
220	4.00	6.00	50	8.00	14.59	4.5°	3	●	●
240	4.50	6.00	50	8.00	13.66	3.5°	3	●	●
260	5.00	6.00	50	9.00	13.72	2.5°	3	●	●
300	6.00	6.00	50	10.00	-	0.0°	3	●	●
331	7.00	8.00	54	10.00	14.72	2.5°	3	●	●
391	8.00	8.00	54	12.00	-	0.0°	3	●	●
420	9.00	10.00	63	12.00	16.72	2.0°	3	●	●
450	10.00	10.00	63	13.00	-	0.0°	3	●	●

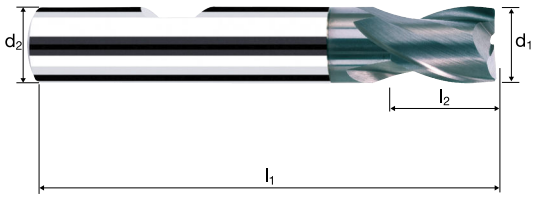
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min-1]	v_f [mm/min]
	Steel < 850 N/mm²	1.00	2	115	0.005	1.000	0.500	36605	365
		2.00	2	115	0.005	2.000	0.900	18305	185
		2.50	2	115	0.005	2.000	1.100	14640	145
		3.00	2	115	0.010	3.000	1.400	12200	245
		4.00	2	115	0.015	4.000	1.800	9150	275
		5.00	2	115	0.020	5.000	2.300	7320	295
		6.00	2	115	0.025	6.000	2.700	6100	305
	Steel 850 - 1100 N/mm²	1.00	2	75	0.005	1.000	0.500	23875	240
		2.00	2	75	0.005	2.000	0.900	11935	120
		2.50	2	75	0.005	2.000	1.100	9550	95
		3.00	2	75	0.010	3.000	1.400	7960	160
		4.00	2	75	0.015	4.000	1.800	5970	180
		5.00	2	75	0.020	5.000	2.300	4775	190
		6.00	2	75	0.020	6.000	2.700	3980	160
	Cast iron (lamellar / spheroidal)	1.00	2	132	0.005	1.000	0.500	42015	420
		2.00	2	150	0.005	2.000	0.900	23875	240
		2.50	2	150	0.005	2.000	1.100	19100	190
		3.00	2	150	0.015	3.000	1.400	15915	475
		4.00	2	150	0.020	4.000	1.800	11935	475
		5.00	2	150	0.020	5.000	2.300	9550	380
		6.00	2	150	0.025	6.000	2.700	7960	400
	Stainless steel [Cr-Ni/1.4301]	1.00	2	40	0.005	1.000	0.500	12730	125
		2.00	2	40	0.005	2.000	0.900	6365	65
		2.50	2	40	0.005	2.000	1.100	5095	50
		3.00	2	40	0.010	3.000	1.400	4245	85
		4.00	2	40	0.015	4.000	1.800	3185	95
		5.00	2	40	0.020	5.000	2.300	2545	100
		6.00	2	40	0.020	6.000	2.700	2120	85
	Steel < 850 N/mm²	1.00	2	85	0.005	0.500	1.000	27055	270
		2.00	2	85	0.005	1.000	2.000	13530	135
		2.50	2	85	0.005	1.000	2.500	10825	110
		3.00	2	85	0.010	1.500	3.000	9020	180
		4.00	2	85	0.010	2.000	4.000	6765	135
		5.00	2	85	0.015	2.500	5.000	5410	160
		6.00	2	85	0.015	3.000	6.000	4510	135
	Steel 850 - 1100 N/mm²	1.00	2	60	0.005	0.500	1.000	19100	190
		2.00	2	60	0.005	1.000	2.000	9550	95
		2.50	2	60	0.005	1.000	2.500	7640	75
		3.00	2	60	0.010	1.500	3.000	6365	125
		4.00	2	60	0.010	2.000	4.000	4775	95
		5.00	2	60	0.015	2.500	5.000	3820	115
		6.00	2	60	0.015	3.000	6.000	3185	95
	Cast iron (lamellar / spheroidal)	1.00	2	105	0.005	0.500	1.000	33425	335
		2.00	2	105	0.005	1.000	2.000	16710	165
		2.50	2	105	0.005	1.000	2.500	13370	135
		3.00	2	105	0.010	1.500	3.000	11140	225
		4.00	2	105	0.010	2.000	4.000	8355	165
		5.00	2	105	0.015	2.500	5.000	6685	200
		6.00	2	105	0.020	3.000	6.000	5570	225
	Stainless steel [Cr-Ni/1.4301]	1.00	2	30	0.005	0.500	1.000	9550	95
		2.00	2	30	0.005	1.000	2.000	4775	50
		2.50	2	30	0.005	1.000	2.500	3820	40
		3.00	2	30	0.010	1.500	3.000	3185	65
		4.00	2	30	0.010	2.000	4.000	2385	50
		5.00	2	30	0.015	2.500	5.000	1910	55
		6.00	2	30	0.015	3.000	6.000	1590	50

Cylindrical end mills

Smooth-edged, short version

HM MG10	λ 30° γ 12°

45°



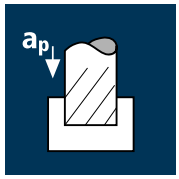
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **5400** ø-Code **100**

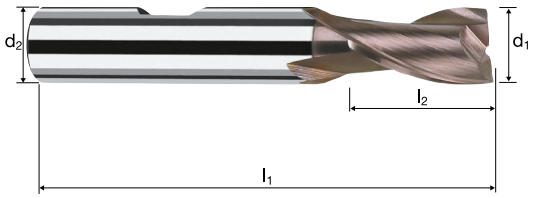
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P5400	POLYCHROM P5299
100	1.00	6.00	50	3.00	13.79	0.07	11.0°	2		●
120	1.50	6.00	50	3.00	12.86	0.07	10.5°	2		●
140	2.00	6.00	50	3.00	12.32	0.10	10.0°	2		●
160	2.50	6.00	50	3.00	11.39	0.10	9.5°	2		●
180	3.00	6.00	50	4.00	11.96	0.10	8.0°	2		●
220	4.00	6.00	54	5.00	11.59	0.10	5.5°	2		●
260	5.00	6.00	54	6.00	10.72	0.15	3.0°	2		●
300	6.00	6.00	54	7.00	-	0.15	0.0°	2		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	1.00	2	44	0.002	0.500	1.000	14005	55
		2.00	2	44	0.004	1.000	2.000	7005	55
		3.00	2	44	0.006	1.500	3.000	4670	55
		4.00	2	44	0.008	2.000	4.000	3500	55
		5.00	2	44	0.012	2.500	5.000	2800	65
		6.00	2	44	0.014	3.000	6.000	2335	65
		8.00	2	44	0.018	4.000	8.000	1750	65
		9.00	2	44	0.020	4.500	9.000	1555	60
		10.00	2	44	0.022	5.000	10.000	1400	60
	Steel 850 - 1100 N/mm²	1.00	2	36	0.002	0.500	1.000	11460	45
		2.00	2	36	0.004	1.000	2.000	5730	45
		3.00	2	36	0.006	1.500	3.000	3820	45
		4.00	2	36	0.008	2.000	4.000	2865	45
		5.00	2	36	0.012	2.500	5.000	2290	55
		6.00	2	36	0.014	3.000	6.000	1910	55
		8.00	2	36	0.018	4.000	8.000	1430	50
		9.00	2	36	0.020	4.500	9.000	1275	50
		10.00	2	36	0.022	5.000	10.000	1145	50
	Steel 1100 - 1300 N/mm²	1.00	2	28	0.002	0.500	1.000	8915	35
		2.00	2	28	0.004	1.000	2.000	4455	35
		3.00	2	28	0.006	1.500	3.000	2970	35
		4.00	2	28	0.008	2.000	4.000	2230	35
		5.00	2	28	0.012	2.500	5.000	1785	45
		6.00	2	28	0.014	3.000	6.000	1485	40
		8.00	2	28	0.018	4.000	8.000	1115	40
		9.00	2	28	0.020	4.500	9.000	990	40
		10.00	2	28	0.022	5.000	10.000	890	40
	Cold work tool steel (12% Cr), high alloyed [1.2379]	1.00	2	25	0.002	0.500	1.000	7960	30
		2.00	2	25	0.004	1.000	2.000	3980	30
		3.00	2	25	0.006	1.500	3.000	2655	30
		4.00	2	25	0.008	2.000	4.000	1990	30
		5.00	2	25	0.012	2.500	5.000	1590	40
		6.00	2	25	0.014	3.000	6.000	1325	35
		8.00	2	25	0.018	4.000	8.000	995	35
		9.00	2	25	0.020	4.500	9.000	885	35
		10.00	2	25	0.022	5.000	10.000	795	35
	Cast iron (lamellar / spheroidal)	1.00	2	34	0.002	0.500	1.000	10825	45
		2.00	2	34	0.004	1.000	2.000	5410	45
		3.00	2	34	0.006	1.500	3.000	3610	45
		4.00	2	34	0.008	2.000	4.000	2705	45
		5.00	2	34	0.012	2.500	5.000	2165	50
		6.00	2	34	0.014	3.000	6.000	1805	50
		8.00	2	34	0.018	4.000	8.000	1355	50
		9.00	2	34	0.020	4.500	9.000	1205	50
		10.00	2	34	0.022	5.000	10.000	1080	50
	Stainless steel [Cr-Ni/1.4301]	1.00	2	18	0.002	0.500	1.000	5730	25
		2.00	2	18	0.004	1.000	2.000	2865	25
		3.00	2	18	0.006	1.500	3.000	1910	25
		4.00	2	18	0.008	2.000	4.000	1430	25
		5.00	2	18	0.012	2.500	5.000	1145	30
		6.00	2	18	0.014	3.000	6.000	955	25
		8.00	2	18	0.018	4.000	8.000	715	25
		9.00	2	18	0.020	4.500	9.000	635	25
		10.00	2	18	0.022	5.000	10.000	575	25
	Unalloyed copper	1.00	2	80	0.002	0.500	1.000	25465	100
		2.00	2	80	0.004	1.000	2.000	12730	100
		3.00	2	80	0.006	1.500	3.000	8490	100
		4.00	2	80	0.008	2.000	4.000	6365	100
		5.00	2	80	0.012	2.500	5.000	5095	120
		6.00	2	80	0.014	3.000	6.000	4245	120
		8.00	2	80	0.018	4.000	8.000	3185	115
		9.00	2	80	0.020	4.500	9.000	2830	115
		10.00	2	80	0.022	5.000	10.000	2545	110
	Wrought aluminium Si < 6%	1.00	2	100	0.002	0.500	1.000	31830	125
		2.00	2	100	0.004	1.000	2.000	15915	125
		3.00	2	100	0.006	1.500	3.000	10610	125
		4.00	2	100	0.008	2.000	4.000	7960	125
		5.00	2	100	0.012	2.500	5.000	6365	155
		6.00	2	100	0.014	3.000	6.000	5305	150
		8.00	2	100	0.018	4.000	8.000	3980	145
		9.00	2	100	0.020	4.500	9.000	3535	140
		10.00	2	100	0.022	5.000	10.000	3185	140

Cylindrical end mills

Smooth-edged, short version

HSS PM/F	λ 30° γ 15°
90°	



Roughing

Finishing

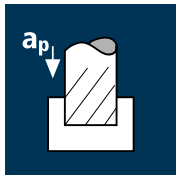
Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **0700** ø-Code **100**

Ø Code	d_1 h8	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U0700
100	1.00	6.00	47	3.00	10.48	14.0°	2	●
120	1.50	6.00	47	3.00	9.99	13.0°	2	●
140*	2.00	6.00	48	4.00	10.71	11.0°	2	●
160	2.50	6.00	49	5.00	12.50	8.0°	2	●
180*	3.00	6.00	49	5.00	12.50	7.0°	2	●
200	3.50	6.00	50	6.00	13.50	5.5°	2	●
220*	4.00	6.00	51	7.00	14.50	4.0°	2	●
240	4.50	6.00	51	7.00	14.50	3.0°	2	●
260*	5.00	6.00	52	8.00	15.50	2.0°	2	●
280	5.50	6.00	52	8.00	15.50	1.0°	2	●
300*	6.00	6.00	52	8.00	-	0.0°	2	●
322	6.50	10.00	60	10.00	19.50	5.5°	2	●
331	7.00	8.00	54	10.00	17.50	2.0°	2	●
362	7.50	10.00	60	10.00	19.50	4.0°	2	●
391*	8.00	8.00	55	11.00	-	0.0°	2	●
410	8.50	10.00	61	11.00	20.50	2.5°	2	●
420	9.00	10.00	61	11.00	20.50	1.5°	2	●
440	9.70	10.00	63	13.00	22.50	0.0°	2	●
450*	10.00	10.00	63	13.00	-	0.0°	2	●

* d_1 tolerance for keyway P9

Application

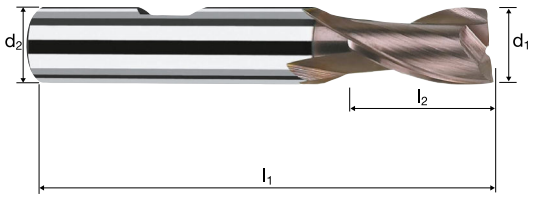


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
Steel < 850 N/mm²	11.00	2	44	0.024	5.500	11.000	1275	60
	12.00	2	44	0.026	6.000	12.000	1165	60
	13.00	2	44	0.028	6.500	13.000	1075	60
	14.00	2	44	0.032	7.000	14.000	1000	65
	16.00	2	44	0.036	8.000	16.000	875	65
	18.00	2	44	0.040	9.000	18.000	780	60
	20.00	2	44	0.044	10.000	20.000	700	60
	22.00	2	44	0.048	11.000	22.000	635	60
	25.00	2	44	0.056	12.500	25.000	560	65
Steel 850 - 1100 N/mm²	11.00	2	36	0.024	5.500	11.000	1040	50
	12.00	2	36	0.026	6.000	12.000	955	50
	13.00	2	36	0.028	6.500	13.000	880	50
	14.00	2	36	0.032	7.000	14.000	820	50
	16.00	2	36	0.036	8.000	16.000	715	50
	18.00	2	36	0.040	9.000	18.000	635	50
	20.00	2	36	0.044	10.000	20.000	575	50
	22.00	2	36	0.048	11.000	22.000	520	50
	25.00	2	36	0.056	12.500	25.000	460	50
Steel 1100 - 1300 N/mm²	11.00	2	28	0.024	5.500	11.000	810	40
	12.00	2	28	0.026	6.000	12.000	745	40
	13.00	2	28	0.028	6.500	13.000	685	40
	14.00	2	28	0.032	7.000	14.000	635	40
	16.00	2	28	0.036	8.000	16.000	555	40
	18.00	2	28	0.040	9.000	18.000	495	40
	20.00	2	28	0.044	10.000	20.000	445	40
	22.00	2	28	0.048	11.000	22.000	405	40
	25.00	2	28	0.056	12.500	25.000	355	40
Cold work tool steel (12% Cr), high alloyed [1.2379]	11.00	2	25	0.024	5.500	11.000	725	35
	12.00	2	25	0.026	6.000	12.000	665	35
	13.00	2	25	0.028	6.500	13.000	610	35
	14.00	2	25	0.032	7.000	14.000	570	35
	16.00	2	25	0.036	8.000	16.000	495	35
	18.00	2	25	0.040	9.000	18.000	440	35
	20.00	2	25	0.044	10.000	20.000	400	35
	22.00	2	25	0.048	11.000	22.000	360	35
	25.00	2	25	0.056	12.500	25.000	320	35
Cast iron (lamellar / spheroidal)	11.00	2	34	0.024	5.500	11.000	985	45
	12.00	2	34	0.026	6.000	12.000	900	45
	13.00	2	34	0.028	6.500	13.000	835	45
	14.00	2	34	0.032	7.000	14.000	775	50
	16.00	2	34	0.036	8.000	16.000	675	50
	18.00	2	34	0.040	9.000	18.000	600	50
	20.00	2	34	0.044	10.000	20.000	540	50
	22.00	2	34	0.048	11.000	22.000	490	45
	25.00	2	34	0.056	12.500	25.000	435	50
Stainless steel [Cr-Ni/1.4301]	11.00	2	18	0.024	5.500	11.000	520	25
	12.00	2	18	0.026	6.000	12.000	475	25
	13.00	2	18	0.028	6.500	13.000	440	25
	14.00	2	18	0.032	7.000	14.000	410	25
	16.00	2	18	0.036	8.000	16.000	360	25
	18.00	2	18	0.040	9.000	18.000	320	25
	20.00	2	18	0.044	10.000	20.000	285	25
	22.00	2	18	0.048	11.000	22.000	260	25
	25.00	2	18	0.056	12.500	25.000	230	25
Unalloyed copper	11.00	2	80	0.024	5.500	11.000	2315	110
	12.00	2	80	0.026	6.000	12.000	2120	110
	13.00	2	80	0.028	6.500	13.000	1960	110
	14.00	2	80	0.032	7.000	14.000	1820	115
	16.00	2	80	0.036	8.000	16.000	1590	115
	18.00	2	80	0.040	9.000	18.000	1415	115
	20.00	2	80	0.044	10.000	20.000	1275	110
	22.00	2	80	0.048	11.000	22.000	1155	110
	25.00	2	80	0.056	12.500	25.000	1020	115
Wrought aluminium Si < 6%	11.00	2	100	0.024	5.500	11.000	2895	140
	12.00	2	100	0.026	6.000	12.000	2655	140
	13.00	2	100	0.028	6.500	13.000	2450	135
	14.00	2	100	0.032	7.000	14.000	2275	145
	16.00	2	100	0.036	8.000	16.000	1990	145
	18.00	2	100	0.040	9.000	18.000	1770	140
	20.00	2	100	0.044	10.000	20.000	1590	140
	22.00	2	100	0.048	11.000	22.000	1445	140
	25.00	2	100	0.056	12.500	25.000	1275	145

Cylindrical end mills

Smooth-edged, short version

HSS-E Co8	λ 30° γ 15°
90°	



Roughing

Finishing

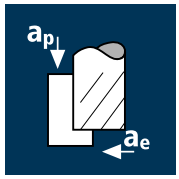
Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

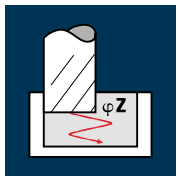
Example: **Order-N°.** Coating **U** Article-N°. **0700** ø-Code **460**

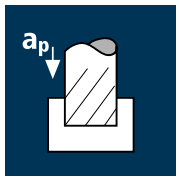
Ø Code	d_1 h8	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U0700
460	10.50	12.00	70	13.00	24.50	2.0°	2	●
470	11.00	12.00	70	13.00	24.50	1.5°	2	●
501*	12.00	12.00	73	16.00	-	0.0°	2	●
540	13.00	12.00	73	16.00	-	0.0°	2	●
570*	14.00	12.00	73	16.00	-	0.0°	2	●
581	15.00	12.00	73	16.00	-	0.0°	2	●
610*	16.00	16.00	79	19.00	-	0.0°	2	●
620	17.00	16.00	79	19.00	-	0.0°	2	●
640*	18.00	16.00	79	19.00	-	0.0°	2	●
650	19.00	16.00	79	19.00	-	0.0°	2	●
682*	20.00	20.00	88	22.00	-	0.0°	2	●
710*	22.00	20.00	88	22.00	-	0.0°	2	●
772*	25.00	25.00	102	26.00	-	0.0°	2	●

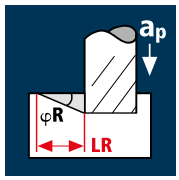
* d_1 tolerance for keyway P9

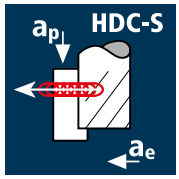
Application

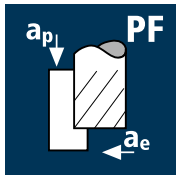


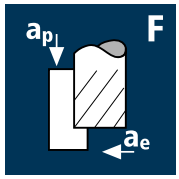


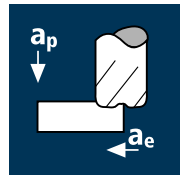


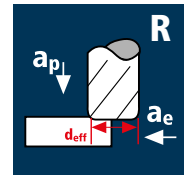


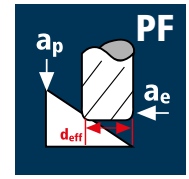










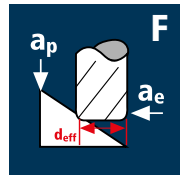


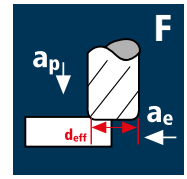
Cutting data HX-RNVS

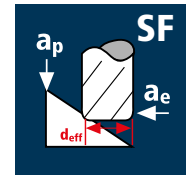
Always up to date

The new corner radius HX-RNVS end mill has been developed for HPC, HDC and HSC machining of hardened steels (>55 HRC). The detailed information and cutting data for the HX-RNVS tools can be found in the latest product brochure and in our cutting data calculator ToolExpert.

Scan this QR code to start the cutting data calculator ToolExpert 2.0







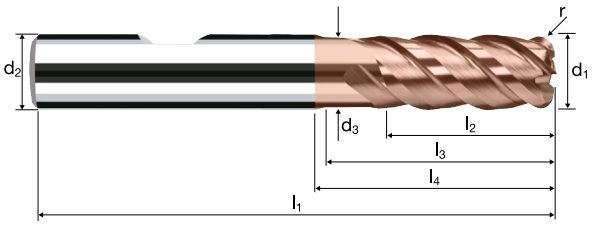
Corner radius end mills HX-RNVS

Smooth-edged, normal version with short neck
High-performance penetration edge

HM
XA

λ 45°
γ -10°

new!



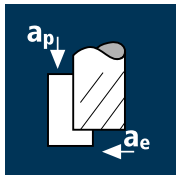
Roughing HPC | Roughing HDC | Finishing

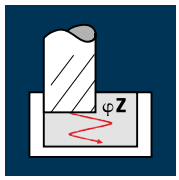
HRC 48-56 | HRC 56-60 | HRC > 60 | HSS

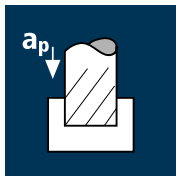
Example: **Order-N°.** Coating **H** | Article-N°. **8607** | ø-Code **178**

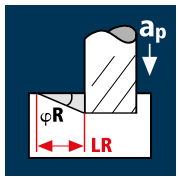
Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	DURO-Si H8607	DURO-Si H8507
178	3.00	6.00	2.80	57	8.00	14.00	20.37	0.200	4.5°	4	●	
218	4.00	6.00	3.70	57	11.00	16.00	20.82	0.200	3.0°	4	●	
258	5.00	6.00	4.60	57	13.00	18.00	21.27	0.200	1.5°	4	●	
297	6.00	6.00	5.50	57	13.00	18.15	20.00	0.200	0.0°	4	●	
385	8.00	8.00	7.40	63	19.00	23.63	26.00	0.200	0.0°	4	●	
445	10.00	10.00	9.20	72	22.00	27.99	31.00	0.200	0.0°	4	●	
496	12.00	12.00	11.00	83	26.00	33.29	37.00	0.200	0.0°	4	●	
605	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4	●	
180	3.00	6.00	2.80	57	8.00	14.00	20.37	0.500	4.5°	4	●	
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.500	3.0°	4	●	
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.500	1.5°	4	●	
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.500	0.0°	4	●	
388	8.00	8.00	7.40	63	19.00	23.63	26.00	0.500	0.0°	4	●	
448	10.00	10.00	9.20	72	22.00	27.99	31.00	0.500	0.0°	4	●	
498	12.00	12.00	11.00	83	26.00	33.29	37.00	0.500	0.0°	4	●	
606	16.00	16.00	15.00	92	32.00	38.73	43.00	0.500	0.0°	4	●	

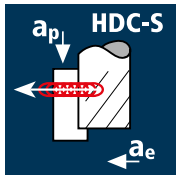
Application

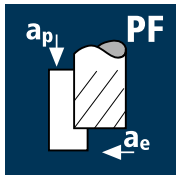


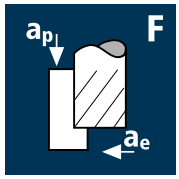


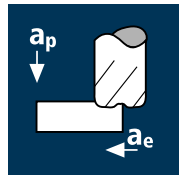


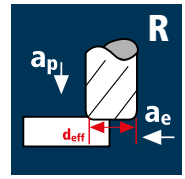


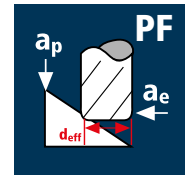










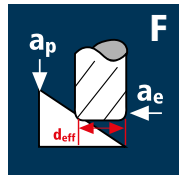


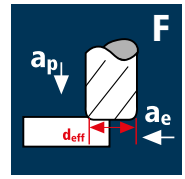
Cutting data HX-RNVS

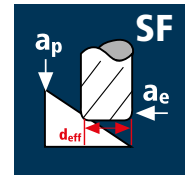
Always up to date

The new corner radius HX-RNVS end mill has been developed for HPC, HDC and HSC machining of hardened steels (>55 HRC). The detailed information and cutting data for the HX-RNVS tools can be found in the latest product brochure and in our cutting data calculator ToolExpert.

Scan this QR code to start the cutting data calculator ToolExpert 2.0







Corner radius end mills HX-RNVS

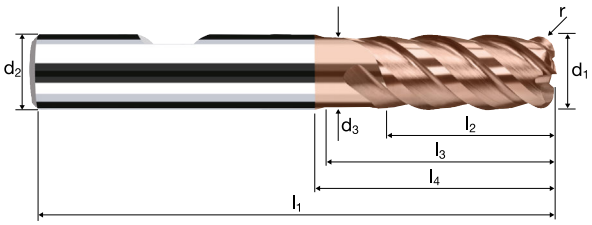
Smooth-edged, normal version with short neck
High-performance penetration edge

X-Generation X

HM
XA

λ 45°
γ -10°

new!

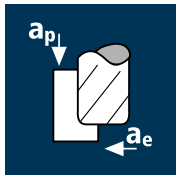
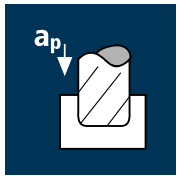


Roughing HPC | Roughing HDC | Finishing

HRC 48-56 | HRC 56-60 | HRC > 60 | HSS

Example: **Order-N°.** Coating **H** Article-N°. **8607** ø-Code **302**

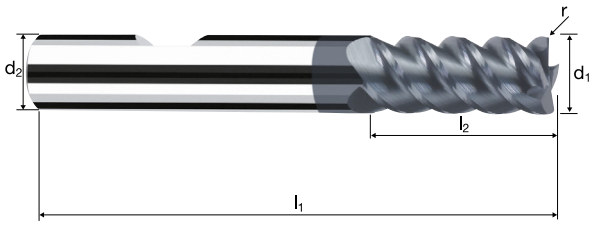
Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	DURO-Si H8607	DURO-Si H8507
302	6.00	6.00	5.50	57	13.00	18.15	20.00	1.000	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	1.000	0.0°	4		●
450	10.00	10.00	9.20	72	22.00	27.99	31.00	1.000	0.0°	4		●
501	12.00	12.00	11.00	83	26.00	33.29	37.00	1.000	0.0°	4		●
608	16.00	16.00	15.00	92	32.00	38.73	43.00	1.000	0.0°	4		●
304	6.00	6.00	5.50	57	13.00	18.15	20.00	1.500	0.0°	4		●
395	8.00	8.00	7.40	63	19.00	23.63	26.00	2.000	0.0°	4		●
457	10.00	10.00	9.20	72	22.00	27.99	31.00	2.500	0.0°	4		●
507	12.00	12.00	11.00	83	26.00	33.29	37.00	3.000	0.0°	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Hardened tool steel 42 - 48 HRC	3.00	4	110	0.025	4.500	0.450	11670	1165	2.4
		4.00	4	110	0.035	6.000	0.600	8755	1225	4.4
		5.00	4	110	0.040	7.500	0.750	7005	1120	6.3
		6.00	4	110	0.050	9.000	0.900	5835	1165	9.5
		8.00	4	110	0.065	12.000	1.200	4375	1140	16.4
		10.00	4	110	0.085	15.000	1.500	3500	1190	26.8
		12.00	4	110	0.100	18.000	1.800	2920	1165	37.8
		16.00	4	110	0.135	24.000	2.400	2190	1180	68.1
	Hardened tool steel 48 - 52 HRC	3.00	4	70	0.015	4.500	0.450	7425	445	0.9
		4.00	4	70	0.020	6.000	0.600	5570	445	1.6
		5.00	4	70	0.030	7.500	0.750	4455	535	3.0
		6.00	4	70	0.035	9.000	0.900	3715	520	4.2
		8.00	4	70	0.045	12.000	1.200	2785	500	7.2
		10.00	4	70	0.055	15.000	1.500	2230	490	11.0
		12.00	4	70	0.065	18.000	1.800	1855	485	15.6
		16.00	4	70	0.090	24.000	2.400	1395	500	28.9
	Hardened tool steel 52 - 56 HRC	3.00	4	50	0.015	4.500	0.450	5305	320	0.6
		4.00	4	50	0.020	6.000	0.600	3980	320	1.1
		5.00	4	50	0.025	7.500	0.750	3185	320	1.8
		6.00	4	50	0.025	9.000	0.900	2655	265	2.1
		8.00	4	50	0.035	12.000	1.200	1990	280	4.0
		10.00	4	50	0.045	15.000	1.500	1590	285	6.4
		12.00	4	50	0.055	18.000	1.800	1325	290	9.5
		16.00	4	50	0.075	24.000	2.400	995	300	17.2
	Hardened tool steel 56 - 60 HRC	3.00	4	25	0.010	4.500	0.450	2655	105	0.2
		4.00	4	25	0.015	6.000	0.600	1990	120	0.4
		5.00	4	25	0.015	7.500	0.750	1590	95	0.5
		6.00	4	25	0.020	9.000	0.900	1325	105	0.9
		8.00	4	25	0.025	12.000	1.200	995	100	1.4
		10.00	4	25	0.035	15.000	1.500	795	110	2.5
		12.00	4	25	0.040	18.000	1.800	665	105	3.4
		16.00	4	25	0.055	24.000	2.400	495	110	6.3
	Hardened tool steel 42 - 48 HRC	3.00	4	95	0.020	1.500	3.000	10080	805	3.6
		4.00	4	95	0.025	2.000	4.000	7560	755	6.0
		5.00	4	95	0.035	2.500	5.000	6050	845	10.6
		6.00	4	95	0.040	3.000	6.000	5040	805	14.5
		8.00	4	95	0.055	4.000	8.000	3780	830	26.6
		10.00	4	95	0.065	5.000	10.000	3025	785	39.3
		12.00	4	95	0.080	6.000	12.000	2520	805	58.1
		16.00	4	95	0.105	4.000	16.000	1890	795	50.8
	Hardened tool steel 48 - 52 HRC	3.00	4	60	0.015	1.500	3.000	6365	380	1.7
		4.00	4	60	0.020	2.000	4.000	4775	380	3.1
		5.00	4	60	0.025	2.500	5.000	3820	380	4.8
		6.00	4	60	0.030	3.000	6.000	3185	380	6.9
		8.00	4	60	0.040	4.000	8.000	2385	380	12.2
		10.00	4	60	0.050	5.000	10.000	1910	380	19.1
		12.00	4	60	0.060	6.000	12.000	1590	380	27.5
		16.00	4	60	0.080	4.000	16.000	1195	380	24.4
	Hardened tool steel 52 - 56 HRC	3.00	4	40	0.010	1.500	3.000	4245	170	0.8
		4.00	4	40	0.015	2.000	4.000	3185	190	1.5
		5.00	4	40	0.020	2.500	5.000	2545	205	2.5
		6.00	4	40	0.025	3.000	6.000	2120	210	3.8
		8.00	4	40	0.030	4.000	8.000	1590	190	6.1
		10.00	4	40	0.040	5.000	10.000	1275	205	10.2
		12.00	4	40	0.050	6.000	12.000	1060	210	15.3
		16.00	4	40	0.065	4.000	16.000	795	205	13.2
	Hardened tool steel 56 - 60 HRC	3.00	4	20	0.009	1.500	3.000	2120	75	0.3
		4.00	4	20	0.011	2.000	4.000	1590	70	0.6
		5.00	4	20	0.014	2.500	5.000	1275	70	0.9
		6.00	4	20	0.017	3.000	6.000	1060	70	1.3
		8.00	4	20	0.023	4.000	8.000	795	75	2.3
		10.00	4	20	0.029	5.000	10.000	635	75	3.7
		12.00	4	20	0.034	6.000	12.000	530	70	5.2
		16.00	4	20	0.046	4.000	16.000	400	75	4.7

Corner radius end mills HX-RN

Smooth-edged, normal version

HM MG10	λ 55° γ -10°



Roughing

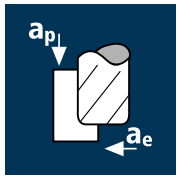
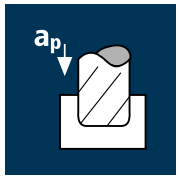
Finishing

ToolSchool

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **D** Article-N°. **5359** ø-Code **178**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r 0/+0.03	α	z	POLYCHROM P5359 P5259	DURO-S D5359 D5259
178	3.00	6.00	57	8.00	15.76	0.200	6.0°	4	●	●
218	4.00	6.00	57	11.00	16.89	0.200	4.0°	4	●	●
258	5.00	6.00	57	13.00	17.02	0.200	2.0°	4	●	●
297	6.00	6.00	57	13.00	-	0.200	0.0°	4	●	●
388	8.00	8.00	63	19.00	-	0.200	0.0°	4	●	●
445	10.00	10.00	72	22.00	-	0.200	0.0°	4	●	●
496	12.00	12.00	83	26.00	-	0.200	0.0°	4	●	●
605	16.00	16.00	92	32.00	-	0.200	0.0°	4	●	●
180	3.00	6.00	57	8.00	15.76	0.500	6.0°	4	●	●
220	4.00	6.00	57	11.00	16.89	0.500	4.0°	4	●	●
260	5.00	6.00	57	13.00	17.02	0.500	2.0°	4	●	●
300	6.00	6.00	57	13.00	-	0.500	0.0°	4	●	●
391	8.00	8.00	63	19.00	-	0.500	0.0°	4	●	●
450	10.00	10.00	72	22.00	-	0.500	0.0°	4	●	●
501	12.00	12.00	83	26.00	-	0.500	0.0°	4	●	●
610	16.00	16.00	92	32.00	-	0.500	0.0°	4	●	●

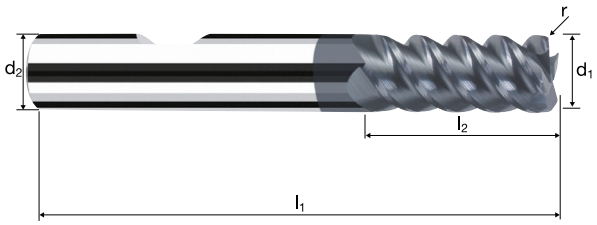
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Hardened tool steel 42 - 48 HRC	6.00	4	110	0.050	9.000	0.900	5835	1165	9.5
		8.00	4	110	0.065	12.000	1.200	4375	1140	16.4
		10.00	4	110	0.085	15.000	1.500	3500	1190	26.8
		12.00	4	110	0.100	18.000	1.800	2920	1165	37.8
		16.00	4	110	0.135	24.000	2.400	2190	1180	68.1
		20.00	4	110	0.165	30.000	3.000	1750	1155	104.0
	Hardened tool steel 48 - 52 HRC	6.00	4	70	0.035	9.000	0.900	3715	520	4.2
		8.00	4	70	0.045	12.000	1.200	2785	500	7.2
		10.00	4	70	0.055	15.000	1.500	2230	490	11.0
		12.00	4	70	0.065	18.000	1.800	1855	485	15.6
		16.00	4	70	0.090	24.000	2.400	1395	500	28.9
		20.00	4	70	0.110	30.000	3.000	1115	490	44.1
	Hardened tool steel 52 - 56 HRC	6.00	4	50	0.025	9.000	0.900	2655	265	2.1
		8.00	4	50	0.035	12.000	1.200	1990	280	4.0
		10.00	4	50	0.045	15.000	1.500	1590	285	6.4
		12.00	4	50	0.055	18.000	1.800	1325	290	9.5
		16.00	4	50	0.075	24.000	2.400	995	300	17.2
		20.00	4	50	0.090	30.000	3.000	795	285	25.8
	Hardened tool steel 56 - 60 HRC	6.00	4	25	0.020	9.000	0.900	1325	105	0.9
		8.00	4	25	0.025	12.000	1.200	995	100	1.4
		10.00	4	25	0.035	15.000	1.500	795	110	2.5
		12.00	4	25	0.040	18.000	1.800	665	105	3.4
		16.00	4	25	0.055	24.000	2.400	495	110	6.3
		20.00	4	25	0.065	30.000	3.000	400	105	9.3
	Hardened tool steel 42 - 48 HRC	6.00	4	95	0.040	3.000	6.000	5040	805	14.5
		8.00	4	95	0.055	4.000	8.000	3780	830	26.6
		10.00	4	95	0.065	5.000	10.000	3025	785	39.3
		12.00	4	95	0.080	6.000	12.000	2520	805	58.1
		16.00	4	95	0.105	4.000	16.000	1890	795	50.8
		20.00	4	95	0.135	5.000	20.000	1510	815	81.6
	Hardened tool steel 48 - 52 HRC	6.00	4	60	0.030	3.000	6.000	3185	380	6.9
		8.00	4	60	0.040	4.000	8.000	2385	380	12.2
		10.00	4	60	0.050	5.000	10.000	1910	380	19.1
		12.00	4	60	0.060	6.000	12.000	1590	380	27.5
		16.00	4	60	0.080	4.000	16.000	1195	380	24.4
		20.00	4	60	0.100	5.000	20.000	955	380	38.2
	Hardened tool steel 52 - 56 HRC	6.00	4	40	0.025	3.000	6.000	2120	210	3.8
		8.00	4	40	0.030	4.000	8.000	1590	190	6.1
		10.00	4	40	0.040	5.000	10.000	1275	205	10.2
		12.00	4	40	0.050	6.000	12.000	1060	210	15.3
		16.00	4	40	0.065	4.000	16.000	795	205	13.2
		20.00	4	40	0.080	5.000	20.000	635	205	20.4
	Hardened tool steel 56 - 60 HRC	6.00	4	20	0.017	3.000	6.000	1060	70	1.3
		8.00	4	20	0.023	4.000	8.000	795	75	2.3
		10.00	4	20	0.029	5.000	10.000	635	75	3.7
		12.00	4	20	0.034	6.000	12.000	530	70	5.2
		16.00	4	20	0.046	4.000	16.000	400	75	4.7
		20.00	4	20	0.057	5.000	20.000	320	75	7.3

Corner radius end mills HX-RN

Smooth-edged, normal version

HM
MG10

λ 55°
γ -10°



Roughing

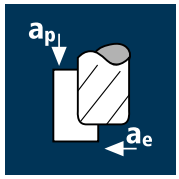
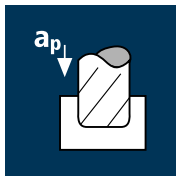
Finishing

ToolSchool

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **P** Article-N°. **15357** ø-Code **302**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	r 0/+0.03	z		POLYCHROM P15357	POLYCHROM P15257
302	6.00	6.00	57	13.00	1.000	4			●
391	8.00	8.00	63	19.00	1.000	4			●
450	10.00	10.00	72	22.00	1.000	4			●
501	12.00	12.00	83	26.00	1.000	4			●
608	16.00	16.00	92	32.00	1.000	4			●
680	20.00	20.00	104	38.00	1.000	4			●
306	6.00	6.00	57	13.00	2.000	4			●
395	8.00	8.00	63	19.00	2.000	4			●
455	10.00	10.00	72	22.00	2.000	4			●
505	12.00	12.00	83	26.00	2.000	4			●
611	16.00	16.00	92	32.00	2.000	4			●
683	20.00	20.00	104	38.00	2.000	4			●

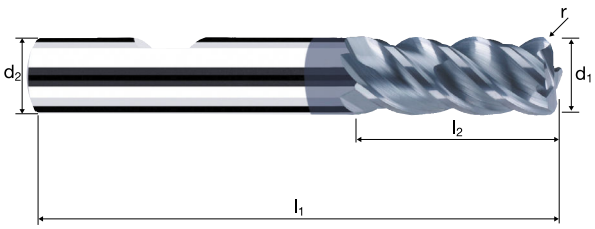
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel 850 - 1100 N/mm²	4.00	4	150	0.025	6.000	1.600	11935	1195	11.5
		5.00	4	150	0.035	7.500	2.000	9550	1335	20.1
		6.00	4	150	0.040	9.000	2.400	7960	1275	27.5
		8.00	4	150	0.055	12.000	3.200	5970	1315	50.4
		10.00	4	150	0.065	15.000	4.000	4775	1240	74.5
		12.00	4	150	0.080	18.000	4.800	3980	1275	110.0
		16.00	4	150	0.090	24.000	6.400	2985	1075	165.0
		20.00	4	150	0.110	30.000	8.000	2385	1050	252.1
	Steel 1100 - 1300 N/mm²	4.00	4	115	0.025	6.000	1.600	9150	915	8.8
		5.00	4	115	0.035	7.500	2.000	7320	1025	15.4
		6.00	4	115	0.040	9.000	2.400	6100	975	21.1
		8.00	4	115	0.055	12.000	3.200	4575	1005	38.7
		10.00	4	115	0.065	15.000	4.000	3660	950	57.1
		12.00	4	115	0.080	18.000	4.800	3050	975	84.3
		16.00	4	115	0.090	24.000	6.400	2290	825	126.5
		20.00	4	115	0.110	30.000	8.000	1830	805	193.3
	Hardened tool steel 52 - 56 HRC	4.00	4	55	0.015	6.000	1.200	4375	265	1.9
		5.00	4	55	0.018	7.500	1.500	3500	250	2.8
		6.00	4	55	0.021	9.000	1.800	2920	245	4.0
		8.00	4	55	0.027	12.000	2.400	2190	235	6.8
		10.00	4	55	0.036	15.000	3.000	1750	250	11.3
		12.00	4	55	0.042	18.000	3.600	1460	245	15.9
		16.00	4	55	0.048	24.000	4.800	1095	210	24.2
		20.00	4	55	0.060	30.000	6.000	875	210	37.8
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	50	0.015	6.000	1.600	3980	240	2.3
		5.00	4	50	0.020	7.500	2.000	3185	255	3.8
		6.00	4	50	0.020	9.000	2.400	2655	210	4.6
		8.00	4	50	0.025	12.000	3.200	1990	200	7.6
		10.00	4	50	0.035	15.000	4.000	1590	225	13.4
		12.00	4	50	0.040	18.000	4.800	1325	210	18.3
		16.00	4	50	0.050	24.000	6.400	995	200	30.6
		20.00	4	50	0.060	30.000	8.000	795	190	45.8
	Steel 850 - 1100 N/mm²	4.00	4	115	0.020	5.000	4.000	9150	730	14.6
		5.00	4	115	0.025	6.250	5.000	7320	730	22.9
		6.00	4	115	0.025	7.500	6.000	6100	610	27.5
		8.00	4	115	0.035	10.000	8.000	4575	640	51.2
		10.00	4	115	0.045	12.500	10.000	3660	660	82.4
		12.00	4	115	0.055	15.000	12.000	3050	670	120.8
		16.00	4	115	0.065	20.000	16.000	2290	595	190.3
		20.00	4	115	0.080	25.000	20.000	1830	585	292.8
	Steel 1100 - 1300 N/mm²	4.00	4	90	0.020	5.000	4.000	7160	575	11.5
		5.00	4	90	0.025	6.250	5.000	5730	575	17.9
		6.00	4	90	0.025	7.500	6.000	4775	475	21.5
		8.00	4	90	0.035	10.000	8.000	3580	500	40.1
		10.00	4	90	0.045	12.500	10.000	2865	515	64.5
		12.00	4	90	0.055	15.000	12.000	2385	525	94.5
		16.00	4	90	0.065	20.000	16.000	1790	465	149.0
		20.00	4	90	0.080	25.000	20.000	1430	460	229.2
	Hardened tool steel 52 - 56 HRC	4.00	4	50	0.009	4.000	4.000	3980	145	2.3
		5.00	4	50	0.012	5.000	5.000	3185	155	3.8
		6.00	4	50	0.015	6.000	6.000	2655	160	5.7
		8.00	4	50	0.018	8.000	8.000	1990	145	9.2
		10.00	4	50	0.024	10.000	10.000	1590	155	15.3
		12.00	4	50	0.030	12.000	12.000	1325	160	22.9
		16.00	4	50	0.033	16.000	16.000	995	130	33.6
		20.00	4	50	0.042	20.000	20.000	795	135	53.5
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	40	0.010	5.000	4.000	3185	125	2.5
		5.00	4	40	0.015	6.250	5.000	2545	155	4.8
		6.00	4	40	0.020	7.500	6.000	2120	170	7.6
		8.00	4	40	0.025	10.000	8.000	1590	160	12.7
		10.00	4	40	0.030	12.500	10.000	1275	155	19.1
		12.00	4	40	0.040	15.000	12.000	1060	170	30.6
		16.00	4	40	0.045	20.000	16.000	795	145	45.8
		20.00	4	40	0.055	25.000	20.000	635	140	70.0

Corner radius end mills NX-RNVD

Smooth-edged, normal version

HM MG10	λ 45° γ -20°

Vario



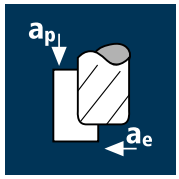
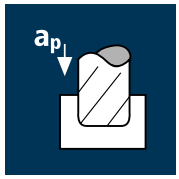
Roughing

Finishing

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60			Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15368** ø-Code **178**

	Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r 0/+0.03	α	z	POLYCHROM P15368	POLYCHROM P15268
new!	178	3.00	6.00	57	8.00	15.56	0.200	6.0°	4		●
new!	180	3.00	6.00	57	8.00	15.56	0.500	6.0°	4		●
	220	4.00	6.00	57	8.00	14.59	0.500	4.5°	4		●
	260	5.00	6.00	57	10.00	14.72	0.500	2.5°	4		●
	300	6.00	6.00	57	12.00	-	0.500	0.0°	4		●
	388	8.00	8.00	63	19.00	-	0.500	0.0°	4		●
	448	10.00	10.00	72	23.00	-	0.500	0.0°	4		●
	498	12.00	12.00	83	27.00	-	0.500	0.0°	4		●
	302	6.00	6.00	57	12.00	-	1.000	0.0°	4		●
	391	8.00	8.00	63	19.00	-	1.000	0.0°	4		●
	450	10.00	10.00	72	23.00	-	1.000	0.0°	4		●
	501	12.00	12.00	83	27.00	-	1.000	0.0°	4		●
	608	16.00	16.00	92	32.00	-	1.000	0.0°	4		●
	680	20.00	20.00	104	39.00	-	1.000	0.0°	4		●
	393	8.00	8.00	63	19.00	-	1.500	0.0°	4		●
	453	10.00	10.00	72	23.00	-	1.500	0.0°	4		●
	503	12.00	12.00	83	27.00	-	1.500	0.0°	4		●
	610	16.00	16.00	92	32.00	-	1.500	0.0°	4		●

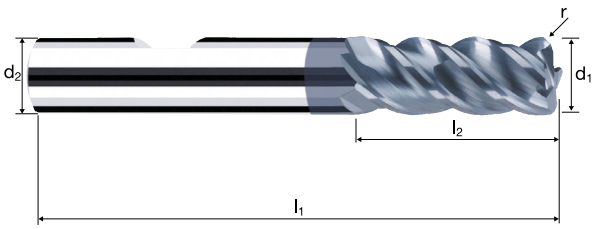
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel 850 - 1100 N/mm²	10.00	4	150	0.065	15.000	4.000	4775	1240	74.5
		12.00	4	150	0.080	18.000	4.800	3980	1275	110.0
		16.00	4	150	0.090	24.000	6.400	2985	1075	165.0
		20.00	4	150	0.110	30.000	8.000	2385	1050	252.1
	Steel 1100 - 1300 N/mm²	10.00	4	115	0.065	15.000	4.000	3660	950	57.1
		12.00	4	115	0.080	18.000	4.800	3050	975	84.3
		16.00	4	115	0.090	24.000	6.400	2290	825	126.5
		20.00	4	115	0.110	30.000	8.000	1830	805	193.3
	Hardened tool steel 52 - 56 HRC	10.00	4	55	0.036	15.000	3.000	1750	250	11.3
		12.00	4	55	0.042	18.000	3.600	1460	245	15.9
		16.00	4	55	0.048	24.000	4.800	1095	210	24.2
		20.00	4	55	0.060	30.000	6.000	875	210	37.8
	Titanium alloys > 300 HB [Ti6Al4V]	10.00	4	50	0.035	15.000	4.000	1590	225	13.4
		12.00	4	50	0.040	18.000	4.800	1325	210	18.3
		16.00	4	50	0.050	24.000	6.400	995	200	30.6
		20.00	4	50	0.060	30.000	8.000	795	190	45.8
	Steel 850 - 1100 N/mm²	10.00	4	115	0.045	12.500	10.000	3660	660	82.4
		12.00	4	115	0.055	15.000	12.000	3050	670	120.8
		16.00	4	115	0.065	20.000	16.000	2290	595	190.3
		20.00	4	115	0.080	25.000	20.000	1830	585	292.8
	Steel 1100 - 1300 N/mm²	10.00	4	90	0.045	12.500	10.000	2865	515	64.5
		12.00	4	90	0.055	15.000	12.000	2385	525	94.5
		16.00	4	90	0.065	20.000	16.000	1790	465	149.0
		20.00	4	90	0.080	25.000	20.000	1430	460	229.2
	Hardened tool steel 52 - 56 HRC	10.00	4	50	0.024	10.000	10.000	1590	155	15.3
		12.00	4	50	0.030	12.000	12.000	1325	160	22.9
		16.00	4	50	0.033	16.000	16.000	995	130	33.6
		20.00	4	50	0.042	20.000	20.000	795	135	53.5
	Titanium alloys > 300 HB [Ti6Al4V]	10.00	4	40	0.030	12.500	10.000	1275	155	19.1
		12.00	4	40	0.040	15.000	12.000	1060	170	30.6
		16.00	4	40	0.045	20.000	16.000	795	145	45.8
		20.00	4	40	0.055	25.000	20.000	635	140	70.0

Corner radius end mills NX-RNVD

Smooth-edged, normal version

HM MG10	λ 45° γ -20°

Vario



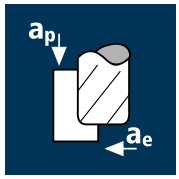
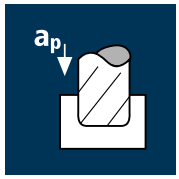
Roughing

Finishing

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60			Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15368** ø-Code **306**

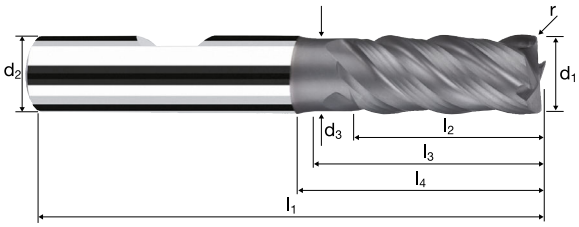
	Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r 0/+0.03	α	z	POLYCHROM P15368	POLYCHROM P15268
new!	306	6.00	6.00	57	12.00	-	2.000	0.0°	4		●
new!	395	8.00	8.00	63	19.00	-	2.000	0.0°	4		●
	505	12.00	12.00	83	27.00	-	2.000	0.0°	4		●
	611	16.00	16.00	92	32.00	-	2.000	0.0°	4		●
	683	20.00	20.00	104	39.00	-	2.000	0.0°	4		●
	457	10.00	10.00	72	23.00	-	2.500	0.0°	4		●
	506	12.00	12.00	83	27.00	-	2.500	0.0°	4		●
	612	16.00	16.00	92	32.00	-	2.500	0.0°	4		●
	684	20.00	20.00	104	39.00	-	2.500	0.0°	4		●
	508	12.00	12.00	83	27.00	-	4.000	0.0°	4		●
	614	16.00	16.00	92	32.00	-	4.000	0.0°	4		●
	686	20.00	20.00	104	39.00	-	4.000	0.0°	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718]	3.00	4	35	0.010	5.400	1.350	3715	150	1.1
		4.00	4	35	0.015	7.200	1.800	2785	165	2.2
		5.00	4	35	0.020	9.000	2.250	2230	180	3.6
		6.00	4	35	0.020	10.800	2.700	1855	150	4.3
		8.00	4	35	0.030	14.400	3.600	1395	165	8.7
		10.00	4	35	0.035	18.000	4.500	1115	155	12.6
		12.00	4	35	0.045	21.600	5.400	930	165	19.5
		16.00	4	35	0.050	28.800	7.200	695	140	28.9
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	3.00	4	25	0.010	5.400	1.350	2655	105	0.8
		4.00	4	25	0.010	7.200	1.800	1990	80	1.0
		5.00	4	25	0.015	9.000	2.250	1590	95	1.9
		6.00	4	25	0.015	10.800	2.700	1325	80	2.3
		8.00	4	25	0.025	14.400	3.600	995	100	5.2
		10.00	4	25	0.030	18.000	4.500	795	95	7.7
		12.00	4	25	0.035	21.600	5.400	665	95	10.8
		16.00	4	25	0.040	28.800	7.200	495	80	16.5
	Manganese steel Mn >5% [1.3964 / Nitronic] [1.3401 / X120Mn12]	3.00	4	40	0.010	5.400	1.350	4245	170	1.2
		4.00	4	40	0.015	7.200	1.800	3185	190	2.5
		5.00	4	40	0.020	9.000	2.250	2545	205	4.1
		6.00	4	40	0.020	10.800	2.700	2120	170	5.0
		8.00	4	40	0.030	14.400	3.600	1590	190	9.9
		10.00	4	40	0.035	18.000	4.500	1275	180	14.4
		12.00	4	40	0.045	21.600	5.400	1060	190	22.3
		16.00	4	40	0.050	28.800	7.200	795	160	33.0
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3.00	4	50	0.015	5.400	1.350	5305	320	2.3
		4.00	4	50	0.020	7.200	1.800	3980	320	4.1
		5.00	4	50	0.030	9.000	2.250	3185	380	7.7
		6.00	4	50	0.035	10.800	2.700	2655	370	10.8
		8.00	4	50	0.045	14.400	3.600	1990	360	18.6
		10.00	4	50	0.055	18.000	4.500	1590	350	28.4
		12.00	4	50	0.065	21.600	5.400	1325	345	40.2
		16.00	4	50	0.070	28.800	7.200	995	280	57.8
	PM high-speed steel annealed [Böhler S390] [ASP 2023]	3.00	4	80	0.010	5.400	1.350	8490	340	2.5
		4.00	4	80	0.015	7.200	1.800	6365	380	5.0
		5.00	4	80	0.020	9.000	2.250	5095	405	8.3
		6.00	4	80	0.020	10.800	2.700	4245	340	9.9
		8.00	4	80	0.030	14.400	3.600	3185	380	19.8
		10.00	4	80	0.035	18.000	4.500	2545	355	28.9
		12.00	4	80	0.045	21.600	5.400	2120	380	44.6
		16.00	4	80	0.050	28.800	7.200	1590	320	66.0
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	4	70	0.010	5.400	1.350	7425	295	2.2
		4.00	4	70	0.015	7.200	1.800	5570	335	4.3
		5.00	4	70	0.015	9.000	2.250	4455	265	5.4
		6.00	4	70	0.020	10.800	2.700	3715	295	8.7
		8.00	4	70	0.025	14.400	3.600	2785	280	14.4
		10.00	4	70	0.035	18.000	4.500	2230	310	25.3
		12.00	4	70	0.040	21.600	5.400	1855	295	34.7
		16.00	4	70	0.045	28.800	7.200	1395	250	52.0
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718]	3.00	4	25	0.010	3.750	3.000	2655	105	1.2
		4.00	4	25	0.010	5.000	4.000	1990	80	1.6
		5.00	4	25	0.015	6.250	5.000	1590	95	3.0
		6.00	4	25	0.015	7.500	6.000	1325	80	3.6
		8.00	4	25	0.025	10.000	8.000	995	100	8.0
		10.00	4	25	0.030	12.500	10.000	795	95	11.9
		12.00	4	25	0.035	15.000	12.000	665	95	16.7
		16.00	4	25	0.040	20.000	16.000	495	80	25.5
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	3.00	4	20	0.005	3.750	3.000	2120	40	0.5
		4.00	4	20	0.010	5.000	4.000	1590	65	1.3
		5.00	4	20	0.010	6.250	5.000	1275	50	1.6
		6.00	4	20	0.015	7.500	6.000	1060	65	2.9
		8.00	4	20	0.020	10.000	8.000	795	65	5.1
		10.00	4	20	0.020	12.500	10.000	635	50	6.4
		12.00	4	20	0.025	15.000	12.000	530	55	9.5
		16.00	4	20	0.030	20.000	16.000	400	50	15.3

Corner radius end mills ZX-RNV

Smooth-edged, normal version with short neck

HM MG10	λ 40° γ 5°



Roughing

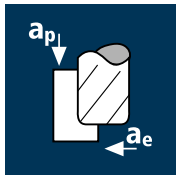
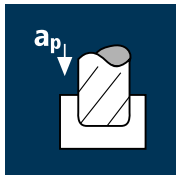
Finishing

Inox Stainless | Ti Titanium | Nickel-Alloys Mangan-Steels HSS

Example: **Order-N°.** Coating **P** Article-N°. **8820** ø-Code **299**

											TICUT	POLYCHROM
											I8820	P8820
											I8720	P8720
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z		
299	6.00	6.00	5.50	57	13.00	18.15	20.00	0.400	0.0°	4	● I	●
387	8.00	8.00	7.40	63	19.00	23.63	26.00	0.400	0.0°	4	● I	●
447	10.00	10.00	9.20	72	22.00	27.99	31.00	0.400	0.0°	4	● I	●
497	12.00	12.00	11.00	83	26.00	33.29	37.00	0.400	0.0°	4	● I	●
180	3.00	6.00	2.80	57	8.00	14.00	20.37	0.500	4.5°	4	● I	●
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.500	3.0°	4	● I	●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.500	1.5°	4	● I	●
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.500	0.0°	4	● I	●
388	8.00	8.00	7.40	63	19.00	23.63	26.00	0.500	0.0°	4	● I	●
448	10.00	10.00	9.20	72	22.00	27.99	31.00	0.500	0.0°	4	● I	●
498	12.00	12.00	11.00	83	26.00	33.29	37.00	0.500	0.0°	4	● I	●
301	6.00	6.00	5.50	57	13.00	18.15	20.00	0.800	0.0°	4	● I	●
389	8.00	8.00	7.40	63	19.00	23.63	26.00	0.800	0.0°	4	● I	●
449	10.00	10.00	9.20	72	22.00	27.99	31.00	0.800	0.0°	4	● I	●
499	12.00	12.00	11.00	83	26.00	33.29	37.00	0.800	0.0°	4	● I	●
607	16.00	16.00	15.00	92	32.00	38.73	43.00	0.800	0.0°	4	● I	●

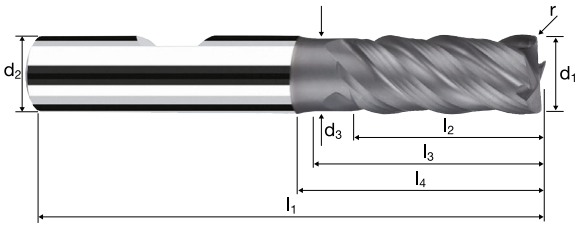
I Availability and delivery dates on request

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718]	6.00	4	35	0.020	10.800	2.400	1855	150	3.9
		8.00	4	35	0.025	14.400	3.200	1395	140	6.4
		10.00	4	35	0.030	18.000	4.000	1115	135	9.6
		12.00	4	35	0.040	21.600	4.800	930	150	15.4
		16.00	4	35	0.045	28.800	6.400	695	125	23.1
		20.00	4	35	0.055	36.000	8.000	555	125	35.3
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	6.00	4	25	0.015	10.800	2.400	1325	80	2.1
		8.00	4	25	0.020	14.400	3.200	995	80	3.7
		10.00	4	25	0.025	18.000	4.000	795	80	5.7
		12.00	4	25	0.030	21.600	4.800	665	80	8.3
		16.00	4	25	0.035	28.800	6.400	495	70	12.8
		20.00	4	25	0.045	36.000	8.000	400	70	20.6
	Manganese steel Mn >5% [1.3964 / Nitronic] [1.3401 / X120Mn12]	6.00	4	40	0.020	10.800	2.400	2120	170	4.4
		8.00	4	40	0.025	14.400	3.200	1590	160	7.3
		10.00	4	40	0.030	18.000	4.000	1275	155	11.0
		12.00	4	40	0.040	21.600	4.800	1060	170	17.6
		16.00	4	40	0.045	28.800	6.400	795	145	26.4
		20.00	4	40	0.055	36.000	8.000	635	140	40.3
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	6.00	4	50	0.030	10.800	2.400	2655	320	8.3
		8.00	4	50	0.040	14.400	3.200	1990	320	14.7
		10.00	4	50	0.050	18.000	4.000	1590	320	22.9
		12.00	4	50	0.060	21.600	4.800	1325	320	33.0
		16.00	4	50	0.065	28.800	6.400	995	260	47.7
		20.00	4	50	0.080	36.000	8.000	795	255	73.3
	PM high-speed steel annealed [Böhler S390] [ASP 2023]	6.00	4	80	0.020	10.800	2.400	4245	340	8.8
		8.00	4	80	0.025	14.400	3.200	3185	320	14.7
		10.00	4	80	0.030	18.000	4.000	2545	305	22.0
		12.00	4	80	0.040	21.600	4.800	2120	340	35.2
		16.00	4	80	0.045	28.800	6.400	1590	285	52.8
		20.00	4	80	0.055	36.000	8.000	1275	280	80.7
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	4	70	0.020	10.800	2.400	3715	295	7.7
		8.00	4	70	0.025	14.400	3.200	2785	280	12.8
		10.00	4	70	0.030	18.000	4.000	2230	265	19.3
		12.00	4	70	0.035	21.600	4.800	1855	260	27.0
		16.00	4	70	0.040	28.800	6.400	1395	225	41.1
		20.00	4	70	0.050	36.000	8.000	1115	225	64.2
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718]	6.00	4	25	0.015	7.200	6.000	1325	80	3.4
		8.00	4	25	0.020	9.600	8.000	995	80	6.1
		10.00	4	25	0.025	12.000	10.000	795	80	9.5
		12.00	4	25	0.030	14.400	12.000	665	80	13.8
		16.00	4	25	0.035	19.200	16.000	495	70	21.4
		20.00	4	25	0.045	24.000	20.000	400	70	34.4
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	6.00	4	20	0.010	7.200	6.000	1060	40	1.8
		8.00	4	20	0.015	9.600	8.000	795	50	3.7
		10.00	4	20	0.020	12.000	10.000	635	50	6.1
		12.00	4	20	0.025	14.400	12.000	530	55	9.2
		16.00	4	20	0.030	19.200	16.000	400	50	14.7
		20.00	4	20	0.035	24.000	20.000	320	45	21.4

Corner radius end mills ZX-RNV

Smooth-edged, normal version with short neck

HM MG10	λ 40° γ 5°



Roughing

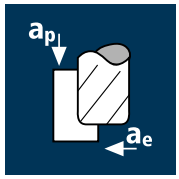
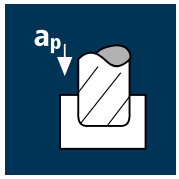
Finishing

Inox Stainless | Ti Titanium | Nickel-Alloys Mangan-Steels HSS

Example: **Order-N°.** Coating **P** Article-N°. **8820** ø-Code **302**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	TICUT I8820 / I8720	POLYCHROM P8820 / P8720
302	6.00	6.00	5.50	57	13.00	18.15	20.00	1.000	0.0°	4	● I	●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	1.000	0.0°	4	● I	●
450	10.00	10.00	9.20	72	22.00	27.99	31.00	1.000	0.0°	4	● I	●
501	12.00	12.00	11.00	83	26.00	33.29	37.00	1.000	0.0°	4	● I	●
608	16.00	16.00	15.00	92	32.00	38.73	43.00	1.000	0.0°	4	● I	●
680	20.00	20.00	19.00	104	38.00	48.23	53.00	1.000	0.0°	4	● I	●
453	10.00	10.00	9.20	72	22.00	27.99	31.00	1.500	0.0°	4	● I	●
503	12.00	12.00	11.00	83	26.00	33.29	37.00	1.500	0.0°	4	● I	●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	1.500	0.0°	4	● I	●
505	12.00	12.00	11.00	83	26.00	33.29	37.00	2.000	0.0°	4	● I	●
611	16.00	16.00	15.00	92	32.00	38.73	43.00	2.000	0.0°	4	● I	●
683	20.00	20.00	19.00	104	38.00	48.23	53.00	2.000	0.0°	4	● I	●

I Availability and delivery dates on request

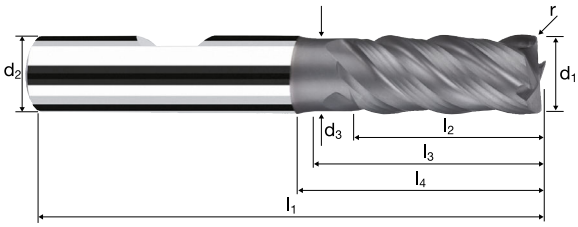
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718]	10.00	4	35	0.030	18.000	4.000	1115	135	9.6
		12.00	4	35	0.040	21.600	4.800	930	150	15.4
		16.00	4	35	0.045	28.800	6.400	695	125	23.1
		20.00	4	35	0.055	36.000	8.000	555	125	35.3
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	10.00	4	25	0.025	18.000	4.000	795	80	5.7
		12.00	4	25	0.030	21.600	4.800	665	80	8.3
		16.00	4	25	0.035	28.800	6.400	495	70	12.8
		20.00	4	25	0.045	36.000	8.000	400	70	20.6
	Manganese steel Mn >5% [1.3964 / Nitronic] [1.3401 / X120Mn12]	10.00	4	40	0.030	18.000	4.000	1275	155	11.0
		12.00	4	40	0.040	21.600	4.800	1060	170	17.6
		16.00	4	40	0.045	28.800	6.400	795	145	26.4
		20.00	4	40	0.055	36.000	8.000	635	140	40.3
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	10.00	4	50	0.050	18.000	4.000	1590	320	22.9
		12.00	4	50	0.060	21.600	4.800	1325	320	33.0
		16.00	4	50	0.065	28.800	6.400	995	260	47.7
		20.00	4	50	0.080	36.000	8.000	795	255	73.3
	PM high-speed steel annealed [Böhler S390] [ASP 2023]	10.00	4	80	0.030	18.000	4.000	2545	305	22.0
		12.00	4	80	0.040	21.600	4.800	2120	340	35.2
		16.00	4	80	0.045	28.800	6.400	1590	285	52.8
		20.00	4	80	0.055	36.000	8.000	1275	280	80.7
	Titanium alloys > 300 HB [Ti6Al4V]	10.00	4	70	0.030	18.000	4.000	2230	265	19.3
		12.00	4	70	0.035	21.600	4.800	1855	260	27.0
		16.00	4	70	0.040	28.800	6.400	1395	225	41.1
		20.00	4	70	0.050	36.000	8.000	1115	225	64.2
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718]	10.00	4	25	0.025	12.000	10.000	795	80	9.5
		12.00	4	25	0.030	14.400	12.000	665	80	13.8
		16.00	4	25	0.035	19.200	16.000	495	70	21.4
		20.00	4	25	0.045	24.000	20.000	400	70	34.4
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	10.00	4	20	0.020	12.000	10.000	635	50	6.1
		12.00	4	20	0.025	14.400	12.000	530	55	9.2
		16.00	4	20	0.030	19.200	16.000	400	50	14.7
		20.00	4	20	0.035	24.000	20.000	320	45	21.4

Corner radius end mills ZX-RNV

Smooth-edged, normal version with short neck

X-Generation X

HM MG10	λ 40° γ 5°



Roughing

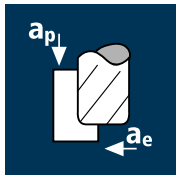
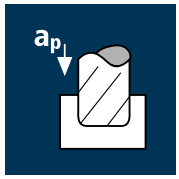
Finishing

Inox Stainless | **Ti** Titanium | **Nickel-Alloys Mangan-Steels HSS**

Example: **Order-N°.** Coating **P** | Article-N°. **8820** | ø-Code **457**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	TICUT I8820	TICUT I8720	POLYCHROM P8820	POLYCHROM P8720
457	10.00	10.00	9.20	72	22.00	27.99	31.00	2.500	0.0°	4	●	I	●	
506	12.00	12.00	11.00	83	26.00	33.29	37.00	2.500	0.0°	4	●	I	●	
612	16.00	16.00	15.00	92	32.00	38.73	43.00	2.500	0.0°	4	●	I	●	
684	20.00	20.00	19.00	104	38.00	48.23	53.00	2.500	0.0°	4	●	I	●	
508	12.00	12.00	11.00	83	26.00	33.29	37.00	4.000	0.0°	4	●	I	●	
614	16.00	16.00	15.00	92	32.00	38.73	43.00	4.000	0.0°	4	●	I	●	
686	20.00	20.00	19.00	104	38.00	48.23	53.00	4.000	0.0°	4	●	I	●	

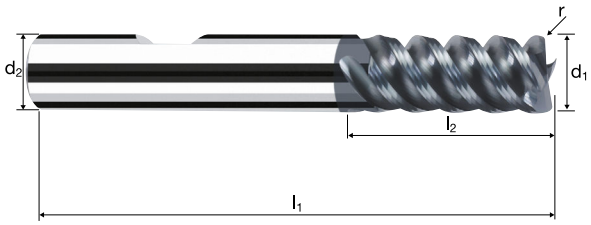
I Availability and delivery dates on request

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Stainless steel [Cr-Ni/1.4301]	6.00	4	80	0.025	9.000	2.400	4245	425	9.2
		8.00	4	80	0.035	12.000	3.200	3185	445	17.1
		10.00	4	80	0.045	15.000	4.000	2545	460	27.5
		12.00	4	80	0.050	18.000	4.800	2120	425	36.7
		16.00	4	80	0.075	24.000	3.200	1590	475	36.7
	Stainless steel [Cr-Ni-Mo-.../1.4429]	6.00	4	40	0.025	9.000	2.400	2120	210	4.6
		8.00	4	40	0.035	12.000	3.200	1590	225	8.6
		10.00	4	40	0.045	15.000	4.000	1275	230	13.8
		12.00	4	40	0.050	18.000	4.800	1060	210	18.3
		16.00	4	40	0.075	24.000	3.200	795	240	18.3
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	6.00	4	25	0.020	9.000	2.400	1325	105	2.3
		8.00	4	25	0.030	12.000	3.200	995	120	4.6
		10.00	4	25	0.035	15.000	4.000	795	110	6.7
		12.00	4	25	0.040	18.000	4.800	665	105	9.2
		16.00	4	25	0.060	24.000	3.200	495	120	9.2
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	6.00	4	15	0.020	9.000	2.400	795	65	1.4
		8.00	4	15	0.030	12.000	3.200	595	70	2.8
		10.00	4	15	0.035	15.000	4.000	475	65	4.0
		12.00	4	15	0.040	18.000	4.800	400	65	5.5
		16.00	4	15	0.060	24.000	3.200	300	70	5.5
	Stainless steel [Cr-Ni/1.4301]	6.00	4	60	0.030	3.000	6.000	3185	380	6.9
		8.00	4	60	0.040	4.000	8.000	2385	380	12.2
		10.00	4	60	0.055	5.000	10.000	1910	420	21.0
		12.00	4	60	0.055	6.000	12.000	1590	350	25.2
		16.00	4	60	0.085	4.000	16.000	1195	405	26.0
	Stainless steel [Cr-Ni-Mo-.../1.4429]	6.00	4	30	0.030	3.000	6.000	1590	190	3.4
		8.00	4	30	0.040	4.000	8.000	1195	190	6.1
		10.00	4	30	0.055	5.000	10.000	955	210	10.5
		12.00	4	30	0.055	6.000	12.000	795	175	12.6
		16.00	4	30	0.085	4.000	16.000	595	205	13.0
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	6.00	4	20	0.025	3.000	6.000	1060	105	1.9
		8.00	4	20	0.035	4.000	8.000	795	110	3.6
		10.00	4	20	0.045	5.000	10.000	635	115	5.7
		12.00	4	20	0.050	6.000	12.000	530	105	7.6
		16.00	4	20	0.075	4.000	16.000	400	120	7.6
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	6.00	4	10	0.025	3.000	6.000	530	55	1.0
		8.00	4	10	0.035	4.000	8.000	400	55	1.8
		10.00	4	10	0.045	5.000	10.000	320	55	2.9
		12.00	4	10	0.050	6.000	12.000	265	55	3.8
		16.00	4	10	0.075	4.000	16.000	200	60	3.8

Corner radius end mills SX-RN

Smooth-edged, normal version

HM MG10	λ 55° γ 15°



Roughing

Finishing

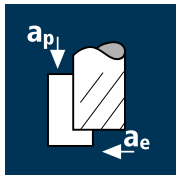
ToolSchool

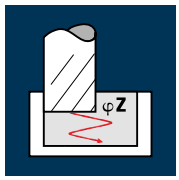
Rm < 850	Rm 850-1100						Inox Stainless	Ti Titanium	Nickel-Alloys Tool Steel

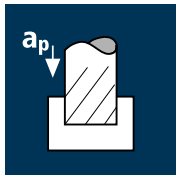
Example: **Order-N°.** Coating **P** Article-N°. **15312** ø-Code **300**

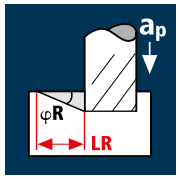
Ø Code	d_1 e8	d_2 h6	l_1	l_2	r 0/+0.03	z	POLYCHROM P15312	POLYCHROM P15212
300	6.00	6.00	57	13.00	0.500	4		●
388	8.00	8.00	63	19.00	0.500	4		●
448	10.00	10.00	72	22.00	0.500	4		●
498	12.00	12.00	83	26.00	0.500	4		●
606	16.00	16.00	92	32.00	0.500	4		●
302	6.00	6.00	57	13.00	1.000	4		●
391	8.00	8.00	63	19.00	1.000	4		●
450	10.00	10.00	72	22.00	1.000	4		●
501	12.00	12.00	83	26.00	1.000	4		●
608	16.00	16.00	92	32.00	1.000	4		●
304	6.00	6.00	57	13.00	1.500	4		●
393	8.00	8.00	63	19.00	1.500	4		●
453	10.00	10.00	72	22.00	1.500	4		●
503	12.00	12.00	83	26.00	1.500	4		●
610	16.00	16.00	92	32.00	1.500	4		●

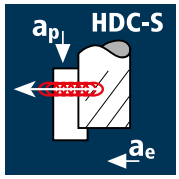
Application

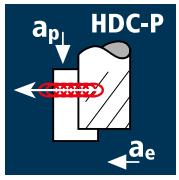


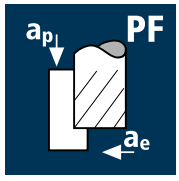


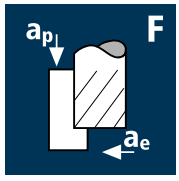




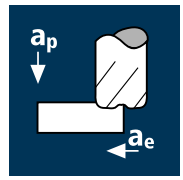


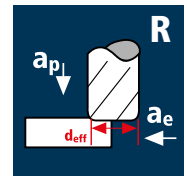


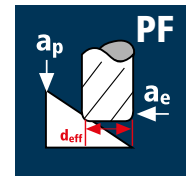




New application areas for 3D machining!







Cutting data calculator ToolExpert MFC

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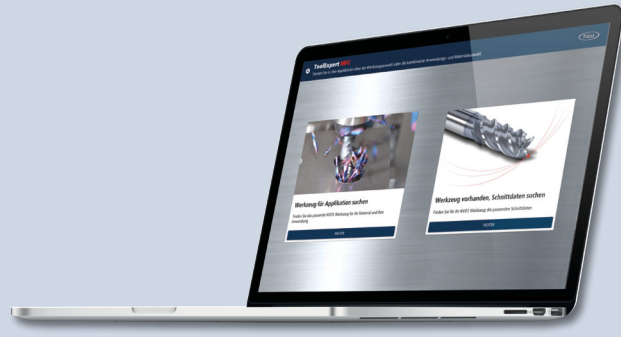
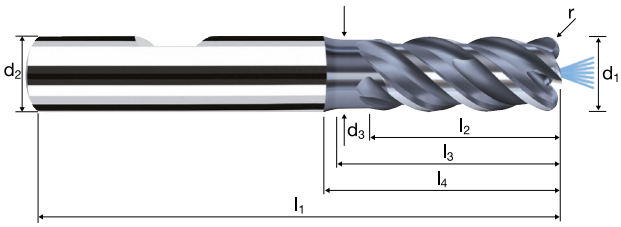


This way to the new cutting data calculator **ToolExpert MFC** or the FRAISA website **www.fraisa.com/en/toolexpert-mfc**

Corner radius end mills MFC-R (MB-RNVDS)

Smooth-edged, normal version with short neck
High-performance penetration edge with central air/cooling channel

HM MG10	λ 45° γ 10°



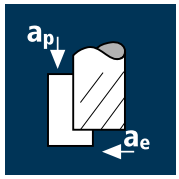
Roughing HPC
Roughing HDC
Finishing

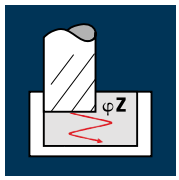
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

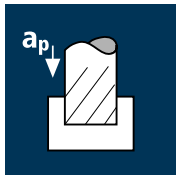
Example: **Order-N°.** Coating **P** Article-N°. **8207** ø-Code **218**

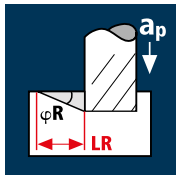
Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P8207	POLYCHROM P8107
218	4.00	6.00	3.70	57	8.00	16.00	20.82	0.200	3.0°	4		●
258	5.00	6.00	4.60	57	10.00	18.00	21.27	0.200	1.5°	4		●
297	6.00	6.00	5.50	57	12.00	18.15	20.00	0.200	0.0°	4		●
385	8.00	8.00	7.40	63	19.00	23.63	26.00	0.200	0.0°	4		●
445	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	4		●
496	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	4		●
new! **605**	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
220	4.00	6.00	3.70	57	8.00	16.00	20.82	0.500	3.0°	4		●
260	5.00	6.00	4.60	57	10.00	18.00	21.27	0.500	1.5°	4		●
300	6.00	6.00	5.50	57	12.00	18.15	20.00	0.500	0.0°	4		●
388	8.00	8.00	7.40	63	19.00	23.63	26.00	0.500	0.0°	4		●
448	10.00	10.00	9.20	72	23.00	27.99	31.00	0.500	0.0°	4		●
498	12.00	12.00	11.00	83	27.00	33.29	37.00	0.500	0.0°	4		●
new! **606**	16.00	16.00	15.00	92	32.00	38.73	43.00	0.500	0.0°	4		●
302	6.00	6.00	5.50	57	12.00	18.15	20.00	1.000	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	1.000	0.0°	4		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	1.000	0.0°	4		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	1.000	0.0°	4		●
608	16.00	16.00	15.00	92	32.00	38.73	43.00	1.000	0.0°	4		●

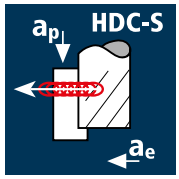
Application

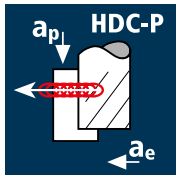


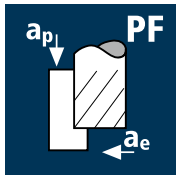


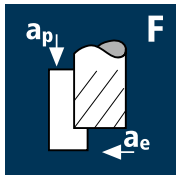












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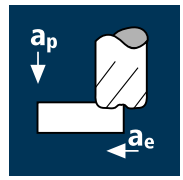

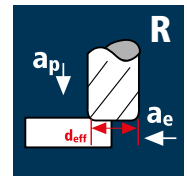

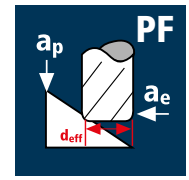

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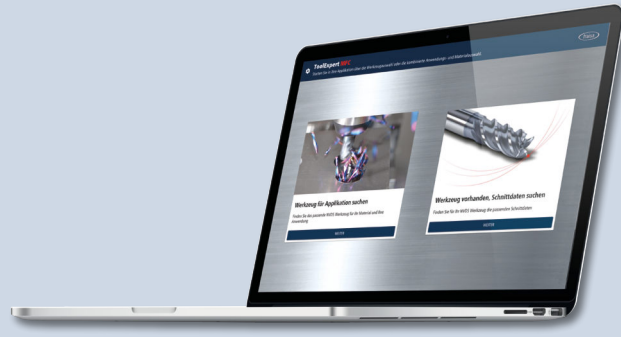

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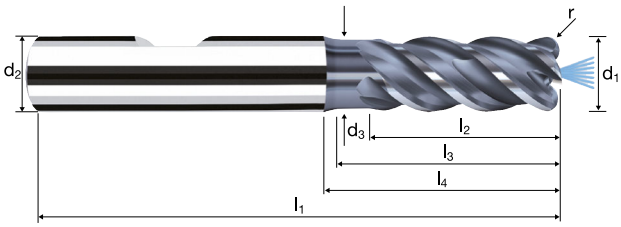
Corner radius end mills MFC-R (MB-RNVDS)

Smooth-edged, normal version with short neck
High-performance penetration edge with central air/cooling channel

HM MG10	λ 45° γ 10°

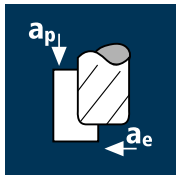
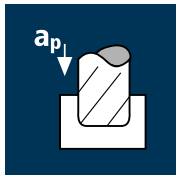


Roughing HPC
Roughing HDC
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8207** ø-Code **393**

												POLYCHROM
												P8207
												P8107
Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z		
393	8.00	8.00	7.40	63	19.00	23.63	26.00	1.500	0.0°	4		●
453	10.00	10.00	9.20	72	23.00	27.99	31.00	1.500	0.0°	4		●
503	12.00	12.00	11.00	83	27.00	33.29	37.00	1.500	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	1.500	0.0°	4		●
new! 455	10.00	10.00	9.20	72	23.00	27.99	31.00	2.000	0.0°	4		●
505	12.00	12.00	11.00	83	27.00	33.29	37.00	2.000	0.0°	4		●
611	16.00	16.00	15.00	92	32.00	38.73	43.00	2.000	0.0°	4		●
506	12.00	12.00	11.00	83	27.00	33.29	37.00	2.500	0.0°	4		●

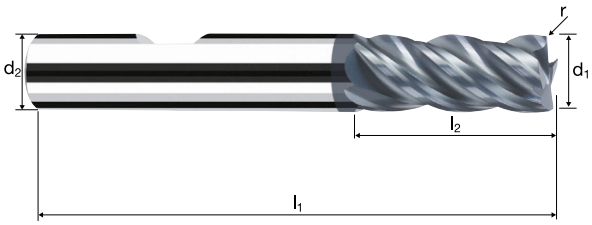
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	3.00	4	190	0.020	4.500	1.200	20160	1615	8.7
		4.00	4	190	0.025	6.000	1.600	15120	1510	14.5
		5.00	4	190	0.035	7.500	2.000	12095	1695	25.4
		6.00	4	190	0.040	9.000	2.400	10080	1615	34.8
		8.00	4	190	0.055	12.000	3.200	7560	1665	63.9
		10.00	4	190	0.070	15.000	4.000	6050	1695	101.6
		12.00	4	190	0.075	18.000	4.800	5040	1510	130.6
		16.00	4	190	0.100	24.000	6.400	3780	1510	232.2
		20.00	4	190	0.130	30.000	8.000	3025	1570	377.4
	Steel 850 - 1100 N/mm²	3.00	4	140	0.020	4.500	1.200	14855	1190	6.4
		4.00	4	140	0.025	6.000	1.600	11140	1115	10.7
		5.00	4	140	0.035	7.500	2.000	8915	1250	18.7
		6.00	4	140	0.040	9.000	2.400	7425	1190	25.7
		8.00	4	140	0.055	12.000	3.200	5570	1225	47.1
		10.00	4	140	0.070	15.000	4.000	4455	1250	74.9
		12.00	4	140	0.075	18.000	4.800	3715	1115	96.3
		16.00	4	140	0.100	24.000	6.400	2785	1115	171.1
		20.00	4	140	0.130	30.000	8.000	2230	1160	278.1
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	4	70	0.020	4.500	1.200	7425	595	3.2
		4.00	4	70	0.025	6.000	1.600	5570	555	5.3
		5.00	4	70	0.030	7.500	2.000	4455	535	8.0
		6.00	4	70	0.040	9.000	2.400	3715	595	12.8
		8.00	4	70	0.050	12.000	3.200	2785	555	21.4
		10.00	4	70	0.065	15.000	4.000	2230	580	34.8
		12.00	4	70	0.075	18.000	4.800	1855	555	48.1
		16.00	4	70	0.095	24.000	6.400	1395	530	81.3
		20.00	4	70	0.120	30.000	8.000	1115	535	128.3
	Stainless steel [Cr-Ni/1.4301]	3.00	4	90	0.015	4.500	1.200	9550	575	3.1
		4.00	4	90	0.020	6.000	1.600	7160	575	5.5
		5.00	4	90	0.020	7.500	2.000	5730	460	6.9
		6.00	4	90	0.030	9.000	2.400	4775	575	12.4
		8.00	4	90	0.035	12.000	3.200	3580	500	19.3
		10.00	4	90	0.045	15.000	4.000	2865	515	30.9
		12.00	4	90	0.055	18.000	4.800	2385	525	45.4
		16.00	4	90	0.065	24.000	6.400	1790	465	71.5
		20.00	4	90	0.085	30.000	8.000	1430	485	116.9
	Steel < 850 N/mm²	3.00	4	155	0.015	3.000	3.000	16445	985	8.9
		4.00	4	155	0.020	4.000	4.000	12335	985	15.8
		5.00	4	155	0.030	5.000	5.000	9870	1185	29.6
		6.00	4	155	0.035	6.000	6.000	8225	1150	41.4
		8.00	4	155	0.045	8.000	8.000	6165	1110	71.0
		10.00	4	155	0.055	10.000	10.000	4935	1085	108.5
		12.00	4	155	0.060	12.000	12.000	4110	985	142.1
		16.00	4	155	0.075	8.000	16.000	3085	925	118.4
		20.00	4	155	0.095	10.000	20.000	2465	935	187.5
	Steel 850 - 1100 N/mm²	3.00	4	105	0.015	3.000	3.000	11140	670	6.0
		4.00	4	105	0.020	4.000	4.000	8355	670	10.7
		5.00	4	105	0.030	5.000	5.000	6685	800	20.1
		6.00	4	105	0.035	6.000	6.000	5570	780	28.1
		8.00	4	105	0.045	8.000	8.000	4180	750	48.1
		10.00	4	105	0.055	10.000	10.000	3340	735	73.5
		12.00	4	105	0.060	12.000	12.000	2785	670	96.3
		16.00	4	105	0.075	8.000	16.000	2090	625	80.2
		20.00	4	105	0.095	10.000	20.000	1670	635	127.0
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	4	55	0.015	3.000	3.000	5835	350	3.2
		4.00	4	55	0.020	4.000	4.000	4375	350	5.6
		5.00	4	55	0.030	5.000	5.000	3500	420	10.5
		6.00	4	55	0.035	6.000	6.000	2920	410	14.7
		8.00	4	55	0.045	8.000	8.000	2190	395	25.2
		10.00	4	55	0.055	10.000	10.000	1750	385	38.5
		12.00	4	55	0.060	12.000	12.000	1460	350	50.4
		16.00	4	55	0.075	8.000	16.000	1095	330	42.0
		20.00	4	55	0.095	10.000	20.000	875	335	66.5
	Stainless steel [Cr-Ni/1.4301]	3.00	4	70	0.010	3.000	3.000	7425	295	2.7
		4.00	4	70	0.015	4.000	4.000	5570	335	5.3
		5.00	4	70	0.025	5.000	5.000	4455	445	11.1
		6.00	4	70	0.030	6.000	6.000	3715	445	16.0
		8.00	4	70	0.035	8.000	8.000	2785	390	25.0
		10.00	4	70	0.045	10.000	10.000	2230	400	40.1
		12.00	4	70	0.050	12.000	12.000	1855	370	53.5
		16.00	4	70	0.060	8.000	16.000	1395	335	42.8
		20.00	4	70	0.075	10.000	20.000	1115	335	66.8

Corner radius end mills NB-RNV

Smooth-edged, normal version

HM MG10	λ 40° γ 0°

Vario



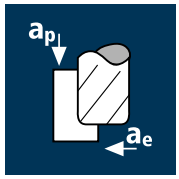
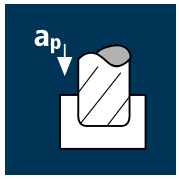
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **15326** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r 0/+0.03	α	z	POLYCHROM P15326	POLYCHROM P15226
180	3.00	6.00	57	8.00	15.56	0.500	6.0°	4		●
220	4.00	6.00	57	11.00	16.89	0.500	4.0°	4		●
260	5.00	6.00	57	13.00	17.22	0.500	2.0°	4		●
300	6.00	6.00	57	13.00	-	0.500	0.0°	4		●
388	8.00	8.00	63	19.00	-	0.500	0.0°	4		●
448	10.00	10.00	72	22.00	-	0.500	0.0°	4		●
498	12.00	12.00	83	26.00	-	0.500	0.0°	4		●
302	6.00	6.00	57	13.00	-	1.000	0.0°	4		●
391	8.00	8.00	63	19.00	-	1.000	0.0°	4		●
450	10.00	10.00	72	22.00	-	1.000	0.0°	4		●
501	12.00	12.00	83	26.00	-	1.000	0.0°	4		●
608	16.00	16.00	92	32.00	-	1.000	0.0°	4		●
680	20.00	20.00	104	38.00	-	1.000	0.0°	4		●
453	10.00	10.00	72	22.00	-	1.500	0.0°	4		●
503	12.00	12.00	83	26.00	-	1.500	0.0°	4		●
610	16.00	16.00	92	32.00	-	1.500	0.0°	4		●

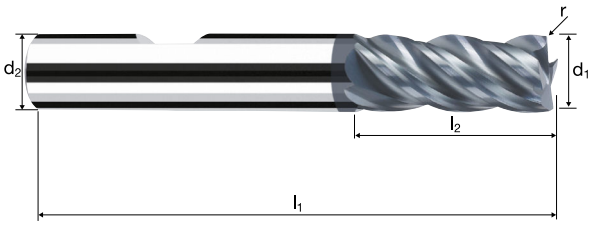
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	10.00	4	190	0.070	15.000	4.000	6050	1695	101.6
		12.00	4	190	0.075	18.000	4.800	5040	1510	130.6
		16.00	4	190	0.100	24.000	6.400	3780	1510	232.2
		20.00	4	190	0.130	30.000	8.000	3025	1570	377.4
	Steel 850 - 1100 N/mm²	10.00	4	140	0.070	15.000	4.000	4455	1250	74.9
		12.00	4	140	0.075	18.000	4.800	3715	1115	96.3
		16.00	4	140	0.100	24.000	6.400	2785	1115	171.1
		20.00	4	140	0.130	30.000	8.000	2230	1160	278.1
	Cold work tool steel (12% Cr), high alloyed [1.2379]	10.00	4	70	0.065	15.000	4.000	2230	580	34.8
		12.00	4	70	0.075	18.000	4.800	1855	555	48.1
		16.00	4	70	0.095	24.000	6.400	1395	530	81.3
		20.00	4	70	0.120	30.000	8.000	1115	535	128.3
	Stainless steel [Cr-Ni/1.4301]	10.00	4	90	0.045	15.000	4.000	2865	515	30.9
		12.00	4	90	0.055	18.000	4.800	2385	525	45.4
		16.00	4	90	0.065	24.000	6.400	1790	465	71.5
		20.00	4	90	0.085	30.000	8.000	1430	485	116.9
	Steel < 850 N/mm²	10.00	4	155	0.055	10.000	10.000	4935	1085	108.5
		12.00	4	155	0.060	12.000	12.000	4110	985	142.1
		16.00	4	155	0.075	8.000	16.000	3085	925	118.4
		20.00	4	155	0.095	10.000	20.000	2465	935	187.5
	Steel 850 - 1100 N/mm²	10.00	4	105	0.055	10.000	10.000	3340	735	73.5
		12.00	4	105	0.060	12.000	12.000	2785	670	96.3
		16.00	4	105	0.075	8.000	16.000	2090	625	80.2
		20.00	4	105	0.095	10.000	20.000	1670	635	127.0
	Cold work tool steel (12% Cr), high alloyed [1.2379]	10.00	4	55	0.055	10.000	10.000	1750	385	38.5
		12.00	4	55	0.060	12.000	12.000	1460	350	50.4
		16.00	4	55	0.075	8.000	16.000	1095	330	42.0
		20.00	4	55	0.095	10.000	20.000	875	335	66.5
	Stainless steel [Cr-Ni/1.4301]	10.00	4	70	0.045	10.000	10.000	2230	400	40.1
		12.00	4	70	0.050	12.000	12.000	1855	370	53.5
		16.00	4	70	0.060	8.000	16.000	1395	335	42.8
		20.00	4	70	0.075	10.000	20.000	1115	335	66.8

Corner radius end mills NB-RNV

Smooth-edged, normal version

HM MG10	λ 40° γ 0°

Vario



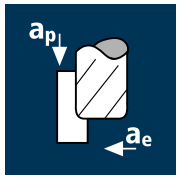
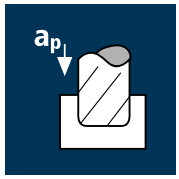
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **15326** ø-Code **505**

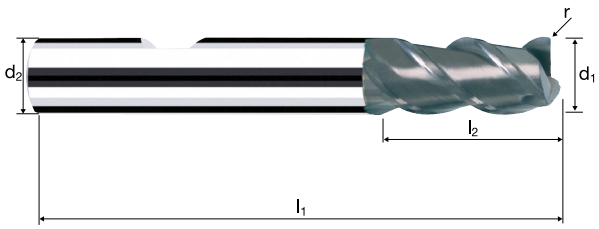
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r 0/+0.03	α	z	POLYCHROM P15326	POLYCHROM P15226
505	12.00	12.00	83	26.00	-	2.000	0.0°	4		●
611	16.00	16.00	92	32.00	-	2.000	0.0°	4		●
683	20.00	20.00	104	38.00	-	2.000	0.0°	4		●
457	10.00	10.00	72	22.00	-	2.500	0.0°	4		●
506	12.00	12.00	83	26.00	-	2.500	0.0°	4		●
612	16.00	16.00	92	32.00	-	2.500	0.0°	4		●
684	20.00	20.00	104	38.00	-	2.500	0.0°	4		●
508	12.00	12.00	83	26.00	-	4.000	0.0°	4		●
614	16.00	16.00	92	32.00	-	4.000	0.0°	4		●
686	20.00	20.00	104	38.00	-	4.000	0.0°	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	3.00	3	115	0.010	4.500	0.300	12200	365	0.5
		4.00	3	115	0.015	6.000	0.400	9150	410	1.0
		5.00	3	115	0.015	7.500	0.500	7320	330	1.2
		6.00	3	115	0.020	9.000	0.600	6100	365	2.0
		8.00	3	115	0.025	12.000	0.800	4575	345	3.3
		10.00	3	115	0.035	15.000	1.000	3660	385	5.8
		12.00	3	115	0.040	18.000	1.200	3050	365	7.9
	Steel 850 - 1100 N/mm²	3.00	3	75	0.010	1.500	0.300	7960	240	0.1
		4.00	3	75	0.015	6.000	0.400	5970	270	0.6
		5.00	3	75	0.015	7.500	0.500	4775	215	0.8
		6.00	3	75	0.020	9.000	0.600	3980	240	1.3
		8.00	3	75	0.025	12.000	0.800	2985	225	2.1
		10.00	3	75	0.035	15.000	1.000	2385	250	3.8
		12.00	3	75	0.040	18.000	1.200	1990	240	5.2
	Cast iron (lamellar / spheroidal)	3.00	3	150	0.010	4.500	0.300	15915	475	0.6
		4.00	3	150	0.015	6.000	0.400	11935	535	1.3
		5.00	3	150	0.015	7.500	0.500	9550	430	1.6
		6.00	3	150	0.020	9.000	0.600	7960	475	2.6
		8.00	3	150	0.025	12.000	0.800	5970	450	4.3
		10.00	3	150	0.035	15.000	1.000	4775	500	7.5
		12.00	3	150	0.040	18.000	1.200	3980	475	10.3
	Stainless steel [Cr-Ni/1.4301]	3.00	3	60	0.010	4.500	0.300	6365	190	0.3
		4.00	3	60	0.015	6.000	0.400	4775	215	0.5
		5.00	3	60	0.015	7.500	0.500	3820	170	0.6
		6.00	3	60	0.020	9.000	0.600	3185	190	1.0
		8.00	3	60	0.025	12.000	0.800	2385	180	1.7
		10.00	3	60	0.035	15.000	1.000	1910	200	3.0
		12.00	3	60	0.040	18.000	1.200	1590	190	4.1
	Steel < 850 N/mm²	3.00	3	85	0.010	1.500	3.000	9020	270	1.2
		4.00	3	85	0.010	2.000	4.000	6765	205	1.6
		5.00	3	85	0.015	2.500	5.000	5410	245	3.0
		6.00	3	85	0.015	3.000	6.000	4510	205	3.7
		8.00	3	85	0.020	4.000	8.000	3380	205	6.5
		10.00	3	85	0.030	5.000	10.000	2705	245	12.2
		12.00	3	85	0.035	6.000	12.000	2255	235	17.0
	Steel 850 - 1100 N/mm²	3.00	3	60	0.010	1.500	3.000	6365	190	0.9
		4.00	3	60	0.010	2.000	4.000	4775	145	1.1
		5.00	3	60	0.015	2.500	5.000	3820	170	2.1
		6.00	3	60	0.015	3.000	6.000	3185	145	2.6
		8.00	3	60	0.020	4.000	8.000	2385	145	4.6
		10.00	3	60	0.025	5.000	10.000	1910	145	7.2
		12.00	3	60	0.030	6.000	12.000	1590	145	10.3
	Cast iron (lamellar / spheroidal)	3.00	3	105	0.010	1.500	3.000	11140	335	1.5
		4.00	3	105	0.010	2.000	4.000	8355	250	2.0
		5.00	3	105	0.015	2.500	5.000	6685	300	3.8
		6.00	3	105	0.015	3.000	6.000	5570	250	4.5
		8.00	3	105	0.020	4.000	8.000	4180	250	8.0
		10.00	3	105	0.025	5.000	10.000	3340	250	12.5
		12.00	3	105	0.030	6.000	12.000	2785	250	18.0
	Stainless steel [Cr-Ni/1.4301]	3.00	3	40	0.010	1.500	3.000	4245	125	0.6
		4.00	3	40	0.010	2.000	4.000	3185	95	0.8
		5.00	3	40	0.015	2.500	5.000	2545	115	1.4
		6.00	3	40	0.015	3.000	6.000	2120	95	1.7
		8.00	3	40	0.020	4.000	8.000	1590	95	3.1
		10.00	3	40	0.025	5.000	10.000	1275	95	4.8
		12.00	3	40	0.030	6.000	12.000	1060	95	6.9

Corner radius end mills

Smooth-edged, normal version

HM MG10	λ 45° γ 15°



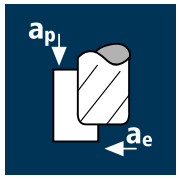
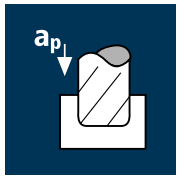
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **5334** ø-Code **178**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r 0/+0.03	α	z	POLYCHROM P5334	POLYCHROM P5234
178	3.00	6.00	57	7.00	14.96	0.200	6.0°	3		●
218	4.00	6.00	57	8.00	14.59	0.200	4.5°	3		●
258	5.00	6.00	57	10.00	14.72	0.200	2.5°	3		●
297	6.00	6.00	57	10.00	-	0.200	0.0°	3		●
388	8.00	8.00	63	16.00	-	0.200	0.0°	3		●
445	10.00	10.00	72	19.00	-	0.200	0.0°	3		●
496	12.00	12.00	83	22.00	-	0.200	0.0°	3		●
180	3.00	6.00	57	7.00	14.96	0.500	6.0°	3		●
220	4.00	6.00	57	8.00	14.59	0.500	4.5°	3		●
260	5.00	6.00	57	10.00	14.72	0.500	2.5°	3		●
300	6.00	6.00	57	10.00	-	0.500	0.0°	3		●
391	8.00	8.00	63	16.00	-	0.500	0.0°	3		●
450	10.00	10.00	72	19.00	-	0.500	0.0°	3		●
501	12.00	12.00	83	22.00	-	0.500	0.0°	3		●

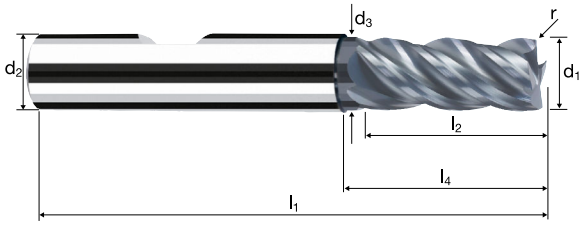
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	3.00	4	170	0.015	4.500	1.200	18040	1080	5.8
		4.00	4	170	0.020	6.000	1.600	13530	1080	10.4
		5.00	4	170	0.025	7.500	2.000	10825	1080	16.2
		6.00	4	170	0.030	9.000	2.400	9020	1080	23.4
		8.00	4	170	0.040	12.000	3.200	6765	1080	41.6
		10.00	4	170	0.050	15.000	4.000	5410	1080	64.9
		12.00	4	170	0.060	18.000	4.800	4510	1080	93.5
		16.00	4	170	0.075	24.000	6.400	3380	1015	155.8
		20.00	4	170	0.095	30.000	8.000	2705	1030	246.8
	Steel 850 - 1100 N/mm²	3.00	4	120	0.015	4.500	1.200	12730	765	4.1
		4.00	4	120	0.020	6.000	1.600	9550	765	7.3
		5.00	4	120	0.025	7.500	2.000	7640	765	11.5
		6.00	4	120	0.030	9.000	2.400	6365	765	16.5
		8.00	4	120	0.040	12.000	3.200	4775	765	29.3
		10.00	4	120	0.050	15.000	4.000	3820	765	45.8
		12.00	4	120	0.060	18.000	4.800	3185	765	66.0
		16.00	4	120	0.075	24.000	6.400	2385	715	110.0
		20.00	4	120	0.095	30.000	8.000	1910	725	174.2
	Stainless steel [Cr-Ni/1.4301]	3.00	4	80	0.010	4.500	1.200	8490	340	1.8
		4.00	4	80	0.015	6.000	1.600	6365	380	3.7
		5.00	4	80	0.020	7.500	2.000	5095	405	6.1
		6.00	4	80	0.025	9.000	2.400	4245	425	9.2
		8.00	4	80	0.030	12.000	3.200	3185	380	14.7
		10.00	4	80	0.040	15.000	4.000	2545	405	24.4
		12.00	4	80	0.050	18.000	4.800	2120	425	36.7
		16.00	4	80	0.060	24.000	6.400	1590	380	58.7
		20.00	4	80	0.075	30.000	8.000	1275	380	91.7
	Cast iron (lamellar / spheroidal)	3.00	4	150	0.015	4.500	1.200	15915	955	5.2
		4.00	4	150	0.020	6.000	1.600	11935	955	9.2
		5.00	4	150	0.030	7.500	2.000	9550	1145	17.2
		6.00	4	150	0.035	9.000	2.400	7960	1115	24.1
		8.00	4	150	0.045	12.000	3.200	5970	1075	41.3
		10.00	4	150	0.055	15.000	4.000	4775	1050	63.0
		12.00	4	150	0.065	18.000	4.800	3980	1035	89.4
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.8
		20.00	4	150	0.105	30.000	8.000	2385	1005	240.6
	Steel < 850 N/mm²	3.00	4	135	0.010	3.000	3.000	14325	575	5.2
		4.00	4	135	0.015	4.000	4.000	10745	645	10.3
		5.00	4	135	0.020	5.000	5.000	8595	690	17.2
		6.00	4	135	0.025	6.000	6.000	7160	715	25.8
		8.00	4	135	0.030	8.000	8.000	5370	645	41.3
		10.00	4	135	0.040	10.000	10.000	4295	690	68.8
		12.00	4	135	0.045	12.000	12.000	3580	645	92.8
		16.00	4	135	0.055	8.000	16.000	2685	590	75.6
		20.00	4	135	0.070	10.000	20.000	2150	600	120.3
	Steel 850 - 1100 N/mm²	3.00	4	95	0.010	3.000	3.000	10080	405	3.6
		4.00	4	95	0.015	4.000	4.000	7560	455	7.3
		5.00	4	95	0.020	5.000	5.000	6050	485	12.1
		6.00	4	95	0.025	6.000	6.000	5040	505	18.1
		8.00	4	95	0.030	8.000	8.000	3780	455	29.0
		10.00	4	95	0.040	10.000	10.000	3025	485	48.4
		12.00	4	95	0.045	12.000	12.000	2520	455	65.3
		16.00	4	95	0.055	8.000	16.000	1890	415	53.2
		20.00	4	95	0.070	10.000	20.000	1510	425	84.7
	Stainless steel [Cr-Ni/1.4301]	3.00	4	65	0.010	2.100	3.000	6895	275	1.7
		4.00	4	65	0.010	2.800	4.000	5175	205	2.3
		5.00	4	65	0.015	3.500	5.000	4140	250	4.3
		6.00	4	65	0.020	4.200	6.000	3450	275	7.0
		8.00	4	65	0.025	8.000	8.000	2585	260	16.6
		10.00	4	65	0.030	10.000	10.000	2070	250	24.8
		12.00	4	65	0.040	12.000	12.000	1725	275	39.7
		16.00	4	65	0.045	8.000	16.000	1295	235	29.8
		20.00	4	65	0.055	10.000	20.000	1035	230	45.5
	Cast iron (lamellar / spheroidal)	3.00	4	125	0.010	3.000	3.000	13265	530	4.8
		4.00	4	125	0.015	4.000	4.000	9945	595	9.5
		5.00	4	125	0.025	5.000	5.000	7960	795	19.9
		6.00	4	125	0.025	6.000	6.000	6630	665	23.9
		8.00	4	125	0.035	8.000	8.000	4975	695	44.6
		10.00	4	125	0.040	10.000	10.000	3980	635	63.7
		12.00	4	125	0.050	12.000	12.000	3315	665	95.5
		16.00	4	125	0.065	8.000	16.000	2485	645	82.8
		20.00	4	125	0.080	10.000	20.000	1990	635	127.3

Corner radius end mills NF-RNV

Smooth-edged, normal version with short neck

Favora® F

HM MG10	λ 40° γ 6°
Vario	



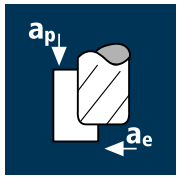
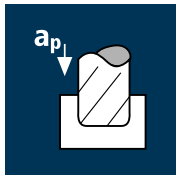
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **45319** ø-Code **178**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P45319	P45219
178	3.00	6.00	2.80	57	8.00	14.00	20.63	0.200	4.5°	4		●
218	4.00	6.00	3.70	57	11.00	16.00	20.95	0.200	3.0°	4		●
258	5.00	6.00	4.60	57	13.00	18.00	21.27	0.200	1.5°	4		●
297	6.00	6.00	5.50	57	13.00	19.34	20.00	0.200	0.0°	4		●
385	8.00	8.00	7.40	63	19.00	25.29	26.00	0.200	0.0°	4		●
445	10.00	10.00	9.20	72	22.00	30.20	31.00	0.200	0.0°	4		●
496	12.00	12.00	11.00	83	26.00	36.13	37.00	0.200	0.0°	4		●
605	16.00	16.00	15.00	92	32.00	42.13	43.00	0.200	0.0°	4		●
180	3.00	6.00	2.80	57	8.00	14.00	20.63	0.500	4.5°	4		●
220	4.00	6.00	3.70	57	11.00	16.00	20.95	0.500	3.0°	4		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.500	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.500	0.0°	4		●
388	8.00	8.00	7.40	63	19.00	25.29	26.00	0.500	0.0°	4		●
448	10.00	10.00	9.20	72	22.00	30.20	31.00	0.500	0.0°	4		●
498	12.00	12.00	11.00	83	26.00	36.13	37.00	0.500	0.0°	4		●
606	16.00	16.00	15.00	92	32.00	42.13	43.00	0.500	0.0°	4		●
678	20.00	20.00	19.00	104	38.00	52.13	53.00	0.500	0.0°	4		●

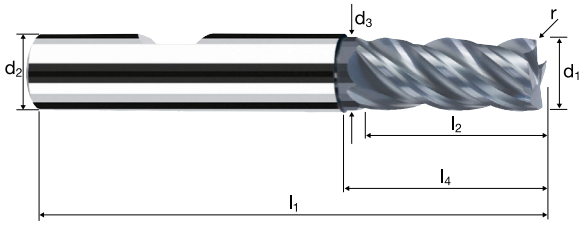
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	4	170	0.030	9.000	2.400	9020	1080	23.4
		8.00	4	170	0.040	12.000	3.200	6765	1080	41.6
		10.00	4	170	0.050	15.000	4.000	5410	1080	64.9
		12.00	4	170	0.060	18.000	4.800	4510	1080	93.5
		16.00	4	170	0.075	24.000	6.400	3380	1015	155.8
		20.00	4	170	0.095	30.000	8.000	2705	1030	246.8
	Steel 850 - 1100 N/mm²	6.00	4	120	0.030	9.000	2.400	6365	765	16.5
		8.00	4	120	0.040	12.000	3.200	4775	765	29.3
		10.00	4	120	0.050	15.000	4.000	3820	765	45.8
		12.00	4	120	0.060	18.000	4.800	3185	765	66.0
		16.00	4	120	0.075	24.000	6.400	2385	715	110.0
		20.00	4	120	0.095	30.000	8.000	1910	725	174.2
	Stainless steel [Cr-Ni/1.4301]	6.00	4	80	0.025	9.000	2.400	4245	425	9.2
		8.00	4	80	0.030	12.000	3.200	3185	380	14.7
		10.00	4	80	0.040	15.000	4.000	2545	405	24.4
		12.00	4	80	0.050	18.000	4.800	2120	425	36.7
		16.00	4	80	0.060	24.000	6.400	1590	380	58.7
		20.00	4	80	0.075	30.000	8.000	1275	380	91.7
	Cast iron (lamellar / spheroidal)	6.00	4	150	0.035	9.000	2.400	7960	1115	24.1
		8.00	4	150	0.045	12.000	3.200	5970	1075	41.3
		10.00	4	150	0.055	15.000	4.000	4775	1050	63.0
		12.00	4	150	0.065	18.000	4.800	3980	1035	89.4
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.8
		20.00	4	150	0.105	30.000	8.000	2385	1005	240.6
	Steel < 850 N/mm²	6.00	4	135	0.025	6.000	6.000	7160	715	25.8
		8.00	4	135	0.030	8.000	8.000	5370	645	41.3
		10.00	4	135	0.040	10.000	10.000	4295	690	68.8
		12.00	4	135	0.045	12.000	12.000	3580	645	92.8
		16.00	4	135	0.055	8.000	16.000	2685	590	75.6
		20.00	4	135	0.070	10.000	20.000	2150	600	120.3
	Steel 850 - 1100 N/mm²	6.00	4	95	0.025	6.000	6.000	5040	505	18.1
		8.00	4	95	0.030	8.000	8.000	3780	455	29.0
		10.00	4	95	0.040	10.000	10.000	3025	485	48.4
		12.00	4	95	0.045	12.000	12.000	2520	455	65.3
		16.00	4	95	0.055	8.000	16.000	1890	415	53.2
		20.00	4	95	0.070	10.000	20.000	1510	425	84.7
	Stainless steel [Cr-Ni/1.4301]	6.00	4	65	0.020	4.200	6.000	3450	275	7.0
		8.00	4	65	0.025	8.000	8.000	2585	260	16.6
		10.00	4	65	0.030	10.000	10.000	2070	250	24.8
		12.00	4	65	0.040	12.000	12.000	1725	275	39.7
		16.00	4	65	0.045	8.000	16.000	1295	235	29.8
		20.00	4	65	0.055	10.000	20.000	1035	230	45.5
	Cast iron (lamellar / spheroidal)	6.00	4	125	0.025	6.000	6.000	6630	665	23.9
		8.00	4	125	0.035	8.000	8.000	4975	695	44.6
		10.00	4	125	0.040	10.000	10.000	3980	635	63.7
		12.00	4	125	0.050	12.000	12.000	3315	665	95.5
		16.00	4	125	0.065	8.000	16.000	2485	645	82.8
		20.00	4	125	0.080	10.000	20.000	1990	635	127.3

Corner radius end mills NF-RNV

Smooth-edged, normal version with short neck

Favora® F

HM MG10	λ 40° γ 6°
Vario	



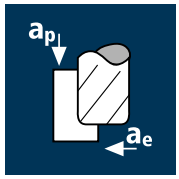
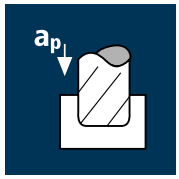
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **45319** ø-Code **301**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P45319	POLYCHROM P45219
301	6.00	6.00	5.50	57	13.00	19.34	20.00	0.800	0.0°	4	●	
389	8.00	8.00	7.40	63	19.00	25.29	26.00	0.800	0.0°	4	●	
449	10.00	10.00	9.20	72	22.00	30.20	31.00	0.800	0.0°	4	●	
499	12.00	12.00	11.00	83	26.00	36.13	37.00	0.800	0.0°	4	●	
302	6.00	6.00	5.50	57	13.00	19.34	20.00	1.000	0.0°	4	●	
391	8.00	8.00	7.40	63	19.00	25.29	26.00	1.000	0.0°	4	●	
450	10.00	10.00	9.20	72	22.00	30.20	31.00	1.000	0.0°	4	●	
501	12.00	12.00	11.00	83	26.00	36.13	37.00	1.000	0.0°	4	●	
608	16.00	16.00	15.00	92	32.00	42.13	43.00	1.000	0.0°	4	●	
680	20.00	20.00	19.00	104	38.00	52.13	53.00	1.000	0.0°	4	●	
304	6.00	6.00	5.50	57	13.00	19.34	20.00	1.500	0.0°	4	●	
393	8.00	8.00	7.40	63	19.00	25.29	26.00	1.500	0.0°	4	●	
453	10.00	10.00	9.20	72	22.00	30.20	31.00	1.500	0.0°	4	●	
503	12.00	12.00	11.00	83	26.00	36.13	37.00	1.500	0.0°	4	●	
610	16.00	16.00	15.00	92	32.00	42.13	43.00	1.500	0.0°	4	●	

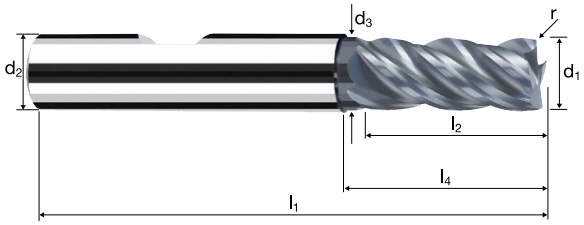
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	10.00	4	170	0.050	15.000	4.000	5410	1080	64.9
		12.00	4	170	0.060	18.000	4.800	4510	1080	93.5
		16.00	4	170	0.075	24.000	6.400	3380	1015	155.8
		20.00	4	170	0.095	30.000	8.000	2705	1030	246.8
	Steel 850 - 1100 N/mm²	10.00	4	120	0.050	15.000	4.000	3820	765	45.8
		12.00	4	120	0.060	18.000	4.800	3185	765	66.0
		16.00	4	120	0.075	24.000	6.400	2385	715	110.0
		20.00	4	120	0.095	30.000	8.000	1910	725	174.2
	Stainless steel [Cr-Ni/1.4301]	10.00	4	80	0.040	15.000	4.000	2545	405	24.4
		12.00	4	80	0.050	18.000	4.800	2120	425	36.7
		16.00	4	80	0.060	24.000	6.400	1590	380	58.7
		20.00	4	80	0.075	30.000	8.000	1275	380	91.7
	Cast iron (lamellar / spheroidal)	10.00	4	150	0.055	15.000	4.000	4775	1050	63.0
		12.00	4	150	0.065	18.000	4.800	3980	1035	89.4
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.8
		20.00	4	150	0.105	30.000	8.000	2385	1005	240.6
	Steel < 850 N/mm²	10.00	4	135	0.040	10.000	10.000	4295	690	68.8
		12.00	4	135	0.045	12.000	12.000	3580	645	92.8
		16.00	4	135	0.055	8.000	16.000	2685	590	75.6
		20.00	4	135	0.070	10.000	20.000	2150	600	120.3
	Steel 850 - 1100 N/mm²	10.00	4	95	0.040	10.000	10.000	3025	485	48.4
		12.00	4	95	0.045	12.000	12.000	2520	455	65.3
		16.00	4	95	0.055	8.000	16.000	1890	415	53.2
		20.00	4	95	0.070	10.000	20.000	1510	425	84.7
	Stainless steel [Cr-Ni/1.4301]	10.00	4	65	0.030	10.000	10.000	2070	250	24.8
		12.00	4	65	0.040	12.000	12.000	1725	275	39.7
		16.00	4	65	0.045	8.000	16.000	1295	235	29.8
		20.00	4	65	0.055	10.000	20.000	1035	230	45.5
	Cast iron (lamellar / spheroidal)	10.00	4	125	0.040	10.000	10.000	3980	635	63.7
		12.00	4	125	0.050	12.000	12.000	3315	665	95.5
		16.00	4	125	0.065	8.000	16.000	2485	645	82.8
		20.00	4	125	0.080	10.000	20.000	1990	635	127.3

Corner radius end mills NF-RNV

Smooth-edged, normal version with short neck

Favora® F

HM MG10	λ 40° γ 6°
Vario	



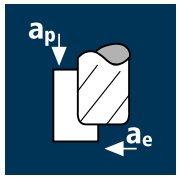
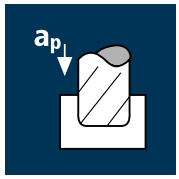
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **45319** ø-Code **306**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P45319	P45219
306	6.00	6.00	5.50	57	13.00	19.34	20.00	2.000	0.0°	4		●
395	8.00	8.00	7.40	63	19.00	25.29	26.00	2.000	0.0°	4		●
455	10.00	10.00	9.20	72	22.00	30.20	31.00	2.000	0.0°	4		●
505	12.00	12.00	11.00	83	26.00	36.13	37.00	2.000	0.0°	4		●
611	16.00	16.00	15.00	92	32.00	42.13	43.00	2.000	0.0°	4		●
683	20.00	20.00	19.00	104	38.00	52.13	53.00	2.000	0.0°	4		●
457	10.00	10.00	9.20	72	22.00	30.20	31.00	2.500	0.0°	4		●
506	12.00	12.00	11.00	83	26.00	36.13	37.00	2.500	0.0°	4		●
612	16.00	16.00	15.00	92	32.00	42.13	43.00	2.500	0.0°	4		●
684	20.00	20.00	19.00	104	38.00	52.13	53.00	2.500	0.0°	4		●
508	12.00	12.00	11.00	83	26.00	36.13	37.00	4.000	0.0°	4		●
614	16.00	16.00	15.00	92	32.00	42.13	43.00	4.000	0.0°	4		●
686	20.00	20.00	19.00	104	38.00	52.13	53.00	4.000	0.0°	4		●

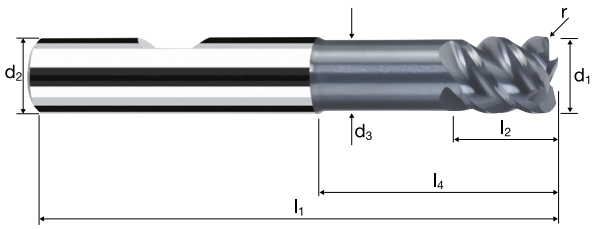
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 1100 - 1300 N/mm²	6.00	4	150	0.050	6.000	3.600	7960	1590	34.4
		8.00	4	150	0.065	8.000	4.800	5970	1550	59.6
		10.00	4	150	0.085	10.000	6.000	4775	1625	97.4
		12.00	4	150	0.100	12.000	7.200	3980	1590	137.5
		16.00	4	150	0.135	16.000	6.400	2985	1610	165.0
	Hardened tool steel 42 - 48 HRC	6.00	4	120	0.035	6.000	3.600	6365	890	19.3
		8.00	4	120	0.045	8.000	4.800	4775	860	33.0
		10.00	4	120	0.055	10.000	6.000	3820	840	50.4
		12.00	4	120	0.065	12.000	7.200	3185	830	71.5
		16.00	4	120	0.090	16.000	6.400	2385	860	88.0
	Hardened tool steel 48 - 52 HRC	6.00	4	80	0.025	6.000	3.600	4245	425	9.2
		8.00	4	80	0.035	8.000	4.800	3185	445	17.1
		10.00	4	80	0.045	10.000	6.000	2545	460	27.5
		12.00	4	80	0.055	12.000	7.200	2120	465	40.3
		16.00	4	80	0.075	16.000	6.400	1590	475	48.9
	Hardened tool steel 52 - 56 HRC	6.00	4	60	0.020	6.000	3.600	3185	255	5.5
		8.00	4	60	0.025	8.000	4.800	2385	240	9.2
		10.00	4	60	0.035	10.000	6.000	1910	265	16.0
		12.00	4	60	0.040	12.000	7.200	1590	255	22.0
		16.00	4	60	0.055	16.000	6.400	1195	265	26.9
	Steel 1100 - 1300 N/mm²	6.00	4	120	0.040	3.000	6.000	6365	1020	18.3
		8.00	4	120	0.050	4.000	8.000	4775	955	30.6
		10.00	4	120	0.070	5.000	10.000	3820	1070	53.5
		12.00	4	120	0.080	6.000	12.000	3185	1020	73.3
		16.00	4	120	0.110	4.000	16.000	2385	1050	67.2
	Hardened tool steel 42 - 48 HRC	6.00	4	100	0.030	3.000	6.000	5305	635	11.5
		8.00	4	100	0.035	4.000	8.000	3980	555	17.8
		10.00	4	100	0.045	5.000	10.000	3185	575	28.6
		12.00	4	100	0.050	6.000	12.000	2655	530	38.2
		16.00	4	100	0.070	4.000	16.000	1990	555	35.7
	Hardened tool steel 48 - 52 HRC	6.00	4	60	0.020	3.000	6.000	3185	255	4.6
		8.00	4	60	0.030	4.000	8.000	2385	285	9.2
		10.00	4	60	0.035	5.000	10.000	1910	265	13.4
		12.00	4	60	0.045	6.000	12.000	1590	285	20.6
		16.00	4	60	0.060	4.000	16.000	1195	285	18.3
	Hardened tool steel 52 - 56 HRC	6.00	4	40	0.015	3.000	6.000	2120	125	2.3
		8.00	4	40	0.020	4.000	8.000	1590	125	4.1
		10.00	4	40	0.030	5.000	10.000	1275	155	7.6
		12.00	4	40	0.030	6.000	12.000	1060	125	9.2
		16.00	4	40	0.045	4.000	16.000	795	145	9.2

Corner radius end mills HX-R

Smooth-edged, normal version with neck

X-Generation X

HM MG10	λ 55° γ -10°



Roughing

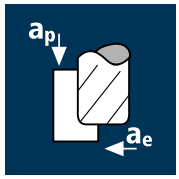
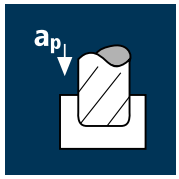
Finishing

ToolSchool

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **D** Article-N°. **5353** ø-Code **300**

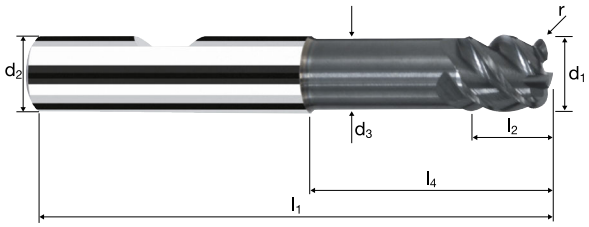
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	z	POLYCHROM P5353 / P5253	DURO-S D5353 / D5253
300	6.00	6.00	5.50	57	7.00	19.34	20.00	1.000	4	●	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	1.000	4	●	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	1.000	4	●	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	1.000	4	●	●
610	16.00	16.00	15.00	92	17.00	42.13	43.00	1.000	4	●	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel 1100 - 1300 N/mm²	6.00	4	150	0.050	6.000	3.600	7960	1590	34.4
		8.00	4	150	0.065	8.000	4.800	5970	1550	59.6
		10.00	4	150	0.085	10.000	6.000	4775	1625	97.4
		12.00	4	150	0.100	12.000	7.200	3980	1590	137.5
		16.00	4	150	0.135	16.000	6.400	2985	1610	165.0
	Hardened tool steel 42 - 48 HRC	6.00	4	120	0.035	6.000	3.600	6365	890	19.3
		8.00	4	120	0.045	8.000	4.800	4775	860	33.0
		10.00	4	120	0.055	10.000	6.000	3820	840	50.4
		12.00	4	120	0.065	12.000	7.200	3185	830	71.5
		16.00	4	120	0.090	16.000	6.400	2385	860	88.0
	Hardened tool steel 48 - 52 HRC	6.00	4	80	0.025	6.000	3.600	4245	425	9.2
		8.00	4	80	0.035	8.000	4.800	3185	445	17.1
		10.00	4	80	0.045	10.000	6.000	2545	460	27.5
		12.00	4	80	0.055	12.000	7.200	2120	465	40.3
		16.00	4	80	0.075	16.000	6.400	1590	475	48.9
	Hardened tool steel 52 - 56 HRC	6.00	4	60	0.020	6.000	3.600	3185	255	5.5
		8.00	4	60	0.025	8.000	4.800	2385	240	9.2
		10.00	4	60	0.035	10.000	6.000	1910	265	16.0
		12.00	4	60	0.040	12.000	7.200	1590	255	22.0
		16.00	4	60	0.055	16.000	6.400	1195	265	26.9
	Steel 1100 - 1300 N/mm²	6.00	4	120	0.040	3.000	6.000	6365	1020	18.3
		8.00	4	120	0.050	4.000	8.000	4775	955	30.6
		10.00	4	120	0.070	5.000	10.000	3820	1070	53.5
		12.00	4	120	0.080	6.000	12.000	3185	1020	73.3
		16.00	4	120	0.110	4.000	16.000	2385	1050	67.2
	Hardened tool steel 42 - 48 HRC	6.00	4	100	0.030	3.000	6.000	5305	635	11.5
		8.00	4	100	0.035	4.000	8.000	3980	555	17.8
		10.00	4	100	0.045	5.000	10.000	3185	575	28.6
		12.00	4	100	0.050	6.000	12.000	2655	530	38.2
		16.00	4	100	0.070	4.000	16.000	1990	555	35.7
	Hardened tool steel 48 - 52 HRC	6.00	4	60	0.020	3.000	6.000	3185	255	4.6
		8.00	4	60	0.030	4.000	8.000	2385	285	9.2
		10.00	4	60	0.035	5.000	10.000	1910	265	13.4
		12.00	4	60	0.045	6.000	12.000	1590	285	20.6
		16.00	4	60	0.060	4.000	16.000	1195	285	18.3
	Hardened tool steel 52 - 56 HRC	6.00	4	40	0.015	3.000	6.000	2120	125	2.3
		8.00	4	40	0.020	4.000	8.000	1590	125	4.1
		10.00	4	40	0.030	5.000	10.000	1275	155	7.6
		12.00	4	40	0.030	6.000	12.000	1060	125	9.2
		16.00	4	40	0.045	4.000	16.000	795	145	9.2

Corner radius end mills HX-R

Smooth-edged, normal version with neck

HM MG10	λ 55° γ -10°



Roughing

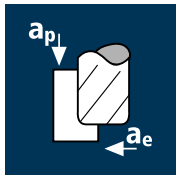
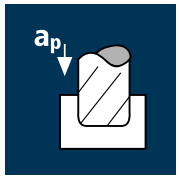
Finishing

ToolSchool

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **D** Article-N°. **5356** ø-Code **300**

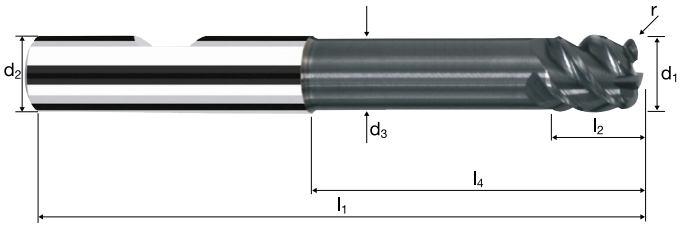
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	z	DURO-S D5356	DURO-S D5256
300	6.00	6.00	5.50	57	7.00	19.34	20.00	1.500	4		●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	2.000	4		●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	2.500	4		●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	3.000	4		●
605	16.00	16.00	15.00	92	17.00	42.13	43.00	2.500	4		●
610	16.00	16.00	15.00	92	17.00	42.13	43.00	3.500	4		●
615	16.00	16.00	15.00	92	17.00	42.13	43.00	4.000	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel 1100 - 1300 N/mm²	6.00	4	120	0.050	6.000	2.400	6365	1275	18.3
		8.00	4	120	0.065	8.000	3.200	4775	1240	31.8
		10.00	4	120	0.085	10.000	4.000	3820	1300	51.9
		12.00	4	120	0.100	12.000	4.800	3185	1275	73.3
		16.00	4	120	0.135	16.000	3.200	2385	1290	66.0
	Hardened tool steel 42 - 48 HRC	6.00	4	80	0.035	6.000	2.400	4245	595	8.6
		8.00	4	80	0.045	8.000	3.200	3185	575	14.7
		10.00	4	80	0.055	10.000	4.000	2545	560	22.4
		12.00	4	80	0.065	12.000	4.800	2120	550	31.8
		16.00	4	80	0.090	16.000	3.200	1590	575	29.3
	Hardened tool steel 48 - 52 HRC	6.00	4	60	0.025	6.000	2.400	3185	320	4.6
		8.00	4	60	0.035	8.000	3.200	2385	335	8.6
		10.00	4	60	0.045	10.000	4.000	1910	345	13.8
		12.00	4	60	0.055	12.000	4.800	1590	350	20.2
		16.00	4	60	0.075	16.000	3.200	1195	360	18.3
	Hardened tool steel 52 - 56 HRC	6.00	4	30	0.020	6.000	2.400	1590	125	1.8
		8.00	4	30	0.025	8.000	3.200	1195	120	3.1
		10.00	4	30	0.035	10.000	4.000	955	135	5.3
		12.00	4	30	0.040	12.000	4.800	795	125	7.3
		16.00	4	30	0.055	16.000	3.200	595	130	6.7
	Steel 1100 - 1300 N/mm²	6.00	4	100	0.040	3.000	6.000	5305	850	15.3
		8.00	4	100	0.050	4.000	8.000	3980	795	25.5
		10.00	4	100	0.070	5.000	10.000	3185	890	44.6
		12.00	4	100	0.080	6.000	12.000	2655	850	61.1
		16.00	4	100	0.110	4.000	16.000	1990	875	56.0
	Hardened tool steel 42 - 48 HRC	6.00	4	60	0.030	3.000	6.000	3185	380	6.9
		8.00	4	60	0.035	4.000	8.000	2385	335	10.7
		10.00	4	60	0.045	5.000	10.000	1910	345	17.2
		12.00	4	60	0.050	6.000	12.000	1590	320	22.9
		16.00	4	60	0.070	4.000	16.000	1195	335	21.4
	Hardened tool steel 48 - 52 HRC	6.00	4	40	0.020	3.000	6.000	2120	170	3.1
		8.00	4	40	0.030	4.000	8.000	1590	190	6.1
		10.00	4	40	0.035	5.000	10.000	1275	180	8.9
		12.00	4	40	0.045	6.000	12.000	1060	190	13.8
		16.00	4	40	0.060	4.000	16.000	795	190	12.2
	Hardened tool steel 52 - 56 HRC	6.00	4	20	0.015	3.000	6.000	1060	65	1.1
		8.00	4	20	0.020	4.000	8.000	795	65	2.0
		10.00	4	20	0.030	5.000	10.000	635	75	3.8
		12.00	4	20	0.030	6.000	12.000	530	65	4.6
		16.00	4	20	0.045	4.000	16.000	400	70	4.6

Corner radius end mills HX-R

Smooth-edged, medium length version with neck

HM MG10	λ 55° γ -10°



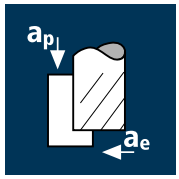
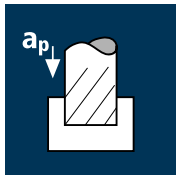
Roughing

Finishing

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **D** Article-N°. **5357** ø-Code **300**

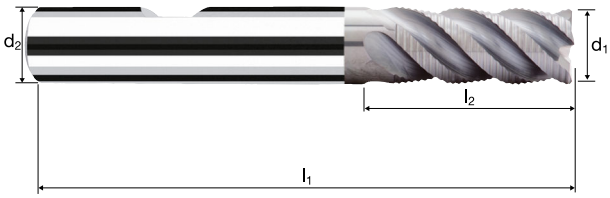
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	z	POLYCHROM P5357 P5257	DURO-S D5357 D5257
300	6.00	6.00	5.50	70	7.00	32.34	33.00	1.500	4	●	●
391	8.00	8.00	7.40	80	9.00	42.29	43.00	2.000	4	●	●
450	10.00	10.00	9.20	84	11.00	42.20	43.00	2.500	4	●	●
501	12.00	12.00	11.00	97	13.00	50.13	51.00	3.000	4	●	●
610	16.00	16.00	15.00	115	17.00	65.13	66.00	3.500	4	●	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	4	180	0.025	9.000	3.600	9550	955	30.9
		8.00	4	180	0.030	12.000	4.800	7160	860	49.5
		10.00	4	180	0.050	15.000	6.000	5730	1145	103.1
		12.00	4	180	0.055	18.000	7.200	4775	1050	136.1
		16.00	4	180	0.055	24.000	9.600	3580	790	181.5
		20.00	4	180	0.060	30.000	12.000	2865	690	247.5
	Steel 850 - 1100 N/mm²	6.00	4	150	0.025	9.000	3.600	7960	795	25.8
		8.00	4	150	0.030	12.000	4.800	5970	715	41.3
		10.00	4	150	0.050	15.000	6.000	4775	955	85.9
		12.00	4	150	0.055	18.000	7.200	3980	875	113.4
		16.00	4	150	0.055	24.000	9.600	2985	655	151.3
		20.00	4	150	0.060	30.000	12.000	2385	575	206.3
	Steel 1100 - 1300 N/mm²	6.00	4	120	0.025	9.000	3.600	6365	635	20.6
		8.00	4	120	0.030	12.000	4.800	4775	575	33.0
		10.00	4	120	0.050	15.000	6.000	3820	765	68.8
		12.00	4	120	0.055	18.000	7.200	3185	700	90.8
		16.00	4	120	0.055	24.000	9.600	2385	525	121.0
		20.00	4	120	0.060	30.000	12.000	1910	460	165.0
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	80	0.025	9.000	3.600	4245	425	13.8
		8.00	4	80	0.030	12.000	4.800	3185	380	22.0
		10.00	4	80	0.050	15.000	6.000	2545	510	45.8
		12.00	4	80	0.055	18.000	7.200	2120	465	60.5
		16.00	4	80	0.055	24.000	9.600	1590	350	80.7
		20.00	4	80	0.060	30.000	12.000	1275	305	110.0
	Steel < 850 N/mm²	6.00	4	150	0.025	9.000	6.000	7960	795	43.0
		8.00	4	150	0.030	12.000	8.000	5970	715	68.8
		10.00	4	150	0.050	15.000	10.000	4775	955	143.2
		12.00	4	150	0.055	18.000	12.000	3980	875	189.1
		16.00	4	150	0.055	24.000	16.000	2985	655	252.1
		20.00	4	150	0.060	30.000	20.000	2385	575	343.8
	Steel 850 - 1100 N/mm²	6.00	4	100	0.020	9.000	6.000	5305	425	22.9
		8.00	4	100	0.025	12.000	8.000	3980	400	38.2
		10.00	4	100	0.030	15.000	10.000	3185	380	57.3
		12.00	4	100	0.040	18.000	12.000	2655	425	91.7
		16.00	4	100	0.050	24.000	16.000	1990	400	152.8
		20.00	4	100	0.055	30.000	20.000	1590	350	210.1
	Steel 1100 - 1300 N/mm²	6.00	4	80	0.020	9.000	6.000	4245	340	18.3
		8.00	4	80	0.025	12.000	8.000	3185	320	30.6
		10.00	4	80	0.030	15.000	10.000	2545	305	45.8
		12.00	4	80	0.040	18.000	12.000	2120	340	73.3
		16.00	4	80	0.050	24.000	16.000	1590	320	122.2
		20.00	4	80	0.055	30.000	20.000	1275	280	168.1
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	60	0.020	9.000	6.000	3185	255	13.8
		8.00	4	60	0.025	12.000	8.000	2385	240	22.9
		10.00	4	60	0.030	15.000	10.000	1910	230	34.4
		12.00	4	60	0.040	18.000	12.000	1590	255	55.0
		16.00	4	60	0.050	24.000	16.000	1195	240	91.7
		20.00	4	60	0.055	30.000	20.000	955	210	126.1

Cylindrical end mills NX-FP

Profiled, normal version

HM XT	λ 45° γ 0°



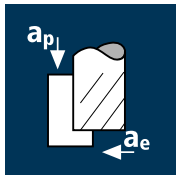
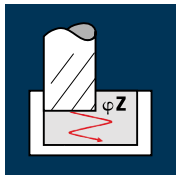
Roughing

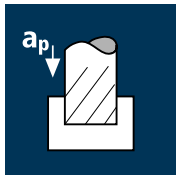
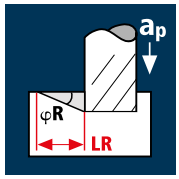
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **5379** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z	POLYCHROM P5379	POLYCHROM P5279
300	6.00	6.00	57	13.00	0.35	4		●
391	8.00	8.00	63	19.00	0.45	4		●
450	10.00	10.00	72	22.00	0.60	4		●
501	12.00	12.00	83	26.00	0.60	4		●
608	16.00	16.00	92	32.00	0.70	4		●
610	16.00	16.00	92	32.00	0.70	6		●
680	20.00	20.00	104	38.00	0.70	4		●
682	20.00	20.00	104	38.00	0.70	6		●

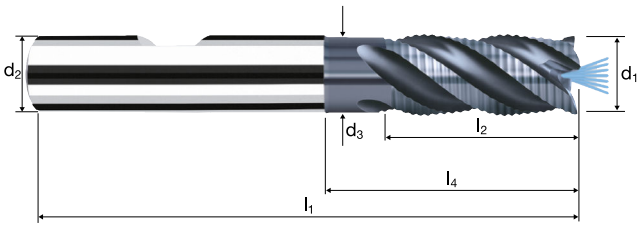
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]	φZ [°]
	Steel < 850 N/mm²	4.00	3	180	0.020	6.000	2.400	14325	860	12.4	20°
		5.00	4	180	0.025	7.500	3.000	11460	1145	25.8	20°
		6.00	4	180	0.030	9.000	3.600	9550	1145	37.1	20°
		8.00	4	180	0.040	12.000	4.800	7160	1145	66.0	20°
		10.00	4	180	0.050	15.000	6.000	5730	1145	103.1	20°
		12.00	4	180	0.055	18.000	7.200	4775	1050	136.1	20°
		16.00	4	180	0.055	24.000	9.600	3580	790	181.5	20°
		20.00	4	180	0.060	30.000	12.000	2865	690	247.5	20°
	Steel 850 - 1100 N/mm²	4.00	3	130	0.020	6.000	2.400	10345	620	8.9	18°
		5.00	4	130	0.025	7.500	3.000	8275	830	18.6	18°
		6.00	4	130	0.030	9.000	3.600	6895	830	26.8	18°
		8.00	4	130	0.040	12.000	4.800	5175	830	47.7	18°
		10.00	4	130	0.050	15.000	6.000	4140	830	74.5	18°
		12.00	4	130	0.055	18.000	7.200	3450	760	98.3	18°
		16.00	4	130	0.055	24.000	9.600	2585	570	131.1	18°
		20.00	4	130	0.060	30.000	12.000	2070	495	178.8	18°
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	3	45	0.015	6.000	2.400	3580	160	2.3	12°
		5.00	4	45	0.020	7.500	3.000	2865	230	5.2	12°
		6.00	4	45	0.025	9.000	3.600	2385	240	7.7	12°
		8.00	4	45	0.030	12.000	4.800	1790	215	12.4	12°
		10.00	4	45	0.040	15.000	6.000	1430	230	20.6	12°
		12.00	4	45	0.045	18.000	7.200	1195	215	27.8	12°
		16.00	4	45	0.045	24.000	9.600	895	160	37.1	12°
		20.00	4	45	0.050	30.000	12.000	715	145	51.6	12°
	Stainless steel [Cr-Ni/1.4301]	4.00	3	60	0.015	6.000	2.400	4775	215	3.1	12°
		5.00	4	60	0.020	7.500	3.000	3820	305	6.9	12°
		6.00	4	60	0.025	9.000	3.600	3185	320	10.3	12°
		8.00	4	60	0.030	12.000	4.800	2385	285	16.5	12°
		10.00	4	60	0.040	15.000	6.000	1910	305	27.5	12°
		12.00	4	60	0.045	18.000	7.200	1590	285	37.1	12°
		16.00	4	60	0.045	24.000	8.400	1195	215	43.3	12°
		20.00	4	60	0.050	30.000	12.000	955	190	68.8	12°

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]	φR [°]	LR [mm]
	Steel < 850 N/mm²	4.00	3	150	0.020	5.000	4.000	11935	715	14.3	20°	13.7
		5.00	4	150	0.025	6.300	5.000	9550	955	30.1	20°	17.3
		6.00	4	150	0.030	7.500	6.000	7960	955	43.0	20°	20.6
		8.00	4	150	0.040	10.000	8.000	5970	955	76.4	20°	27.5
		10.00	4	150	0.050	12.500	10.000	4775	955	119.4	20°	34.3
		12.00	4	150	0.055	15.000	12.000	3980	875	157.6	20°	41.2
		16.00	4	150	0.055	20.000	16.000	2985	655	210.1	20°	54.9
		20.00	4	150	0.060	25.000	20.000	2385	575	286.5	20°	68.7
	Steel 850 - 1100 N/mm²	4.00	3	80	0.020	5.000	4.000	6365	380	7.6	20°	13.7
		5.00	4	80	0.025	6.300	5.000	5095	510	16.0	20°	17.3
		6.00	4	80	0.030	7.500	6.000	4245	510	22.9	20°	20.6
		8.00	4	80	0.040	10.000	8.000	3185	510	40.7	20°	27.5
		10.00	4	80	0.050	12.500	10.000	2545	510	63.7	20°	34.3
		12.00	4	80	0.055	15.000	12.000	2120	465	84.0	20°	41.2
		16.00	4	80	0.055	20.000	16.000	1590	350	112.0	20°	54.9
		20.00	4	80	0.060	25.000	20.000	1275	305	152.8	20°	68.7
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	3	35	0.015	5.000	4.000	2785	125	2.5	14°	20.1
		5.00	4	35	0.020	6.300	5.000	2230	180	5.6	14°	25.3
		6.00	4	35	0.025	7.500	6.000	1855	185	8.4	14°	30.1
		8.00	4	35	0.030	10.000	8.000	1395	165	13.4	14°	40.1
		10.00	4	35	0.040	12.500	10.000	1115	180	22.3	14°	50.1
		12.00	4	35	0.045	15.000	12.000	930	165	30.1	14°	60.2
		16.00	4	35	0.045	20.000	16.000	695	125	40.1	14°	80.2
		20.00	4	35	0.050	25.000	20.000	555	110	55.7	14°	100.3
	Stainless steel [Cr-Ni/1.4301]	4.00	3	50	0.015	5.000	4.000	3980	180	3.6	14°	20.1
		5.00	4	50	0.020	6.300	5.000	3185	255	8.0	14°	25.3
		6.00	4	50	0.025	7.500	6.000	2655	265	11.9	14°	30.1
		8.00	4	50	0.030	10.000	8.000	1990	240	19.1	14°	40.1
		10.00	4	50	0.040	12.500	10.000	1590	255	31.8	14°	50.1
		12.00	4	50	0.045	15.000	12.000	1325	240	43.0	14°	60.2
		16.00	4	50	0.045	20.000	16.000	995	180	57.3	14°	80.2
		20.00	4	50	0.050	25.000	20.000	795	160	79.6	14°	100.3

Cylindrical end mills SupraCarb®

Profiled, normal version with short neck
High-performance penetration edge with central air/cooling channel

HM MG10	λ 38° γ 0°



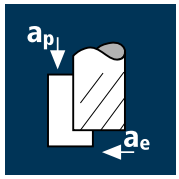
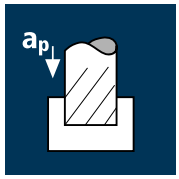
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8402** ø-Code **220**

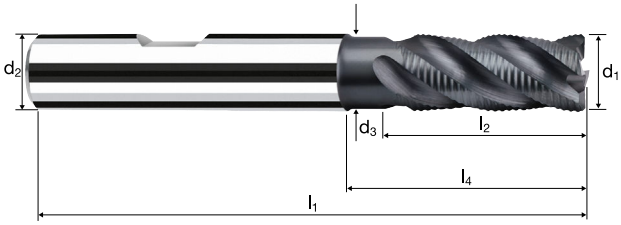
Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8402	POLYCHROM P8302
220	4.00	6.00	3.70	57	11.00	16.00	20.95	0.100	3.0°	3		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.100	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	0.150	0.0°	4		●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	0.200	0.0°	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	3	180	0.015	3.600	1.800	19100	860	5.6
		4.00	3	180	0.020	4.800	2.400	14325	860	9.9
		5.00	4	180	0.025	6.000	3.000	11460	1145	20.6
		6.00	4	180	0.030	7.200	3.600	9550	1145	29.7
		8.00	4	180	0.040	9.600	4.800	7160	1145	52.8
		10.00	4	180	0.050	12.000	6.000	5730	1145	82.5
		12.00	4	180	0.055	14.400	7.200	4775	1050	108.9
		16.00	4	180	0.055	19.200	9.600	3580	790	145.2
		20.00	4	180	0.060	24.000	12.000	2865	690	198.0
	Steel 850 - 1100 N/mm²	3.00	3	130	0.015	3.600	1.800	13795	620	4.0
		4.00	3	130	0.020	4.800	2.400	10345	620	7.2
		5.00	4	130	0.025	6.000	3.000	8275	830	14.9
		6.00	4	130	0.030	7.200	3.600	6895	830	21.5
		8.00	4	130	0.040	9.600	4.800	5175	830	38.1
		10.00	4	130	0.050	12.000	6.000	4140	830	59.6
		12.00	4	130	0.055	14.400	7.200	3450	760	78.7
		16.00	4	130	0.055	19.200	9.600	2585	570	104.9
		20.00	4	130	0.060	24.000	12.000	2070	495	143.0
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	3	45	0.010	3.600	1.800	4775	145	0.9
		4.00	3	45	0.015	4.800	2.400	3580	160	1.9
		5.00	4	45	0.020	6.000	3.000	2865	230	4.1
		6.00	4	45	0.025	7.200	3.600	2385	240	6.2
		8.00	4	45	0.030	9.600	4.800	1790	215	9.9
		10.00	4	45	0.040	12.000	6.000	1430	230	16.5
		12.00	4	45	0.045	14.400	7.200	1195	215	22.3
		16.00	4	45	0.045	19.200	9.600	895	160	29.7
		20.00	4	45	0.050	24.000	12.000	715	145	41.3
	Stainless steel [Cr-Ni/1.4301]	3.00	3	60	0.010	3.600	1.800	6365	190	1.2
		4.00	3	60	0.015	4.800	2.400	4775	215	2.5
		5.00	4	60	0.020	6.000	3.000	3820	305	5.5
		6.00	4	60	0.025	7.200	3.600	3185	320	8.3
		8.00	4	60	0.030	9.600	4.800	2385	285	13.2
		10.00	4	60	0.040	12.000	6.000	1910	305	22.0
		12.00	4	60	0.045	14.400	7.200	1590	285	29.7
		16.00	4	60	0.045	16.800	8.400	1195	215	30.3
		20.00	4	60	0.050	24.000	12.000	955	190	55.0
	Steel < 850 N/mm²	3.00	3	150	0.015	3.000	3.000	15915	715	6.4
		4.00	3	150	0.020	4.000	4.000	11935	715	11.5
		5.00	4	150	0.025	5.000	5.000	9550	955	23.9
		6.00	4	150	0.030	6.000	6.000	7960	955	34.4
		8.00	4	150	0.040	8.000	8.000	5970	955	61.1
		10.00	4	150	0.050	10.000	10.000	4775	955	95.5
		12.00	4	150	0.055	12.000	12.000	3980	875	126.1
		16.00	4	150	0.055	16.000	16.000	2985	655	168.1
		20.00	4	150	0.060	20.000	20.000	2385	575	229.2
	Steel 850 - 1100 N/mm²	3.00	3	80	0.015	3.000	3.000	8490	380	3.4
		4.00	3	80	0.020	4.000	4.000	6365	380	6.1
		5.00	4	80	0.025	5.000	5.000	5095	510	12.7
		6.00	4	80	0.030	6.000	6.000	4245	510	18.3
		8.00	4	80	0.040	8.000	8.000	3185	510	32.6
		10.00	4	80	0.050	10.000	10.000	2545	510	50.9
		12.00	4	80	0.055	12.000	12.000	2120	465	67.2
		16.00	4	80	0.055	16.000	16.000	1590	350	89.6
		20.00	4	80	0.060	20.000	20.000	1275	305	122.2
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	3	35	0.010	3.000	3.000	3715	110	1.0
		4.00	3	35	0.015	4.000	4.000	2785	125	2.0
		5.00	4	35	0.020	5.000	5.000	2230	180	4.5
		6.00	4	35	0.025	6.000	6.000	1855	185	6.7
		8.00	4	35	0.030	8.000	8.000	1395	165	10.7
		10.00	4	35	0.040	10.000	10.000	1115	180	17.8
		12.00	4	35	0.045	12.000	12.000	930	165	24.1
		16.00	4	35	0.045	16.000	16.000	695	125	32.1
		20.00	4	35	0.050	20.000	20.000	555	110	44.6
	Stainless steel [Cr-Ni/1.4301]	3.00	3	50	0.010	3.000	3.000	5305	160	1.4
		4.00	3	50	0.015	4.000	4.000	3980	180	2.9
		5.00	4	50	0.020	5.000	5.000	3185	255	6.4
		6.00	4	50	0.025	6.000	6.000	2655	265	9.5
		8.00	4	50	0.030	8.000	8.000	1990	240	15.3
		10.00	4	50	0.040	10.000	10.000	1590	255	25.5
		12.00	4	50	0.045	12.000	12.000	1325	240	34.4
		16.00	4	50	0.045	16.000	16.000	995	180	45.8
		20.00	4	50	0.050	20.000	20.000	795	160	63.7

Cylindrical end mills SupraCarb®

Profiled, normal version with short neck

HM MG10	λ 38° γ 0°



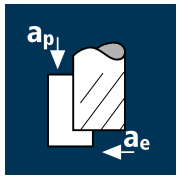
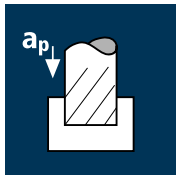
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15336** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P15336	POLYCHROM P15236
180	3.00	6.00	2.80	57	8.00	14.00	20.63	0.25	4.5°	3	●	
220	4.00	6.00	3.70	57	11.00	16.00	20.95	0.30	3.0°	3	●	
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.35	1.5°	4	●	
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.35	0.0°	4	●	
391	8.00	8.00	7.40	63	19.00	25.29	26.00	0.45	0.0°	4	●	
450	10.00	10.00	9.20	72	22.00	30.20	31.00	0.60	0.0°	4	●	
501	12.00	12.00	11.00	83	26.00	36.13	37.00	0.60	0.0°	4	●	
570	14.00	14.00	13.00	83	26.00	36.13	37.00	0.60	0.0°	4	●	
610	16.00	16.00	15.00	92	32.00	42.13	43.00	0.70	0.0°	4	●	
612	16.00	16.00	15.00	92	32.00	42.13	43.00	0.70	0.0°	6	●	
640	18.00	18.00	17.00	92	32.00	42.13	43.00	0.70	0.0°	4	●	
682	20.00	20.00	19.00	104	38.00	52.13	53.00	0.70	0.0°	4	●	
684	20.00	20.00	19.00	104	38.00	52.13	53.00	0.70	0.0°	6	●	

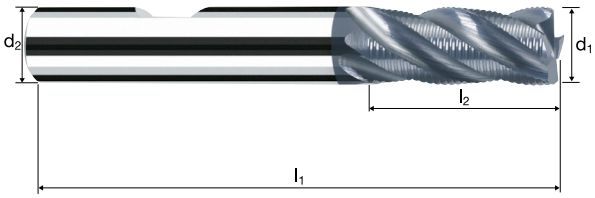
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	3.00	3	180	0.015	3.600	1.800	19100	860	5.6
		4.00	3	180	0.020	4.800	2.400	14325	860	9.9
		5.00	4	180	0.025	6.000	3.000	11460	1145	20.6
		6.00	4	180	0.030	7.200	3.600	9550	1145	29.7
		8.00	4	180	0.040	9.600	4.800	7160	1145	52.8
		10.00	4	180	0.050	12.000	6.000	5730	1145	82.5
		12.00	4	180	0.055	14.400	7.200	4775	1050	108.9
		16.00	4	180	0.055	19.200	9.600	3580	790	145.2
		20.00	4	180	0.060	24.000	12.000	2865	690	198.0
	Steel 850 - 1100 N/mm²	3.00	3	130	0.015	3.600	1.800	13795	620	4.0
		4.00	3	130	0.020	4.800	2.400	10345	620	7.2
		5.00	4	130	0.025	6.000	3.000	8275	830	14.9
		6.00	4	130	0.030	7.200	3.600	6895	830	21.5
		8.00	4	130	0.040	9.600	4.800	5175	830	38.1
		10.00	4	130	0.050	12.000	6.000	4140	830	59.6
		12.00	4	130	0.055	14.400	7.200	3450	760	78.7
		16.00	4	130	0.055	19.200	9.600	2585	570	104.9
		20.00	4	130	0.060	24.000	12.000	2070	495	143.0
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	3	45	0.010	3.600	1.800	4775	145	0.9
		4.00	3	45	0.015	4.800	2.400	3580	160	1.9
		5.00	4	45	0.020	6.000	3.000	2865	230	4.1
		6.00	4	45	0.025	7.200	3.600	2385	240	6.2
		8.00	4	45	0.030	9.600	4.800	1790	215	9.9
		10.00	4	45	0.040	12.000	6.000	1430	230	16.5
		12.00	4	45	0.045	14.400	7.200	1195	215	22.3
		16.00	4	45	0.045	19.200	9.600	895	160	29.7
		20.00	4	45	0.050	24.000	12.000	715	145	41.3
	Stainless steel [Cr-Ni/1.4301]	3.00	3	55	0.010	3.600	1.800	5835	175	1.1
		4.00	3	55	0.015	4.800	2.400	4375	195	2.3
		5.00	4	55	0.020	6.000	3.000	3500	280	5.0
		6.00	4	55	0.025	7.200	3.600	2920	290	7.6
		8.00	4	55	0.030	9.600	4.800	2190	265	12.1
		10.00	4	55	0.040	12.000	6.000	1750	280	20.2
		12.00	4	55	0.045	14.400	7.200	1460	265	27.2
		16.00	4	55	0.045	19.200	9.600	1095	195	36.3
		20.00	4	55	0.050	24.000	12.000	875	175	50.4
	Steel < 850 N/mm²	3.00	3	150	0.015	3.000	3.000	15915	715	6.4
		4.00	3	150	0.020	4.000	4.000	11935	715	11.5
		5.00	4	150	0.025	5.000	5.000	9550	955	23.9
		6.00	4	150	0.030	6.000	6.000	7960	955	34.4
		8.00	4	150	0.040	8.000	8.000	5970	955	61.1
		10.00	4	150	0.050	10.000	10.000	4775	955	95.5
		12.00	4	150	0.055	12.000	12.000	3980	875	126.1
		16.00	4	150	0.055	16.000	16.000	2985	655	168.1
		20.00	4	150	0.060	20.000	20.000	2385	575	229.2
	Steel 850 - 1100 N/mm²	3.00	3	80	0.015	3.000	3.000	8490	380	3.4
		4.00	3	80	0.020	4.000	4.000	6365	380	6.1
		5.00	4	80	0.025	5.000	5.000	5095	510	12.7
		6.00	4	80	0.030	6.000	6.000	4245	510	18.3
		8.00	4	80	0.040	8.000	8.000	3185	510	32.6
		10.00	4	80	0.050	10.000	10.000	2545	510	50.9
		12.00	4	80	0.055	12.000	12.000	2120	465	67.2
		16.00	4	80	0.055	16.000	16.000	1590	350	89.6
		20.00	4	80	0.060	20.000	20.000	1275	305	122.2
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	3	35	0.010	3.000	3.000	3715	110	1.0
		4.00	3	35	0.015	4.000	4.000	2785	125	2.0
		5.00	4	35	0.020	5.000	5.000	2230	180	4.5
		6.00	4	35	0.025	6.000	6.000	1855	185	6.7
		8.00	4	35	0.030	8.000	8.000	1395	165	10.7
		10.00	4	35	0.040	10.000	10.000	1115	180	17.8
		12.00	4	35	0.045	12.000	12.000	930	165	24.1
		16.00	4	35	0.045	16.000	16.000	695	125	32.1
		20.00	4	35	0.050	20.000	20.000	555	110	44.6
	Stainless steel [Cr-Ni/1.4301]	3.00	3	45	0.010	3.000	3.000	4775	145	1.3
		4.00	3	45	0.015	4.000	4.000	3580	160	2.6
		5.00	4	45	0.020	5.000	5.000	2865	230	5.7
		6.00	4	45	0.025	6.000	6.000	2385	240	8.6
		8.00	4	45	0.030	8.000	8.000	1790	215	13.8
		10.00	4	45	0.040	10.000	10.000	1430	230	22.9
		12.00	4	45	0.045	12.000	12.000	1195	215	30.9
		16.00	4	45	0.045	16.000	16.000	895	160	41.3
		20.00	4	45	0.050	20.000	20.000	715	145	57.3

Cylindrical end mills NF-RP

Profiled, normal version

Favora® F

HM MG10	λ 38° γ 0°



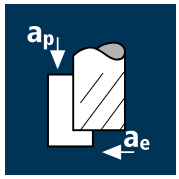
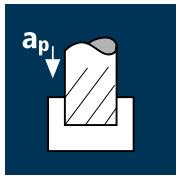
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Coating **P** Article-N°. **45371** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P45371
180	3.00	6.00	57	8.00	15.56	0.25	6.0°	3	●
220	4.00	6.00	57	11.00	16.89	0.30	4.0°	3	●
260	5.00	6.00	57	13.00	17.22	0.35	2.0°	4	●
300	6.00	6.00	57	13.00	-	0.35	0.0°	4	●
391	8.00	8.00	63	19.00	-	0.45	0.0°	4	●
450	10.00	10.00	72	22.00	-	0.60	0.0°	4	●
501	12.00	12.00	83	26.00	-	0.60	0.0°	4	●
610	16.00	16.00	92	32.00	-	0.70	0.0°	4	●
612	16.00	16.00	92	32.00	-	0.70	0.0°	6	●
682	20.00	20.00	104	38.00	-	0.70	0.0°	4	●
684	20.00	20.00	104	38.00	-	0.70	0.0°	6	●

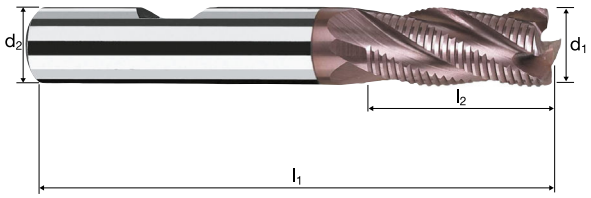
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm² U	5.00	4	55	0.025	5.000	2.300	3500	350	4.0
		6.00	4	55	0.030	6.000	2.700	2920	350	5.7
		8.00	4	55	0.040	8.000	3.600	2190	350	10.1
		10.00	4	55	0.050	10.000	4.500	1750	350	15.8
		12.00	4	55	0.080	12.000	5.400	1460	465	30.3
		16.00	4	55	0.105	16.000	7.200	1095	460	52.9
		20.00	4	55	0.130	20.000	9.000	875	455	81.9
		22.00	4	55	0.145	22.000	9.900	795	460	100.5
		25.00	4	55	0.165	25.000	11.300	700	460	130.6
	Steel 1100 - 1300 N/mm² U	5.00	4	42	0.025	5.000	2.300	2675	265	3.1
		6.00	4	42	0.030	6.000	2.700	2230	265	4.3
		8.00	4	42	0.040	8.000	3.600	1670	265	7.7
		10.00	4	42	0.050	10.000	4.500	1335	265	12.0
		12.00	4	42	0.080	12.000	5.400	1115	355	23.1
		16.00	4	42	0.105	16.000	7.200	835	350	40.4
		20.00	4	42	0.130	20.000	9.000	670	350	62.6
		22.00	4	42	0.145	22.000	9.900	610	350	76.8
		25.00	4	42	0.165	25.000	11.300	535	355	99.7
	Cold work tool steel (12% Cr), high alloyed [1.2379] U	5.00	4	25	0.025	5.000	2.300	1590	160	1.8
		6.00	4	25	0.030	6.000	2.700	1325	160	2.6
		8.00	4	25	0.040	8.000	3.600	995	160	4.6
		10.00	4	25	0.050	10.000	4.500	795	160	7.2
		12.00	4	25	0.080	12.000	5.400	665	210	13.8
		16.00	4	25	0.105	16.000	7.200	495	210	24.1
		20.00	4	25	0.130	20.000	9.000	400	205	37.2
		22.00	4	25	0.145	22.000	9.900	360	210	45.7
		25.00	4	25	0.165	25.000	11.300	320	210	59.3
	Cast iron (lamellar / spheroidal) U	5.00	4	47	0.025	5.000	2.300	2990	300	3.4
		6.00	4	47	0.030	6.000	2.700	2495	300	4.8
		8.00	4	47	0.040	8.000	3.600	1870	300	8.6
		10.00	4	47	0.050	10.000	4.500	1495	300	13.5
		12.00	4	47	0.080	12.000	5.400	1245	400	25.9
		16.00	4	47	0.105	16.000	7.200	935	395	45.2
		20.00	4	47	0.130	20.000	9.000	750	390	70.0
		22.00	4	47	0.145	22.000	9.900	680	395	85.9
		25.00	4	47	0.165	25.000	11.300	600	395	111.6
	Steel 850 - 1100 N/mm² U	5.00	4	53	0.020	5.000	5.000	3375	270	6.7
		6.00	4	53	0.020	6.000	6.000	2810	225	8.1
		8.00	4	53	0.030	8.000	8.000	2110	255	16.2
		10.00	4	53	0.035	10.000	10.000	1685	235	23.6
		12.00	4	53	0.060	12.000	12.000	1405	335	48.6
		16.00	4	53	0.080	16.000	16.000	1055	335	86.4
		20.00	4	53	0.100	20.000	20.000	845	335	135.0
		22.00	4	53	0.110	22.000	22.000	765	335	163.3
		25.00	4	53	0.125	25.000	25.000	675	335	210.9
	Steel 1100 - 1300 N/mm² U	5.00	4	40	0.020	5.000	5.000	2545	205	5.1
		6.00	4	40	0.020	6.000	6.000	2120	170	6.1
		8.00	4	40	0.030	8.000	8.000	1590	190	12.2
		10.00	4	40	0.035	10.000	10.000	1275	180	17.8
		12.00	4	40	0.060	12.000	12.000	1060	255	36.7
		16.00	4	40	0.080	16.000	16.000	795	255	65.2
		20.00	4	40	0.100	20.000	20.000	635	255	101.9
		22.00	4	40	0.110	22.000	22.000	580	255	123.2
		25.00	4	40	0.125	25.000	25.000	510	255	159.2
	Cold work tool steel (12% Cr), high alloyed [1.2379] U	5.00	4	22	0.020	5.000	5.000	1400	110	2.8
		6.00	4	22	0.020	6.000	6.000	1165	95	3.4
		8.00	4	22	0.030	8.000	8.000	875	105	6.7
		10.00	4	22	0.035	10.000	10.000	700	100	9.8
		12.00	4	22	0.060	12.000	12.000	585	140	20.2
		16.00	4	22	0.080	16.000	16.000	440	140	35.9
		20.00	4	22	0.100	20.000	20.000	350	140	56.0
		22.00	4	22	0.110	22.000	22.000	320	140	67.8
		25.00	4	22	0.125	25.000	25.000	280	140	87.5
	Cast iron (lamellar / spheroidal) U	5.00	4	42	0.020	5.000	5.000	2675	215	5.3
		6.00	4	42	0.020	6.000	6.000	2230	180	6.4
		8.00	4	42	0.030	8.000	8.000	1670	200	12.8
		10.00	4	42	0.035	10.000	10.000	1335	185	18.7
		12.00	4	42	0.060	12.000	12.000	1115	265	38.5
		16.00	4	42	0.080	16.000	16.000	835	265	68.4
		20.00	4	42	0.100	20.000	20.000	670	265	107.0
		22.00	4	42	0.110	22.000	22.000	610	265	129.4
		25.00	4	42	0.125	25.000	25.000	535	265	167.1

Cylindrical end mills Supracut

Profiled NRC, normal version

HSS PM/F	λ 30° γ 12°

45°



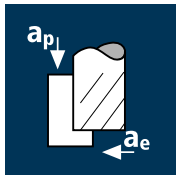
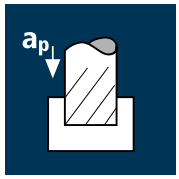
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300							GG(G)

Example: **Order-N°.** Coating **U** Article-N°. **0619** ø-Code **260**

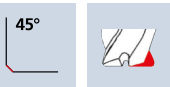
Ø Code	d_1 k8	d_2 h6	l_1	l_2	l_4	45°	α	z	UNICUT-4X U0619
260	5.00	6.00	57	13.00	20.55	0.40	1.5°	4	●
300	6.00	6.00	57	13.00	-	0.40	0.0°	4	●
331	7.00	8.00	60	16.00	23.50	0.40	1.5°	4	●
391	8.00	8.00	63	19.00	-	0.40	0.0°	4	●
402	8.00	10.00	69	19.00	28.50	0.40	2.5°	4	●
420	9.00	10.00	69	19.00	28.50	0.40	1.5°	4	●
450	10.00	10.00	72	22.00	-	0.40	0.0°	4	●
470	11.00	12.00	79	22.00	33.50	0.40	1.0°	4	●
501	12.00	12.00	83	26.00	-	0.40	0.0°	4	●
570	14.00	12.00	83	26.00	-	0.40	0.0°	4	●
610	16.00	16.00	92	32.00	-	0.50	0.0°	4	●
640	18.00	16.00	92	32.00	-	0.50	0.0°	4	●
682	20.00	20.00	104	38.00	-	0.50	0.0°	4	●
710	22.00	20.00	104	38.00	-	0.70	0.0°	4	●
772	25.00	25.00	121	45.00	-	0.70	0.0°	4	●

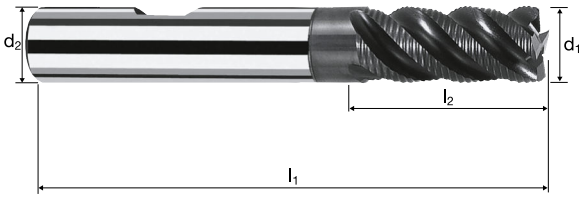
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	4	68	0.030	9.000	2.400	3610	435	9.4
		8.00	4	68	0.040	12.000	3.200	2705	435	16.6
		10.00	4	68	0.050	15.000	4.000	2165	435	26.0
		12.00	4	68	0.080	18.000	4.800	1805	575	49.9
		16.00	4	68	0.105	24.000	6.400	1355	570	87.3
		20.00	4	68	0.130	30.000	8.000	1080	565	135.1
		25.00	4	68	0.165	37.500	10.000	865	570	214.3
	Steel 850 - 1100 N/mm²	6.00	4	52	0.030	9.000	2.400	2760	330	7.2
		8.00	4	52	0.040	12.000	3.200	2070	330	12.7
		10.00	4	52	0.050	15.000	4.000	1655	330	19.9
		12.00	4	52	0.080	18.000	4.800	1380	440	38.1
		16.00	4	52	0.105	24.000	6.400	1035	435	66.7
		20.00	4	52	0.130	30.000	8.000	830	430	103.3
		25.00	4	52	0.165	37.500	10.000	660	435	163.9
	Steel 1100 - 1300 N/mm²	6.00	4	40	0.030	9.000	2.400	2120	255	5.5
		8.00	4	40	0.040	12.000	3.200	1590	255	9.8
		10.00	4	40	0.050	15.000	4.000	1275	255	15.3
		12.00	4	40	0.080	18.000	4.800	1060	340	29.3
		16.00	4	40	0.105	24.000	6.400	795	335	51.3
		20.00	4	40	0.130	30.000	8.000	635	330	79.5
		25.00	4	40	0.165	37.500	10.000	510	335	126.1
	Stainless steel [Cr-Ni/1.4301]	6.00	4	30	0.030	9.000	2.400	1590	190	4.1
		8.00	4	30	0.040	12.000	3.200	1195	190	7.3
		10.00	4	30	0.050	15.000	4.000	955	190	11.5
		12.00	4	30	0.080	18.000	4.800	795	255	22.0
		16.00	4	30	0.105	24.000	6.400	595	250	38.5
		20.00	4	30	0.130	30.000	8.000	475	250	59.6
		25.00	4	30	0.165	37.500	10.000	380	250	94.5
	Steel < 850 N/mm²	6.00	4	62	0.020	6.000	6.000	3290	265	9.5
		8.00	4	62	0.030	8.000	8.000	2465	295	18.9
		10.00	4	62	0.035	10.000	10.000	1975	275	27.6
		12.00	4	62	0.060	12.000	12.000	1645	395	56.8
		16.00	4	62	0.080	16.000	16.000	1235	395	101.0
		20.00	4	62	0.100	20.000	20.000	985	395	157.9
		25.00	4	62	0.125	25.000	25.000	790	395	246.7
	Steel 850 - 1100 N/mm²	6.00	4	50	0.020	6.000	6.000	2655	210	7.6
		8.00	4	50	0.030	8.000	8.000	1990	240	15.3
		10.00	4	50	0.035	10.000	10.000	1590	225	22.3
		12.00	4	50	0.060	12.000	12.000	1325	320	45.8
		16.00	4	50	0.080	16.000	16.000	995	320	81.5
		20.00	4	50	0.100	20.000	20.000	795	320	127.3
		25.00	4	50	0.125	25.000	25.000	635	320	198.9
	Steel 1100 - 1300 N/mm²	6.00	4	37	0.020	6.000	6.000	1965	155	5.7
		8.00	4	37	0.030	8.000	8.000	1470	175	11.3
		10.00	4	37	0.035	10.000	10.000	1180	165	16.5
		12.00	4	37	0.060	12.000	12.000	980	235	33.9
		16.00	4	37	0.080	16.000	16.000	735	235	60.3
		20.00	4	37	0.100	20.000	20.000	590	235	94.2
		25.00	4	37	0.125	25.000	25.000	470	235	147.2
	Stainless steel [Cr-Ni/1.4301]	6.00	4	25	0.020	6.000	6.000	1325	105	3.8
		8.00	4	25	0.030	8.000	8.000	995	120	7.6
		10.00	4	25	0.035	10.000	10.000	795	110	11.1
		12.00	4	25	0.060	12.000	12.000	665	160	22.9
		16.00	4	25	0.080	16.000	16.000	495	160	40.7
		20.00	4	25	0.100	20.000	20.000	400	160	63.7
		25.00	4	25	0.125	25.000	25.000	320	160	99.5

Cylindrical end mills Supracut FP

Profiled, normal version

HSS PM/F	λ 45° γ 2°





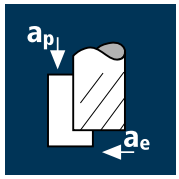
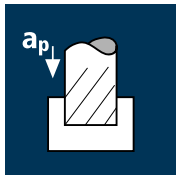
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		

Example: **Order-N°.** Coating **P** Article-N°. **0540** ø-Code **300**

Ø Code	d_1 k8	d_2 h6	l_1	l_2	45°	z	POLYCHROM P0540
300	6.00	6.00	57	13.00	0.35	4	●
391	8.00	8.00	63	19.00	0.45	4	●
450	10.00	10.00	72	22.00	0.60	4	●
501	12.00	12.00	83	26.00	0.60	4	●
610	16.00	16.00	92	32.00	0.70	4	●
682	20.00	20.00	104	38.00	0.70	4	●
772	25.00	25.00	121	45.00	0.85	4	●

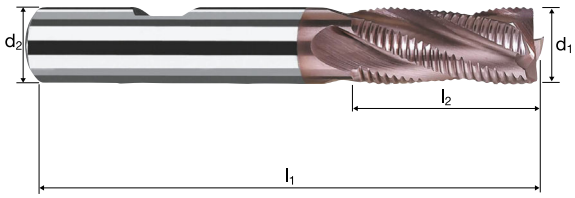
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm² U	5.00	3	60	0.025	5.000	2.000	3820	285	2.9
		6.00	3	60	0.025	6.000	2.400	3185	240	3.4
		8.00	4	60	0.035	8.000	3.200	2385	335	8.6
		10.00	4	60	0.045	10.000	4.000	1910	345	13.8
		12.00	4	60	0.070	12.000	4.800	1590	445	25.7
		16.00	4	60	0.095	16.000	6.400	1195	455	46.4
		20.00	4	60	0.115	20.000	8.000	955	440	70.3
		22.00	4	60	0.130	22.000	8.800	870	450	87.4
		25.00	4	60	0.145	25.000	10.000	765	445	110.8
	Steel 850 - 1100 N/mm² U	5.00	3	48	0.025	5.000	2.000	3055	230	2.3
		6.00	3	48	0.025	6.000	2.400	2545	190	2.8
		8.00	4	48	0.035	8.000	3.200	1910	265	6.8
		10.00	4	48	0.045	10.000	4.000	1530	275	11.0
		12.00	4	48	0.070	12.000	4.800	1275	355	20.5
		16.00	4	48	0.095	16.000	6.400	955	365	37.2
		20.00	4	48	0.115	20.000	8.000	765	350	56.2
		22.00	4	48	0.130	22.000	8.800	695	360	69.9
		25.00	4	48	0.145	25.000	10.000	610	355	88.6
	Stainless steel [Cr-Ni/1.4301] U	5.00	3	25	0.025	5.000	2.000	1590	120	1.2
		6.00	3	25	0.025	6.000	2.400	1325	100	1.4
		8.00	4	25	0.035	8.000	3.200	995	140	3.6
		10.00	4	25	0.045	10.000	4.000	795	145	5.7
		12.00	4	25	0.070	12.000	4.800	665	185	10.7
		16.00	4	25	0.095	16.000	6.400	495	190	19.4
		20.00	4	25	0.115	20.000	8.000	400	185	29.3
		22.00	4	25	0.130	22.000	8.800	360	190	36.4
		25.00	4	25	0.145	25.000	10.000	320	185	46.2
	Cast iron (lamellar / spheroidal) U	5.00	3	42	0.025	5.000	2.000	2675	200	2.0
		6.00	3	42	0.025	6.000	2.400	2230	165	2.4
		8.00	4	42	0.035	8.000	3.200	1670	235	6.0
		10.00	4	42	0.045	10.000	4.000	1335	240	9.6
		12.00	4	42	0.070	12.000	4.800	1115	310	18.0
		16.00	4	42	0.095	16.000	6.400	835	320	32.5
		20.00	4	42	0.115	20.000	8.000	670	305	49.2
		22.00	4	42	0.130	22.000	8.800	610	315	61.2
		25.00	4	42	0.145	25.000	10.000	535	310	77.5
	Steel < 850 N/mm² U	5.00	3	55	0.015	5.000	5.000	3500	160	3.9
		6.00	3	55	0.020	6.000	6.000	2920	175	6.3
		8.00	4	55	0.025	8.000	8.000	2190	220	14.0
		10.00	4	55	0.035	10.000	10.000	1750	245	24.5
		12.00	4	55	0.055	12.000	12.000	1460	320	46.2
		16.00	4	55	0.070	16.000	16.000	1095	305	78.4
		20.00	4	55	0.090	20.000	20.000	875	315	126.1
		22.00	4	55	0.095	22.000	22.000	795	300	146.4
		25.00	4	55	0.110	25.000	25.000	700	310	192.6
	Steel 850 - 1100 N/mm² U	5.00	3	45	0.015	5.000	5.000	2865	130	3.2
		6.00	3	45	0.020	6.000	6.000	2385	145	5.2
		8.00	4	45	0.025	8.000	8.000	1790	180	11.5
		10.00	4	45	0.035	10.000	10.000	1430	200	20.1
		12.00	4	45	0.055	12.000	12.000	1195	265	37.8
		16.00	4	45	0.070	16.000	16.000	895	250	64.2
		20.00	4	45	0.090	20.000	20.000	715	260	103.1
		22.00	4	45	0.095	22.000	22.000	650	245	119.7
		25.00	4	45	0.110	25.000	25.000	575	250	157.6
	Stainless steel [Cr-Ni/1.4301] U	5.00	3	22	0.015	5.000	5.000	1400	65	1.6
		6.00	3	22	0.020	6.000	6.000	1165	70	2.5
		8.00	4	22	0.025	8.000	8.000	875	90	5.6
		10.00	4	22	0.035	10.000	10.000	700	100	9.8
		12.00	4	22	0.055	12.000	12.000	585	130	18.5
		16.00	4	22	0.070	16.000	16.000	440	125	31.4
		20.00	4	22	0.090	20.000	20.000	350	125	50.4
		22.00	4	22	0.095	22.000	22.000	320	120	58.5
		25.00	4	22	0.110	25.000	25.000	280	125	77.0
	Cast iron (lamellar / spheroidal) U	5.00	3	36	0.015	5.000	5.000	2290	105	2.6
		6.00	3	36	0.020	6.000	6.000	1910	115	4.1
		8.00	4	36	0.025	8.000	8.000	1430	145	9.2
		10.00	4	36	0.035	10.000	10.000	1145	160	16.0
		12.00	4	36	0.055	12.000	12.000	955	210	30.3
		16.00	4	36	0.070	16.000	16.000	715	200	51.3
		20.00	4	36	0.090	20.000	20.000	575	205	82.5
		22.00	4	36	0.095	22.000	22.000	520	200	95.8
		25.00	4	36	0.110	25.000	25.000	460	200	126.1

Cylindrical end mills

Profiled NRF, normal version

HSS PM/F	λ 25° γ 10°

45°



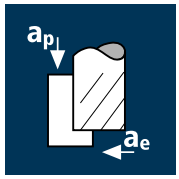
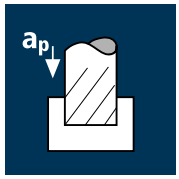
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Coating **U** Article-N°. **0610** ø-Code **260**

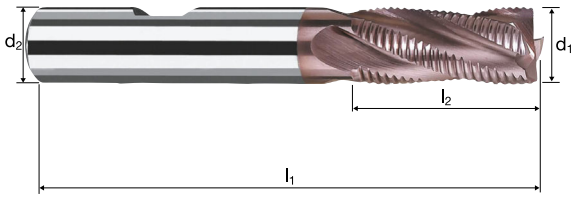
Ø Code	d_1 k12	d_2 h6	l_1	l_2	l_4	45°	α	z	UNICUT-4X U0610
260	5.00	6.00	57	13.00	20.55	0.40	1.0°	3	●
300	6.00	6.00	57	13.00	-	0.40	0.0°	3	●
342	7.00	10.00	66	16.00	25.50	0.40	3.5°	3	●
391	8.00	8.00	63	19.00	-	0.40	0.0°	4	●
402	8.00	10.00	69	19.00	28.50	0.40	2.5°	4	●
420	9.00	10.00	69	19.00	28.50	0.40	1.5°	4	●
450	10.00	10.00	72	22.00	-	0.40	0.0°	4	●
470	11.00	12.00	79	22.00	33.50	0.40	1.0°	4	●
501	12.00	12.00	83	26.00	-	0.40	0.0°	4	●
540	13.00	12.00	83	26.00	-	0.40	0.0°	4	●
570	14.00	12.00	83	26.00	-	0.40	0.0°	4	●
581	15.00	12.00	83	26.00	-	0.50	0.0°	4	●
610	16.00	16.00	92	32.00	-	0.50	0.0°	4	●
640	18.00	16.00	92	32.00	-	0.50	0.0°	4	●
671	20.00	16.00	98	38.00	-	0.50	0.0°	4	●
682	20.00	20.00	104	38.00	-	0.50	0.0°	4	●
710	22.00	20.00	104	38.00	-	0.70	0.0°	4	●
741	24.00	20.00	111	45.00	-	0.70	0.0°	4	●
761	25.00	20.00	111	45.00	-	0.70	0.0°	4	●
772	25.00	25.00	121	45.00	-	0.70	0.0°	4	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm² U	28.00	6	60	0.115	28.000	11.200	680	470	147.6
		30.00	6	60	0.120	30.000	12.000	635	460	165.0
		32.00	6	60	0.130	32.000	12.800	595	465	190.7
		36.00	6	60	0.145	36.000	14.400	530	460	239.3
		40.00	6	60	0.160	40.000	16.000	475	460	293.4
	Steel 850 - 1100 N/mm² U	28.00	6	48	0.115	28.000	11.200	545	375	118.1
		30.00	6	48	0.120	30.000	12.000	510	365	132.0
		32.00	6	48	0.130	32.000	12.800	475	370	152.5
		36.00	6	48	0.145	36.000	14.400	425	370	191.4
		40.00	6	48	0.160	40.000	16.000	380	365	234.7
	Stainless steel [Cr-Ni/1.4301] U	28.00	6	25	0.115	28.000	11.200	285	195	61.5
		30.00	6	25	0.120	30.000	12.000	265	190	68.8
		32.00	6	25	0.130	32.000	12.800	250	195	79.5
		36.00	6	25	0.145	36.000	14.400	220	190	99.7
		40.00	6	25	0.160	40.000	16.000	200	190	122.2
	Cast iron (lamellar / spheroidal) U	28.00	6	42	0.115	28.000	11.200	475	330	103.3
		30.00	6	42	0.120	30.000	12.000	445	320	115.5
		32.00	6	42	0.130	32.000	12.800	420	325	133.5
		36.00	6	42	0.145	36.000	14.400	370	325	167.5
		40.00	6	42	0.160	40.000	16.000	335	320	205.3
	Steel < 850 N/mm² U	28.00	6	55	0.085	28.000	28.000	625	320	250.0
		30.00	6	55	0.090	30.000	30.000	585	315	283.6
		32.00	6	55	0.095	32.000	32.000	545	310	319.3
		36.00	6	55	0.105	36.000	36.000	485	305	397.1
		40.00	6	55	0.120	40.000	40.000	440	315	504.2
	Steel 850 - 1100 N/mm² U	28.00	6	45	0.085	28.000	28.000	510	260	204.5
		30.00	6	45	0.090	30.000	30.000	475	260	232.0
		32.00	6	45	0.095	32.000	32.000	450	255	261.3
		36.00	6	45	0.105	36.000	36.000	400	250	324.9
		40.00	6	45	0.120	40.000	40.000	360	260	412.5
	Stainless steel [Cr-Ni/1.4301] U	28.00	6	22	0.085	28.000	28.000	250	130	100.0
		30.00	6	22	0.090	30.000	30.000	235	125	113.4
		32.00	6	22	0.095	32.000	32.000	220	125	127.7
		36.00	6	22	0.105	36.000	36.000	195	125	158.8
		40.00	6	22	0.120	40.000	40.000	175	125	201.7
	Cast iron (lamellar / spheroidal) U	28.00	6	36	0.085	28.000	28.000	410	210	163.6
		30.00	6	36	0.090	30.000	30.000	380	205	185.6
		32.00	6	36	0.095	32.000	32.000	360	205	209.0
		36.00	6	36	0.105	36.000	36.000	320	200	259.9
		40.00	6	36	0.120	40.000	40.000	285	205	330.0

Cylindrical end mills

Profiled NRF, normal version

HSS-E Co8	λ 25° γ 10°



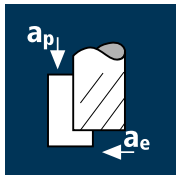
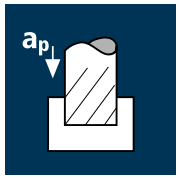
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Coating **U** Article-N°. **0610** ø-Code **800**

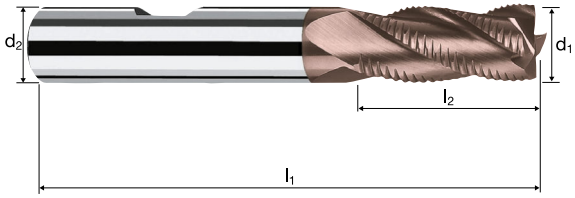
Ø Code	d_1 k12	d_2 h6	l_1	l_2	l_4	45°	α	z	UNICUT-4X U0610
800	28.00	25.00	121	45.00	-	0.70	0.0°	6	●
810	30.00	25.00	121	45.00	-	0.70	0.0°	6	●
832	32.00	32.00	133	53.00	-	0.70	0.0°	6	●
860	36.00	32.00	133	53.00	-	0.90	0.0°	6	●
881	40.00	32.00	143	63.00	-	0.90	0.0°	6	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm² U	6.00	4	64	0.025	6.000	2.400	3395	340	4.9
		8.00	4	64	0.035	8.000	3.200	2545	355	9.1
		10.00	4	64	0.045	10.000	4.000	2035	365	14.7
		12.00	4	64	0.070	12.000	4.800	1700	475	27.4
		16.00	4	64	0.095	16.000	6.400	1275	485	49.5
		18.00	4	64	0.105	18.000	7.200	1130	475	61.6
		20.00	4	64	0.115	20.000	8.000	1020	470	75.0
		25.00	6	64	0.145	25.000	10.000	815	710	177.2
		32.00	7	64	0.130	32.000	12.800	635	580	237.3
	Steel 850 - 1100 N/mm² U	6.00	4	52	0.025	6.000	2.400	2760	275	4.0
		8.00	4	52	0.035	8.000	3.200	2070	290	7.4
		10.00	4	52	0.045	10.000	4.000	1655	300	11.9
		12.00	4	52	0.070	12.000	4.800	1380	385	22.2
		16.00	4	52	0.095	16.000	6.400	1035	395	40.3
		18.00	4	52	0.105	18.000	7.200	920	385	50.1
		20.00	4	52	0.115	20.000	8.000	830	380	60.9
		25.00	6	52	0.145	25.000	10.000	660	575	144.0
		32.00	7	52	0.130	32.000	12.800	515	470	192.8
	Stainless steel [Cr-Ni/1.4301] U	6.00	4	26	0.025	6.000	2.400	1380	140	2.0
		8.00	4	26	0.035	8.000	3.200	1035	145	3.7
		10.00	4	26	0.045	10.000	4.000	830	150	6.0
		12.00	4	26	0.070	12.000	4.800	690	195	11.1
		16.00	4	26	0.095	16.000	6.400	515	195	20.1
		18.00	4	26	0.105	18.000	7.200	460	195	25.0
		20.00	4	26	0.115	20.000	8.000	415	190	30.5
		25.00	6	26	0.145	25.000	10.000	330	290	72.0
		32.00	7	26	0.130	32.000	12.800	260	235	96.4
	Stainless steel [Cr-Ni-Mo-.../1.4429] U	6.00	4	22	0.025	6.000	2.400	1165	115	1.7
		8.00	4	22	0.035	8.000	3.200	875	125	3.1
		10.00	4	22	0.045	10.000	4.000	700	125	5.0
		12.00	4	22	0.070	12.000	4.800	585	165	9.4
		16.00	4	22	0.095	16.000	6.400	440	165	17.0
		18.00	4	22	0.105	18.000	7.200	390	165	21.2
		20.00	4	22	0.115	20.000	8.000	350	160	25.8
		25.00	6	22	0.145	25.000	10.000	280	245	60.9
		32.00	7	22	0.130	32.000	12.800	220	200	81.6
	Steel < 850 N/mm² U	6.00	4	58	0.020	6.000	6.000	3075	245	8.9
		8.00	4	58	0.025	8.000	8.000	2310	230	14.8
		10.00	4	58	0.035	10.000	10.000	1845	260	25.8
		12.00	4	58	0.055	12.000	12.000	1540	340	48.7
		16.00	4	58	0.070	16.000	16.000	1155	325	82.7
		18.00	4	58	0.080	18.000	18.000	1025	330	106.3
		20.00	4	58	0.090	20.000	20.000	925	330	132.9
	Steel 850 - 1100 N/mm² U	6.00	4	48	0.020	6.000	6.000	2545	205	7.3
		8.00	4	48	0.025	8.000	8.000	1910	190	12.2
		10.00	4	48	0.035	10.000	10.000	1530	215	21.4
		12.00	4	48	0.055	12.000	12.000	1275	280	40.3
		16.00	4	48	0.070	16.000	16.000	955	265	68.4
		18.00	4	48	0.080	18.000	18.000	850	270	88.0
		20.00	4	48	0.090	20.000	20.000	765	275	110.0
	Stainless steel [Cr-Ni/1.4301] U	6.00	4	23	0.020	6.000	6.000	1220	100	3.5
		8.00	4	23	0.025	8.000	8.000	915	90	5.9
		10.00	4	23	0.035	10.000	10.000	730	100	10.2
		12.00	4	23	0.055	12.000	12.000	610	135	19.3
		16.00	4	23	0.070	16.000	16.000	460	130	32.8
		18.00	4	23	0.080	18.000	18.000	405	130	42.2
		20.00	4	23	0.090	20.000	20.000	365	130	52.7
	Stainless steel [Cr-Ni-Mo-.../1.4429] U	6.00	4	20	0.020	6.000	6.000	1060	85	3.1
		8.00	4	20	0.025	8.000	8.000	795	80	5.1
		10.00	4	20	0.035	10.000	10.000	635	90	8.9
		12.00	4	20	0.055	12.000	12.000	530	115	16.8
		16.00	4	20	0.070	16.000	16.000	400	110	28.5
		18.00	4	20	0.080	18.000	18.000	355	115	36.7
		20.00	4	20	0.090	20.000	20.000	320	115	45.8

Cylindrical end mills

Profiled NRF, normal version

HSS-E Co8	λ 30° γ 12°



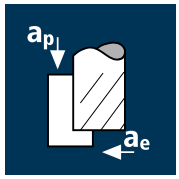
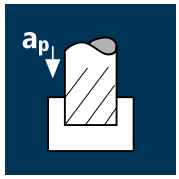
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Coating **U** Article-N°. **0609** ø-Code **300**

Ø Code	d_1 k12	d_2 h6	l_1	l_2	l_4	45°	α	z	UNICUT-4X U0609
300	6.00	6.00	57	13.00	-	0.40	0.0°	4	●
342	7.00	10.00	66	16.00	25.50	0.40	3.0°	4	●
402	8.00	10.00	69	19.00	28.50	0.40	2.5°	4	●
420	9.00	10.00	69	19.00	28.50	0.40	1.5°	4	●
450	10.00	10.00	72	22.00	-	0.40	0.0°	4	●
470	11.00	12.00	79	22.00	33.50	0.40	1.0°	4	●
501	12.00	12.00	83	26.00	-	0.40	0.0°	4	●
540	13.00	12.00	83	26.00	-	0.40	0.0°	4	●
570	14.00	12.00	83	26.00	-	0.40	0.0°	4	●
592	15.00	16.00	86	26.00	37.50	0.50	1.0°	4	●
610	16.00	16.00	92	32.00	-	0.50	0.0°	4	●
640	18.00	16.00	92	32.00	-	0.50	0.0°	4	●
682	20.00	20.00	104	38.00	-	0.50	0.0°	4	●
686	20.00	20.00	104	38.00	-	0.50	0.0°	6	●
710	22.00	20.00	104	38.00	-	0.70	0.0°	6	●
772	25.00	25.00	121	45.00	-	0.70	0.0°	6	●
832	32.00	32.00	133	53.00	-	0.70	0.0°	7	●

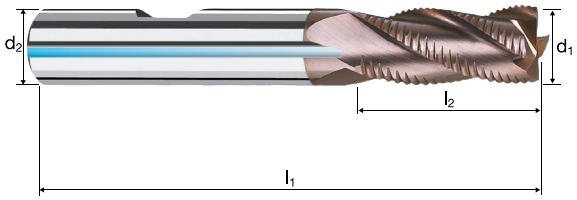
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm² U	8.00	4	65	0.035	8.000	3.200	2585	360	9.3
		10.00	4	65	0.045	10.000	4.000	2070	370	14.9
		12.00	4	65	0.070	12.000	4.800	1725	485	27.8
		16.00	4	65	0.095	16.000	6.400	1295	490	50.3
		20.00	4	65	0.115	20.000	8.000	1035	475	76.1
		25.00	6	65	0.145	25.000	10.000	830	720	180.0
		32.00	7	65	0.130	32.000	12.800	645	590	241.0
	Steel 850 - 1100 N/mm² U	8.00	4	54	0.035	8.000	3.200	2150	300	7.7
		10.00	4	54	0.045	10.000	4.000	1720	310	12.4
		12.00	4	54	0.070	12.000	4.800	1430	400	23.1
		16.00	4	54	0.095	16.000	6.400	1075	410	41.8
		20.00	4	54	0.115	20.000	8.000	860	395	63.3
		25.00	6	54	0.145	25.000	10.000	690	600	149.5
		32.00	7	54	0.130	32.000	12.800	535	490	200.2
	Stainless steel [Cr-Ni/1.4301] U	8.00	4	28	0.035	8.000	3.200	1115	155	4.0
		10.00	4	28	0.045	10.000	4.000	890	160	6.4
		12.00	4	28	0.070	12.000	4.800	745	210	12.0
		16.00	4	28	0.095	16.000	6.400	555	210	21.7
		20.00	4	28	0.115	20.000	8.000	445	205	32.8
		25.00	6	28	0.145	25.000	10.000	355	310	77.5
		32.00	7	28	0.130	32.000	12.800	280	255	103.8
	Stainless steel [Cr-Ni-Mo-.../1.4429] U	8.00	4	22	0.035	8.000	3.200	875	125	3.1
		10.00	4	22	0.045	10.000	4.000	700	125	5.0
		12.00	4	22	0.070	12.000	4.800	585	165	9.4
		16.00	4	22	0.095	16.000	6.400	440	165	17.0
		20.00	4	22	0.115	20.000	8.000	350	160	25.8
		25.00	6	22	0.145	25.000	10.000	280	245	60.9
		32.00	7	22	0.130	32.000	12.800	220	200	81.6
	Steel < 850 N/mm² U	8.00	4	60	0.025	8.000	8.000	2385	240	15.3
		10.00	4	60	0.035	10.000	10.000	1910	265	26.7
		12.00	4	60	0.055	12.000	12.000	1590	350	50.4
		16.00	4	60	0.070	16.000	16.000	1195	335	85.6
		20.00	4	60	0.090	20.000	20.000	955	345	137.5
		25.00	6	60	0.110	25.000	25.000	765	505	315.1
		32.00	7	60	0.095	32.000	32.000	595	395	406.4
	Steel 850 - 1100 N/mm² U	8.00	4	50	0.025	8.000	8.000	1990	200	12.7
		10.00	4	50	0.035	10.000	10.000	1590	225	22.3
		12.00	4	50	0.055	12.000	12.000	1325	290	42.0
		16.00	4	50	0.070	16.000	16.000	995	280	71.3
		20.00	4	50	0.090	20.000	20.000	795	285	114.6
		25.00	6	50	0.110	25.000	25.000	635	420	262.6
		32.00	7	50	0.095	32.000	32.000	495	330	338.7
	Stainless steel [Cr-Ni/1.4301] U	8.00	4	25	0.025	8.000	8.000	995	100	6.4
		10.00	4	25	0.035	10.000	10.000	795	110	11.1
		12.00	4	25	0.055	12.000	12.000	665	145	21.0
		16.00	4	25	0.070	16.000	16.000	495	140	35.7
		20.00	4	25	0.090	20.000	20.000	400	145	57.3
		25.00	6	25	0.110	25.000	25.000	320	210	131.3
		32.00	7	25	0.095	32.000	32.000	250	165	169.3
	Stainless steel [Cr-Ni-Mo-.../1.4429] U	8.00	4	20	0.025	8.000	8.000	795	80	5.1
		10.00	4	20	0.035	10.000	10.000	635	90	8.9
		12.00	4	20	0.055	12.000	12.000	530	115	16.8
		16.00	4	20	0.070	16.000	16.000	400	110	28.5
		20.00	4	20	0.090	20.000	20.000	320	115	45.8
		25.00	6	20	0.110	25.000	25.000	255	170	105.0
		32.00	7	20	0.095	32.000	32.000	200	130	135.5

Cylindrical end mills

Profiled NRF, normal version, Pericool

HSS-E Co8	λ 30° γ 12°

45°



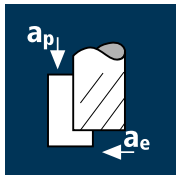
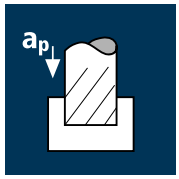
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Coating **U** Article-N°. **0695** ø-Code **402**

Ø Code	d_1 k12	d_2 h6	l_1	l_2	l_4	45°	α	z	UNICUT-4X U0695
402	8.00	10.00	69	19.00	69.00	0.40	1.0°	4	●
450	10.00	10.00	72	22.00	-	0.40	0.0°	4	●
501	12.00	12.00	83	26.00	-	0.40	0.0°	4	●
610	16.00	16.00	92	32.00	-	0.50	0.0°	4	●
682	20.00	20.00	104	38.00	-	0.50	0.0°	4	●
772	25.00	25.00	121	45.00	-	0.70	0.0°	6	●
832	32.00	32.00	133	53.00	-	0.70	0.0°	7	●

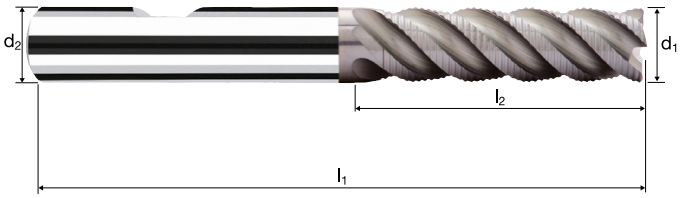
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	4	180	0.030	12.000	1.200	9550	1145	16.5
		8.00	4	180	0.040	16.000	1.600	7160	1145	29.3
		10.00	4	180	0.055	20.000	2.000	5730	1260	50.4
		12.00	4	180	0.065	24.000	2.400	4775	1240	71.5
		16.00	4	180	0.070	32.000	3.200	3580	1005	102.7
		20.00	4	180	0.075	40.000	4.000	2865	860	137.5
	Steel 850 - 1100 N/mm²	6.00	4	150	0.030	12.000	1.200	7960	955	13.8
		8.00	4	150	0.040	16.000	1.600	5970	955	24.4
		10.00	4	150	0.055	20.000	2.000	4775	1050	42.0
		12.00	4	150	0.065	24.000	2.400	3980	1035	59.6
		16.00	4	150	0.070	32.000	3.200	2985	835	85.6
		20.00	4	150	0.075	40.000	4.000	2385	715	114.6
	Steel 1100 - 1300 N/mm²	6.00	4	120	0.030	12.000	1.200	6365	765	11.0
		8.00	4	120	0.040	16.000	1.600	4775	765	19.6
		10.00	4	120	0.055	20.000	2.000	3820	840	33.6
		12.00	4	120	0.065	24.000	2.400	3185	830	47.7
		16.00	4	120	0.070	32.000	3.200	2385	670	68.4
		20.00	4	120	0.075	40.000	4.000	1910	575	91.7
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	80	0.030	12.000	1.200	4245	510	7.3
		8.00	4	80	0.040	16.000	1.600	3185	510	13.0
		10.00	4	80	0.055	20.000	2.000	2545	560	22.4
		12.00	4	80	0.065	24.000	2.400	2120	550	31.8
		16.00	4	80	0.070	32.000	3.200	1590	445	45.6
		20.00	4	80	0.075	40.000	4.000	1275	380	61.1
	Steel < 850 N/mm²	6.00	4	150	0.020	4.200	6.000	7960	635	16.0
		8.00	4	150	0.025	5.600	8.000	5970	595	26.7
		10.00	4	150	0.035	7.000	10.000	4775	670	46.8
		12.00	4	150	0.040	8.400	12.000	3980	635	64.2
		16.00	4	150	0.050	11.200	16.000	2985	595	107.0
		20.00	4	150	0.050	14.000	20.000	2385	475	133.7
	Steel 850 - 1100 N/mm²	6.00	4	100	0.020	4.200	6.000	5305	425	10.7
		8.00	4	100	0.025	5.600	8.000	3980	400	17.8
		10.00	4	100	0.035	7.000	10.000	3185	445	31.2
		12.00	4	100	0.040	8.400	12.000	2655	425	42.8
		16.00	4	100	0.050	11.200	16.000	1990	400	71.3
		20.00	4	100	0.050	14.000	20.000	1590	320	89.1
	Steel 1100 - 1300 N/mm²	6.00	4	80	0.020	4.200	6.000	4245	340	8.6
		8.00	4	80	0.025	5.600	8.000	3185	320	14.3
		10.00	4	80	0.035	7.000	10.000	2545	355	25.0
		12.00	4	80	0.040	8.400	12.000	2120	340	34.2
		16.00	4	80	0.050	11.200	16.000	1590	320	57.0
		20.00	4	80	0.050	14.000	20.000	1275	255	71.3
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	60	0.020	4.200	6.000	3185	255	6.4
		8.00	4	60	0.025	5.600	8.000	2385	240	10.7
		10.00	4	60	0.035	7.000	10.000	1910	265	18.7
		12.00	4	60	0.040	8.400	12.000	1590	255	25.7
		16.00	4	60	0.050	11.200	16.000	1195	240	42.8
		20.00	4	60	0.050	14.000	20.000	955	190	53.5

Cylindrical end mills NX-FP

Profiled, medium length version

X-Generation X

HM XT	λ 45° γ 0°



Roughing

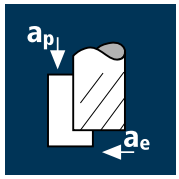
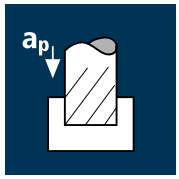
Finishing

ToolSchool

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **5173** ø-Code **300**

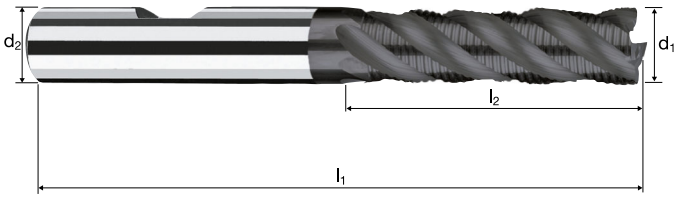
Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z		POLYCHROM P5173
300	6.00	6.00	63	19.00	0.35	4		●
391	8.00	8.00	72	28.00	0.45	4		●
450	10.00	10.00	84	34.00	0.60	4		●
501	12.00	12.00	97	40.00	0.60	4		●
610	16.00	16.00	108	48.00	0.70	4		●
682	20.00	20.00	122	56.00	0.70	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	4	180	0.035	9.600	1.200	9550	1335	15.4
		8.00	4	180	0.045	12.800	1.600	7160	1290	26.4
		10.00	4	180	0.060	16.000	2.000	5730	1375	44.0
		12.00	4	180	0.070	19.200	2.400	4775	1335	61.6
		16.00	4	180	0.075	25.600	3.200	3580	1075	88.0
		20.00	4	180	0.080	32.000	4.000	2865	915	117.3
	Steel 850 - 1100 N/mm²	6.00	4	130	0.035	9.600	1.200	6895	965	11.1
		8.00	4	130	0.045	12.800	1.600	5175	930	19.1
		10.00	4	130	0.060	16.000	2.000	4140	995	31.8
		12.00	4	130	0.070	19.200	2.400	3450	965	44.5
		16.00	4	130	0.075	25.600	3.200	2585	775	63.6
		20.00	4	130	0.080	32.000	4.000	2070	660	84.7
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	4	45	0.025	9.600	1.200	2385	240	2.8
		8.00	4	45	0.035	12.800	1.600	1790	250	5.1
		10.00	4	45	0.045	16.000	2.000	1430	260	8.3
		12.00	4	45	0.055	19.200	2.400	1195	265	12.1
		16.00	4	45	0.060	25.600	3.200	895	215	17.6
		20.00	4	45	0.065	32.000	4.000	715	185	23.8
	Stainless steel [Cr-Ni/1.4301]	6.00	4	60	0.025	9.600	1.200	3185	320	3.7
		8.00	4	60	0.035	12.800	1.600	2385	335	6.8
		10.00	4	60	0.045	16.000	2.000	1910	345	11.0
		12.00	4	60	0.055	19.200	2.400	1590	350	16.1
		16.00	4	60	0.060	25.600	3.200	1195	285	23.5
		20.00	4	60	0.065	32.000	4.000	955	250	31.8
	Steel < 850 N/mm²	6.00	4	150	0.030	3.300	6.000	7960	955	18.9
		8.00	4	150	0.040	4.400	8.000	5970	955	33.6
		10.00	4	150	0.050	5.500	10.000	4775	955	52.5
		12.00	4	150	0.055	6.600	12.000	3980	875	69.3
		16.00	4	150	0.055	8.800	16.000	2985	655	92.4
		20.00	4	150	0.060	11.000	20.000	2385	575	126.1
	Steel 850 - 1100 N/mm²	6.00	4	80	0.030	3.300	6.000	4245	510	10.1
		8.00	4	80	0.040	4.400	8.000	3185	510	17.9
		10.00	4	80	0.050	5.500	10.000	2545	510	28.0
		12.00	4	80	0.055	6.600	12.000	2120	465	37.0
		16.00	4	80	0.055	8.800	16.000	1590	350	49.3
		20.00	4	80	0.060	11.000	20.000	1275	305	67.2
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	4	35	0.025	3.300	6.000	1855	185	3.7
		8.00	4	35	0.030	4.400	8.000	1395	165	5.9
		10.00	4	35	0.040	5.500	10.000	1115	180	9.8
		12.00	4	35	0.045	6.600	12.000	930	165	13.2
		16.00	4	35	0.045	8.800	16.000	695	125	17.6
		20.00	4	35	0.050	11.000	20.000	555	110	24.5
	Stainless steel [Cr-Ni/1.4301]	6.00	4	50	0.025	3.300	6.000	2655	265	5.3
		8.00	4	50	0.030	4.400	8.000	1990	240	8.4
		10.00	4	50	0.040	5.500	10.000	1590	255	14.0
		12.00	4	50	0.045	6.600	12.000	1325	240	18.9
		16.00	4	50	0.045	8.800	16.000	995	180	25.2
		20.00	4	50	0.050	11.000	20.000	795	160	35.0

Cylindrical end mills SupraCarb®

Profiled, medium length version

HM MG10	λ 38° γ 0°



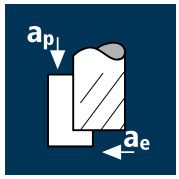
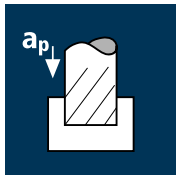
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15338** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z	POLYCHROM P15338	POLYCHROM P15238
300	6.00	6.00	63	19.00	0.35	4	●	
391	8.00	8.00	72	28.00	0.45	4	●	
450	10.00	10.00	84	34.00	0.60	4	●	
501	12.00	12.00	97	40.00	0.60	4	●	
610	16.00	16.00	108	48.00	0.70	4	●	
682	20.00	20.00	122	56.00	0.70	4	●	

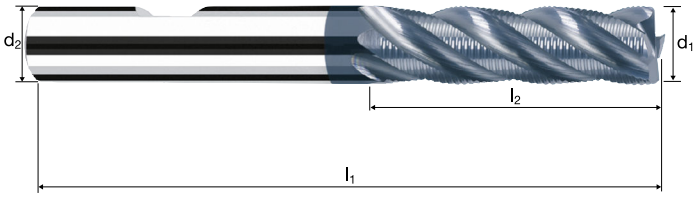
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	3.00	3	180	0.015	4.800	0.600	19100	860	2.5
		4.00	3	180	0.020	6.400	0.800	14325	860	4.4
		5.00	4	180	0.025	8.000	1.000	11460	1145	9.2
		6.00	4	180	0.035	9.600	1.200	9550	1335	15.4
		8.00	4	180	0.045	12.800	1.600	7160	1290	26.4
		10.00	4	180	0.060	16.000	2.000	5730	1375	44.0
		12.00	4	180	0.070	19.200	2.400	4775	1335	61.6
		16.00	4	180	0.075	25.600	3.200	3580	1075	88.0
		20.00	4	180	0.080	32.000	4.000	2865	915	117.3
	Steel 850 - 1100 N/mm²	3.00	3	130	0.015	4.800	0.600	13795	620	1.8
		4.00	3	130	0.020	6.400	0.800	10345	620	3.2
		5.00	4	130	0.025	8.000	1.000	8275	830	6.6
		6.00	4	130	0.035	9.600	1.200	6895	965	11.1
		8.00	4	130	0.045	12.800	1.600	5175	930	19.1
		10.00	4	130	0.060	16.000	2.000	4140	995	31.8
		12.00	4	130	0.070	19.200	2.400	3450	965	44.5
		16.00	4	130	0.075	25.600	3.200	2585	775	63.6
		20.00	4	130	0.080	32.000	4.000	2070	660	84.7
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	3	45	0.010	4.800	0.600	4775	145	0.4
		4.00	3	45	0.015	6.400	0.800	3580	160	0.8
		5.00	4	45	0.020	8.000	1.000	2865	230	1.8
		6.00	4	45	0.025	9.600	1.200	2385	240	2.8
		8.00	4	45	0.035	12.800	1.600	1790	250	5.1
		10.00	4	45	0.045	16.000	2.000	1430	260	8.3
		12.00	4	45	0.055	19.200	2.400	1195	265	12.1
		16.00	4	45	0.060	25.600	3.200	895	215	17.6
		20.00	4	45	0.065	32.000	4.000	715	185	23.8
	Stainless steel [Cr-Ni/1.4301]	3.00	3	55	0.010	4.800	0.600	5835	175	0.5
		4.00	3	55	0.015	6.400	0.800	4375	195	1.0
		5.00	4	55	0.020	8.000	1.000	3500	280	2.2
		6.00	4	55	0.025	9.600	1.200	2920	290	3.4
		8.00	4	55	0.035	12.800	1.600	2190	305	6.3
		10.00	4	55	0.045	16.000	2.000	1750	315	10.1
		12.00	4	55	0.055	19.200	2.400	1460	320	14.8
		16.00	4	55	0.060	25.600	3.200	1095	265	21.5
		20.00	4	55	0.065	32.000	4.000	875	230	29.1
	Steel < 850 N/mm²	3.00	3	150	0.015	1.650	3.000	15915	715	3.5
		4.00	3	150	0.020	2.200	4.000	11935	715	6.3
		5.00	4	150	0.025	2.750	5.000	9550	955	13.1
		6.00	4	150	0.030	3.300	6.000	7960	955	18.9
		8.00	4	150	0.040	4.400	8.000	5970	955	33.6
		10.00	4	150	0.050	5.500	10.000	4775	955	52.5
		12.00	4	150	0.055	6.600	12.000	3980	875	69.3
		16.00	4	150	0.055	8.800	16.000	2985	655	92.4
		20.00	4	150	0.060	11.000	20.000	2385	575	126.1
	Steel 850 - 1100 N/mm²	3.00	3	80	0.015	1.650	3.000	8490	380	1.9
		4.00	3	80	0.020	2.200	4.000	6365	380	3.4
		5.00	4	80	0.025	2.750	5.000	5095	510	7.0
		6.00	4	80	0.030	3.300	6.000	4245	510	10.1
		8.00	4	80	0.040	4.400	8.000	3185	510	17.9
		10.00	4	80	0.050	5.500	10.000	2545	510	28.0
		12.00	4	80	0.055	6.600	12.000	2120	465	37.0
		16.00	4	80	0.055	8.800	16.000	1590	350	49.3
		20.00	4	80	0.060	11.000	20.000	1275	305	67.2
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	3	35	0.010	1.650	3.000	3715	110	0.6
		4.00	3	35	0.015	2.200	4.000	2785	125	1.1
		5.00	4	35	0.020	2.750	5.000	2230	180	2.5
		6.00	4	35	0.025	3.300	6.000	1855	185	3.7
		8.00	4	35	0.030	4.400	8.000	1395	165	5.9
		10.00	4	35	0.040	5.500	10.000	1115	180	9.8
		12.00	4	35	0.045	6.600	12.000	930	165	13.2
		16.00	4	35	0.045	8.800	16.000	695	125	17.6
		20.00	4	35	0.050	11.000	20.000	555	110	24.5
	Stainless steel [Cr-Ni/1.4301]	3.00	3	45	0.010	1.650	3.000	4775	145	0.7
		4.00	3	45	0.015	2.200	4.000	3580	160	1.4
		5.00	4	45	0.020	2.750	5.000	2865	230	3.2
		6.00	4	45	0.025	3.300	6.000	2385	240	4.7
		8.00	4	45	0.030	4.400	8.000	1790	215	7.6
		10.00	4	45	0.040	5.500	10.000	1430	230	12.6
		12.00	4	45	0.045	6.600	12.000	1195	215	17.0
		16.00	4	45	0.045	8.800	16.000	895	160	22.7
		20.00	4	45	0.050	11.000	20.000	715	145	31.5

Cylindrical end mills NF-RP

Profiled, medium length version

Favora® F

HM MG10	λ 38° γ 0°



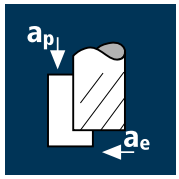
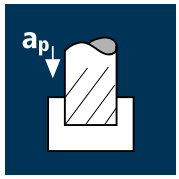
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Coating **P** Article-N°. **45372** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P45372
180	3.00	6.00	63	14.00	21.56	0.25	6.0°	3	●
220	4.00	6.00	63	17.00	23.09	0.30	4.0°	3	●
260	5.00	6.00	63	19.00	23.22	0.35	2.0°	4	●
300	6.00	6.00	63	19.00	-	0.35	0.0°	4	●
391	8.00	8.00	72	28.00	-	0.45	0.0°	4	●
450	10.00	10.00	84	34.00	-	0.60	0.0°	4	●
501	12.00	12.00	97	40.00	-	0.60	0.0°	4	●
610	16.00	16.00	108	48.00	-	0.70	0.0°	4	●
612	16.00	16.00	108	48.00	-	0.70	0.0°	6	●
682	20.00	20.00	122	56.00	-	0.70	0.0°	4	●
684	20.00	20.00	122	56.00	-	0.70	0.0°	6	●

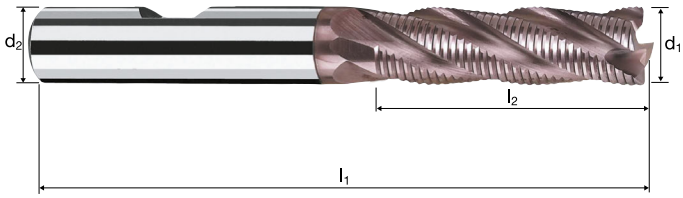
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm² U	6.00	4	38	0.025	12.000	1.500	2015	200	3.6
		8.00	4	38	0.030	16.000	2.000	1510	180	5.8
		10.00	4	38	0.040	20.000	2.500	1210	195	9.7
		12.00	4	38	0.060	24.000	3.000	1010	240	17.4
		16.00	4	38	0.085	32.000	4.000	755	255	32.9
		20.00	4	38	0.105	40.000	5.000	605	255	50.8
		25.00	4	38	0.130	50.000	6.250	485	250	78.6
	Steel 1100 - 1300 N/mm² U	6.00	4	30	0.025	12.000	1.500	1590	160	2.9
		8.00	4	30	0.030	16.000	2.000	1195	145	4.6
		10.00	4	30	0.040	20.000	2.500	955	155	7.6
		12.00	4	30	0.060	24.000	3.000	795	190	13.8
		16.00	4	30	0.085	32.000	4.000	595	205	26.0
		20.00	4	30	0.105	40.000	5.000	475	200	40.1
		25.00	4	30	0.130	50.000	6.250	380	200	62.1
	Cold work tool steel (12% Cr), high alloyed [1.2379] U	6.00	4	24	0.025	12.000	1.500	1275	125	2.3
		8.00	4	24	0.030	16.000	2.000	955	115	3.7
		10.00	4	24	0.040	20.000	2.500	765	120	6.1
		12.00	4	24	0.060	24.000	3.000	635	155	11.0
		16.00	4	24	0.085	32.000	4.000	475	160	20.8
		20.00	4	24	0.105	40.000	5.000	380	160	32.1
		25.00	4	24	0.130	50.000	6.250	305	160	49.7
	Cast iron (lamellar / spheroidal) U	6.00	4	34	0.025	12.000	1.500	1805	180	3.2
		8.00	4	34	0.030	16.000	2.000	1355	160	5.2
		10.00	4	34	0.040	20.000	2.500	1080	175	8.7
		12.00	4	34	0.060	24.000	3.000	900	215	15.6
		16.00	4	34	0.085	32.000	4.000	675	230	29.4
		20.00	4	34	0.105	40.000	5.000	540	225	45.5
		25.00	4	34	0.130	50.000	6.250	435	225	70.3
	Steel 850 - 1100 N/mm² U	6.00	4	35	0.020	4.200	6.000	1855	150	3.7
		8.00	4	35	0.030	5.600	8.000	1395	165	7.5
		10.00	4	35	0.035	7.000	10.000	1115	155	10.9
		12.00	4	35	0.060	8.400	12.000	930	225	22.5
		16.00	4	35	0.080	11.200	16.000	695	225	39.9
		20.00	4	35	0.100	14.000	20.000	555	225	62.4
		25.00	4	35	0.125	17.500	25.000	445	225	97.5
	Steel 1100 - 1300 N/mm² U	6.00	4	25	0.020	4.200	6.000	1325	105	2.7
		8.00	4	25	0.030	5.600	8.000	995	120	5.3
		10.00	4	25	0.035	7.000	10.000	795	110	7.8
		12.00	4	25	0.060	8.400	12.000	665	160	16.0
		16.00	4	25	0.080	11.200	16.000	495	160	28.5
		20.00	4	25	0.100	14.000	20.000	400	160	44.6
		25.00	4	25	0.125	17.500	25.000	320	160	69.6
	Cold work tool steel (12% Cr), high alloyed [1.2379] U	6.00	4	18	0.020	4.200	6.000	955	75	1.9
		8.00	4	18	0.030	5.600	8.000	715	85	3.9
		10.00	4	18	0.035	7.000	10.000	575	80	5.6
		12.00	4	18	0.060	8.400	12.000	475	115	11.6
		16.00	4	18	0.080	11.200	16.000	360	115	20.5
		20.00	4	18	0.100	14.000	20.000	285	115	32.1
		25.00	4	18	0.125	17.500	25.000	230	115	50.1
	Cast iron (lamellar / spheroidal) U	6.00	4	29	0.020	4.200	6.000	1540	125	3.1
		8.00	4	29	0.030	5.600	8.000	1155	140	6.2
		10.00	4	29	0.035	7.000	10.000	925	130	9.0
		12.00	4	29	0.060	8.400	12.000	770	185	18.6
		16.00	4	29	0.080	11.200	16.000	575	185	33.1
		20.00	4	29	0.100	14.000	20.000	460	185	51.7
		25.00	4	29	0.125	17.500	25.000	370	185	80.8

Cylindrical end mills Supracut

Profiled NRC, medium length version

HSS PM/F	λ 30° γ 12°

45°



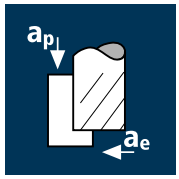
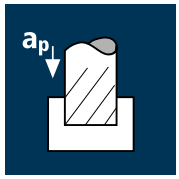
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300							GG(G)

Example: **Order-N°.** Coating **U** Article-N°. **0659** ø-Code **300**

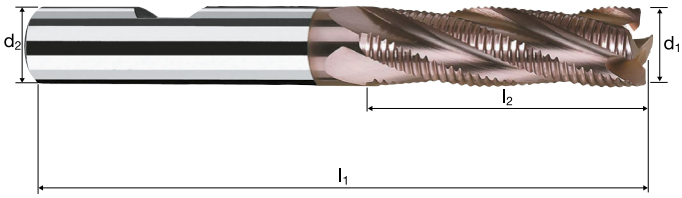
Ø Code	d_1 k8	d_2 h6	l_1	l_2	l_4	45°	z	UNICUT-4X U0659
300	6.00	6.00	63	19.00	-	0.40	4	●
402	8.00	10.00	78	28.00	37.50	0.40	4	●
450	10.00	10.00	84	34.00	-	0.40	4	●
501	12.00	12.00	97	40.00	-	0.40	4	●
610	16.00	16.00	108	48.00	-	0.50	4	●
682	20.00	20.00	122	56.00	-	0.50	4	●
772	25.00	25.00	144	68.00	-	0.70	4	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm² U	6.00	3	36	0.020	12.000	1.500	1910	115	2.1
		8.00	4	36	0.030	16.000	2.000	1430	170	5.5
		10.00	4	36	0.035	20.000	2.500	1145	160	8.0
		12.00	4	36	0.055	24.000	3.000	955	210	15.1
		16.00	4	36	0.075	32.000	4.000	715	215	27.5
		20.00	4	36	0.095	40.000	5.000	575	220	43.5
		25.00	4	36	0.115	50.000	6.250	460	210	65.9
		30.00	6	36	0.095	60.000	7.500	380	220	98.0
		32.00	6	36	0.105	64.000	8.000	360	225	115.5
	Steel 850 - 1100 N/mm² U	6.00	3	30	0.020	12.000	1.500	1590	95	1.7
		8.00	4	30	0.030	16.000	2.000	1195	145	4.6
		10.00	4	30	0.035	20.000	2.500	955	135	6.7
		12.00	4	30	0.055	24.000	3.000	795	175	12.6
		16.00	4	30	0.075	32.000	4.000	595	180	22.9
		20.00	4	30	0.095	40.000	5.000	475	180	36.3
		25.00	4	30	0.115	50.000	6.250	380	175	54.9
		30.00	6	30	0.095	60.000	7.500	320	180	81.6
		32.00	6	30	0.105	64.000	8.000	300	190	96.3
	Stainless steel [Cr-Ni/1.4301] U	6.00	3	15	0.020	12.000	1.500	795	50	0.9
		8.00	4	15	0.030	16.000	2.000	595	70	2.3
		10.00	4	15	0.035	20.000	2.500	475	65	3.3
		12.00	4	15	0.055	24.000	3.000	400	90	6.3
		16.00	4	15	0.075	32.000	4.000	300	90	11.5
		20.00	4	15	0.095	40.000	5.000	240	90	18.1
		25.00	4	15	0.115	50.000	6.250	190	90	27.5
		30.00	6	15	0.095	60.000	7.500	160	90	40.8
		32.00	6	15	0.105	64.000	8.000	150	95	48.1
	Cast iron (lamellar / spheroidal) U	6.00	3	28	0.020	12.000	1.500	1485	90	1.6
		8.00	4	28	0.030	16.000	2.000	1115	135	4.3
		10.00	4	28	0.035	20.000	2.500	890	125	6.2
		12.00	4	28	0.055	24.000	3.000	745	165	11.8
		16.00	4	28	0.075	32.000	4.000	555	165	21.4
		20.00	4	28	0.095	40.000	5.000	445	170	33.9
		25.00	4	28	0.115	50.000	6.250	355	165	51.2
		30.00	6	28	0.095	60.000	7.500	295	170	76.2
		32.00	6	28	0.105	64.000	8.000	280	175	89.8
	Steel < 850 N/mm² U	6.00	3	30	0.020	4.200	6.000	1590	95	2.4
		8.00	4	30	0.025	5.600	8.000	1195	120	5.3
		10.00	4	30	0.035	7.000	10.000	955	135	9.4
		12.00	4	30	0.055	8.400	12.000	795	175	17.6
		16.00	4	30	0.070	11.200	16.000	595	165	29.9
		20.00	4	30	0.090	14.000	20.000	475	170	48.1
		25.00	4	30	0.110	17.500	25.000	380	170	73.5
		30.00	6	30	0.090	21.000	30.000	320	170	108.3
		32.00	6	30	0.095	22.400	32.000	300	170	121.9
	Steel 850 - 1100 N/mm² U	6.00	3	26	0.020	4.200	6.000	1380	85	2.1
		8.00	4	26	0.025	5.600	8.000	1035	105	4.6
		10.00	4	26	0.035	7.000	10.000	830	115	8.1
		12.00	4	26	0.055	8.400	12.000	690	150	15.3
		16.00	4	26	0.070	11.200	16.000	515	145	26.0
		20.00	4	26	0.090	14.000	20.000	415	150	41.7
		25.00	4	26	0.110	17.500	25.000	330	145	63.7
		30.00	6	26	0.090	21.000	30.000	275	150	93.9
		32.00	6	26	0.095	22.400	32.000	260	145	105.7
	Stainless steel [Cr-Ni/1.4301] U	6.00	3	14	0.020	4.200	6.000	745	45	1.1
		8.00	4	14	0.025	5.600	8.000	555	55	2.5
		10.00	4	14	0.035	7.000	10.000	445	60	4.4
		12.00	4	14	0.055	8.400	12.000	370	80	8.2
		16.00	4	14	0.070	11.200	16.000	280	80	14.0
		20.00	4	14	0.090	14.000	20.000	225	80	22.5
		25.00	4	14	0.110	17.500	25.000	180	80	34.3
		30.00	6	14	0.090	21.000	30.000	150	80	50.5
		32.00	6	14	0.095	22.400	32.000	140	80	56.9
	Cast iron (lamellar / spheroidal) U	6.00	3	22	0.020	4.200	6.000	1165	70	1.8
		8.00	4	22	0.025	5.600	8.000	875	90	3.9
		10.00	4	22	0.035	7.000	10.000	700	100	6.9
		12.00	4	22	0.055	8.400	12.000	585	130	12.9
		16.00	4	22	0.070	11.200	16.000	440	125	22.0
		20.00	4	22	0.090	14.000	20.000	350	125	35.3
		25.00	4	22	0.110	17.500	25.000	280	125	53.9
		30.00	6	22	0.090	21.000	30.000	235	125	79.4
		32.00	6	22	0.095	22.400	32.000	220	125	89.4

Cylindrical end mills

Profiled NRF, medium length version

HSS-E Co8	λ 25° γ 10°



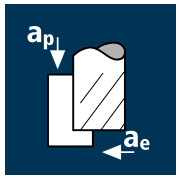
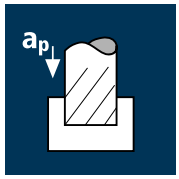
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Coating **U** Article-N°. **0650** ø-Code **260**

Ø Code	d_1 k12	d_2 h6	l_1	l_2	l_4	45°	α	z	UNICUT-4X U0650
260	5.00	6.00	63	19.00	26.55	0.40	1.5°	3	●
300	6.00	6.00	63	19.00	-	0.40	0.0°	3	●
402	8.00	10.00	78	28.00	37.50	0.40	2.0°	4	●
450	10.00	10.00	84	34.00	-	0.40	0.0°	4	●
501	12.00	12.00	97	40.00	-	0.40	0.0°	4	●
570	14.00	12.00	97	40.00	-	0.40	0.0°	4	●
610	16.00	16.00	108	48.00	-	0.50	0.0°	4	●
640	18.00	16.00	108	48.00	-	0.50	0.0°	4	●
682	20.00	20.00	122	56.00	-	0.50	0.0°	4	●
710	22.00	20.00	122	56.00	-	0.70	0.0°	4	●
772	25.00	25.00	144	68.00	-	0.70	0.0°	4	●
800	28.00	25.00	144	68.00	-	0.70	0.0°	6	●
810	30.00	25.00	144	68.00	-	0.70	0.0°	6	●
832	32.00	32.00	160	80.00	-	0.70	0.0°	6	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	4	180	0.030	9.000	1.800	9550	1145	18.6
		8.00	4	180	0.040	12.000	2.400	7160	1145	33.0
		10.00	4	180	0.055	15.000	3.000	5730	1260	56.7
		12.00	4	180	0.065	18.000	3.600	4775	1240	80.4
		16.00	4	180	0.070	24.000	4.800	3580	1005	115.5
		20.00	4	180	0.075	30.000	6.000	2865	860	154.7
	Steel 850 - 1100 N/mm²	6.00	4	150	0.030	9.000	1.800	7960	955	15.5
		8.00	4	150	0.040	12.000	2.400	5970	955	27.5
		10.00	4	150	0.055	15.000	3.000	4775	1050	47.3
		12.00	4	150	0.065	18.000	3.600	3980	1035	67.0
		16.00	4	150	0.070	24.000	4.800	2985	835	96.3
		20.00	4	150	0.075	30.000	6.000	2385	715	128.9
	Steel 1100 - 1300 N/mm²	6.00	4	120	0.030	9.000	1.800	6365	765	12.4
		8.00	4	120	0.040	12.000	2.400	4775	765	22.0
		10.00	4	120	0.055	15.000	3.000	3820	840	37.8
		12.00	4	120	0.065	18.000	3.600	3185	830	53.6
		16.00	4	120	0.070	24.000	4.800	2385	670	77.0
		20.00	4	120	0.075	30.000	6.000	1910	575	103.1
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	80	0.030	9.000	1.800	4245	510	8.3
		8.00	4	80	0.040	12.000	2.400	3185	510	14.7
		10.00	4	80	0.055	15.000	3.000	2545	560	25.2
		12.00	4	80	0.065	18.000	3.600	2120	550	35.8
		16.00	4	80	0.070	24.000	4.800	1590	445	51.3
		20.00	4	80	0.075	30.000	6.000	1275	380	68.8
	Steel < 850 N/mm²	6.00	4	150	0.025	4.800	6.000	7960	795	22.9
		8.00	4	150	0.030	6.400	8.000	5970	715	36.7
		10.00	4	150	0.040	8.000	10.000	4775	765	61.1
		12.00	4	150	0.050	9.600	12.000	3980	795	91.7
		16.00	4	150	0.060	12.800	16.000	2985	715	146.7
		20.00	4	150	0.060	16.000	20.000	2385	575	183.3
	Steel 850 - 1100 N/mm²	6.00	4	100	0.020	4.800	6.000	5305	425	12.2
		8.00	4	100	0.025	6.400	8.000	3980	400	20.4
		10.00	4	100	0.035	8.000	10.000	3185	445	35.7
		12.00	4	100	0.040	9.600	12.000	2655	425	48.9
		16.00	4	100	0.050	12.800	16.000	1990	400	81.5
		20.00	4	100	0.050	16.000	20.000	1590	320	101.9
	Steel 1100 - 1300 N/mm²	6.00	4	80	0.020	4.800	6.000	4245	340	9.8
		8.00	4	80	0.025	6.400	8.000	3185	320	16.3
		10.00	4	80	0.035	8.000	10.000	2545	355	28.5
		12.00	4	80	0.040	9.600	12.000	2120	340	39.1
		16.00	4	80	0.050	12.800	16.000	1590	320	65.2
		20.00	4	80	0.050	16.000	20.000	1275	255	81.5
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	60	0.020	4.800	6.000	3185	255	7.3
		8.00	4	60	0.025	6.400	8.000	2385	240	12.2
		10.00	4	60	0.035	8.000	10.000	1910	265	21.4
		12.00	4	60	0.040	9.600	12.000	1590	255	29.3
		16.00	4	60	0.050	12.800	16.000	1195	240	48.9
		20.00	4	60	0.050	16.000	20.000	955	190	61.1

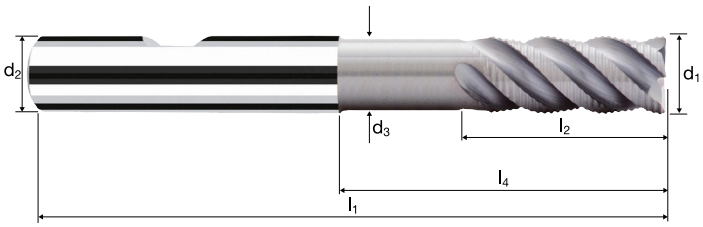
Cylindrical end mills NX-FP

Profiled, medium length version with neck

X-Generation X

HM XT

λ 45°
γ 0°



Roughing

Finishing

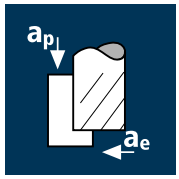
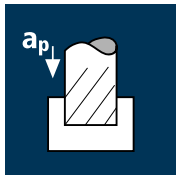
ToolSchool

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** | Article-N°. **5174** | ø-Code **300**

POLYCHROM **P5174**

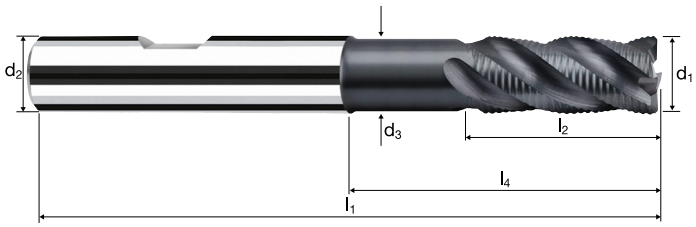
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	z		
300	6.00	6.00	5.50	63	13.00	25.34	26.00	0.35	4		●
391	8.00	8.00	7.40	72	19.00	34.29	35.00	0.45	4		●
450	10.00	10.00	9.20	84	22.00	42.20	43.00	0.60	4		●
501	12.00	12.00	11.00	97	26.00	50.13	51.00	0.60	4		●
610	16.00	16.00	15.00	108	32.00	58.13	59.00	0.70	4		●
682	20.00	20.00	19.00	122	38.00	70.13	71.00	0.70	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	4	180	0.035	7.200	1.800	9550	1335	17.3
		8.00	4	180	0.045	9.600	2.400	7160	1290	29.7
		10.00	4	180	0.060	12.000	3.000	5730	1375	49.5
		12.00	4	180	0.070	14.400	3.600	4775	1335	69.3
		16.00	4	180	0.075	19.200	4.800	3580	1075	99.0
		20.00	4	180	0.080	24.000	6.000	2865	915	132.0
	Steel 850 - 1100 N/mm²	6.00	4	130	0.035	7.200	1.800	6895	965	12.5
		8.00	4	130	0.045	9.600	2.400	5175	930	21.5
		10.00	4	130	0.060	12.000	3.000	4140	995	35.8
		12.00	4	130	0.070	14.400	3.600	3450	965	50.1
		16.00	4	130	0.075	19.200	4.800	2585	775	71.5
		20.00	4	130	0.080	24.000	6.000	2070	660	95.3
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	4	45	0.025	7.200	1.800	2385	240	3.1
		8.00	4	45	0.035	9.600	2.400	1790	250	5.8
		10.00	4	45	0.045	12.000	3.000	1430	260	9.3
		12.00	4	45	0.055	14.400	3.600	1195	265	13.6
		16.00	4	45	0.060	19.200	4.800	895	215	19.8
		20.00	4	45	0.065	24.000	6.000	715	185	26.8
	Stainless steel [Cr-Ni/1.4301]	6.00	4	60	0.025	7.200	1.800	3185	320	4.1
		8.00	4	60	0.035	9.600	2.400	2385	335	7.7
		10.00	4	60	0.045	12.000	3.000	1910	345	12.4
		12.00	4	60	0.055	14.400	3.600	1590	350	18.2
		16.00	4	60	0.060	19.200	4.800	1195	285	26.4
		20.00	4	60	0.065	24.000	6.000	955	250	35.8
	Steel < 850 N/mm²	6.00	4	150	0.030	3.600	6.000	7960	955	20.6
		8.00	4	150	0.040	4.800	8.000	5970	955	36.7
		10.00	4	150	0.050	6.000	10.000	4775	955	57.3
		12.00	4	150	0.055	7.200	12.000	3980	875	75.6
		16.00	4	150	0.055	9.600	16.000	2985	655	100.8
		20.00	4	150	0.060	12.000	20.000	2385	575	137.5
	Steel 850 - 1100 N/mm²	6.00	4	80	0.030	3.600	6.000	4245	510	11.0
		8.00	4	80	0.040	4.800	8.000	3185	510	19.6
		10.00	4	80	0.050	6.000	10.000	2545	510	30.6
		12.00	4	80	0.055	7.200	12.000	2120	465	40.3
		16.00	4	80	0.055	9.600	16.000	1590	350	53.8
		20.00	4	80	0.060	12.000	20.000	1275	305	73.3
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	4	35	0.025	3.600	6.000	1855	185	4.0
		8.00	4	35	0.030	4.800	8.000	1395	165	6.4
		10.00	4	35	0.040	6.000	10.000	1115	180	10.7
		12.00	4	35	0.045	7.200	12.000	930	165	14.4
		16.00	4	35	0.045	9.600	16.000	695	125	19.3
		20.00	4	35	0.050	12.000	20.000	555	110	26.7
	Stainless steel [Cr-Ni/1.4301]	6.00	4	50	0.025	3.600	6.000	2655	265	5.7
		8.00	4	50	0.030	4.800	8.000	1990	240	9.2
		10.00	4	50	0.040	6.000	10.000	1590	255	15.3
		12.00	4	50	0.045	7.200	12.000	1325	240	20.6
		16.00	4	50	0.045	9.600	16.000	995	180	27.5
		20.00	4	50	0.050	12.000	20.000	795	160	38.2

Cylindrical end mills SupraCarb®

Profiled, medium length version with neck

HM MG10	λ 38° γ 0°



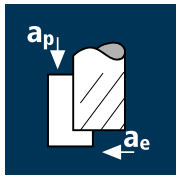
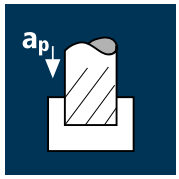
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15339** ø-Code **300**

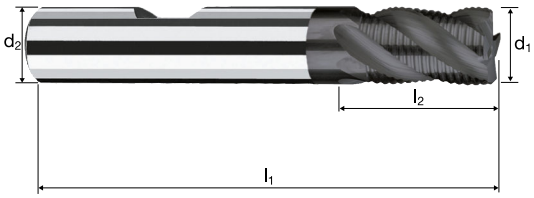
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	z	POLYCHROM P15339	POLYCHROM P15239
300	6.00	6.00	5.50	63	13.00	25.34	26.00	0.35	4		●
391	8.00	8.00	7.40	72	19.00	34.29	35.00	0.45	4		●
450	10.00	10.00	9.20	84	22.00	42.20	43.00	0.60	4		●
501	12.00	12.00	11.00	97	26.00	50.13	51.00	0.60	4		●
610	16.00	16.00	15.00	108	32.00	58.13	59.00	0.70	4		●
682	20.00	20.00	19.00	122	38.00	70.13	71.00	0.70	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	3.00	3	180	0.015	3.000	2.100	19100	860	5.4
		4.00	3	180	0.020	4.000	2.800	14325	860	9.6
		5.00	4	180	0.030	5.000	3.500	11460	1375	24.1
		6.00	4	180	0.035	6.000	4.200	9550	1335	33.7
		8.00	4	180	0.045	8.000	5.600	7160	1290	57.8
		10.00	4	180	0.055	10.000	7.000	5730	1260	88.2
		12.00	4	180	0.060	12.000	8.400	4775	1145	115.5
		16.00	4	180	0.065	16.000	11.200	3580	930	166.8
	Steel 850 - 1100 N/mm²	3.00	3	130	0.015	3.000	2.100	13795	620	3.9
		4.00	3	130	0.020	4.000	2.800	10345	620	7.0
		5.00	4	130	0.030	5.000	3.500	8275	995	17.4
		6.00	4	130	0.035	6.000	4.200	6895	965	24.3
		8.00	4	130	0.045	8.000	5.600	5175	930	41.7
		10.00	4	130	0.055	10.000	7.000	4140	910	63.7
		12.00	4	130	0.060	12.000	8.400	3450	830	83.4
		16.00	4	130	0.065	16.000	11.200	2585	670	120.5
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	3	45	0.015	3.000	2.100	4775	215	1.4
		4.00	3	45	0.020	4.000	2.800	3580	215	2.4
		5.00	4	45	0.020	5.000	3.500	2865	230	4.0
		6.00	4	45	0.025	6.000	4.200	2385	240	6.0
		8.00	4	45	0.035	8.000	5.600	1790	250	11.2
		10.00	4	45	0.045	10.000	7.000	1430	260	18.0
		12.00	4	45	0.050	12.000	8.400	1195	240	24.1
		16.00	4	45	0.050	16.000	11.200	895	180	32.1
	Stainless steel [Cr-Ni/1.4301]	3.00	3	60	0.015	3.000	2.100	6365	285	1.8
		4.00	3	60	0.020	4.000	2.800	4775	285	3.2
		5.00	4	60	0.020	5.000	3.500	3820	305	5.3
		6.00	4	60	0.025	6.000	4.200	3185	320	8.0
		8.00	4	60	0.035	8.000	5.600	2385	335	15.0
		10.00	4	60	0.045	10.000	7.000	1910	345	24.1
		12.00	4	60	0.050	12.000	8.400	1590	320	32.1
		16.00	4	60	0.050	16.000	11.200	1195	240	42.8
	Steel < 850 N/mm²	3.00	3	150	0.015	3.000	3.000	15915	715	6.4
		4.00	3	150	0.020	4.000	4.000	11935	715	11.5
		5.00	4	150	0.025	5.000	5.000	9550	955	23.9
		6.00	4	150	0.030	6.000	6.000	7960	955	34.4
		8.00	4	150	0.040	8.000	8.000	5970	955	61.1
		10.00	4	150	0.050	10.000	10.000	4775	955	95.5
		12.00	4	150	0.055	12.000	12.000	3980	875	126.1
		16.00	4	150	0.055	16.000	16.000	2985	655	168.1
	Steel 850 - 1100 N/mm²	3.00	3	80	0.015	3.000	3.000	8490	380	3.4
		4.00	3	80	0.020	4.000	4.000	6365	380	6.1
		5.00	4	80	0.025	5.000	5.000	5095	510	12.7
		6.00	4	80	0.030	6.000	6.000	4245	510	18.3
		8.00	4	80	0.040	8.000	8.000	3185	510	32.6
		10.00	4	80	0.050	10.000	10.000	2545	510	50.9
		12.00	4	80	0.055	12.000	12.000	2120	465	67.2
		16.00	4	80	0.055	16.000	16.000	1590	350	89.6
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	3	35	0.010	3.000	3.000	3715	110	1.0
		4.00	3	35	0.015	4.000	4.000	2785	125	2.0
		5.00	4	35	0.020	5.000	5.000	2230	180	4.5
		6.00	4	35	0.025	6.000	6.000	1855	185	6.7
		8.00	4	35	0.030	8.000	8.000	1395	165	10.7
		10.00	4	35	0.040	10.000	10.000	1115	180	17.8
		12.00	4	35	0.045	12.000	12.000	930	165	24.1
		16.00	4	35	0.045	16.000	16.000	695	125	32.1
	Stainless steel [Cr-Ni/1.4301]	3.00	3	50	0.010	3.000	3.000	5305	160	1.4
		4.00	3	50	0.015	4.000	4.000	3980	180	2.9
		5.00	4	50	0.020	5.000	5.000	3185	255	6.4
		6.00	4	50	0.025	6.000	6.000	2655	265	9.5
		8.00	4	50	0.030	8.000	8.000	1990	240	15.3
		10.00	4	50	0.040	10.000	10.000	1590	255	25.5
		12.00	4	50	0.045	12.000	12.000	1325	240	34.4
		16.00	4	50	0.045	16.000	16.000	995	180	45.8

Cylindrical end mills SupraCarb®

Profiled, short version

HM MG10	λ 38° γ 0°



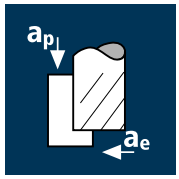
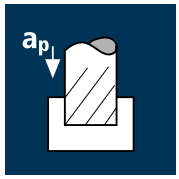
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15360** ø-Code **180**

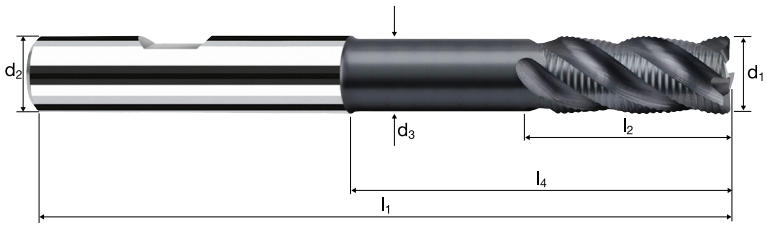
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	z	POLYCHROM P15360	POLYCHROM P15260
180	3.00	6.00	50	5.00	12.56	0.25	3		●
220	4.00	6.00	54	8.00	14.09	0.30	3		●
260	5.00	6.00	54	9.00	13.22	0.35	4		●
300	6.00	6.00	54	10.00	-	0.35	4		●
391	8.00	8.00	58	12.00	-	0.45	4		●
450	10.00	10.00	66	14.00	-	0.60	4		●
501	12.00	12.00	73	16.00	-	0.60	4		●
610	16.00	16.00	82	22.00	-	0.70	4		●
612	16.00	16.00	82	22.00	-	0.70	6		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	4	180	0.030	7.200	1.500	9550	1145	12.4
		8.00	4	180	0.040	9.600	2.000	7160	1145	22.0
		10.00	4	180	0.055	12.000	2.500	5730	1260	37.8
		12.00	4	180	0.065	14.400	3.000	4775	1240	53.6
		16.00	4	180	0.070	19.200	4.000	3580	1005	77.0
		20.00	4	180	0.075	24.000	5.000	2865	860	103.1
	Steel 850 - 1100 N/mm²	6.00	4	130	0.030	7.200	1.500	6895	830	8.9
		8.00	4	130	0.040	9.600	2.000	5175	830	15.9
		10.00	4	130	0.055	12.000	2.500	4140	910	27.3
		12.00	4	130	0.065	14.400	3.000	3450	895	38.7
		16.00	4	130	0.070	19.200	4.000	2585	725	55.6
		20.00	4	130	0.075	24.000	5.000	2070	620	74.5
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	4	45	0.025	7.200	1.500	2385	240	2.6
		8.00	4	45	0.035	9.600	2.000	1790	250	4.8
		10.00	4	45	0.045	12.000	2.500	1430	260	7.7
		12.00	4	45	0.055	14.400	3.000	1195	265	11.3
		16.00	4	45	0.060	19.200	4.000	895	215	16.5
		20.00	4	45	0.065	24.000	5.000	715	185	22.3
	Stainless steel [Cr-Ni/1.4301]	6.00	4	60	0.025	7.200	1.500	3185	320	3.4
		8.00	4	60	0.035	9.600	2.000	2385	335	6.4
		10.00	4	60	0.045	12.000	2.500	1910	345	10.3
		12.00	4	60	0.055	14.400	3.000	1590	350	15.1
		16.00	4	60	0.060	19.200	4.000	1195	285	22.0
		20.00	4	60	0.065	24.000	5.000	955	250	29.8
	Steel < 850 N/mm²	6.00	4	150	0.025	3.000	6.000	7960	795	14.3
		8.00	4	150	0.035	4.000	8.000	5970	835	26.7
		10.00	4	150	0.045	5.000	10.000	4775	860	43.0
		12.00	4	150	0.050	6.000	12.000	3980	795	57.3
		16.00	4	150	0.050	8.000	16.000	2985	595	76.4
		20.00	4	150	0.055	10.000	20.000	2385	525	105.0
	Steel 850 - 1100 N/mm²	6.00	4	80	0.025	3.000	6.000	4245	425	7.6
		8.00	4	80	0.035	4.000	8.000	3185	445	14.3
		10.00	4	80	0.045	5.000	10.000	2545	460	22.9
		12.00	4	80	0.050	6.000	12.000	2120	425	30.6
		16.00	4	80	0.050	8.000	16.000	1590	320	40.7
		20.00	4	80	0.055	10.000	20.000	1275	280	56.0
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	4	35	0.020	3.000	6.000	1855	150	2.7
		8.00	4	35	0.030	4.000	8.000	1395	165	5.3
		10.00	4	35	0.035	5.000	10.000	1115	155	7.8
		12.00	4	35	0.040	6.000	12.000	930	150	10.7
		16.00	4	35	0.040	8.000	16.000	695	110	14.3
		20.00	4	35	0.045	10.000	20.000	555	100	20.1
	Stainless steel [Cr-Ni/1.4301]	6.00	4	50	0.020	3.000	6.000	2655	210	3.8
		8.00	4	50	0.030	4.000	8.000	1990	240	7.6
		10.00	4	50	0.035	5.000	10.000	1590	225	11.1
		12.00	4	50	0.040	6.000	12.000	1325	210	15.3
		16.00	4	50	0.040	8.000	16.000	995	160	20.4
		20.00	4	50	0.045	10.000	20.000	795	145	28.6

Cylindrical end mills SupraCarb®

Profiled, long version with neck

HM MG10	λ 38° γ 0°



Roughing

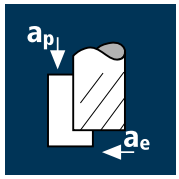
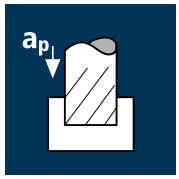
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15348** ø-Code **300**

	POLYCHROM
	P15348
	P15248

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	z		
300	6.00	6.00	5.50	70	13.00	32.34	33.00	0.35	4		●
391	8.00	8.00	7.40	80	19.00	42.29	43.00	0.45	4		●
450	10.00	10.00	9.20	100	22.00	58.20	59.00	0.60	4		●
501	12.00	12.00	11.00	110	26.00	63.13	64.00	0.60	4		●
610	16.00	16.00	15.00	123	32.00	73.13	74.00	0.70	4		●
682	20.00	20.00	19.00	141	38.00	89.13	90.00	0.70	4		●

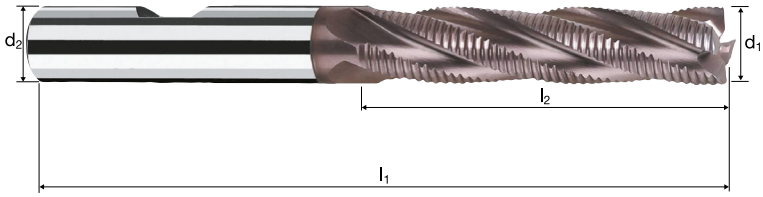
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm² U	6.00	3	28	0.020	15.000	2.400	1485	90	3.2
		8.00	4	28	0.030	20.000	3.200	1115	135	8.6
		10.00	4	28	0.035	25.000	4.000	890	125	12.5
		12.00	4	28	0.055	30.000	4.800	745	165	23.5
		16.00	4	28	0.075	40.000	6.400	555	165	42.8
		20.00	4	28	0.095	50.000	8.000	445	170	67.7
		25.00	4	28	0.115	62.500	10.000	355	165	102.5
		32.00	6	28	0.105	80.000	12.800	280	175	179.7
		40.00	6	28	0.130	100.000	16.000	225	175	278.1
	Steel 850 - 1100 N/mm² U	6.00	3	22	0.020	15.000	2.400	1165	70	2.5
		8.00	4	22	0.030	20.000	3.200	875	105	6.7
		10.00	4	22	0.035	25.000	4.000	700	100	9.8
		12.00	4	22	0.055	30.000	4.800	585	130	18.5
		16.00	4	22	0.075	40.000	6.400	440	130	33.6
		20.00	4	22	0.095	50.000	8.000	350	135	53.2
		25.00	4	22	0.115	62.500	10.000	280	130	80.5
		32.00	6	22	0.105	80.000	12.800	220	140	141.2
		40.00	6	22	0.130	100.000	16.000	175	135	218.5
	Stainless steel [Cr-Ni/1.4301] U	6.00	3	11	0.020	15.000	2.400	585	35	1.3
		8.00	4	11	0.030	20.000	3.200	440	55	3.4
		10.00	4	11	0.035	25.000	4.000	350	50	4.9
		12.00	4	11	0.055	30.000	4.800	290	65	9.2
		16.00	4	11	0.075	40.000	6.400	220	65	16.8
		20.00	4	11	0.095	50.000	8.000	175	65	26.6
		25.00	4	11	0.115	62.500	10.000	140	65	40.3
		32.00	6	11	0.105	80.000	12.800	110	70	70.6
		40.00	6	11	0.130	100.000	16.000	90	70	109.2
	Cast iron (lamellar / spheroidal) U	6.00	3	20	0.020	15.000	2.400	1060	65	2.3
		8.00	4	20	0.030	20.000	3.200	795	95	6.1
		10.00	4	20	0.035	25.000	4.000	635	90	8.9
		12.00	4	20	0.055	30.000	4.800	530	115	16.8
		16.00	4	20	0.075	40.000	6.400	400	120	30.6
		20.00	4	20	0.095	50.000	8.000	320	120	48.4
		25.00	4	20	0.115	62.500	10.000	255	115	73.2
		32.00	6	20	0.105	80.000	12.800	200	125	128.3
		40.00	6	20	0.130	100.000	16.000	160	125	198.6
	Steel < 850 N/mm² U	6.00	3	25	0.020	3.000	6.000	1325	80	1.4
		8.00	4	25	0.025	4.000	8.000	995	100	3.2
		10.00	4	25	0.035	5.000	10.000	795	110	5.6
		12.00	4	25	0.055	6.000	12.000	665	145	10.5
		16.00	4	25	0.070	8.000	16.000	495	140	17.8
		20.00	4	25	0.090	10.000	20.000	400	145	28.6
		25.00	4	25	0.110	12.500	25.000	320	140	43.8
		32.00	6	25	0.095	16.000	32.000	250	140	72.6
		40.00	6	25	0.120	20.000	40.000	200	145	114.6
	Steel 850 - 1100 N/mm² U	6.00	3	18	0.020	3.000	6.000	955	55	1.0
		8.00	4	18	0.025	4.000	8.000	715	70	2.3
		10.00	4	18	0.035	5.000	10.000	575	80	4.0
		12.00	4	18	0.055	6.000	12.000	475	105	7.6
		16.00	4	18	0.070	8.000	16.000	360	100	12.8
		20.00	4	18	0.090	10.000	20.000	285	105	20.6
		25.00	4	18	0.110	12.500	25.000	230	100	31.5
		32.00	6	18	0.095	16.000	32.000	180	100	52.3
		40.00	6	18	0.120	20.000	40.000	145	105	82.5
	Stainless steel [Cr-Ni/1.4301] U	6.00	3	10	0.020	3.000	6.000	530	30	0.6
		8.00	4	10	0.025	4.000	8.000	400	40	1.3
		10.00	4	10	0.035	5.000	10.000	320	45	2.2
		12.00	4	10	0.055	6.000	12.000	265	60	4.2
		16.00	4	10	0.070	8.000	16.000	200	55	7.1
		20.00	4	10	0.090	10.000	20.000	160	55	11.5
		25.00	4	10	0.110	12.500	25.000	125	55	17.5
		32.00	6	10	0.095	16.000	32.000	100	55	29.0
		40.00	6	10	0.120	20.000	40.000	80	55	45.8
	Cast iron (lamellar / spheroidal) U	6.00	3	16	0.020	3.000	6.000	850	50	0.9
		8.00	4	16	0.025	4.000	8.000	635	65	2.0
		10.00	4	16	0.035	5.000	10.000	510	70	3.6
		12.00	4	16	0.055	6.000	12.000	425	95	6.7
		16.00	4	16	0.070	8.000	16.000	320	90	11.4
		20.00	4	16	0.090	10.000	20.000	255	90	18.3
		25.00	4	16	0.110	12.500	25.000	205	90	28.0
		32.00	6	16	0.095	16.000	32.000	160	90	46.4
		40.00	6	16	0.120	20.000	40.000	125	90	73.3

Cylindrical end mills

Profiled NRF, long version

HSS PM/F	λ 25° γ 10°

45°



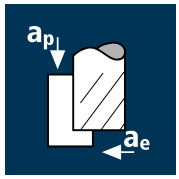
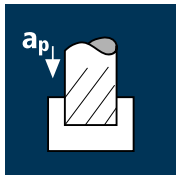
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G)

Example: **Order-N°.** Coating **U** Article-N°. **0665** ø-Code **260**

Ø Code	d_1 k12	d_2 h6	l_1	l_2	l_4	45°	α	z	UNICUT-4X U0665
260	5.00	6.00	68	24.00	31.55	0.40	1.0°	3	●
300	6.00	6.00	68	24.00	-	0.40	0.0°	3	●
342	7.00	10.00	80	30.00	39.50	0.40	2.5°	3	●
391	8.00	8.00	82	38.00	-	0.40	0.0°	4	●
402	8.00	10.00	88	38.00	47.50	0.40	1.0°	4	●
420	9.00	10.00	88	38.00	47.50	0.40	0.0°	4	●
450	10.00	10.00	95	45.00	-	0.40	0.0°	4	●
470	11.00	12.00	102	45.00	56.50	0.40	0.0°	4	●
501	12.00	12.00	110	53.00	-	0.40	0.0°	4	●
540	13.00	12.00	110	53.00	-	0.40	0.0°	4	●
570	14.00	12.00	110	53.00	-	0.40	0.0°	4	●
610	16.00	16.00	123	63.00	-	0.50	0.0°	4	●
640	18.00	16.00	123	63.00	-	0.50	0.0°	4	●
682	20.00	20.00	141	75.00	-	0.50	0.0°	4	●
710	22.00	20.00	141	75.00	-	0.70	0.0°	4	●
772	25.00	25.00	166	90.00	-	0.70	0.0°	4	●
800	28.00	25.00	166	90.00	-	0.70	0.0°	6	●
810	30.00	25.00	166	90.00	-	0.70	0.0°	6	●
832	32.00	32.00	186	106.00	-	0.70	0.0°	6	●
860	36.00	32.00	186	106.00	-	0.90	0.0°	6	●
892	40.00	40.00	217	125.00	-	0.90	0.0°	6	●

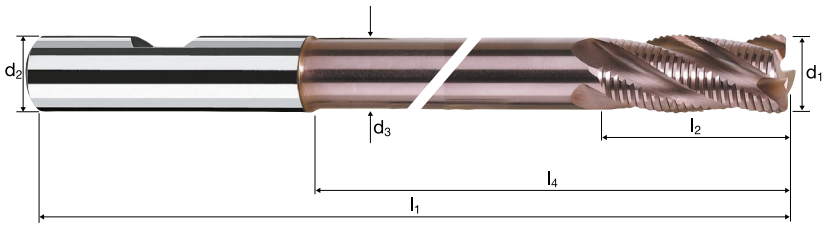
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel 850 - 1100 N/mm² U	6.00	4	27	0.015	6.000	1.200	1430	85	0.6
		8.00	4	27	0.020	8.000	1.600	1075	85	1.1
		10.00	4	27	0.025	10.000	2.000	860	85	1.7
		12.00	4	27	0.035	12.000	2.400	715	100	2.9
		16.00	4	27	0.050	16.000	3.200	535	105	5.5
		20.00	4	27	0.060	20.000	4.000	430	105	8.3
		25.00	4	27	0.080	25.000	5.000	345	110	13.8
	Steel 1100 - 1300 N/mm² U	6.00	4	22	0.015	6.000	1.200	1165	70	0.5
		8.00	4	22	0.020	8.000	1.600	875	70	0.9
		10.00	4	22	0.025	10.000	2.000	700	70	1.4
		12.00	4	22	0.035	12.000	2.400	585	80	2.4
		16.00	4	22	0.050	16.000	3.200	440	90	4.5
		20.00	4	22	0.060	20.000	4.000	350	85	6.7
		25.00	4	22	0.080	25.000	5.000	280	90	11.2
	Cold work tool steel (12% Cr), high alloyed [1.2379] U	6.00	4	16	0.015	6.000	1.200	850	50	0.4
		8.00	4	16	0.020	8.000	1.600	635	50	0.7
		10.00	4	16	0.025	10.000	2.000	510	50	1.0
		12.00	4	16	0.035	12.000	2.400	425	60	1.7
		16.00	4	16	0.050	16.000	3.200	320	65	3.3
		20.00	4	16	0.060	20.000	4.000	255	60	4.9
		25.00	4	16	0.080	25.000	5.000	205	65	8.1
	Cast iron (lamellar / spheroidal) U	6.00	4	24	0.015	6.000	1.200	1275	75	0.6
		8.00	4	24	0.020	8.000	1.600	955	75	1.0
		10.00	4	24	0.025	10.000	2.000	765	75	1.5
		12.00	4	24	0.035	12.000	2.400	635	90	2.6
		16.00	4	24	0.050	16.000	3.200	475	95	4.9
		20.00	4	24	0.060	20.000	4.000	380	90	7.3
		25.00	4	24	0.080	25.000	5.000	305	100	12.2
	Steel 850 - 1100 N/mm² U	6.00	4	24	0.020	3.000	6.000	1275	100	1.8
		8.00	4	24	0.025	4.000	8.000	955	95	3.1
		10.00	4	24	0.030	5.000	10.000	765	90	4.6
		12.00	4	24	0.045	6.000	12.000	635	115	8.3
		16.00	4	24	0.065	8.000	16.000	475	125	15.9
		20.00	4	24	0.080	10.000	20.000	380	120	24.4
		25.00	4	24	0.100	12.500	25.000	305	120	38.2
	Steel 1100 - 1300 N/mm² U	6.00	4	20	0.020	3.000	6.000	1060	85	1.5
		8.00	4	20	0.025	4.000	8.000	795	80	2.5
		10.00	4	20	0.030	5.000	10.000	635	75	3.8
		12.00	4	20	0.045	6.000	12.000	530	95	6.9
		16.00	4	20	0.065	8.000	16.000	400	105	13.2
		20.00	4	20	0.080	10.000	20.000	320	100	20.4
		25.00	4	20	0.100	12.500	25.000	255	100	31.8
	Cold work tool steel (12% Cr), high alloyed [1.2379] U	6.00	4	14	0.020	3.000	6.000	745	60	1.1
		8.00	4	14	0.025	4.000	8.000	555	55	1.8
		10.00	4	14	0.030	5.000	10.000	445	55	2.7
		12.00	4	14	0.045	6.000	12.000	370	65	4.8
		16.00	4	14	0.065	8.000	16.000	280	70	9.3
		20.00	4	14	0.080	10.000	20.000	225	70	14.3
		25.00	4	14	0.100	12.500	25.000	180	70	22.3
	Cast iron (lamellar / spheroidal) U	6.00	4	21	0.020	3.000	6.000	1115	90	1.6
		8.00	4	21	0.025	4.000	8.000	835	85	2.7
		10.00	4	21	0.030	5.000	10.000	670	80	4.0
		12.00	4	21	0.045	6.000	12.000	555	100	7.2
		16.00	4	21	0.065	8.000	16.000	420	110	13.9
		20.00	4	21	0.080	10.000	20.000	335	105	21.4
		25.00	4	21	0.100	12.500	25.000	265	105	33.4

Cylindrical end mills Supracut

Profiled NRC, extra-long version with neck

HSS PM/F	λ 30° γ 12°

45°



Roughing

Finishing

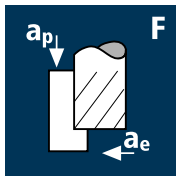
Rm < 850	Rm 850-1100	Rm 1100-1300							GG(G)

Example: **Order-N°.** Coating **U** Article-N°. **0621** ø-Code **300**

UNICUT-4X

U0621

Ø Code	d_1 k8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	z	
300	6.00	6.00	5.50	81	13.00	43.34	44.00	0.40	4	●
391	8.00	8.00	7.40	101	19.00	63.29	64.00	0.40	4	●
450	10.00	10.00	9.20	117	22.00	75.20	76.00	0.40	4	●
501	12.00	12.00	11.00	136	26.00	89.13	90.00	0.40	4	●
610	16.00	16.00	14.50	155	32.00	105.03	106.00	0.50	4	●
682	20.00	20.00	18.00	179	38.00	127.00	128.00	0.50	4	●
772	25.00	25.00	23.00	211	45.00	153.00	154.00	0.70	4	●

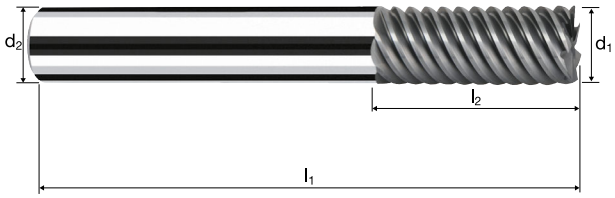
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	3.00	5	160	0.025	8.000	0.030	16975	2120
		4.00	5	160	0.029	11.000	0.030	12730	1845
		5.00	5	160	0.033	13.000	0.060	10185	1680
		6.00	5	160	0.036	13.000	0.060	8490	1530
		8.00	7	160	0.041	19.000	0.100	6365	1825
		10.00	7	160	0.046	22.000	0.100	5095	1640
		12.00	7	160	0.051	26.000	0.120	4245	1515
		16.00	7	160	0.059	32.000	0.120	3185	1315
		20.00	7	160	0.065	38.000	0.150	2545	1160
	Steel 1100 - 1300 N/mm²	3.00	5	140	0.025	8.000	0.030	14855	1855
		4.00	5	140	0.029	11.000	0.030	11140	1615
		5.00	5	140	0.033	13.000	0.060	8915	1470
		6.00	5	140	0.036	13.000	0.060	7425	1335
		8.00	7	140	0.041	19.000	0.100	5570	1600
		10.00	7	140	0.046	22.000	0.100	4455	1435
		12.00	7	140	0.051	26.000	0.120	3715	1325
		16.00	7	140	0.059	32.000	0.120	2785	1150
		20.00	7	140	0.065	38.000	0.150	2230	1015
	Hardened tool steel 52 - 56 HRC	3.00	5	120	0.025	8.000	0.030	12730	1590
		4.00	5	120	0.029	11.000	0.030	9550	1385
		5.00	5	120	0.033	13.000	0.060	7640	1260
		6.00	5	120	0.036	13.000	0.060	6365	1145
		8.00	7	120	0.041	19.000	0.100	4775	1370
		10.00	7	120	0.046	22.000	0.100	3820	1230
		12.00	7	120	0.051	26.000	0.120	3185	1135
		16.00	7	120	0.059	32.000	0.120	2385	985
		20.00	7	120	0.065	38.000	0.150	1910	870
	Hardened tool steel 56 - 60 HRC	3.00	5	80	0.025	8.000	0.030	8490	1060
		4.00	5	80	0.029	11.000	0.030	6365	925
		5.00	5	80	0.033	13.000	0.060	5095	840
		6.00	5	80	0.036	13.000	0.060	4245	765
		8.00	7	80	0.041	19.000	0.100	3185	915
		10.00	7	80	0.046	22.000	0.100	2545	820
		12.00	7	80	0.051	26.000	0.120	2120	760
		16.00	7	80	0.059	32.000	0.120	1590	655
		20.00	7	80	0.065	38.000	0.150	1275	580
	Wrought aluminium Si < 6%	3.00	5	396	0.025	8.000	0.030	42015	5250
		4.00	5	450	0.029	11.000	0.030	35810	5190
		5.00	5	450	0.033	13.000	0.060	28650	4725
		6.00	5	450	0.036	13.000	0.060	23875	4295
		8.00	7	450	0.041	19.000	0.100	17905	5140
		10.00	7	450	0.046	22.000	0.100	14325	4610
		12.00	7	450	0.051	26.000	0.120	11935	4260
		16.00	7	450	0.045	24.000	0.200	8950	2820
		20.00	7	450	0.065	38.000	0.150	7160	3260
	Cast iron (lamellar / spheroidal)	3.00	5	180	0.025	8.000	0.030	19100	2385
		4.00	5	180	0.029	11.000	0.030	14325	2075
		5.00	5	180	0.033	13.000	0.060	11460	1890
		6.00	5	180	0.036	13.000	0.060	9550	1720
		8.00	7	180	0.041	19.000	0.100	7160	2055
		10.00	7	180	0.046	22.000	0.100	5730	1845
		12.00	7	180	0.051	26.000	0.120	4775	1705
		16.00	7	180	0.059	32.000	0.120	3580	1480
		20.00	7	180	0.065	38.000	0.150	2865	1305
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	5	70	0.025	8.000	0.030	7425	930
		4.00	5	70	0.029	11.000	0.030	5570	810
		5.00	5	70	0.033	13.000	0.060	4455	735
		6.00	5	70	0.036	13.000	0.060	3715	670
		8.00	7	70	0.041	19.000	0.100	2785	800
		10.00	7	70	0.046	22.000	0.100	2230	715
		12.00	7	70	0.051	26.000	0.120	1855	665
		16.00	7	70	0.059	32.000	0.120	1395	575
		20.00	7	70	0.065	38.000	0.150	1115	505
	Stainless steel [Cr-Ni/1.4301]	3.00	5	80	0.025	8.000	0.030	8490	1060
		4.00	5	80	0.029	11.000	0.030	6365	925
		5.00	5	80	0.033	13.000	0.060	5095	840
		6.00	5	80	0.036	13.000	0.060	4245	765
		8.00	7	80	0.041	19.000	0.100	3185	915
		10.00	7	80	0.046	22.000	0.100	2545	820
		12.00	7	80	0.051	26.000	0.120	2120	760
		16.00	7	80	0.059	32.000	0.120	1590	655
		20.00	7	80	0.065	38.000	0.150	1275	580

Cylindrical end mills Multicut XF

Finishing, normal version

X-Generation X

HM XA	λ 65° γ 8°
45°	h5



Roughing Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

Example: **Order-N°.** Coating **P** Article-N°. **15250** ø-Code **180**

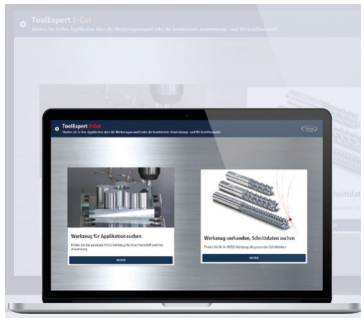
Ø Code	d_1 e8	d_2 h5	l_1	l_2	l_4	45°	α	z	DURO-Si H15250	POLYCHROM P15250
180	3.00	6.00	57	8.00	15.36	-	6.0°	5	●	●
220	4.00	6.00	57	11.00	16.79	-	4.0°	5	●	●
260	5.00	6.00	57	13.00	16.92	-	2.0°	5	●	●
300	6.00	6.00	57	13.00	-	0.15	0.0°	5	●	●
391	8.00	8.00	63	19.00	-	0.15	0.0°	7	●	●
450	10.00	10.00	72	22.00	-	0.20	0.0°	7	●	●
501	12.00	12.00	83	26.00	-	0.20	0.0°	7	●	●
610	16.00	16.00	92	32.00	-	0.20	0.0°	7	●	●
682	20.00	20.00	104	38.00	-	0.20	0.0°	7	●	●

ToolExpert E-Cut

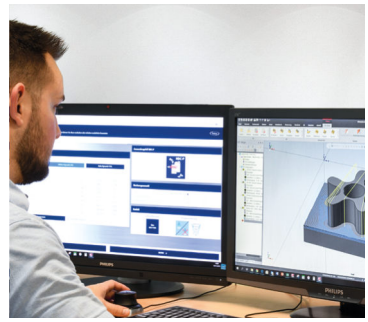
FRAISA's cutting data calculator **ToolExpert E-Cut** provides tool and material-specific cutting data for production and is the basis for precision use of **FRAISA E-Cut** tools.

This innovative software solution is **very user-friendly**: simply select the material, application and tool and the software provides you with the right cutting data. **ToolExpert E-Cut** can then transfer the tool geometry data straight to your CAM system.

Fast, safe and reliable.



Selecting the material, application and tool to obtain the right cutting data



Transferring the cutting data and tool geometry data to the CAM system

To complement existing solutions and for all future applications

EASY TO USE
EFFECTIVE
ECONOMIC

Try out our ToolExpert E-Cut now online – it's simple

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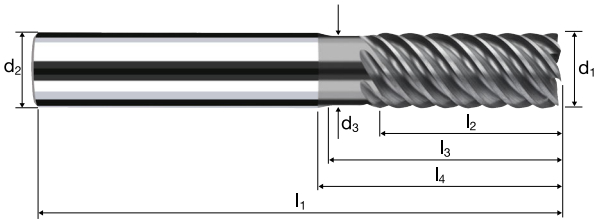
Cylindrical end mills E-Cut

Finishing, normal version

HM MG10	λ 55° γ 10°

new!

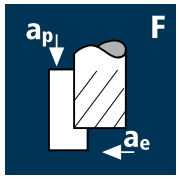


Roughing Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8401** ø-Code **180**

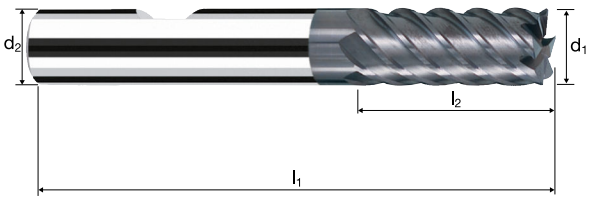
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8401	POLYCHROM P8301
180	3.00	6.00	2.80	57	8.00	14.00	20.37	0.050	4.5°	4		●
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.100	3.0°	5		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.100	1.5°	5		●
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.100	0.0°	6		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	6		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	7		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	7		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	8		●
682	20.00	20.00	19.00	104	40.00	48.23	53.00	0.250	0.0°	8		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	6.00	6	140	0.015	9.000	0.100	7425	670
		8.00	6	140	0.025	12.000	0.100	5570	835
		10.00	6	140	0.030	15.000	0.100	4455	800
		12.00	6	140	0.035	18.000	0.100	3715	780
		16.00	8	140	0.045	24.000	0.200	2785	1005
		20.00	10	140	0.055	30.000	0.200	2230	1225
	Steel 1100 - 1300 N/mm²	6.00	6	120	0.015	9.000	0.100	6365	575
		8.00	6	120	0.025	12.000	0.100	4775	715
		10.00	6	120	0.030	15.000	0.100	3820	690
		12.00	6	120	0.035	18.000	0.100	3185	670
		16.00	8	120	0.045	24.000	0.200	2385	860
		20.00	10	120	0.055	30.000	0.200	1910	1050
	Steel 1300 - 1500 N/mm²	6.00	6	80	0.016	9.000	0.100	4245	405
		8.00	6	80	0.020	12.000	0.100	3185	380
		10.00	6	80	0.026	15.000	0.100	2545	395
		12.00	6	80	0.030	18.000	0.100	2120	380
		16.00	8	80	0.040	24.000	0.200	1590	510
		20.00	10	80	0.050	30.000	0.200	1275	635
	Cast iron (lamellar / spheroidal)	6.00	6	140	0.015	9.000	0.100	7425	670
		8.00	6	140	0.025	12.000	0.100	5570	835
		10.00	6	140	0.030	15.000	0.100	4455	800
		12.00	6	140	0.035	18.000	0.100	3715	780
		16.00	8	140	0.045	24.000	0.200	2785	1005
		20.00	10	140	0.055	30.000	0.200	2230	1225
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	6	60	0.015	9.000	0.100	3185	285
		8.00	6	60	0.025	12.000	0.100	2385	360
		10.00	6	60	0.030	15.000	0.100	1910	345
		12.00	6	60	0.035	18.000	0.100	1590	335
		16.00	8	60	0.045	24.000	0.200	1195	430
		20.00	10	60	0.055	30.000	0.200	955	525
	Unalloyed copper	6.00	6	200	0.015	9.000	0.100	10610	955
		8.00	6	200	0.025	12.000	0.100	7960	1195
		10.00	6	200	0.030	15.000	0.100	6365	1145
		12.00	6	200	0.035	18.000	0.100	5305	1115
		16.00	8	200	0.045	24.000	0.200	3980	1430
		20.00	10	200	0.055	30.000	0.200	3185	1750

Cylindrical end mills Multicut N

Finishing, normal version

HM MG10	λ 45° γ 8°



Roughing

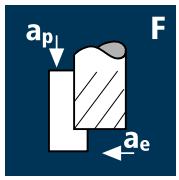
Finishing

ToolSchool

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500					Ti Titanium	GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **5360** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z	POLYCHROM P5360	POLYCHROM P5260
300	6.00	6.00	57	13.00	0.15	6	●	
391	8.00	8.00	63	19.00	0.15	6	●	
450	10.00	10.00	72	22.00	0.20	6	●	
501	12.00	12.00	83	26.00	0.20	6	●	
610	16.00	16.00	92	32.00	0.20	8	●	
682	20.00	20.00	104	38.00	0.20	10	●	

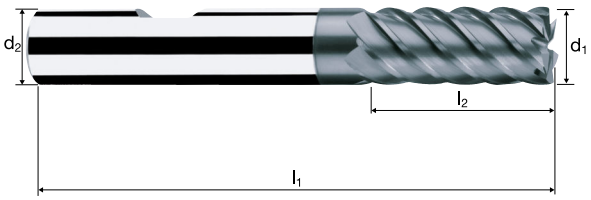
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	6.00	6	150	0.016	9.000	0.100	7960	765
		8.00	6	150	0.020	12.000	0.100	5970	715
		10.00	6	150	0.026	15.000	0.100	4775	745
		12.00	6	150	0.030	18.000	0.100	3980	715
		16.00	6	150	0.040	24.000	0.200	2985	715
		20.00	6	150	0.050	30.000	0.200	2385	715
	Steel 850 - 1100 N/mm²	6.00	6	120	0.016	9.000	0.100	6365	610
		8.00	6	120	0.020	12.000	0.100	4775	575
		10.00	6	120	0.026	15.000	0.100	3820	595
		12.00	6	120	0.030	18.000	0.100	3185	575
		16.00	6	120	0.040	24.000	0.200	2385	575
		20.00	6	120	0.050	30.000	0.200	1910	575
	Steel 1100 - 1300 N/mm²	6.00	6	100	0.016	9.000	0.100	5305	510
		8.00	6	100	0.020	12.000	0.100	3980	475
		10.00	6	100	0.026	15.000	0.100	3185	495
		12.00	6	100	0.030	18.000	0.100	2655	475
		16.00	6	100	0.040	24.000	0.200	1990	475
		20.00	6	100	0.050	30.000	0.200	1590	475
	Cast iron (lamellar / spheroidal)	6.00	6	120	0.016	9.000	0.100	6365	610
		8.00	6	120	0.020	12.000	0.100	4775	575
		10.00	6	120	0.026	15.000	0.100	3820	595
		12.00	6	120	0.030	18.000	0.100	3185	575
		16.00	6	120	0.040	24.000	0.200	2385	575
		20.00	6	120	0.050	30.000	0.200	1910	575
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	6	50	0.016	9.000	0.100	2655	255
		8.00	6	50	0.020	12.000	0.100	1990	240
		10.00	6	50	0.026	15.000	0.100	1590	250
		12.00	6	50	0.030	18.000	0.100	1325	240
		16.00	6	50	0.040	24.000	0.200	995	240
		20.00	6	50	0.050	30.000	0.200	795	240
	Unalloyed copper	6.00	6	180	0.016	9.000	0.100	9550	915
		8.00	6	180	0.020	12.000	0.100	7160	860
		10.00	6	180	0.026	15.000	0.100	5730	895
		12.00	6	180	0.030	18.000	0.100	4775	860
		16.00	6	180	0.040	24.000	0.200	3580	860
		20.00	6	180	0.050	30.000	0.200	2865	860

Cylindrical end mills

Finishing, normal version

Favora® F

HM MG10	λ 45° γ 8°



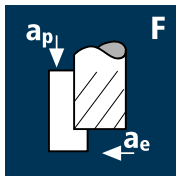
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300						Ti Titanium	GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **45360** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z	POLYCHROM P45360	POLYCHROM P45260
300	6.00	6.00	57	13.00	0.15	6	●	
391	8.00	8.00	63	19.00	0.15	6	●	
450	10.00	10.00	72	22.00	0.20	6	●	
501	12.00	12.00	83	26.00	0.20	6	●	
610	16.00	16.00	92	32.00	0.20	6	●	
682	20.00	20.00	104	38.00	0.20	6	●	

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel 850 - 1100 N/mm² P P	3.00	5	130	0.021	14.000	0.030	13795	1450
		4.00	5	130	0.024	17.000	0.030	10345	1240
		5.00	5	130	0.027	19.000	0.060	8275	1115
		6.00	5	130	0.030	19.000	0.060	6895	1035
		8.00	7	130	0.034	28.000	0.100	5175	1230
		10.00	7	130	0.039	34.000	0.100	4140	1130
		12.00	7	130	0.042	40.000	0.120	3450	1015
		16.00	7	130	0.049	48.000	0.120	2585	885
		20.00	7	130	0.055	56.000	0.150	2070	795
	Steel 1100 - 1300 N/mm² P P	3.00	5	110	0.021	14.000	0.030	11670	1225
		4.00	5	110	0.024	17.000	0.030	8755	1050
		5.00	5	110	0.027	19.000	0.060	7005	945
		6.00	5	110	0.030	19.000	0.060	5835	875
		8.00	7	110	0.034	28.000	0.100	4375	1040
		10.00	7	110	0.039	34.000	0.100	3500	955
		12.00	7	110	0.042	40.000	0.120	2920	860
		16.00	7	110	0.049	48.000	0.120	2190	750
		20.00	7	110	0.055	56.000	0.150	1750	675
	Hardened tool steel 52 - 56 HRC P	3.00	5	100	0.021	14.000	0.030	10610	1115
		4.00	5	100	0.024	17.000	0.030	7960	955
		5.00	5	100	0.027	19.000	0.060	6365	860
		6.00	5	100	0.030	19.000	0.060	5305	795
		8.00	7	100	0.034	28.000	0.100	3980	945
		10.00	7	100	0.039	34.000	0.100	3185	870
		12.00	7	100	0.042	40.000	0.120	2655	780
		16.00	7	100	0.049	48.000	0.120	1990	680
		20.00	7	100	0.055	56.000	0.150	1590	615
	Hardened tool steel 56 - 60 HRC H	3.00	5	60	0.021	14.000	0.030	6365	670
		4.00	5	60	0.024	17.000	0.030	4775	575
		5.00	5	60	0.027	19.000	0.060	3820	515
		6.00	5	60	0.030	19.000	0.060	3185	475
		8.00	7	60	0.034	28.000	0.100	2385	570
		10.00	7	60	0.039	34.000	0.100	1910	520
		12.00	7	60	0.042	40.000	0.120	1590	470
		16.00	7	60	0.049	48.000	0.120	1195	410
		20.00	7	60	0.055	56.000	0.150	955	370
	Wrought aluminium Si < 6% P	3.00	5	360	0.021	14.000	0.030	38195	4010
		4.00	5	360	0.024	17.000	0.030	28650	3440
		5.00	5	360	0.027	19.000	0.060	22920	3095
		6.00	5	360	0.030	19.000	0.060	19100	2865
		8.00	7	360	0.034	28.000	0.100	14325	3410
		10.00	7	360	0.039	34.000	0.100	11460	3130
		12.00	7	360	0.042	40.000	0.120	9550	2805
		16.00	7	360	0.045	40.000	0.250	7160	2255
		20.00	7	360	0.055	56.000	0.150	5730	2205
	Cast iron (lamellar / spheroidal) P P	3.00	5	140	0.021	14.000	0.030	14855	1560
		4.00	5	140	0.024	17.000	0.030	11140	1335
		5.00	5	140	0.027	19.000	0.060	8915	1205
		6.00	5	140	0.030	19.000	0.060	7425	1115
		8.00	7	140	0.034	28.000	0.100	5570	1325
		10.00	7	140	0.039	34.000	0.100	4455	1215
		12.00	7	140	0.042	40.000	0.120	3715	1090
		16.00	7	140	0.049	48.000	0.120	2785	955
		20.00	7	140	0.055	56.000	0.150	2230	860
	Titanium alloys > 300 HB [Ti6Al4V] P	3.00	5	50	0.021	14.000	0.030	5305	555
		4.00	5	50	0.024	17.000	0.030	3980	475
		5.00	5	50	0.027	19.000	0.060	3185	430
		6.00	5	50	0.030	19.000	0.060	2655	400
		8.00	7	50	0.034	28.000	0.100	1990	475
		10.00	7	50	0.039	34.000	0.100	1590	435
		12.00	7	50	0.042	40.000	0.120	1325	390
		16.00	7	50	0.049	48.000	0.120	995	340
		20.00	7	50	0.055	56.000	0.150	795	305
	Stainless steel [Cr-Ni/1.4301] P	3.00	5	60	0.021	14.000	0.030	6365	670
		4.00	5	60	0.024	17.000	0.030	4775	575
		5.00	5	60	0.027	19.000	0.060	3820	515
		6.00	5	60	0.030	19.000	0.060	3185	475
		8.00	7	60	0.034	28.000	0.100	2385	570
		10.00	7	60	0.039	34.000	0.100	1910	520
		12.00	7	60	0.042	40.000	0.120	1590	470
		16.00	7	60	0.049	48.000	0.120	1195	410
		20.00	7	60	0.055	56.000	0.150	955	370

Cylindrical end mills Multicut XF

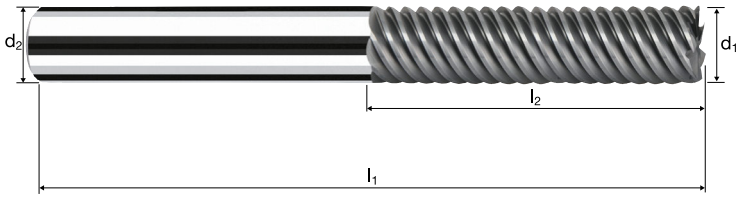
Finishing, medium length version

X-Generation

HM XA	λ 65° γ 8°

45°

h5



Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

Example: **Order-N°.** Coating **P** Article-N°. **15251** ø-Code **180**

Ø Code	d_1 e8	d_2 h5	l_1	l_2	l_4	45°	α	z	DURO-Si H15251	POLYCHROM P15251
180	3.00	6.00	63	14.00	21.56	-	4.5°	5	●	●
220	4.00	6.00	63	17.00	23.09	-	3.0°	5	●	●
260	5.00	6.00	63	19.00	23.22	-	1.5°	5	●	●
300	6.00	6.00	63	19.00	-	0.15	0.0°	5	●	●
391	8.00	8.00	72	28.00	-	0.15	0.0°	7	●	●
450	10.00	10.00	84	34.00	-	0.20	0.0°	7	●	●
501	12.00	12.00	97	40.00	-	0.20	0.0°	7	●	●
610	16.00	16.00	108	48.00	-	0.20	0.0°	7	●	●
682	20.00	20.00	122	56.00	-	0.20	0.0°	7	●	●

ToolExpert E-Cut

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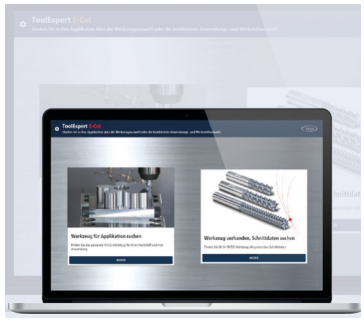
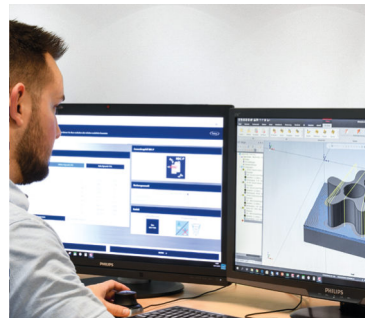
Fast, safe and reliable.



Selecting the material, application and tool to obtain the right cutting data



Transferring the cutting data and tool geometry data to the CAM system

To complement existing solutions and for all future applications

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EFFECTIVE
ECONOMIC

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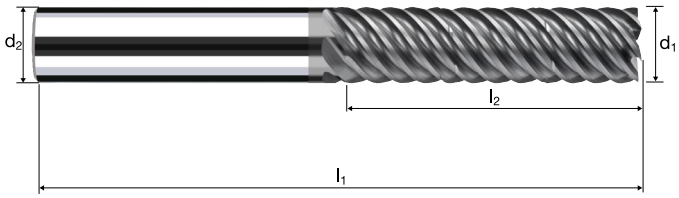
Cylindrical end mills E-Cut

Finishing, medium length version with chip breaker

HM MG10 | λ 55° γ 10°

new!



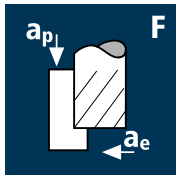
Roughing Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8311** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r	α	z	POLYCHROM P8311
180*	3.00	6.00	63	11.00	20.26	0.050	4.5°	4	●
220*	4.00	6.00	63	13.00	21.39	0.100	3.5°	5	●
260*	5.00	6.00	63	16.00	23.52	0.100	1.5°	5	●
300	6.00	6.00	63	21.00	-	0.100	0.0°	6	●
391	8.00	8.00	72	31.00	-	0.150	0.0°	6	●
450	10.00	10.00	84	37.00	-	0.200	0.0°	7	●
501	12.00	12.00	97	44.00	-	0.200	0.0°	7	●
610	16.00	16.00	108	53.00	-	0.200	0.0°	8	●
682	20.00	20.00	122	62.00	-	0.250	0.0°	8	●

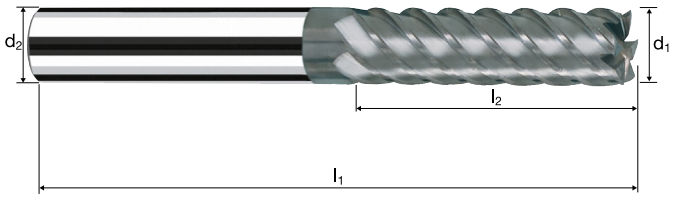
* without chip breaker only

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	6.00	6	120	0.015	15.000	0.150	6365	575
		8.00	6	120	0.025	20.000	0.150	4775	715
		10.00	6	120	0.030	25.000	0.150	3820	690
		12.00	6	120	0.035	30.000	0.150	3185	670
		16.00	8	120	0.045	40.000	0.250	2385	860
		20.00	10	120	0.055	50.000	0.250	1910	1050
	Steel 1100 - 1300 N/mm²	6.00	6	100	0.015	15.000	0.150	5305	475
		8.00	6	100	0.025	20.000	0.150	3980	595
		10.00	6	100	0.030	25.000	0.150	3185	575
		12.00	6	100	0.035	30.000	0.150	2655	555
		16.00	8	100	0.045	40.000	0.250	1990	715
		20.00	10	100	0.055	50.000	0.250	1590	875
	Steel 1300 - 1500 N/mm²	6.00	6	60	0.016	15.000	0.150	3185	305
		8.00	6	60	0.020	20.000	0.150	2385	285
		10.00	6	60	0.026	25.000	0.150	1910	300
		12.00	6	60	0.030	30.000	0.150	1590	285
		16.00	8	60	0.040	40.000	0.250	1195	380
		20.00	10	60	0.050	50.000	0.250	955	475
	Cast iron (lamellar / spheroidal)	6.00	6	120	0.015	15.000	0.150	6365	575
		8.00	6	120	0.025	20.000	0.150	4775	715
		10.00	6	120	0.030	25.000	0.150	3820	690
		12.00	6	120	0.035	30.000	0.150	3185	670
		16.00	8	120	0.045	40.000	0.250	2385	860
		20.00	10	120	0.055	50.000	0.250	1910	1050
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	6	50	0.015	15.000	0.150	2655	240
		8.00	6	50	0.025	20.000	0.150	1990	300
		10.00	6	50	0.030	25.000	0.150	1590	285
		12.00	6	50	0.035	30.000	0.150	1325	280
		16.00	8	50	0.045	40.000	0.250	995	360
		20.00	10	50	0.055	50.000	0.250	795	440
	Unalloyed copper	6.00	6	160	0.015	15.000	0.150	8490	765
		8.00	6	160	0.025	20.000	0.150	6365	955
		10.00	6	160	0.030	25.000	0.150	5095	915
		12.00	6	160	0.035	30.000	0.150	4245	890
		16.00	8	160	0.045	40.000	0.250	3185	1145
		20.00	10	160	0.055	50.000	0.250	2545	1400

Cylindrical end mills Multicut N

Finishing, medium length version

HM MG10	λ 45° γ 8°



Roughing

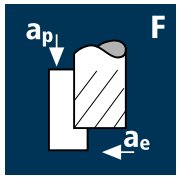
Finishing

ToolSchool

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500					Ti Titanium	GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **5265** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z		POLYCHROM P5265
300	6.00	6.00	63	19.00	0.15	6		●
391	8.00	8.00	72	28.00	0.15	6		●
450	10.00	10.00	84	34.00	0.20	6		●
501	12.00	12.00	97	40.00	0.20	6		●
610	16.00	16.00	108	48.00	0.20	8		●
682	20.00	20.00	122	56.00	0.20	10		●

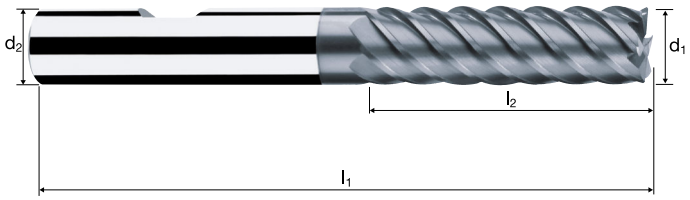
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	6.00	6	120	0.016	15.000	0.150	6365	610
		8.00	6	120	0.020	20.000	0.150	4775	575
		10.00	6	120	0.026	25.000	0.150	3820	595
		12.00	6	120	0.030	30.000	0.150	3185	575
		16.00	6	120	0.040	40.000	0.250	2385	575
		20.00	6	120	0.050	50.000	0.250	1910	575
	Steel 850 - 1100 N/mm²	6.00	6	100	0.016	15.000	0.150	5305	510
		8.00	6	100	0.020	20.000	0.150	3980	475
		10.00	6	100	0.026	25.000	0.150	3185	495
		12.00	6	100	0.030	30.000	0.150	2655	475
		16.00	6	100	0.040	40.000	0.250	1990	475
		20.00	6	100	0.050	50.000	0.250	1590	475
	Steel 1100 - 1300 N/mm²	6.00	6	80	0.016	15.000	0.150	4245	405
		8.00	6	80	0.020	20.000	0.150	3185	380
		10.00	6	80	0.026	25.000	0.150	2545	395
		12.00	6	80	0.030	30.000	0.150	2120	380
		16.00	6	80	0.040	40.000	0.250	1590	380
		20.00	6	80	0.050	50.000	0.250	1275	380
	Cast iron (lamellar / spheroidal)	6.00	6	100	0.016	15.000	0.150	5305	510
		8.00	6	100	0.020	20.000	0.150	3980	475
		10.00	6	100	0.026	25.000	0.150	3185	495
		12.00	6	100	0.030	30.000	0.150	2655	475
		16.00	6	100	0.040	40.000	0.250	1990	475
		20.00	6	100	0.050	50.000	0.250	1590	475
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	6	40	0.016	15.000	0.150	2120	205
		8.00	6	40	0.020	20.000	0.150	1590	190
		10.00	6	40	0.026	25.000	0.150	1275	200
		12.00	6	40	0.030	30.000	0.150	1060	190
		16.00	6	40	0.040	40.000	0.250	795	190
		20.00	6	40	0.050	50.000	0.250	635	190
	Unalloyed copper	6.00	6	150	0.016	15.000	0.150	7960	765
		8.00	6	150	0.020	20.000	0.150	5970	715
		10.00	6	150	0.026	25.000	0.150	4775	745
		12.00	6	150	0.030	30.000	0.150	3980	715
		16.00	6	150	0.040	40.000	0.250	2985	715
		20.00	6	150	0.050	50.000	0.250	2385	715

Cylindrical end mills

Finishing, medium length version

Favora® F

HM MG10	λ 45° γ 8°



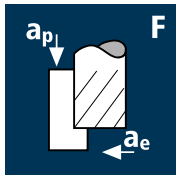
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300						Ti Titanium	GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **45362** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z	POLYCHROM P45362	POLYCHROM P45262
300	6.00	6.00	63	19.00	0.15	6	●	
391	8.00	8.00	72	28.00	0.15	6	●	
450	10.00	10.00	84	34.00	0.20	6	●	
501	12.00	12.00	97	40.00	0.20	6	●	
610	16.00	16.00	108	48.00	0.20	6	●	
682	20.00	20.00	122	56.00	0.20	6	●	

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	6.00	5	100	0.028	26.000	0.060	5305	745
		8.00	7	100	0.032	36.000	0.100	3980	890
		10.00	7	100	0.036	45.000	0.100	3185	800
		12.00	7	100	0.039	53.000	0.120	2655	725
		16.00	7	100	0.045	63.000	0.120	1990	625
		20.00	7	100	0.050	75.000	0.150	1590	555
	Steel 1100 - 1300 N/mm²	6.00	5	90	0.028	26.000	0.060	4775	670
		8.00	7	90	0.032	36.000	0.100	3580	800
		10.00	7	90	0.036	45.000	0.100	2865	720
		12.00	7	90	0.039	53.000	0.120	2385	650
		16.00	7	90	0.045	63.000	0.120	1790	565
		20.00	7	90	0.050	75.000	0.150	1430	500
	Hardened tool steel 52 - 56 HRC	6.00	5	80	0.028	26.000	0.060	4245	595
		8.00	7	80	0.032	36.000	0.100	3185	715
		10.00	7	80	0.036	45.000	0.100	2545	640
		12.00	7	80	0.039	53.000	0.120	2120	580
		16.00	7	80	0.045	63.000	0.120	1590	500
		20.00	7	80	0.050	75.000	0.150	1275	445
	Hardened tool steel 56 - 60 HRC	6.00	5	50	0.028	26.000	0.060	2655	370
		8.00	7	50	0.032	36.000	0.100	1990	445
		10.00	7	50	0.036	45.000	0.100	1590	400
		12.00	7	50	0.039	53.000	0.120	1325	360
		16.00	7	50	0.045	63.000	0.120	995	315
		20.00	7	50	0.050	75.000	0.150	795	280
	Wrought aluminium Si < 6%	6.00	5	290	0.028	26.000	0.060	15385	2155
		8.00	7	290	0.032	36.000	0.100	11540	2585
		10.00	7	290	0.036	45.000	0.100	9230	2325
		12.00	7	290	0.039	53.000	0.120	7690	2100
		16.00	7	360	0.045	56.000	0.250	7160	2255
		20.00	7	290	0.050	75.000	0.150	4615	1615
	Cast iron (lamellar / spheroidal)	6.00	5	110	0.028	26.000	0.060	5835	815
		8.00	7	110	0.032	36.000	0.100	4375	980
		10.00	7	110	0.036	45.000	0.100	3500	880
		12.00	7	110	0.039	53.000	0.120	2920	795
		16.00	7	110	0.045	63.000	0.120	2190	690
		20.00	7	110	0.050	75.000	0.150	1750	615
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	5	40	0.028	26.000	0.060	2120	295
		8.00	7	40	0.032	36.000	0.100	1590	355
		10.00	7	40	0.036	45.000	0.100	1275	320
		12.00	7	40	0.039	53.000	0.120	1060	290
		16.00	7	40	0.045	63.000	0.120	795	250
		20.00	7	40	0.050	75.000	0.150	635	225
	Stainless steel [Cr-Ni/1.4301]	6.00	5	50	0.028	26.000	0.060	2655	370
		8.00	7	50	0.032	36.000	0.100	1990	445
		10.00	7	50	0.036	45.000	0.100	1590	400
		12.00	7	50	0.039	53.000	0.120	1325	360
		16.00	7	50	0.045	63.000	0.120	995	315
		20.00	7	50	0.050	75.000	0.150	795	280

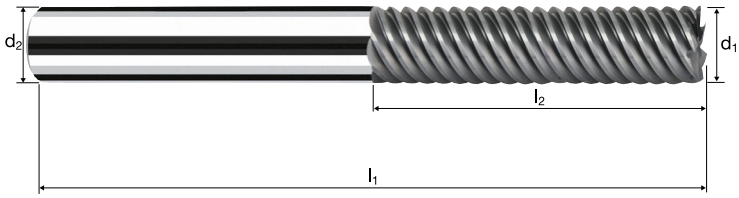
Cylindrical end mills Multicut XF

Finishing, long version

X-Generation X

HM XA	λ 65° γ 8°

45° h5

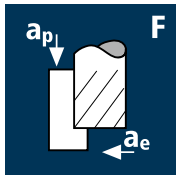


Roughing Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

Example: **Order-N°.** Coating **P** Article-N°. **15254** ø-Code **300**

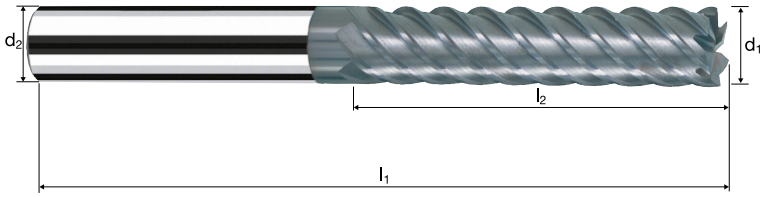
Ø Code	d_1 e8	d_2 h5	l_1	l_2	45°	z	DURO-Si H15254	POLYCHROM P15254
300	6.00	6.00	70	26.00	0.15	5	●	●
391	8.00	8.00	80	36.00	0.15	7	●	●
450	10.00	10.00	100	45.00	0.20	7	●	●
501	12.00	12.00	110	53.00	0.20	7	●	●
610	16.00	16.00	123	63.00	0.20	7	●	●
682	20.00	20.00	141	75.00	0.20	7	●	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min-1]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	10.00	6	30	0.026	40.000	0.150	955	150
		12.00	6	30	0.030	48.000	0.150	795	145
		16.00	8	30	0.040	55.000	0.250	595	190
		20.00	10	30	0.050	80.000	0.250	475	240
		25.00	12	30	0.062	100.000	0.250	380	285
	Steel 1100 - 1300 N/mm²	10.00	6	20	0.026	40.000	0.150	635	100
		12.00	6	20	0.030	48.000	0.150	530	95
		16.00	8	20	0.040	55.000	0.250	400	125
		20.00	10	20	0.050	80.000	0.250	320	160
		25.00	12	20	0.062	100.000	0.250	255	190
	Cast iron (lamellar / spheroidal)	10.00	6	30	0.026	40.000	0.150	955	150
		12.00	6	30	0.030	48.000	0.150	795	145
		16.00	8	30	0.040	55.000	0.250	595	190
		20.00	10	30	0.050	80.000	0.250	475	240
		25.00	12	30	0.062	100.000	0.250	380	285
	Titanium alloys > 300 HB [Ti6Al4V]	10.00	6	20	0.026	40.000	0.150	635	100
		12.00	6	20	0.030	48.000	0.150	530	95
		16.00	8	20	0.040	55.000	0.250	400	125
		20.00	10	20	0.050	80.000	0.250	320	160
		25.00	12	20	0.062	100.000	0.250	255	190
	Unalloyed copper	10.00	6	30	0.026	40.000	0.150	955	150
		12.00	6	30	0.030	48.000	0.150	795	145
		16.00	8	30	0.040	55.000	0.250	595	190
		20.00	10	30	0.050	80.000	0.250	475	240
		25.00	12	30	0.062	100.000	0.250	380	285

Cylindrical end mills Multicut N

Finishing, long version

HM MG10	λ 45° γ 8°



Roughing

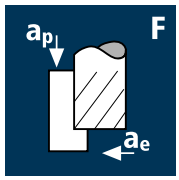
Finishing

ToolSchool

	Rm 850-1100	Rm 1100-1300						Ti Titanium	GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **5268** ø-Code **450**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z	POLYCHROM P5268
450	10.00	10.00	100	45.00	0.20	6	●
501	12.00	12.00	110	53.00	0.20	6	●
610	16.00	16.00	123	63.00	0.20	8	●
615	16.00	16.00	135	80.00	0.20	8	●
682	20.00	20.00	141	75.00	0.20	10	●
685	20.00	20.00	166	100.00	0.20	10	●
688	20.00	20.00	191	125.00	0.20	10	●
772	25.00	25.00	255	175.00	0.25	12	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	6.00	5	80	0.026	32.000	0.060	4245	550
		8.00	7	80	0.030	42.000	0.100	3185	670
		10.00	7	80	0.033	53.000	0.100	2545	590
		12.00	7	80	0.036	63.000	0.120	2120	535
		16.00	7	80	0.042	84.000	0.120	1590	470
		20.00	7	80	0.047	105.000	0.150	1275	420
	Steel 1100 - 1300 N/mm²	6.00	5	70	0.026	32.000	0.060	3715	485
		8.00	7	70	0.030	42.000	0.100	2785	585
		10.00	7	70	0.033	53.000	0.100	2230	515
		12.00	7	70	0.036	63.000	0.120	1855	470
		16.00	7	70	0.042	84.000	0.120	1395	410
		20.00	7	70	0.047	105.000	0.150	1115	365
	Hardened tool steel 52 - 56 HRC	6.00	5	60	0.026	32.000	0.060	3185	415
		8.00	7	60	0.030	42.000	0.100	2385	500
		10.00	7	60	0.033	53.000	0.100	1910	440
		12.00	7	60	0.036	63.000	0.120	1590	400
		16.00	7	60	0.042	84.000	0.120	1195	350
		20.00	7	60	0.047	105.000	0.150	955	315
	Hardened tool steel 56 - 60 HRC	6.00	5	40	0.026	32.000	0.060	2120	275
		8.00	7	40	0.030	42.000	0.100	1590	335
		10.00	7	40	0.033	53.000	0.100	1275	295
		12.00	7	40	0.036	63.000	0.120	1060	265
		16.00	7	40	0.042	84.000	0.120	795	235
		20.00	7	40	0.047	105.000	0.150	635	210
	Wrought aluminium Si < 6%	6.00	5	230	0.026	32.000	0.060	12200	1585
		8.00	7	230	0.030	42.000	0.100	9150	1920
		10.00	7	230	0.033	53.000	0.100	7320	1690
		12.00	7	230	0.036	63.000	0.120	6100	1535
		20.00	7	230	0.047	105.000	0.150	3660	1205
	Cast iron (lamellar / spheroidal)	6.00	5	90	0.026	32.000	0.060	4775	620
		8.00	7	90	0.030	42.000	0.100	3580	750
		10.00	7	90	0.033	53.000	0.100	2865	660
		12.00	7	90	0.036	63.000	0.120	2385	600
		16.00	7	90	0.042	84.000	0.120	1790	525
		20.00	7	90	0.047	105.000	0.150	1430	470
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	5	30	0.026	32.000	0.060	1590	205
		8.00	7	30	0.030	42.000	0.100	1195	250
		10.00	7	30	0.033	53.000	0.100	955	220
		12.00	7	30	0.036	63.000	0.120	795	200
		16.00	7	30	0.042	84.000	0.120	595	175
		20.00	7	30	0.047	105.000	0.150	475	155
	Stainless steel [Cr-Ni/1.4301]	6.00	5	40	0.026	32.000	0.060	2120	275
		8.00	7	40	0.030	42.000	0.100	1590	335
		10.00	7	40	0.033	53.000	0.100	1275	295
		12.00	7	40	0.036	63.000	0.120	1060	265
		16.00	7	40	0.042	84.000	0.120	795	235
		20.00	7	40	0.047	105.000	0.150	635	210

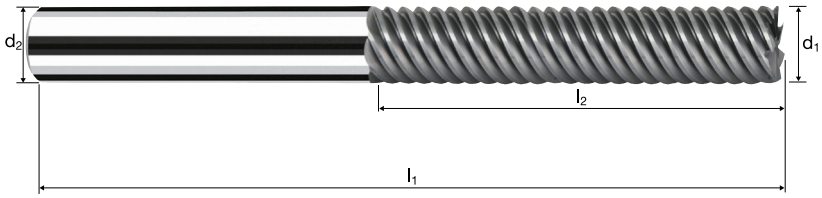
Cylindrical end mills Multicut XF

Finishing, extra-long version 5.2xd

HM XA	λ 65° γ 8°

45° h5

new!



Roughing Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

Example: **Order-N°.** Coating **P** Article-N°. **8521** ø-Code **300**

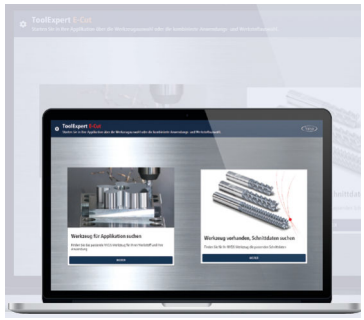
Ø Code	d_1 e8	d_2 h5	l_1	l_2	45°	z	DURO-Si H8521	POLYCHROM P8521
300	6.00	6.00	73	32.00	0.15	5	●	●
391	8.00	8.00	84	42.00	0.15	7	●	●
450	10.00	10.00	100	53.00	0.20	7	●	●
501	12.00	12.00	117	63.00	0.20	7	●	●
610	16.00	16.00	144	84.00	0.20	7	●	●
682	20.00	20.00	169	105.00	0.20	7	●	●

ToolExpert E-Cut

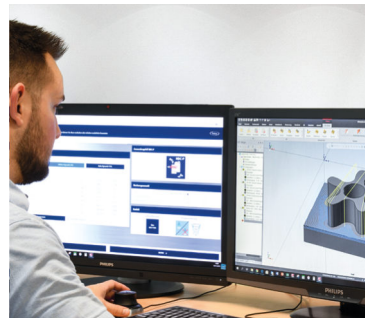
FRAISA's cutting data calculator **ToolExpert E-Cut** provides tool and material-specific cutting data for production and is the basis for precision use of **FRAISA E-Cut** tools.

This innovative software solution is **very user-friendly**: simply select the material, application and tool and the software provides you with the right cutting data. **ToolExpert E-Cut** can then transfer the tool geometry data straight to your CAM system.

Fast, safe and reliable.



Selecting the material, application and tool to obtain the right cutting data



Transferring the cutting data and tool geometry data to the CAM system

To complement existing solutions and for all future applications

EASY TO USE
EFFECTIVE
ECONOMIC

Try out our ToolExpert E-Cut now online – it's simple

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Cylindrical end mills E-Cut

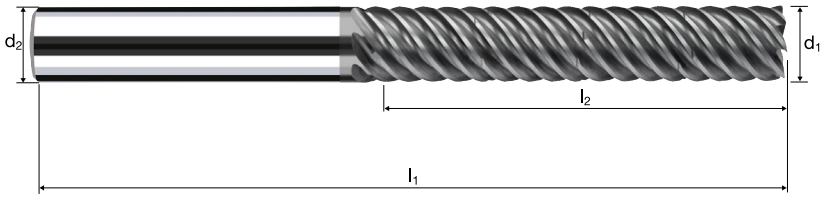
Finishing, extra-long version 5.2xd with chip breaker

HM
MG10

λ 55°
γ 10°

r

new!



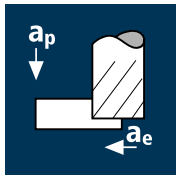
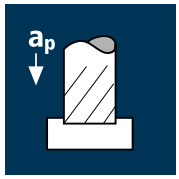
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8321** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	r	z		POLYCHROM P8321
300	6.00	6.00	73	32.00	0.100	6		●
391	8.00	8.00	84	42.00	0.150	6		●
450	10.00	10.00	100	53.00	0.200	7		●
501	12.00	12.00	117	63.00	0.200	7		●
610	16.00	16.00	144	84.00	0.200	8		●
682	20.00	20.00	169	105.00	0.250	8		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.008	0.033	0.040	41380	625	0.8
		0.30	2	40	0.011	0.050	0.060	42440	965	2.9
		0.40	2	53	0.015	0.067	0.080	42175	1275	6.8
		0.50	2	66	0.019	0.083	0.100	42015	1590	13.2
		0.60	2	79	0.023	0.100	0.120	41910	1900	22.8
		0.80	2	106	0.030	0.134	0.160	42175	2550	54.7
		1.00	2	132	0.038	0.167	0.200	42015	3175	106.1
		1.50	2	140	0.057	0.250	0.300	29710	3370	252.7
		2.00	2	140	0.076	0.334	0.400	22280	3370	450.1
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.007	0.033	0.040	41380	595	0.8
		0.30	2	40	0.011	0.050	0.060	42440	915	2.8
		0.40	2	53	0.014	0.067	0.080	42175	1215	6.5
		0.50	2	66	0.018	0.083	0.100	42015	1515	12.6
		0.60	2	79	0.022	0.100	0.120	41910	1810	21.7
		0.80	2	106	0.029	0.134	0.160	42175	2430	52.1
		1.00	2	120	0.036	0.167	0.200	38195	2750	91.9
		1.50	2	120	0.054	0.250	0.300	25465	2750	206.3
		2.00	2	120	0.072	0.334	0.400	19100	2750	367.4
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.006	0.033	0.040	41380	495	0.7
		0.30	2	40	0.009	0.050	0.060	42440	765	2.3
		0.40	2	53	0.012	0.067	0.080	42175	1010	5.4
		0.50	2	66	0.015	0.083	0.100	42015	1260	10.5
		0.60	2	79	0.018	0.100	0.120	41910	1510	18.1
		0.80	2	100	0.024	0.134	0.160	39790	1910	40.9
		1.00	2	100	0.030	0.167	0.200	31830	1910	63.8
		1.50	2	100	0.045	0.250	0.300	21220	1910	143.2
		2.00	2	100	0.060	0.334	0.400	15915	1910	255.2
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.005	0.033	0.040	41380	445	0.6
		0.30	2	40	0.008	0.050	0.060	42440	690	2.1
		0.40	2	53	0.011	0.067	0.080	42175	910	4.9
		0.50	2	60	0.014	0.083	0.100	38195	1030	8.6
		0.60	2	60	0.016	0.100	0.120	31830	1030	12.4
		0.80	2	60	0.022	0.134	0.160	23875	1030	22.1
		1.00	2	60	0.027	0.167	0.200	19100	1030	34.4
		1.50	2	60	0.041	0.250	0.300	12730	1030	77.3
		2.00	2	60	0.054	0.334	0.400	9550	1030	137.8
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.004	0.013	0.200	41380	365	0.9
		0.30	2	40	0.007	0.019	0.300	42440	560	3.2
		0.40	2	53	0.009	0.025	0.400	42175	740	7.4
		0.50	2	66	0.011	0.032	0.500	42015	925	14.8
		0.60	2	79	0.013	0.038	0.600	41910	1105	25.2
		0.80	2	106	0.018	0.051	0.800	42175	1485	60.6
		1.00	2	120	0.022	0.064	1.000	38195	1680	107.6
		1.50	2	120	0.033	0.095	1.500	25465	1680	239.5
		2.00	2	120	0.044	0.127	2.000	19100	1680	426.9
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.004	0.013	0.200	41380	365	0.9
		0.30	2	40	0.007	0.019	0.300	42440	560	3.2
		0.40	2	53	0.009	0.025	0.400	42175	740	7.4
		0.50	2	66	0.011	0.032	0.500	42015	925	14.8
		0.60	2	79	0.013	0.038	0.600	41910	1105	25.2
		0.80	2	100	0.018	0.051	0.800	39790	1400	57.1
		1.00	2	100	0.022	0.064	1.000	31830	1400	89.6
		1.50	2	100	0.033	0.095	1.500	21220	1400	199.6
		2.00	2	100	0.044	0.127	2.000	15915	1400	355.7
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.004	0.013	0.200	41380	330	0.9
		0.30	2	40	0.006	0.019	0.300	42440	510	2.9
		0.40	2	53	0.008	0.025	0.400	42175	675	6.7
		0.50	2	66	0.010	0.032	0.500	42015	840	13.4
		0.60	2	79	0.012	0.038	0.600	41910	1005	22.9
		0.80	2	80	0.016	0.051	0.800	31830	1020	41.6
		1.00	2	80	0.020	0.064	1.000	25465	1020	65.2
		1.50	2	80	0.030	0.095	1.500	16975	1020	145.1
		2.00	2	80	0.040	0.127	2.000	12730	1020	258.7
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.004	0.013	0.200	41380	300	0.8
		0.30	2	40	0.005	0.019	0.300	42440	460	2.6
		0.40	2	40	0.007	0.025	0.400	31830	460	4.6
		0.50	2	40	0.009	0.032	0.500	25465	460	7.3
		0.60	2	40	0.011	0.038	0.600	21220	460	10.5
		0.80	2	40	0.014	0.051	0.800	15915	460	18.7
		1.00	2	40	0.018	0.064	1.000	12730	460	29.3
		1.50	2	40	0.027	0.095	1.500	8490	460	65.3
		2.00	2	40	0.036	0.127	2.000	6365	460	116.4

Cylindrical end mills MicroX

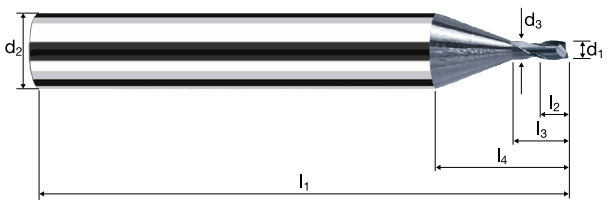
Shank ø 6mm, cylindrical neck, 1xd

X-Generation

HM
XA

λ 25°
γ -10°

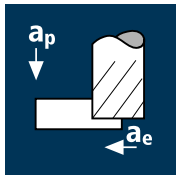
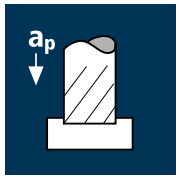
45°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6500** ø-Code **010**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL X6500
010	0.10	6.00	0.09	57	0.10	0.10	17.27	-	15.0°	2	●
020	0.20	6.00	0.18	57	0.20	0.20	17.10	-	15.0°	2	●
030	0.30	6.00	0.25	57	0.30	0.30	16.94	-	15.0°	2	●
040	0.40	6.00	0.35	57	0.40	0.40	16.78	-	14.5°	2	●
050	0.50	6.00	0.45	57	0.50	0.50	11.50	-	14.5°	2	●
060	0.60	6.00	0.55	57	0.60	0.60	11.43	-	14.5°	2	●
080	0.80	6.00	0.75	57	0.80	0.80	11.30	-	14.0°	2	●
100	1.00	6.00	0.95	57	1.00	1.00	11.19	0.07	14.0°	2	●
120	1.50	6.00	1.40	57	1.50	1.50	10.86	0.07	13.0°	2	●
140	2.00	6.00	1.90	57	2.00	2.00	10.52	0.10	12.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.003	0.016	0.040	41380	210	0.1
		0.30	2	40	0.003	0.024	0.060	42440	215	0.3
		0.40	2	53	0.004	0.032	0.080	42175	320	0.8
		0.50	2	66	0.005	0.040	0.100	42015	425	1.7
		0.60	2	79	0.006	0.048	0.120	41910	530	3.0
		0.80	2	106	0.009	0.065	0.160	42175	745	7.7
		1.00	2	132	0.010	0.081	0.200	42015	845	13.7
		1.50	2	140	0.015	0.121	0.300	29710	900	32.6
		2.00	2	140	0.020	0.162	0.400	22280	900	58.2
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.002	0.016	0.040	41380	200	0.1
		0.30	2	40	0.002	0.024	0.060	42440	205	0.3
		0.40	2	53	0.004	0.032	0.080	42175	305	0.8
		0.50	2	66	0.005	0.040	0.100	42015	405	1.6
		0.60	2	79	0.006	0.048	0.120	41910	505	2.9
		0.80	2	106	0.008	0.065	0.160	42175	710	7.4
		1.00	2	120	0.010	0.081	0.200	38195	735	11.9
		1.50	2	120	0.014	0.121	0.300	25465	735	26.6
		2.00	2	120	0.019	0.162	0.400	19100	735	47.5
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.002	0.016	0.040	41380	165	0.1
		0.30	2	40	0.002	0.024	0.060	42440	170	0.2
		0.40	2	53	0.003	0.032	0.080	42175	255	0.6
		0.50	2	66	0.004	0.040	0.100	42015	335	1.3
		0.60	2	79	0.005	0.048	0.120	41910	420	2.4
		0.80	2	100	0.007	0.065	0.160	39790	555	5.8
		1.00	2	100	0.008	0.081	0.200	31830	510	8.3
		1.50	2	100	0.012	0.121	0.300	21220	510	18.5
		2.00	2	100	0.016	0.162	0.400	15915	510	33.0
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.002	0.016	0.040	41380	150	0.1
		0.30	2	40	0.002	0.024	0.060	42440	155	0.2
		0.40	2	53	0.003	0.032	0.080	42175	230	0.6
		0.50	2	60	0.004	0.040	0.100	38195	275	1.1
		0.60	2	60	0.004	0.048	0.120	31830	285	1.7
		0.80	2	60	0.006	0.065	0.160	23875	300	3.1
		1.00	2	60	0.007	0.081	0.200	19100	275	4.5
		1.50	2	60	0.011	0.121	0.300	12730	275	10.0
		2.00	2	60	0.014	0.162	0.400	9550	275	17.8
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.006	0.200	41380	90	0.1
		0.30	2	40	0.002	0.009	0.300	42440	185	0.5
		0.40	2	53	0.003	0.013	0.400	42175	280	1.4
		0.50	2	66	0.003	0.016	0.500	42015	275	2.2
		0.60	2	79	0.004	0.019	0.600	41910	370	4.2
		0.80	2	106	0.007	0.025	0.800	42175	555	11.1
		1.00	2	120	0.008	0.031	1.000	38195	590	18.2
		1.50	2	120	0.011	0.047	1.500	25465	560	39.5
		2.00	2	120	0.015	0.063	2.000	19100	590	74.1
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.006	0.200	41380	90	0.1
		0.30	2	40	0.002	0.009	0.300	42440	185	0.5
		0.40	2	53	0.003	0.013	0.400	42175	280	1.4
		0.50	2	66	0.003	0.016	0.500	42015	275	2.2
		0.60	2	79	0.004	0.019	0.600	41910	370	4.2
		0.80	2	100	0.007	0.025	0.800	39790	525	10.5
		1.00	2	100	0.008	0.031	1.000	31830	490	15.2
		1.50	2	100	0.011	0.047	1.500	21220	465	32.9
		2.00	2	100	0.015	0.063	2.000	15915	490	61.8
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.006	0.200	41380	85	0.1
		0.30	2	40	0.002	0.009	0.300	42440	170	0.5
		0.40	2	53	0.003	0.013	0.400	42175	255	1.3
		0.50	2	66	0.003	0.016	0.500	42015	250	2.0
		0.60	2	79	0.004	0.019	0.600	41910	335	3.8
		0.80	2	80	0.006	0.025	0.800	31830	380	7.6
		1.00	2	80	0.007	0.031	1.000	25465	355	11.1
		1.50	2	80	0.010	0.047	1.500	16975	340	23.9
		2.00	2	80	0.014	0.063	2.000	12730	355	44.9
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.006	0.200	41380	75	0.1
		0.30	2	40	0.002	0.009	0.300	42440	155	0.4
		0.40	2	40	0.003	0.013	0.400	31830	170	0.9
		0.50	2	40	0.003	0.016	0.500	25465	140	1.1
		0.60	2	40	0.004	0.019	0.600	21220	155	1.7
		0.80	2	40	0.005	0.025	0.800	15915	170	3.4
		1.00	2	40	0.006	0.031	1.000	12730	160	5.0
		1.50	2	40	0.009	0.047	1.500	8490	155	10.8
		2.00	2	40	0.013	0.063	2.000	6365	160	20.2

Cylindrical end mills MicroX

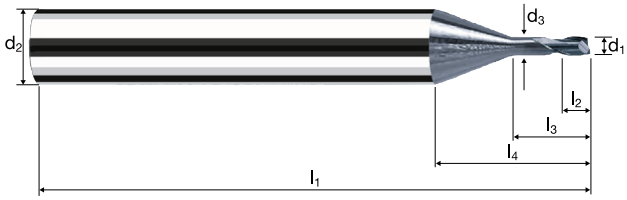
Shank ø 6mm, cylindrical neck, 2xd

X-Generation

HM
XA

λ 25°
γ -10°

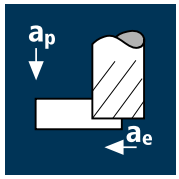
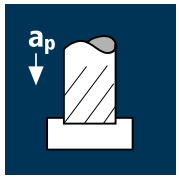
45°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6501** ø-Code **010**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL X6501
010	0.10	6.00	0.09	57	0.06	0.20	17.30	-	15.0°	2	●
020	0.20	6.00	0.18	57	0.12	0.40	17.06	-	14.5°	2	●
030	0.30	6.00	0.25	57	0.18	0.60	16.97	-	14.5°	2	●
040	0.40	6.00	0.35	57	0.24	0.80	16.76	-	14.0°	2	●
050	0.50	6.00	0.45	57	0.30	1.00	11.51	-	14.0°	2	●
060	0.60	6.00	0.55	57	0.36	1.20	11.53	-	13.5°	2	●
080	0.80	6.00	0.75	57	0.48	1.60	11.55	-	13.0°	2	●
100	1.00	6.00	0.95	57	1.00	2.00	12.08	0.07	12.5°	2	●
120	1.50	6.00	1.40	57	1.50	3.00	12.24	0.07	11.5°	2	●
140	2.00	6.00	1.90	57	2.00	4.00	12.31	0.10	10.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.011	0.040	41380	125	0.1
		0.40	2	53	0.003	0.021	0.080	42175	250	0.4
		0.50	2	66	0.004	0.027	0.100	42015	315	0.8
		0.80	2	106	0.006	0.043	0.160	42175	530	3.7
		1.00	2	132	0.008	0.054	0.200	42015	635	6.9
		1.50	2	140	0.011	0.080	0.300	29710	675	16.2
		2.00	2	140	0.015	0.107	0.400	22280	675	28.8
		2.50	2	140	0.019	0.132	0.500	17825	675	44.5
		3.00	2	140	0.023	0.161	0.600	14855	675	65.1
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.011	0.040	41380	120	0.1
		0.40	2	53	0.003	0.021	0.080	42175	240	0.4
		0.50	2	66	0.004	0.027	0.100	42015	300	0.8
		0.80	2	106	0.006	0.043	0.160	42175	505	3.5
		1.00	2	120	0.007	0.054	0.200	38195	550	5.9
		1.50	2	120	0.011	0.080	0.300	25465	550	13.2
		2.00	2	120	0.014	0.107	0.400	19100	550	23.5
		2.50	2	120	0.018	0.132	0.500	15280	550	36.3
		3.00	2	120	0.022	0.161	0.600	12730	550	53.1
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.011	0.040	41380	100	0.0
		0.40	2	53	0.002	0.021	0.080	42175	200	0.3
		0.50	2	66	0.003	0.027	0.100	42015	250	0.7
		0.80	2	100	0.005	0.043	0.160	39790	400	2.7
		1.00	2	100	0.006	0.054	0.200	31830	380	4.1
		1.50	2	100	0.009	0.080	0.300	21220	380	9.2
		2.00	2	100	0.012	0.107	0.400	15915	380	16.3
		2.50	2	100	0.015	0.132	0.500	12730	380	25.2
		3.00	2	100	0.018	0.161	0.600	10610	380	36.9
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.011	0.040	41380	90	0.0
		0.40	2	53	0.002	0.021	0.080	42175	180	0.3
		0.50	2	60	0.003	0.027	0.100	38195	205	0.6
		0.80	2	60	0.004	0.043	0.160	23875	215	1.5
		1.00	2	60	0.005	0.054	0.200	19100	205	2.2
		1.50	2	60	0.008	0.080	0.300	12730	205	5.0
		2.00	2	60	0.011	0.107	0.400	9550	205	8.8
		2.50	2	60	0.014	0.132	0.500	7640	205	13.6
		3.00	2	60	0.016	0.161	0.600	6365	205	19.9
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.004	0.200	41380	90	0.1
		0.40	2	53	0.002	0.008	0.400	42175	185	0.6
		0.50	2	66	0.003	0.010	0.500	42015	275	1.4
		0.80	2	106	0.004	0.017	0.800	42175	370	5.0
		1.00	2	120	0.007	0.021	1.000	38195	505	10.6
		1.50	2	120	0.009	0.031	1.500	25465	450	20.8
		2.00	2	120	0.012	0.042	2.000	19100	460	38.8
		2.50	2	120	0.015	0.052	2.500	15280	470	61.2
		3.00	2	120	0.019	0.063	3.000	12730	475	90.0
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.004	0.200	41380	90	0.1
		0.40	2	53	0.002	0.008	0.400	42175	185	0.6
		0.50	2	66	0.003	0.010	0.500	42015	275	1.4
		0.80	2	100	0.004	0.017	0.800	39790	350	4.8
		1.00	2	100	0.007	0.021	1.000	31830	420	8.8
		1.50	2	100	0.009	0.031	1.500	21220	375	17.4
		2.00	2	100	0.012	0.042	2.000	15915	385	32.4
		2.50	2	100	0.015	0.052	2.500	12730	390	51.0
		3.00	2	100	0.019	0.063	3.000	10610	395	75.0
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.004	0.200	41380	85	0.1
		0.40	2	53	0.002	0.008	0.400	42175	170	0.5
		0.50	2	66	0.003	0.010	0.500	42015	250	1.3
		0.80	2	80	0.004	0.017	0.800	31830	255	3.5
		1.00	2	80	0.006	0.021	1.000	25465	305	6.4
		1.50	2	80	0.008	0.031	1.500	16975	270	12.6
		2.00	2	80	0.011	0.042	2.000	12730	280	23.5
		2.50	2	80	0.014	0.052	2.500	10185	285	37.1
		3.00	2	80	0.017	0.063	3.000	8490	290	54.5
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.004	0.200	41380	75	0.1
		0.40	2	40	0.002	0.008	0.400	31830	115	0.4
		0.50	2	40	0.003	0.010	0.500	25465	140	0.7
		0.80	2	40	0.004	0.017	0.800	15915	115	1.6
		1.00	2	40	0.005	0.021	1.000	12730	140	2.9
		1.50	2	40	0.007	0.031	1.500	8490	120	5.7
		2.00	2	40	0.010	0.042	2.000	6365	125	10.6
		2.50	2	40	0.013	0.052	2.500	5095	130	16.7
		3.00	2	40	0.015	0.063	3.000	4245	130	24.5

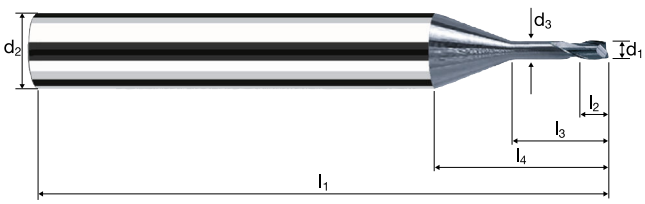
Cylindrical end mills MicroX

Shank ø 6mm, cylindrical neck, 3xd

HM
XA

λ 25°
γ -10°

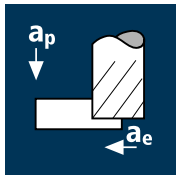
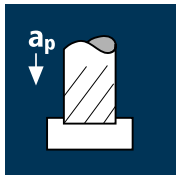
45°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6502** ø-Code **010**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL
											X6502
010	0.10	6.00	0.09	57	0.06	0.30	17.30	-	15.0°	2	●
020	0.20	6.00	0.18	57	0.12	0.60	17.22	-	14.5°	2	●
030	0.30	6.00	0.25	57	0.18	0.90	17.14	-	14.0°	2	●
040	0.40	6.00	0.35	57	0.24	1.20	17.16	-	14.0°	2	●
050	0.50	6.00	0.45	57	0.30	1.50	12.01	-	13.5°	2	●
060	0.60	6.00	0.55	57	0.36	1.80	12.13	-	13.0°	2	●
080	0.80	6.00	0.75	57	0.48	2.40	12.35	-	12.5°	2	●
100	1.00	6.00	0.95	57	1.00	3.00	13.08	0.07	11.5°	2	●
108	1.20	6.00	1.10	57	1.20	3.60	13.40	0.07	11.0°	2	●
120	1.50	6.00	1.40	57	1.50	4.50	13.74	0.07	10.0°	2	●
140	2.00	6.00	1.90	57	2.00	6.00	14.31	0.10	8.5°	2	●
160	2.50	6.00	2.30	57	2.50	7.50	15.06	0.10	7.5°	2	●
180	3.00	6.00	2.80	57	3.00	9.00	15.63	0.10	6.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.008	0.040	41380	105	0.0
		0.30	2	40	0.003	0.012	0.060	42440	215	0.2
		0.40	2	53	0.004	0.016	0.080	42175	320	0.4
		0.50	2	66	0.004	0.020	0.100	42015	320	0.6
		0.60	2	79	0.004	0.024	0.120	41910	315	0.9
		0.80	2	106	0.005	0.032	0.160	42175	425	2.2
		1.00	2	132	0.006	0.040	0.200	42015	530	4.2
		1.50	2	140	0.010	0.060	0.300	29710	600	10.8
		2.00	2	140	0.014	0.080	0.400	22280	620	19.8
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.008	0.040	41380	100	0.0
		0.30	2	40	0.002	0.012	0.060	42440	205	0.1
		0.40	2	53	0.004	0.016	0.080	42175	305	0.4
		0.50	2	66	0.004	0.020	0.100	42015	305	0.6
		0.60	2	79	0.004	0.024	0.120	41910	300	0.9
		0.80	2	106	0.005	0.032	0.160	42175	405	2.1
		1.00	2	120	0.006	0.040	0.200	38195	460	3.7
		1.50	2	120	0.010	0.060	0.300	25465	490	8.8
		2.00	2	120	0.013	0.080	0.400	19100	505	16.1
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.008	0.040	41380	85	0.0
		0.30	2	40	0.002	0.012	0.060	42440	170	0.1
		0.40	2	53	0.003	0.016	0.080	42175	255	0.3
		0.50	2	66	0.003	0.020	0.100	42015	250	0.5
		0.60	2	79	0.003	0.024	0.120	41910	250	0.7
		0.80	2	100	0.004	0.032	0.160	39790	320	1.6
		1.00	2	100	0.005	0.040	0.200	31830	320	2.5
		1.50	2	100	0.008	0.060	0.300	21220	340	6.1
		2.00	2	100	0.011	0.080	0.400	15915	350	11.2
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.008	0.040	41380	75	0.0
		0.30	2	40	0.002	0.012	0.060	42440	155	0.1
		0.40	2	53	0.003	0.016	0.080	42175	230	0.3
		0.50	2	60	0.003	0.020	0.100	38195	205	0.4
		0.60	2	60	0.003	0.024	0.120	31830	170	0.5
		0.80	2	60	0.004	0.032	0.160	23875	170	0.9
		1.00	2	60	0.004	0.040	0.200	19100	170	1.4
		1.50	2	60	0.007	0.060	0.300	12730	185	3.3
		2.00	2	60	0.010	0.080	0.400	9550	190	6.1
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.003	0.200	41380	90	0.1
		0.30	2	40	0.002	0.005	0.300	42440	185	0.3
		0.40	2	53	0.002	0.006	0.400	42175	185	0.4
		0.50	2	66	0.003	0.008	0.500	42015	275	1.1
		0.60	2	79	0.003	0.009	0.600	41910	275	1.5
		0.80	2	106	0.004	0.013	0.800	42175	370	3.9
		1.00	2	120	0.005	0.016	1.000	38195	420	6.7
		1.50	2	120	0.009	0.023	1.500	25465	450	15.5
		2.00	2	120	0.011	0.031	2.000	19100	420	26.1
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.003	0.200	41380	90	0.1
		0.30	2	40	0.002	0.005	0.300	42440	185	0.3
		0.40	2	53	0.002	0.006	0.400	42175	185	0.4
		0.50	2	66	0.003	0.008	0.500	42015	275	1.1
		0.60	2	79	0.003	0.009	0.600	41910	275	1.5
		0.80	2	100	0.004	0.013	0.800	39790	350	3.6
		1.00	2	100	0.005	0.016	1.000	31830	350	5.6
		1.50	2	100	0.009	0.023	1.500	21220	375	12.9
		2.00	2	100	0.011	0.031	2.000	15915	350	21.7
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.003	0.200	41380	85	0.0
		0.30	2	40	0.002	0.005	0.300	42440	170	0.3
		0.40	2	53	0.002	0.006	0.400	42175	170	0.4
		0.50	2	66	0.003	0.008	0.500	42015	250	1.0
		0.60	2	79	0.003	0.009	0.600	41910	250	1.4
		0.80	2	80	0.004	0.013	0.800	31830	255	2.6
		1.00	2	80	0.005	0.016	1.000	25465	255	4.1
		1.50	2	80	0.008	0.023	1.500	16975	270	9.4
		2.00	2	80	0.010	0.031	2.000	12730	255	15.8
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.003	0.200	41380	75	0.0
		0.30	2	40	0.002	0.005	0.300	42440	155	0.2
		0.40	2	40	0.002	0.006	0.400	31830	115	0.3
		0.50	2	40	0.003	0.008	0.500	25465	140	0.6
		0.60	2	40	0.003	0.009	0.600	21220	115	0.6
		0.80	2	40	0.004	0.013	0.800	15915	115	1.2
		1.00	2	40	0.004	0.016	1.000	12730	115	1.8
		1.50	2	40	0.007	0.023	1.500	8490	120	4.2
		2.00	2	40	0.009	0.031	2.000	6365	115	7.1

Cylindrical end mills MicroX

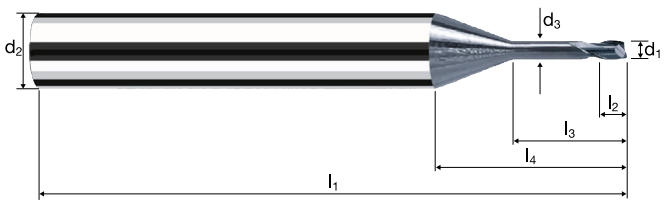
Shank ø 6mm, cylindrical neck, 4xd

X-Generation

HM
XA

λ 25°
γ -10°

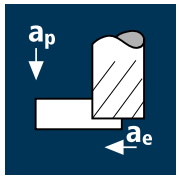
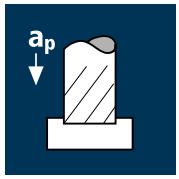
45°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6503** ø-Code **010**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL X6503
010	0.10	6.00	0.09	57	0.06	0.40	17.38	-	14.5°	2	●
020	0.20	6.00	0.18	57	0.12	0.80	17.42	-	14.5°	2	●
030	0.30	6.00	0.25	57	0.18	1.20	17.44	-	14.0°	2	●
040	0.40	6.00	0.35	57	0.24	1.60	17.56	-	13.5°	2	●
050	0.50	6.00	0.45	57	0.30	2.00	12.51	-	13.0°	2	●
060	0.60	6.00	0.55	57	0.36	2.40	12.73	-	12.5°	2	●
080	0.80	6.00	0.75	57	0.48	3.20	13.15	-	11.5°	2	●
100	1.00	6.00	0.95	57	1.00	4.00	14.08	0.07	11.0°	2	●
120	1.50	6.00	1.40	57	1.50	6.00	15.24	0.07	9.0°	2	●
140	2.00	6.00	1.90	61	2.00	8.00	16.31	0.10	7.5°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.006	0.040	41380	105	0.0
		0.40	2	53	0.003	0.013	0.080	42175	215	0.2
		0.50	2	66	0.004	0.016	0.100	42015	320	0.5
		0.80	2	106	0.005	0.026	0.160	42175	425	1.8
		1.00	2	132	0.006	0.032	0.200	42015	530	3.4
		1.50	2	140	0.010	0.048	0.300	29710	600	8.6
		2.00	2	140	0.013	0.064	0.400	22280	560	14.4
		2.50	2	140	0.016	0.080	0.500	17825	585	23.4
		3.00	2	140	0.020	0.096	0.600	14855	600	34.5
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.006	0.040	41380	100	0.0
		0.40	2	53	0.002	0.013	0.080	42175	200	0.2
		0.50	2	66	0.004	0.016	0.100	42015	305	0.5
		0.80	2	106	0.005	0.026	0.160	42175	405	1.7
		1.00	2	120	0.006	0.032	0.200	38195	460	2.9
		1.50	2	120	0.010	0.048	0.300	25465	490	7.0
		2.00	2	120	0.012	0.064	0.400	19100	460	11.7
		2.50	2	120	0.016	0.080	0.500	15280	475	19.1
		3.00	2	120	0.019	0.096	0.600	12730	490	28.2
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.006	0.040	41380	85	0.0
		0.40	2	53	0.002	0.013	0.080	42175	170	0.2
		0.50	2	66	0.003	0.016	0.100	42015	250	0.4
		0.80	2	100	0.004	0.026	0.160	39790	320	1.3
		1.00	2	100	0.005	0.032	0.200	31830	320	2.0
		1.50	2	100	0.008	0.048	0.300	21220	340	4.9
		2.00	2	100	0.010	0.064	0.400	15915	320	8.1
		2.50	2	100	0.013	0.080	0.500	12730	330	13.2
		3.00	2	100	0.016	0.096	0.600	10610	340	19.6
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.006	0.040	41380	75	0.0
		0.40	2	53	0.002	0.013	0.080	42175	150	0.2
		0.50	2	60	0.003	0.016	0.100	38195	205	0.3
		0.80	2	60	0.004	0.026	0.160	23875	170	0.7
		1.00	2	60	0.004	0.032	0.200	19100	170	1.1
		1.50	2	60	0.007	0.048	0.300	12730	185	2.6
		2.00	2	60	0.009	0.064	0.400	9550	170	4.4
		2.50	2	60	0.012	0.080	0.500	7640	180	7.2
		3.00	2	60	0.014	0.096	0.600	6365	185	10.6
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.003	0.200	41380	90	0.1
		0.40	2	53	0.002	0.005	0.400	42175	185	0.4
		0.50	2	66	0.003	0.006	0.500	42015	275	0.8
		0.80	2	106	0.004	0.010	0.800	42175	370	3.0
		1.00	2	120	0.005	0.013	1.000	38195	420	5.5
		1.50	2	120	0.009	0.019	1.500	25465	450	12.8
		2.00	2	120	0.011	0.025	2.000	19100	420	21.0
		2.50	2	120	0.014	0.031	2.500	15280	435	33.9
		3.00	2	120	0.016	0.038	3.000	12730	420	47.9
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.003	0.200	41380	90	0.1
		0.40	2	53	0.002	0.005	0.400	42175	185	0.4
		0.50	2	66	0.003	0.006	0.500	42015	275	0.8
		0.80	2	100	0.004	0.010	0.800	39790	350	2.8
		1.00	2	100	0.005	0.013	1.000	31830	350	4.6
		1.50	2	100	0.009	0.019	1.500	21220	375	10.6
		2.00	2	100	0.011	0.025	2.000	15915	350	17.5
		2.50	2	100	0.014	0.031	2.500	12730	365	28.2
		3.00	2	100	0.016	0.038	3.000	10610	350	39.9
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.003	0.200	41380	85	0.0
		0.40	2	53	0.002	0.005	0.400	42175	170	0.3
		0.50	2	66	0.003	0.006	0.500	42015	250	0.8
		0.80	2	80	0.004	0.010	0.800	31830	255	2.0
		1.00	2	80	0.005	0.013	1.000	25465	255	3.3
		1.50	2	80	0.008	0.019	1.500	16975	270	7.7
		2.00	2	80	0.010	0.025	2.000	12730	255	12.7
		2.50	2	80	0.013	0.031	2.500	10185	265	20.5
		3.00	2	80	0.015	0.038	3.000	8490	255	29.0
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.003	0.200	41380	75	0.0
		0.40	2	40	0.002	0.005	0.400	31830	115	0.2
		0.50	2	40	0.003	0.006	0.500	25465	140	0.4
		0.80	2	40	0.004	0.010	0.800	15915	115	0.9
		1.00	2	40	0.004	0.013	1.000	12730	115	1.5
		1.50	2	40	0.007	0.019	1.500	8490	120	3.5
		2.00	2	40	0.009	0.025	2.000	6365	115	5.7
		2.50	2	40	0.012	0.031	2.500	5095	120	9.2
		3.00	2	40	0.014	0.038	3.000	4245	115	13.1

Cylindrical end mills MicroX

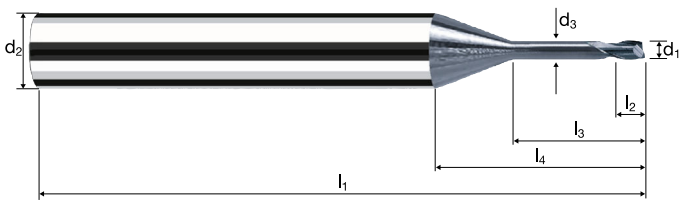
Shank ø 6mm, cylindrical neck, 5xd

X-Generation

HM
XA

λ 25°
γ -10°

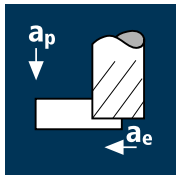
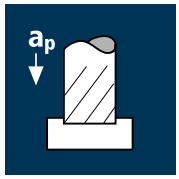
45°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6504** ø-Code **010**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL	X6504
010	0.10	6.00	0.09	57	0.06	0.50	17.48	-	14.5°	2		●
020	0.20	6.00	0.18	57	0.12	1.00	17.62	-	14.0°	2		●
030	0.30	6.00	0.25	57	0.18	1.50	17.74	-	13.5°	2		●
040	0.40	6.00	0.35	57	0.24	2.00	17.96	-	13.0°	2		●
050	0.50	6.00	0.45	57	0.30	2.50	13.01	-	12.5°	2		●
060	0.60	6.00	0.55	57	0.36	3.00	13.33	-	12.0°	2		●
080	0.80	6.00	0.75	57	0.48	4.00	13.95	-	11.0°	2		●
100	1.00	6.00	0.95	57	1.00	5.00	15.08	0.07	10.0°	2		●
108	1.20	6.00	1.10	57	1.20	6.00	15.80	0.07	9.5°	2		●
120	1.50	6.00	1.40	61	1.50	7.50	16.74	0.07	8.5°	2		●
140	2.00	6.00	1.90	61	2.00	10.00	18.31	0.10	7.0°	2		●
160	2.50	6.00	2.30	61	2.50	12.50	20.06	0.10	5.5°	2		●
180	3.00	6.00	2.80	66	3.00	15.00	21.63	0.10	4.5°	2		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.005	0.040	41380	105	0.0
		0.30	2	40	0.003	0.008	0.060	42440	215	0.1
		0.40	2	53	0.003	0.011	0.080	42175	215	0.2
		0.50	2	66	0.004	0.013	0.100	42015	320	0.4
		0.60	2	79	0.004	0.016	0.120	41910	315	0.6
		0.80	2	106	0.005	0.021	0.160	42175	425	1.4
		1.00	2	132	0.006	0.027	0.200	42015	530	2.9
		1.50	2	140	0.010	0.040	0.300	29710	600	7.2
		2.00	2	140	0.013	0.053	0.400	22280	560	11.9
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.005	0.040	41380	100	0.0
		0.30	2	40	0.002	0.008	0.060	42440	205	0.1
		0.40	2	53	0.002	0.011	0.080	42175	200	0.2
		0.50	2	66	0.004	0.013	0.100	42015	305	0.4
		0.60	2	79	0.004	0.016	0.120	41910	300	0.6
		0.80	2	106	0.005	0.021	0.160	42175	405	1.4
		1.00	2	120	0.006	0.027	0.200	38195	460	2.5
		1.50	2	120	0.010	0.040	0.300	25465	490	5.9
		2.00	2	120	0.012	0.053	0.400	19100	460	9.7
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.005	0.040	41380	85	0.0
		0.30	2	40	0.002	0.008	0.060	42440	170	0.1
		0.40	2	53	0.002	0.011	0.080	42175	170	0.1
		0.50	2	66	0.003	0.013	0.100	42015	250	0.3
		0.60	2	79	0.003	0.016	0.120	41910	250	0.5
		0.80	2	100	0.004	0.021	0.160	39790	320	1.1
		1.00	2	100	0.005	0.027	0.200	31830	320	1.7
		1.50	2	100	0.008	0.040	0.300	21220	340	4.1
		2.00	2	100	0.010	0.053	0.400	15915	320	6.7
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.005	0.040	41380	75	0.0
		0.30	2	40	0.002	0.008	0.060	42440	155	0.1
		0.40	2	53	0.002	0.011	0.080	42175	150	0.1
		0.50	2	60	0.003	0.013	0.100	38195	205	0.3
		0.60	2	60	0.003	0.016	0.120	31830	170	0.3
		0.80	2	60	0.004	0.021	0.160	23875	170	0.6
		1.00	2	60	0.004	0.027	0.200	19100	170	0.9
		1.50	2	60	0.007	0.040	0.300	12730	185	2.2
		2.00	2	60	0.009	0.053	0.400	9550	170	3.6
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.002	0.200	41380	90	0.0
		0.30	2	40	0.002	0.003	0.300	42440	185	0.2
		0.40	2	53	0.002	0.004	0.400	42175	185	0.3
		0.50	2	66	0.003	0.005	0.500	42015	275	0.7
		0.60	2	79	0.003	0.006	0.600	41910	275	1.0
		0.80	2	106	0.004	0.009	0.800	42175	370	2.5
		1.00	2	120	0.005	0.010	1.000	38195	420	4.2
		1.50	2	120	0.009	0.016	1.500	25465	450	10.8
		2.00	2	120	0.011	0.021	2.000	19100	420	17.6
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.002	0.200	41380	90	0.0
		0.30	2	40	0.002	0.003	0.300	42440	185	0.2
		0.40	2	53	0.002	0.004	0.400	42175	185	0.3
		0.50	2	66	0.003	0.005	0.500	42015	275	0.7
		0.60	2	79	0.003	0.006	0.600	41910	275	1.0
		0.80	2	100	0.004	0.009	0.800	39790	350	2.4
		1.00	2	100	0.005	0.010	1.000	31830	350	3.5
		1.50	2	100	0.009	0.016	1.500	21220	375	9.0
		2.00	2	100	0.011	0.021	2.000	15915	350	14.7
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.002	0.200	41380	85	0.0
		0.30	2	40	0.002	0.003	0.300	42440	170	0.2
		0.40	2	53	0.002	0.004	0.400	42175	170	0.3
		0.50	2	66	0.003	0.005	0.500	42015	250	0.6
		0.60	2	79	0.003	0.006	0.600	41910	250	0.9
		0.80	2	80	0.004	0.009	0.800	31830	255	1.7
		1.00	2	80	0.005	0.010	1.000	25465	255	2.5
		1.50	2	80	0.008	0.016	1.500	16975	270	6.5
		2.00	2	80	0.010	0.021	2.000	12730	255	10.7
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.002	0.200	41380	75	0.0
		0.30	2	40	0.002	0.003	0.300	42440	155	0.1
		0.40	2	40	0.002	0.004	0.400	31830	115	0.2
		0.50	2	40	0.003	0.005	0.500	25465	140	0.3
		0.60	2	40	0.003	0.006	0.600	21220	115	0.4
		0.80	2	40	0.004	0.009	0.800	15915	115	0.8
		1.00	2	40	0.004	0.010	1.000	12730	115	1.1
		1.50	2	40	0.007	0.016	1.500	8490	120	2.9
		2.00	2	40	0.009	0.021	2.000	6365	115	4.8

Cylindrical end mills MicroX

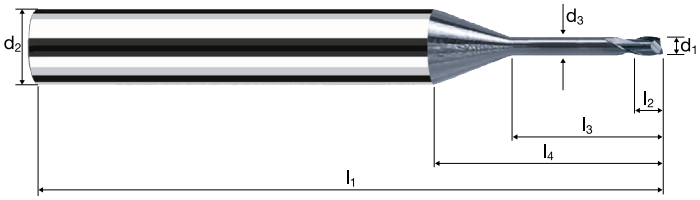
Shank ø 6mm, cylindrical neck, 6xd

X-Generation X

HM
XA

λ 25°
γ -10°

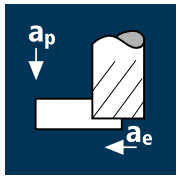
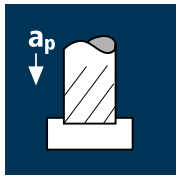
45°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6505** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL X6505
020	0.20	6.00	0.18	57	0.12	1.20	17.82	-	14.0°	2	●
030	0.30	6.00	0.25	57	0.18	1.80	18.04	-	13.0°	2	●
040	0.40	6.00	0.35	57	0.24	2.40	18.36	-	12.5°	2	●
050	0.50	6.00	0.45	57	0.30	3.00	13.51	-	12.0°	2	●
060	0.60	6.00	0.55	57	0.36	3.60	13.93	-	11.5°	2	●
080	0.80	6.00	0.75	57	0.48	4.80	14.75	-	10.5°	2	●
100	1.00	6.00	0.95	57	1.00	6.00	16.08	0.07	9.5°	2	●
120	1.50	6.00	1.40	61	1.50	9.00	18.24	0.07	7.5°	2	●
140	2.00	6.00	1.90	66	2.00	12.00	20.31	0.10	6.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.004	0.040	41380	105	0.0
		0.40	2	53	0.003	0.008	0.080	42175	215	0.1
		0.50	2	66	0.004	0.010	0.100	42015	320	0.3
		0.80	2	106	0.005	0.016	0.160	42175	425	1.1
		1.00	2	132	0.006	0.020	0.200	42015	530	2.1
		1.50	2	140	0.010	0.030	0.300	29710	600	5.4
		2.00	2	140	0.013	0.040	0.400	22280	560	9.0
		2.50	2	140	0.016	0.050	0.500	17825	585	14.6
		3.00	2	140	0.019	0.060	0.600	14855	560	20.2
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.004	0.040	41380	100	0.0
		0.40	2	53	0.002	0.008	0.080	42175	200	0.1
		0.50	2	66	0.004	0.010	0.100	42015	305	0.3
		0.80	2	106	0.005	0.016	0.160	42175	405	1.0
		1.00	2	120	0.006	0.020	0.200	38195	460	1.8
		1.50	2	120	0.010	0.030	0.300	25465	490	4.4
		2.00	2	120	0.012	0.040	0.400	19100	460	7.3
		2.50	2	120	0.016	0.050	0.500	15280	475	11.9
		3.00	2	120	0.018	0.060	0.600	12730	460	16.5
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.004	0.040	41380	85	0.0
		0.40	2	53	0.002	0.008	0.080	42175	170	0.1
		0.50	2	66	0.003	0.010	0.100	42015	250	0.3
		0.80	2	100	0.004	0.016	0.160	39790	320	0.8
		1.00	2	100	0.005	0.020	0.200	31830	320	1.3
		1.50	2	100	0.008	0.030	0.300	21220	340	3.1
		2.00	2	100	0.010	0.040	0.400	15915	320	5.1
		2.50	2	100	0.013	0.050	0.500	12730	330	8.3
		3.00	2	100	0.015	0.060	0.600	10610	320	11.5
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.004	0.040	41380	75	0.0
		0.40	2	53	0.002	0.008	0.080	42175	150	0.1
		0.50	2	60	0.003	0.010	0.100	38195	205	0.2
		0.80	2	60	0.004	0.016	0.160	23875	170	0.4
		1.00	2	60	0.004	0.020	0.200	19100	170	0.7
		1.50	2	60	0.007	0.030	0.300	12730	185	1.7
		2.00	2	60	0.009	0.040	0.400	9550	170	2.8
		2.50	2	60	0.012	0.050	0.500	7640	180	4.5
		3.00	2	60	0.014	0.060	0.600	6365	170	6.2
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.002	0.200	41380	90	0.0
		0.40	2	53	0.002	0.003	0.400	42175	185	0.2
		0.50	2	66	0.003	0.004	0.500	42015	275	0.6
		0.80	2	106	0.004	0.006	0.800	42175	370	1.8
		1.00	2	120	0.005	0.008	1.000	38195	420	3.4
		1.50	2	120	0.009	0.012	1.500	25465	450	8.1
		2.00	2	120	0.011	0.016	2.000	19100	420	13.4
		2.50	2	120	0.014	0.020	2.500	15280	435	21.8
		3.00	2	120	0.016	0.023	3.000	12730	420	29.0
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.002	0.200	41380	90	0.0
		0.40	2	53	0.002	0.003	0.400	42175	185	0.2
		0.50	2	66	0.003	0.004	0.500	42015	275	0.6
		0.80	2	100	0.004	0.006	0.800	39790	350	1.7
		1.00	2	100	0.005	0.008	1.000	31830	350	2.8
		1.50	2	100	0.009	0.012	1.500	21220	375	6.7
		2.00	2	100	0.011	0.016	2.000	15915	350	11.2
		2.50	2	100	0.014	0.020	2.500	12730	365	18.2
		3.00	2	100	0.016	0.023	3.000	10610	350	24.2
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.002	0.200	41380	85	0.0
		0.40	2	53	0.002	0.003	0.400	42175	170	0.2
		0.50	2	66	0.003	0.004	0.500	42015	250	0.5
		0.80	2	80	0.004	0.006	0.800	31830	255	1.2
		1.00	2	80	0.005	0.008	1.000	25465	255	2.0
		1.50	2	80	0.008	0.012	1.500	16975	270	4.9
		2.00	2	80	0.010	0.016	2.000	12730	255	8.1
		2.50	2	80	0.013	0.020	2.500	10185	265	13.2
		3.00	2	80	0.015	0.023	3.000	8490	255	17.6
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.002	0.200	41380	75	0.0
		0.40	2	40	0.002	0.003	0.400	31830	115	0.1
		0.50	2	40	0.003	0.004	0.500	25465	140	0.3
		0.80	2	40	0.004	0.006	0.800	15915	115	0.6
		1.00	2	40	0.004	0.008	1.000	12730	115	0.9
		1.50	2	40	0.007	0.012	1.500	8490	120	2.2
		2.00	2	40	0.009	0.016	2.000	6365	115	3.7
		2.50	2	40	0.012	0.020	2.500	5095	120	6.0
		3.00	2	40	0.014	0.023	3.000	4245	115	7.9

Cylindrical end mills MicroX

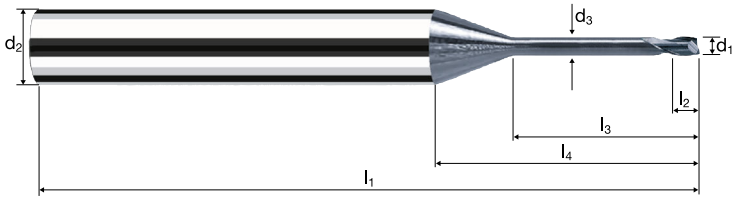
Shank ø 6mm, cylindrical neck, 8xd

X-Generation X

HM
XA

λ 25°
γ -10°

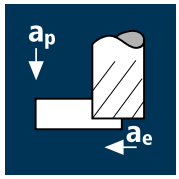
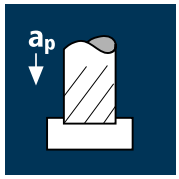
45°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6506** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL X6506
020	0.20	6.00	0.18	57	0.12	1.60	18.22	-	13.5°	2	●
030	0.30	6.00	0.25	57	0.18	2.40	18.64	-	12.5°	2	●
040	0.40	6.00	0.35	57	0.24	3.20	19.16	-	12.0°	2	●
050	0.50	6.00	0.45	57	0.30	4.00	14.51	-	11.0°	2	●
060	0.60	6.00	0.55	57	0.36	4.80	15.13	-	10.5°	2	●
080	0.80	6.00	0.75	57	0.48	6.40	16.35	-	9.5°	2	●
100	1.00	6.00	0.95	61	1.00	8.00	18.08	0.07	8.5°	2	●
108	1.20	6.00	1.10	61	1.20	9.60	19.40	0.07	7.5°	2	●
120	1.50	6.00	1.40	61	1.50	12.00	21.24	0.07	6.5°	2	●
140	2.00	6.00	1.90	66	2.00	16.00	24.31	0.10	5.0°	2	●
160	2.50	6.00	2.30	69	2.50	20.00	27.56	0.10	4.0°	2	●
180	3.00	6.00	2.80	75	3.00	24.00	30.63	0.10	3.0°	2	●

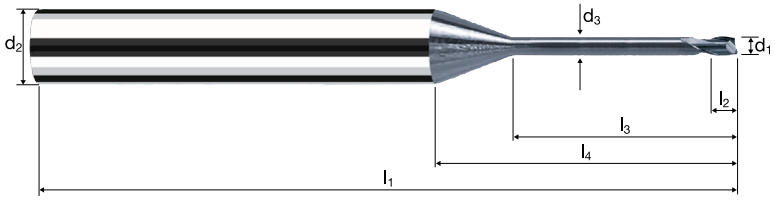
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.004	0.040	41380	105	0.0
		0.40	2	53	0.003	0.008	0.080	42175	215	0.1
		0.50	2	66	0.004	0.010	0.100	42015	320	0.3
		0.80	2	106	0.005	0.016	0.160	42175	425	1.1
		1.00	2	132	0.006	0.020	0.200	42015	530	2.1
		1.50	2	140	0.010	0.030	0.300	29710	600	5.4
		2.00	2	140	0.013	0.040	0.400	22280	560	9.0
		2.50	2	140	0.016	0.050	0.500	17825	585	14.6
		3.00	2	140	0.019	0.060	0.600	14855	560	20.2
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.004	0.040	41380	100	0.0
		0.40	2	53	0.002	0.008	0.080	42175	200	0.1
		0.50	2	66	0.004	0.010	0.100	42015	305	0.3
		0.80	2	106	0.005	0.016	0.160	42175	405	1.0
		1.00	2	120	0.006	0.020	0.200	38195	460	1.8
		1.50	2	120	0.010	0.030	0.300	25465	490	4.4
		2.00	2	120	0.012	0.040	0.400	19100	460	7.3
		2.50	2	120	0.016	0.050	0.500	15280	475	11.9
		3.00	2	120	0.018	0.060	0.600	12730	460	16.5
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.004	0.040	41380	85	0.0
		0.40	2	53	0.002	0.008	0.080	42175	170	0.1
		0.50	2	66	0.003	0.010	0.100	42015	250	0.3
		0.80	2	100	0.004	0.016	0.160	39790	320	0.8
		1.00	2	100	0.005	0.020	0.200	31830	320	1.3
		1.50	2	100	0.008	0.030	0.300	21220	340	3.1
		2.00	2	100	0.010	0.040	0.400	15915	320	5.1
		2.50	2	100	0.013	0.050	0.500	12730	330	8.3
		3.00	2	100	0.015	0.060	0.600	10610	320	11.5
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.004	0.040	41380	75	0.0
		0.40	2	53	0.002	0.008	0.080	42175	150	0.1
		0.50	2	60	0.003	0.010	0.100	38195	205	0.2
		0.80	2	60	0.004	0.016	0.160	23875	170	0.4
		1.00	2	60	0.004	0.020	0.200	19100	170	0.7
		1.50	2	60	0.007	0.030	0.300	12730	185	1.7
		2.00	2	60	0.009	0.040	0.400	9550	170	2.8
		2.50	2	60	0.012	0.050	0.500	7640	180	4.5
		3.00	2	60	0.014	0.060	0.600	6365	170	6.2
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.001	0.200	41380	90	0.0
		0.40	2	53	0.002	0.003	0.400	42175	185	0.2
		0.50	2	66	0.003	0.003	0.500	42015	275	0.4
		0.80	2	106	0.004	0.005	0.800	42175	370	1.5
		1.00	2	120	0.005	0.006	1.000	38195	420	2.5
		1.50	2	120	0.009	0.009	1.500	25465	450	6.1
		2.00	2	120	0.011	0.013	2.000	19100	420	10.9
		2.50	2	120	0.014	0.016	2.500	15280	435	17.5
		3.00	2	120	0.016	0.019	3.000	12730	420	23.9
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.001	0.200	41380	90	0.0
		0.40	2	53	0.002	0.003	0.400	42175	185	0.2
		0.50	2	66	0.003	0.003	0.500	42015	275	0.4
		0.80	2	100	0.004	0.005	0.800	39790	350	1.4
		1.00	2	100	0.005	0.006	1.000	31830	350	2.1
		1.50	2	100	0.009	0.009	1.500	21220	375	5.0
		2.00	2	100	0.011	0.013	2.000	15915	350	9.1
		2.50	2	100	0.014	0.016	2.500	12730	365	14.6
		3.00	2	100	0.016	0.019	3.000	10610	350	20.0
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.001	0.200	41380	85	0.0
		0.40	2	53	0.002	0.003	0.400	42175	170	0.2
		0.50	2	66	0.003	0.003	0.500	42015	250	0.4
		0.80	2	80	0.004	0.005	0.800	31830	255	1.0
		1.00	2	80	0.005	0.006	1.000	25465	255	1.5
		1.50	2	80	0.008	0.009	1.500	16975	270	3.7
		2.00	2	80	0.010	0.013	2.000	12730	255	6.6
		2.50	2	80	0.013	0.016	2.500	10185	265	10.6
		3.00	2	80	0.015	0.019	3.000	8490	255	14.5
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.001	0.200	41380	75	0.0
		0.40	2	40	0.002	0.003	0.400	31830	115	0.1
		0.50	2	40	0.003	0.003	0.500	25465	140	0.2
		0.80	2	40	0.004	0.005	0.800	15915	115	0.5
		1.00	2	40	0.004	0.006	1.000	12730	115	0.7
		1.50	2	40	0.007	0.009	1.500	8490	120	1.7
		2.00	2	40	0.009	0.013	2.000	6365	115	3.0
		2.50	2	40	0.012	0.016	2.500	5095	120	4.8
		3.00	2	40	0.014	0.019	3.000	4245	115	6.5

Cylindrical end mills MicroX

Shank ø 6mm, cylindrical neck, 10xd

X-Generation

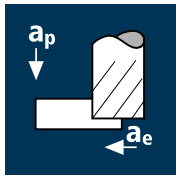
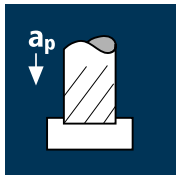
HM XA	λ 25° γ -10°
45°	



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6508** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL **X6508**
020	0.20	6.00	0.18	57	0.12	2.00	18.62	-	13.0°	2	●
030	0.30	6.00	0.25	57	0.18	3.00	19.24	-	12.0°	2	●
040	0.40	6.00	0.35	57	0.24	4.00	19.96	-	11.0°	2	●
050	0.50	6.00	0.45	57	0.30	5.00	15.51	-	10.5°	2	●
060	0.60	6.00	0.55	57	0.36	6.00	16.33	-	10.0°	2	●
080	0.80	6.00	0.75	61	0.48	8.00	17.95	-	8.5°	2	●
100	1.00	6.00	0.95	61	1.00	10.00	20.08	0.07	7.5°	2	●
120	1.50	6.00	1.40	66	1.50	15.00	24.24	0.07	5.5°	2	●
140	2.00	6.00	1.90	69	2.00	20.00	28.31	0.10	4.5°	2	●
160	2.50	6.00	2.30	75	2.50	25.00	32.56	0.10	3.5°	2	●
180	3.00	6.00	2.80	80	3.00	30.00	36.63	0.10	2.5°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.005	0.010	0.040	41380	415	0.2
		0.50	2	66	0.015	0.030	0.100	42015	1260	3.8
		0.80	2	106	0.020	0.050	0.160	42175	1685	13.5
		1.00	2	132	0.025	0.060	0.200	42015	2100	25.2
		1.20	2	140	0.030	0.070	0.240	37135	2230	37.4
		1.50	2	140	0.040	0.090	0.300	29710	2375	64.2
		2.00	2	140	0.050	0.120	0.400	22280	2230	107.0
		2.50	2	140	0.065	0.150	0.500	17825	2315	173.8
		3.00	2	140	0.075	0.180	0.600	14855	2230	240.6
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.004	0.010	0.040	41380	330	0.1
		0.50	2	66	0.014	0.030	0.100	42015	1175	3.5
		0.80	2	106	0.020	0.050	0.160	42175	1685	13.5
		1.00	2	120	0.024	0.060	0.200	38195	1835	22.0
		1.20	2	120	0.028	0.070	0.240	31830	1785	29.9
		1.50	2	120	0.038	0.090	0.300	25465	1935	52.3
		2.00	2	120	0.048	0.120	0.400	19100	1835	88.0
		2.50	2	120	0.062	0.150	0.500	15280	1895	142.1
		3.00	2	120	0.072	0.180	0.600	12730	1835	198.0
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.004	0.010	0.040	41380	330	0.1
		0.50	2	66	0.014	0.030	0.100	42015	1175	3.5
		0.80	2	100	0.018	0.050	0.160	39790	1430	11.5
		1.00	2	100	0.022	0.060	0.200	31830	1400	16.8
		1.20	2	100	0.026	0.070	0.240	26525	1380	23.2
		1.50	2	100	0.036	0.090	0.300	21220	1530	41.3
		2.00	2	100	0.044	0.120	0.400	15915	1400	67.2
		2.50	2	100	0.058	0.150	0.500	12730	1475	110.8
		3.00	2	100	0.066	0.180	0.600	10610	1400	151.3
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.004	0.010	0.040	41380	330	0.1
		0.50	2	60	0.012	0.030	0.100	38195	915	2.8
		0.80	2	60	0.016	0.050	0.160	23875	765	6.1
		1.00	2	60	0.020	0.060	0.200	19100	765	9.2
		1.20	2	60	0.024	0.070	0.240	15915	765	12.8
		1.50	2	60	0.032	0.090	0.300	12730	815	22.0
		2.00	2	60	0.040	0.120	0.400	9550	765	36.7
		2.50	2	60	0.052	0.150	0.500	7640	795	59.6
		3.00	2	60	0.060	0.180	0.600	6365	765	82.5
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.005	0.020	0.200	41380	415	1.7
		0.50	2	66	0.010	0.060	0.500	42015	840	25.2
		0.80	2	106	0.020	0.090	0.800	42175	1685	121.5
		1.00	2	120	0.020	0.110	1.000	38195	1530	168.1
		1.20	2	120	0.025	0.130	1.200	31830	1590	248.3
		1.50	2	120	0.035	0.170	1.500	25465	1785	454.5
		2.00	2	120	0.045	0.220	2.000	19100	1720	756.3
		2.50	2	120	0.055	0.280	2.500	15280	1680	1176.5
		3.00	2	120	0.065	0.330	3.000	12730	1655	1638.7
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.004	0.020	0.200	41380	330	1.3
		0.50	2	66	0.010	0.060	0.500	42015	840	25.2
		0.80	2	100	0.020	0.090	0.800	39790	1590	114.6
		1.00	2	100	0.020	0.110	1.000	31830	1275	140.1
		1.20	2	100	0.024	0.130	1.200	26525	1275	198.6
		1.50	2	100	0.034	0.170	1.500	21220	1445	368.0
		2.00	2	100	0.042	0.220	2.000	15915	1335	588.2
		2.50	2	100	0.052	0.280	2.500	12730	1325	926.9
		3.00	2	100	0.062	0.330	3.000	10610	1315	1302.5
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.004	0.020	0.200	41380	330	1.3
		0.50	2	66	0.008	0.060	0.500	42015	670	20.2
		0.80	2	80	0.018	0.090	0.800	31830	1145	82.5
		1.00	2	80	0.018	0.110	1.000	25465	915	100.8
		1.20	2	80	0.022	0.130	1.200	21220	935	145.7
		1.50	2	80	0.030	0.170	1.500	16975	1020	259.7
		2.00	2	80	0.040	0.220	2.000	12730	1020	448.2
		2.50	2	80	0.048	0.280	2.500	10185	980	684.5
		3.00	2	80	0.058	0.330	3.000	8490	985	974.8
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.004	0.020	0.200	41380	330	1.3
		0.50	2	40	0.008	0.060	0.500	25465	405	12.2
		0.80	2	40	0.016	0.090	0.800	15915	510	36.7
		1.00	2	40	0.016	0.110	1.000	12730	405	44.8
		1.20	2	40	0.020	0.130	1.200	10610	425	66.2
		1.50	2	40	0.028	0.170	1.500	8490	475	121.2
		2.00	2	40	0.036	0.220	2.000	6365	460	201.7
		2.50	2	40	0.044	0.280	2.500	5095	450	313.7
		3.00	2	40	0.052	0.330	3.000	4245	440	437.0

Cylindrical end mills Microcut-C1H

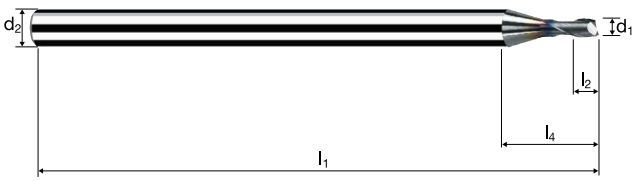
Shank ø 3mm, 1xd

X-Generation

HM
XA

λ 25°
γ -10°

45°

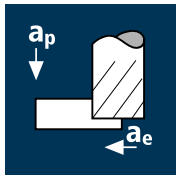
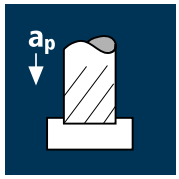


ToolSchool

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	Tungsten

Example: **Order-N°.** Coating **D** Article-N°. **15711** ø-Code **020**

Ø Code	d_1 ±0.01	d_2 h6	l_1	l_2	l_4	45°	α	z	DURO-S D15711
020	0.20	3.00	40	0.24	5.91	-	14.5°	2	●
030	0.30	3.00	40	0.36	5.84	-	14.0°	2	●
040	0.40	3.00	40	0.48	5.78	-	14.0°	2	●
050	0.50	3.00	40	0.60	5.71	-	13.5°	2	●
060	0.60	3.00	40	0.72	5.64	-	13.0°	2	●
080	0.80	3.00	40	0.96	5.51	-	12.5°	2	●
100	1.00	3.00	50	1.20	5.38	0.07	11.5°	2	●
108	1.20	3.00	50	1.40	5.29	0.07	10.5°	2	●
120	1.50	3.00	50	1.80	5.09	0.07	9.5°	2	●
140	2.00	3.00	50	2.40	4.76	0.10	7.0°	2	●
160	2.50	3.00	50	3.00	4.43	0.10	4.0°	2	●
180	3.00	3.00	50	3.60	-	0.10	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.50	2	66	0.015	0.030	0.100	42015	1260	3.8
		0.60	2	79	0.015	0.030	0.120	41910	1255	4.5
		0.80	2	106	0.020	0.040	0.160	42175	1685	10.8
		1.00	2	132	0.025	0.060	0.200	42015	2100	25.2
		1.20	2	140	0.030	0.070	0.240	37135	2230	37.4
		1.50	2	140	0.040	0.080	0.300	29710	2375	57.0
		2.00	2	140	0.050	0.110	0.400	22280	2230	98.0
		2.50	2	140	0.065	0.140	0.500	17825	2315	162.2
		3.00	2	140	0.075	0.170	0.600	14855	2230	227.3
	Hardened tool steel 48 - 52 HRC	0.50	2	66	0.014	0.030	0.100	42015	1175	3.5
		0.60	2	79	0.014	0.030	0.120	41910	1175	4.2
		0.80	2	106	0.020	0.040	0.160	42175	1685	10.8
		1.00	2	120	0.024	0.060	0.200	38195	1835	22.0
		1.20	2	120	0.028	0.070	0.240	31830	1785	29.9
		1.50	2	120	0.038	0.080	0.300	25465	1935	46.4
		2.00	2	120	0.048	0.110	0.400	19100	1835	80.7
		2.50	2	120	0.062	0.140	0.500	15280	1895	132.6
		3.00	2	120	0.072	0.170	0.600	12730	1835	187.0
	Hardened tool steel 52 - 56 HRC	0.50	2	66	0.014	0.030	0.100	42015	1175	3.5
		0.60	2	79	0.014	0.030	0.120	41910	1175	4.2
		0.80	2	100	0.018	0.040	0.160	39790	1430	9.2
		1.00	2	100	0.022	0.060	0.200	31830	1400	16.8
		1.20	2	100	0.026	0.070	0.240	26525	1380	23.2
		1.50	2	100	0.036	0.080	0.300	21220	1530	36.7
		2.00	2	100	0.044	0.110	0.400	15915	1400	61.6
		2.50	2	100	0.058	0.140	0.500	12730	1475	103.4
		3.00	2	100	0.066	0.170	0.600	10610	1400	142.9
	Hardened tool steel 56 - 60 HRC	0.50	2	60	0.012	0.030	0.100	38195	915	2.8
		0.60	2	60	0.012	0.030	0.120	31830	765	2.8
		0.80	2	60	0.016	0.040	0.160	23875	765	4.9
		1.00	2	60	0.020	0.060	0.200	19100	765	9.2
		1.20	2	60	0.024	0.070	0.240	15915	765	12.8
		1.50	2	60	0.032	0.080	0.300	12730	815	19.6
		2.00	2	60	0.040	0.110	0.400	9550	765	33.6
		2.50	2	60	0.052	0.140	0.500	7640	795	55.6
		3.00	2	60	0.060	0.170	0.600	6365	765	77.9
	Hardened tool steel 42 - 48 HRC	0.50	2	66	0.010	0.050	0.500	42015	840	21.0
		0.60	2	79	0.015	0.050	0.600	41910	1255	37.7
		0.80	2	106	0.020	0.070	0.800	42175	1685	94.5
		1.00	2	120	0.020	0.090	1.000	38195	1530	137.5
		1.20	2	120	0.025	0.110	1.200	31830	1590	210.1
		1.50	2	120	0.035	0.140	1.500	25465	1785	374.3
		2.00	2	120	0.045	0.180	2.000	19100	1720	618.8
		2.50	2	120	0.055	0.230	2.500	15280	1680	966.4
		3.00	2	120	0.065	0.270	3.000	12730	1655	1340.7
	Hardened tool steel 48 - 52 HRC	0.50	2	66	0.010	0.050	0.500	42015	840	21.0
		0.60	2	79	0.014	0.050	0.600	41910	1175	35.2
		0.80	2	100	0.020	0.070	0.800	39790	1590	89.1
		1.00	2	100	0.020	0.090	1.000	31830	1275	114.6
		1.20	2	100	0.024	0.110	1.200	26525	1275	168.1
		1.50	2	100	0.034	0.140	1.500	21220	1445	303.0
		2.00	2	100	0.042	0.180	2.000	15915	1335	481.3
		2.50	2	100	0.052	0.230	2.500	12730	1325	761.4
		3.00	2	100	0.062	0.270	3.000	10610	1315	1065.7
	Hardened tool steel 52 - 56 HRC	0.50	2	66	0.008	0.050	0.500	42015	670	16.8
		0.60	2	79	0.014	0.050	0.600	41910	1175	35.2
		0.80	2	80	0.018	0.070	0.800	31830	1145	64.2
		1.00	2	80	0.018	0.090	1.000	25465	915	82.5
		1.20	2	80	0.022	0.110	1.200	21220	935	123.2
		1.50	2	80	0.030	0.140	1.500	16975	1020	213.9
		2.00	2	80	0.040	0.180	2.000	12730	1020	366.7
		2.50	2	80	0.048	0.230	2.500	10185	980	562.3
		3.00	2	80	0.058	0.270	3.000	8490	985	797.6
	Hardened tool steel 56 - 60 HRC	0.50	2	40	0.008	0.050	0.500	25465	405	10.2
		0.60	2	40	0.012	0.050	0.600	21220	510	15.3
		0.80	2	40	0.016	0.070	0.800	15915	510	28.5
		1.00	2	40	0.016	0.090	1.000	12730	405	36.7
		1.20	2	40	0.020	0.110	1.200	10610	425	56.0
		1.50	2	40	0.028	0.140	1.500	8490	475	99.8
		2.00	2	40	0.036	0.180	2.000	6365	460	165.0
		2.50	2	40	0.044	0.230	2.500	5095	450	257.7
		3.00	2	40	0.052	0.270	3.000	4245	440	357.5

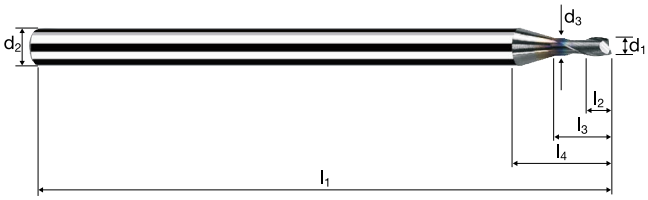
Cylindrical end mills Microcut-C3H

Shank ø 3mm, cylindrical neck, 3xd

HM
XA

λ 25°
γ -10°

45°

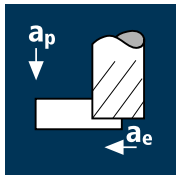
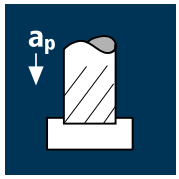


ToolSchool

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	Tungsten

Example: **Order-N°.** Coating **D** Article-N°. **5722** ø-Code **050**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	DURO-S D5722
050	0.50	3.00	0.45	40	0.60	1.50	6.65	-	11.5°	2	●
060	0.60	3.00	0.55	40	0.72	1.80	6.77	-	11.0°	2	●
080	0.80	3.00	0.75	40	0.96	2.40	6.99	-	10.0°	2	●
100	1.00	3.00	0.95	50	1.20	3.00	7.22	0.07	8.5°	2	●
108	1.20	3.00	1.10	50	1.44	3.60	7.54	0.07	7.5°	2	●
120	1.50	3.00	1.40	50	1.80	4.50	7.88	0.07	6.0°	2	●
140	2.00	3.00	1.90	50	2.40	6.00	8.45	0.10	4.0°	2	●
160	2.50	3.00	2.30	50	3.00	7.50	9.20	0.10	2.0°	2	●
180	3.00	3.00	2.80	50	3.60	8.56	9.00	0.10	0.0°	2	●

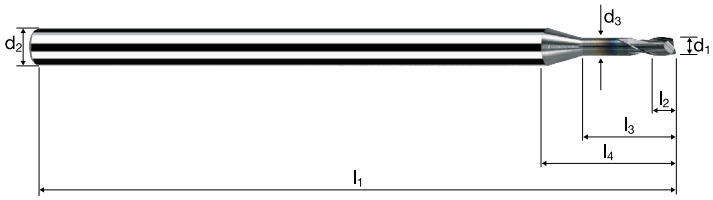
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.50	2	66	0.015	0.030	0.100	42015	1260	3.8
		0.60	2	79	0.015	0.030	0.120	41910	1255	4.5
		0.80	2	106	0.020	0.040	0.160	42175	1685	10.8
		1.00	2	132	0.025	0.050	0.200	42015	2100	21.0
		1.20	2	140	0.030	0.060	0.240	37135	2230	32.1
		1.50	2	140	0.040	0.080	0.300	29710	2375	57.0
		2.00	2	140	0.050	0.100	0.400	22280	2230	89.1
		2.50	2	140	0.065	0.130	0.500	17825	2315	150.6
		3.00	2	140	0.075	0.150	0.600	14855	2230	200.5
	Hardened tool steel 48 - 52 HRC	0.50	2	66	0.014	0.030	0.100	42015	1175	3.5
		0.60	2	79	0.014	0.030	0.120	41910	1175	4.2
		0.80	2	106	0.020	0.040	0.160	42175	1685	10.8
		1.00	2	120	0.024	0.050	0.200	38195	1835	18.3
		1.20	2	120	0.028	0.060	0.240	31830	1785	25.7
		1.50	2	120	0.038	0.080	0.300	25465	1935	46.4
		2.00	2	120	0.048	0.100	0.400	19100	1835	73.3
		2.50	2	120	0.062	0.130	0.500	15280	1895	123.1
		3.00	2	120	0.072	0.150	0.600	12730	1835	165.0
	Hardened tool steel 52 - 56 HRC	0.50	2	66	0.014	0.030	0.100	42015	1175	3.5
		0.60	2	79	0.014	0.030	0.120	41910	1175	4.2
		0.80	2	100	0.018	0.040	0.160	39790	1430	9.2
		1.00	2	100	0.022	0.050	0.200	31830	1400	14.0
		1.20	2	100	0.026	0.060	0.240	26525	1380	19.9
		1.50	2	100	0.036	0.080	0.300	21220	1530	36.7
		2.00	2	100	0.044	0.100	0.400	15915	1400	56.0
		2.50	2	100	0.058	0.130	0.500	12730	1475	96.0
		3.00	2	100	0.066	0.150	0.600	10610	1400	126.1
	Hardened tool steel 56 - 60 HRC	0.50	2	60	0.012	0.030	0.100	38195	915	2.8
		0.60	2	60	0.012	0.030	0.120	31830	765	2.8
		0.80	2	60	0.016	0.040	0.160	23875	765	4.9
		1.00	2	60	0.020	0.050	0.200	19100	765	7.6
		1.20	2	60	0.024	0.060	0.240	15915	765	11.0
		1.50	2	60	0.032	0.080	0.300	12730	815	19.6
		2.00	2	60	0.040	0.100	0.400	9550	765	30.6
		2.50	2	60	0.052	0.130	0.500	7640	795	51.6
		3.00	2	60	0.060	0.150	0.600	6365	765	68.8
	Hardened tool steel 42 - 48 HRC	0.50	2	66	0.010	0.040	0.500	42015	840	16.8
		0.60	2	79	0.015	0.040	0.600	41910	1255	30.2
		0.80	2	106	0.020	0.060	0.800	42175	1685	81.0
		1.00	2	120	0.020	0.070	1.000	38195	1530	107.0
		1.20	2	120	0.025	0.080	1.200	31830	1590	152.8
		1.50	2	120	0.035	0.110	1.500	25465	1785	294.1
		2.00	2	120	0.045	0.140	2.000	19100	1720	481.3
		2.50	2	120	0.055	0.180	2.500	15280	1680	756.3
		3.00	2	120	0.065	0.210	3.000	12730	1655	1042.8
	Hardened tool steel 48 - 52 HRC	0.50	2	66	0.010	0.040	0.500	42015	840	16.8
		0.60	2	79	0.014	0.040	0.600	41910	1175	28.2
		0.80	2	100	0.020	0.060	0.800	39790	1590	76.4
		1.00	2	100	0.020	0.070	1.000	31830	1275	89.1
		1.20	2	100	0.024	0.080	1.200	26525	1275	122.2
		1.50	2	100	0.034	0.110	1.500	21220	1445	238.1
		2.00	2	100	0.042	0.140	2.000	15915	1335	374.3
		2.50	2	100	0.052	0.180	2.500	12730	1325	595.9
		3.00	2	100	0.062	0.210	3.000	10610	1315	828.9
	Hardened tool steel 52 - 56 HRC	0.50	2	66	0.008	0.040	0.500	42015	670	13.4
		0.60	2	79	0.014	0.040	0.600	41910	1175	28.2
		0.80	2	80	0.018	0.060	0.800	31830	1145	55.0
		1.00	2	80	0.018	0.070	1.000	25465	915	64.2
		1.20	2	80	0.022	0.080	1.200	21220	935	89.6
		1.50	2	80	0.030	0.110	1.500	16975	1020	168.1
		2.00	2	80	0.040	0.140	2.000	12730	1020	285.2
		2.50	2	80	0.048	0.180	2.500	10185	980	440.0
		3.00	2	80	0.058	0.210	3.000	8490	985	620.3
	Hardened tool steel 56 - 60 HRC	0.50	2	40	0.008	0.040	0.500	25465	405	8.1
		0.60	2	40	0.012	0.040	0.600	21220	510	12.2
		0.80	2	40	0.016	0.060	0.800	15915	510	24.4
		1.00	2	40	0.016	0.070	1.000	12730	405	28.5
		1.20	2	40	0.020	0.080	1.200	10610	425	40.7
		1.50	2	40	0.028	0.110	1.500	8490	475	78.4
		2.00	2	40	0.036	0.140	2.000	6365	460	128.3
		2.50	2	40	0.044	0.180	2.500	5095	450	201.7
		3.00	2	40	0.052	0.210	3.000	4245	440	278.1

Cylindrical end mills Microcut-C5H

Shank ø 3mm, cylindrical neck, 5xd

X-Generation

HM XA	λ 25° γ -10°
45°	

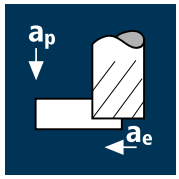
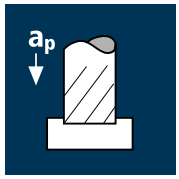


ToolSchool

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	Tungsten

Example: **Order-N°.** Coating **D** Article-N°. **5724** ø-Code **050**

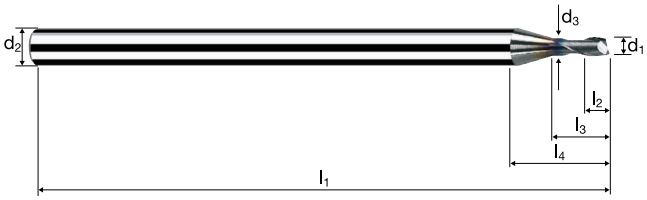
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	DURO-S D5724
050	0.50	3.00	0.45	40	0.60	2.50	7.65	-	10.0°	2	●
060	0.60	3.00	0.55	40	0.72	3.00	7.97	-	9.5°	2	●
070	0.70	3.00	0.65	40	0.84	3.50	8.28	-	8.5°	2	●
080	0.80	3.00	0.75	40	0.96	4.00	8.59	-	8.0°	2	●
090	0.90	3.00	0.85	40	1.08	4.50	8.91	0.07	7.5°	2	●
100	1.00	3.00	0.95	50	1.20	5.00	9.22	0.07	7.0°	2	●
108	1.20	3.00	1.10	50	1.44	6.00	9.94	0.07	5.5°	2	●
120	1.50	3.00	1.40	50	1.80	7.50	10.88	0.07	4.5°	2	●
132	1.80	3.00	1.70	50	2.16	9.00	11.82	0.08	3.5°	2	●
140	2.00	3.00	1.90	50	2.40	10.00	12.45	0.10	2.5°	2	●
152	2.30	3.00	2.10	50	2.76	11.50	13.57	0.10	2.0°	2	●
160	2.50	3.00	2.30	50	3.00	12.50	14.20	0.10	1.5°	2	●
172	2.80	3.00	2.60	50	3.36	14.00	15.14	0.10	0.5°	2	●
180	3.00	3.00	2.80	50	3.60	14.56	15.00	0.10	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.20	2	26	0.004	0.160	0.030	41380	330	1.6
		0.50	2	66	0.012	0.400	0.080	42015	1010	32.3
		0.80	2	106	0.018	0.640	0.120	42175	1520	116.6
		1.00	2	132	0.022	0.800	0.150	42015	1850	221.8
		1.20	2	158	0.026	0.960	0.180	41910	2180	376.6
		1.50	2	180	0.034	1.200	0.230	38195	2595	716.9
		2.00	2	180	0.044	1.600	0.300	28650	2520	1210.1
		2.50	2	180	0.056	2.000	0.380	22920	2565	1950.8
		3.00	2	180	0.066	2.400	0.450	19100	2520	2722.7
	Steel 1100 - 1300 N/mm²	0.20	2	26	0.004	0.160	0.030	41380	330	1.6
		0.50	2	66	0.010	0.400	0.080	42015	840	26.9
		0.80	2	106	0.016	0.640	0.120	42175	1350	103.7
		1.00	2	132	0.020	0.800	0.150	42015	1680	201.7
		1.20	2	158	0.024	0.960	0.180	41910	2010	347.6
		1.50	2	160	0.030	1.200	0.230	33955	2035	562.3
		2.00	2	160	0.040	1.600	0.300	25465	2035	977.8
		2.50	2	160	0.050	2.000	0.380	20370	2035	1548.3
		3.00	2	160	0.060	2.400	0.450	16975	2035	2200.2
	Stainless steel [Cr-Ni/1.4301]	0.20	2	26	0.004	0.160	0.030	41380	330	1.6
		0.50	2	66	0.010	0.400	0.080	42015	840	26.9
		0.80	2	80	0.014	0.640	0.120	31830	890	68.4
		1.00	2	80	0.018	0.800	0.150	25465	915	110.0
		1.20	2	80	0.020	0.960	0.180	21220	850	146.7
		1.50	2	80	0.028	1.200	0.230	16975	950	262.4
		2.00	2	80	0.036	1.600	0.300	12730	915	440.0
		2.50	2	80	0.044	2.000	0.380	10185	895	681.2
		3.00	2	80	0.052	2.400	0.450	8490	885	953.4
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.20	2	26	0.002	0.160	0.030	41380	165	0.8
		0.50	2	60	0.008	0.400	0.080	38195	610	19.6
		0.80	2	60	0.012	0.640	0.120	23875	575	44.0
		1.00	2	60	0.016	0.800	0.150	19100	610	73.3
		1.20	2	60	0.018	0.960	0.180	15915	575	99.0
		1.50	2	60	0.024	1.200	0.230	12730	610	168.7
		2.00	2	60	0.030	1.600	0.300	9550	575	275.0
		2.50	2	60	0.040	2.000	0.380	7640	610	464.5
		3.00	2	60	0.046	2.400	0.450	6365	585	632.5
	Steel 850 - 1100 N/mm²	0.20	2	26	0.004	0.020	0.200	41380	330	1.3
		0.50	2	66	0.010	0.060	0.500	42015	840	25.2
		0.80	2	106	0.014	0.100	0.800	42175	1180	94.5
		1.00	2	132	0.018	0.120	1.000	42015	1515	181.5
		1.20	2	158	0.022	0.140	1.200	41910	1845	309.8
		1.50	2	160	0.028	0.180	1.500	33955	1900	513.4
		2.00	2	160	0.036	0.240	2.000	25465	1835	880.1
		2.50	2	160	0.046	0.300	2.500	20370	1875	1405.7
		3.00	2	160	0.054	0.360	3.000	16975	1835	1980.1
	Steel 1100 - 1300 N/mm²	0.20	2	26	0.004	0.020	0.200	41380	330	1.3
		0.50	2	66	0.010	0.060	0.500	42015	840	25.2
		0.80	2	106	0.014	0.100	0.800	42175	1180	94.5
		1.00	2	132	0.018	0.120	1.000	42015	1515	181.5
		1.20	2	140	0.020	0.140	1.200	37135	1485	249.6
		1.50	2	140	0.026	0.180	1.500	29710	1545	417.1
		2.00	2	140	0.034	0.240	2.000	22280	1515	727.3
		2.50	2	140	0.044	0.300	2.500	17825	1570	1176.5
		3.00	2	140	0.052	0.360	3.000	14855	1545	1668.5
	Stainless steel [Cr-Ni/1.4301]	0.20	2	26	0.004	0.020	0.200	41380	330	1.3
		0.50	2	66	0.008	0.060	0.500	42015	670	20.2
		0.80	2	70	0.012	0.100	0.800	27850	670	53.5
		1.00	2	70	0.016	0.120	1.000	22280	715	85.6
		1.20	2	70	0.020	0.140	1.200	18570	745	124.8
		1.50	2	70	0.024	0.180	1.500	14855	715	192.5
		2.00	2	70	0.032	0.240	2.000	11140	715	342.2
		2.50	2	70	0.040	0.300	2.500	8915	715	534.8
		3.00	2	70	0.048	0.360	3.000	7425	715	770.1
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.20	2	26	0.004	0.020	0.200	41380	330	1.3
		0.50	2	50	0.008	0.060	0.500	31830	510	15.3
		0.80	2	50	0.012	0.100	0.800	19895	475	38.2
		1.00	2	50	0.014	0.120	1.000	15915	445	53.5
		1.20	2	50	0.018	0.140	1.200	13265	475	80.2
		1.50	2	50	0.022	0.180	1.500	10610	465	126.1
		2.00	2	50	0.028	0.240	2.000	7960	445	213.9
		2.50	2	50	0.036	0.300	2.500	6365	460	343.8
		3.00	2	50	0.044	0.360	3.000	5305	465	504.2

Cylindrical end mills Microcut-C3

Shank ø 3mm, cylindrical neck, 3xd

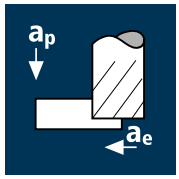
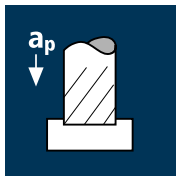
HM MG10	λ 25° γ 6°
45°	



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5712** ø-Code **020**

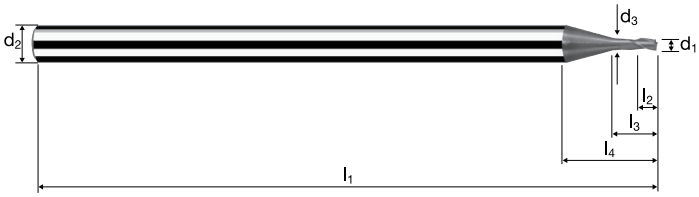
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	MICRO M5712
020	0.20	3.00	0.18	40	0.24	0.60	8.86	-	9.5°	2	●
030	0.30	3.00	0.25	40	0.36	0.90	8.96	-	9.0°	2	●
040	0.40	3.00	0.35	40	0.48	1.20	8.98	-	9.0°	2	●
050	0.50	3.00	0.45	40	0.60	1.50	6.65	-	11.5°	2	●
060	0.60	3.00	0.55	40	0.72	1.80	6.77	-	11.0°	2	●
080	0.80	3.00	0.75	40	0.96	2.40	6.99	-	10.0°	2	●
100	1.00	3.00	0.95	50	1.20	3.00	7.22	0.07	8.5°	2	●
108	1.20	3.00	1.10	50	1.44	3.60	7.54	0.07	7.5°	2	●
120	1.50	3.00	1.40	50	1.80	4.50	7.88	0.07	6.0°	2	●
140	2.00	3.00	1.90	50	2.40	6.00	8.45	0.10	4.0°	2	●
160	2.50	3.00	2.30	50	3.00	7.50	9.20	0.10	2.0°	2	●
180	3.00	3.00	2.80	50	3.60	8.56	9.00	0.10	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Stainless steel [Cr-Ni/1.4301]	0.50	3	66	0.010	0.400	0.080	42015	1260	40.3
		0.60	3	79	0.012	0.480	0.090	41910	1510	65.2
		0.80	3	80	0.016	0.640	0.120	31830	1530	117.3
		1.00	3	80	0.020	0.800	0.150	25465	1530	183.3
		1.20	3	80	0.024	0.960	0.180	21220	1530	264.0
		1.50	3	80	0.030	1.200	0.230	16975	1530	421.7
		2.00	3	80	0.040	1.600	0.300	12730	1530	733.4
		2.50	3	80	0.050	2.000	0.380	10185	1530	1161.2
		3.00	3	80	0.060	2.400	0.450	8490	1530	1650.1
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.50	3	50	0.008	0.400	0.080	31830	765	24.4
		0.60	3	50	0.010	0.480	0.090	26525	795	34.4
		0.80	3	50	0.012	0.640	0.120	19895	715	55.0
		1.00	3	50	0.016	0.800	0.150	15915	765	91.7
		1.20	3	50	0.020	0.960	0.180	13265	795	137.5
		1.50	3	50	0.024	1.200	0.230	10610	765	210.8
		2.00	3	50	0.032	1.600	0.300	7960	765	366.7
		2.50	3	50	0.040	2.000	0.380	6365	765	580.6
		3.00	3	50	0.048	2.400	0.450	5305	765	825.1
	Gold	0.50	3	180	0.012	0.400	0.080	114590	4125	132.0
		0.60	3	180	0.014	0.480	0.090	95495	4010	173.3
		0.80	3	180	0.020	0.640	0.120	71620	4295	330.0
		1.00	3	180	0.024	0.800	0.150	57295	4125	495.0
		1.20	3	180	0.028	0.960	0.180	47745	4010	693.0
		1.50	3	180	0.036	1.200	0.230	38195	4125	1138.6
		2.00	3	180	0.048	1.600	0.300	28650	4125	1980.1
		2.50	3	180	0.060	2.000	0.380	22920	4125	3135.2
		3.00	3	180	0.072	2.400	0.450	19100	4125	4455.3
	Steel 850 - 1300 N/mm²	0.50	3	66	0.010	0.400	0.080	42015	1260	40.3
		0.60	3	79	0.012	0.480	0.090	41910	1510	65.2
		0.80	3	106	0.016	0.640	0.120	42175	2025	155.5
		1.00	3	120	0.020	0.800	0.150	38195	2290	275.0
		1.20	3	120	0.024	0.960	0.180	31830	2290	396.0
		1.50	3	120	0.030	1.200	0.230	25465	2290	632.5
		2.00	3	120	0.040	1.600	0.300	19100	2290	1100.1
		2.50	3	120	0.050	2.000	0.380	15280	2290	1741.8
		3.00	3	120	0.060	2.400	0.450	12730	2290	2475.2
	Stainless steel [Cr-Ni/1.4301]	0.50	3	60	0.008	0.060	0.500	38195	915	27.5
		0.60	3	60	0.008	0.070	0.600	31830	765	32.1
		0.80	3	60	0.012	0.100	0.800	23875	860	68.8
		1.00	3	60	0.014	0.120	1.000	19100	800	96.3
		1.20	3	60	0.018	0.140	1.200	15915	860	144.4
		1.50	3	60	0.022	0.180	1.500	12730	840	226.9
		2.00	3	60	0.028	0.240	2.000	9550	800	385.0
		2.50	3	60	0.036	0.300	2.500	7640	825	618.8
		3.00	3	60	0.042	0.360	3.000	6365	800	866.3
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.50	3	40	0.006	0.060	0.500	25465	460	13.8
		0.60	3	40	0.006	0.070	0.600	21220	380	16.0
		0.80	3	40	0.010	0.100	0.800	15915	475	38.2
		1.00	3	40	0.012	0.120	1.000	12730	460	55.0
		1.20	3	40	0.014	0.140	1.200	10610	445	74.9
		1.50	3	40	0.018	0.180	1.500	8490	460	123.8
		2.00	3	40	0.022	0.240	2.000	6365	420	201.7
		2.50	3	40	0.028	0.300	2.500	5095	430	320.9
		3.00	3	40	0.034	0.360	3.000	4245	435	467.5
	Gold	0.50	3	160	0.010	0.060	0.500	101860	3055	91.7
		0.60	3	160	0.010	0.070	0.600	84885	2545	107.0
		0.80	3	160	0.014	0.100	0.800	63660	2675	213.9
		1.00	3	160	0.016	0.120	1.000	50930	2445	293.4
		1.20	3	160	0.022	0.140	1.200	42440	2800	470.6
		1.50	3	160	0.026	0.180	1.500	33955	2650	715.1
		2.00	3	160	0.034	0.240	2.000	25465	2595	1246.8
		2.50	3	160	0.044	0.300	2.500	20370	2690	2016.8
		3.00	3	160	0.050	0.360	3.000	16975	2545	2750.2
	Steel 850 - 1300 N/mm²	0.50	3	66	0.008	0.060	0.500	42015	1010	30.3
		0.60	3	79	0.008	0.070	0.600	41910	1005	42.2
		0.80	3	100	0.012	0.100	0.800	39790	1430	114.6
		1.00	3	100	0.014	0.120	1.000	31830	1335	160.4
		1.20	3	100	0.018	0.140	1.200	26525	1430	240.6
		1.50	3	100	0.022	0.180	1.500	21220	1400	378.2
		2.00	3	100	0.028	0.240	2.000	15915	1335	641.7
		2.50	3	100	0.036	0.300	2.500	12730	1375	1031.3
		3.00	3	100	0.042	0.360	3.000	10610	1335	1443.9

Cylindrical end mills Microcut-C3

Shank ø 3mm, cylindrical neck, 3xd

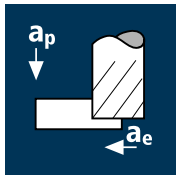
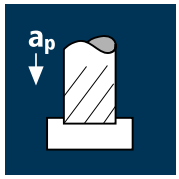
HM XA	λ 25° γ -10°
90°	



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **15752** ø-Code **050**

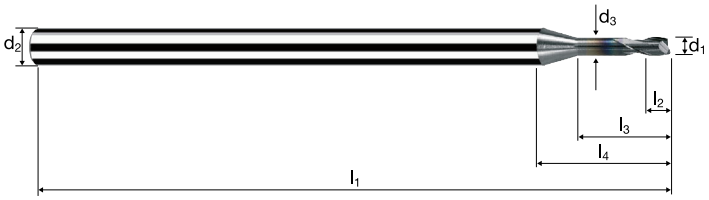
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	α	z	MICRO M15752
050	0.50	3.00	0.45	40	0.60	1.50	6.65	11.5°	3	●
060	0.60	3.00	0.55	40	0.72	1.80	6.77	11.0°	3	●
080	0.80	3.00	0.75	40	0.96	2.40	6.99	10.0°	3	●
100	1.00	3.00	0.95	50	1.20	3.00	7.22	8.5°	3	●
108	1.20	3.00	1.10	50	1.44	3.60	7.54	7.5°	3	●
120	1.50	3.00	1.40	60	1.80	4.50	7.88	6.0°	3	●
140	2.00	3.00	1.90	60	2.40	6.00	8.45	4.0°	3	●
160	2.50	3.00	2.30	60	3.00	7.50	9.20	2.0°	3	●
180	3.00	3.00	2.80	60	3.60	8.56	9.00	0.0°	3	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.50	2	66	0.012	0.400	0.070	42015	1010	28.2
		0.60	2	79	0.014	0.480	0.080	41910	1175	45.1
		0.80	2	106	0.018	0.640	0.100	42175	1520	97.2
		1.00	2	132	0.022	0.800	0.130	42015	1850	192.3
		1.20	2	158	0.026	0.960	0.160	41910	2180	334.7
		1.50	2	180	0.034	1.200	0.200	38195	2595	623.4
		2.00	2	180	0.044	1.600	0.260	28650	2520	1048.7
		2.50	2	180	0.056	2.000	0.330	22920	2565	1694.1
		3.00	2	180	0.066	2.400	0.390	19100	2520	2359.7
	Steel 1100 - 1300 N/mm²	0.50	2	66	0.010	0.400	0.070	42015	840	23.5
		0.60	2	79	0.012	0.480	0.080	41910	1005	38.6
		0.80	2	106	0.016	0.640	0.100	42175	1350	86.4
		1.00	2	132	0.020	0.800	0.130	42015	1680	174.8
		1.20	2	158	0.024	0.960	0.160	41910	2010	309.0
		1.50	2	160	0.030	1.200	0.200	33955	2035	488.9
		2.00	2	160	0.040	1.600	0.260	25465	2035	847.5
		2.50	2	160	0.050	2.000	0.330	20370	2035	1344.5
		3.00	2	160	0.060	2.400	0.390	16975	2035	1906.8
	Stainless steel [Cr-Ni/1.4301]	0.50	2	66	0.010	0.400	0.070	42015	840	23.5
		0.60	2	79	0.012	0.480	0.080	41910	1005	38.6
		0.80	2	80	0.014	0.640	0.100	31830	890	57.0
		1.00	2	80	0.018	0.800	0.130	25465	915	95.3
		1.20	2	80	0.020	0.960	0.160	21220	850	130.4
		1.50	2	80	0.028	1.200	0.200	16975	950	228.2
		2.00	2	80	0.036	1.600	0.260	12730	915	381.4
		2.50	2	80	0.044	2.000	0.330	10185	895	591.6
		3.00	2	80	0.052	2.400	0.390	8490	885	826.3
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.50	2	60	0.008	0.400	0.070	38195	610	17.1
		0.60	2	60	0.010	0.480	0.080	31830	635	24.4
		0.80	2	60	0.012	0.640	0.100	23875	575	36.7
		1.00	2	60	0.016	0.800	0.130	19100	610	63.6
		1.20	2	60	0.018	0.960	0.160	15915	575	88.0
		1.50	2	60	0.024	1.200	0.200	12730	610	146.7
		2.00	2	60	0.030	1.600	0.260	9550	575	238.4
		2.50	2	60	0.040	2.000	0.330	7640	610	403.4
		3.00	2	60	0.046	2.400	0.390	6365	585	548.2
	Steel 850 - 1100 N/mm²	0.50	2	66	0.010	0.060	0.500	42015	840	25.2
		0.60	2	79	0.010	0.070	0.600	41910	840	35.2
		0.80	2	106	0.014	0.090	0.800	42175	1180	85.0
		1.00	2	132	0.018	0.110	1.000	42015	1515	166.4
		1.20	2	158	0.022	0.130	1.200	41910	1845	287.7
		1.50	2	160	0.028	0.170	1.500	33955	1900	484.8
		2.00	2	160	0.036	0.220	2.000	25465	1835	806.7
		2.50	2	160	0.046	0.280	2.500	20370	1875	1311.9
		3.00	2	160	0.054	0.330	3.000	16975	1835	1815.1
	Steel 1100 - 1300 N/mm²	0.50	2	66	0.010	0.060	0.500	42015	840	25.2
		0.60	2	79	0.010	0.070	0.600	41910	840	35.2
		0.80	2	106	0.014	0.090	0.800	42175	1180	85.0
		1.00	2	132	0.018	0.110	1.000	42015	1515	166.4
		1.20	2	140	0.020	0.130	1.200	37135	1485	231.7
		1.50	2	140	0.026	0.170	1.500	29710	1545	393.9
		2.00	2	140	0.034	0.220	2.000	22280	1515	666.7
		2.50	2	140	0.044	0.280	2.500	17825	1570	1098.0
		3.00	2	140	0.052	0.330	3.000	14855	1545	1529.4
	Stainless steel [Cr-Ni/1.4301]	0.50	2	66	0.008	0.060	0.500	42015	670	20.2
		0.60	2	70	0.008	0.070	0.600	37135	595	25.0
		0.80	2	70	0.012	0.090	0.800	27850	670	48.1
		1.00	2	70	0.016	0.110	1.000	22280	715	78.4
		1.20	2	70	0.020	0.130	1.200	18570	745	115.9
		1.50	2	70	0.024	0.170	1.500	14855	715	181.8
		2.00	2	70	0.032	0.220	2.000	11140	715	313.7
		2.50	2	70	0.040	0.280	2.500	8915	715	499.1
		3.00	2	70	0.048	0.330	3.000	7425	715	705.9
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.50	2	50	0.008	0.060	0.500	31830	510	15.3
		0.60	2	50	0.008	0.070	0.600	26525	425	17.8
		0.80	2	50	0.012	0.090	0.800	19895	475	34.4
		1.00	2	50	0.014	0.110	1.000	15915	445	49.0
		1.20	2	50	0.018	0.130	1.200	13265	475	74.5
		1.50	2	50	0.022	0.170	1.500	10610	465	119.0
		2.00	2	50	0.028	0.220	2.000	7960	445	196.1
		2.50	2	50	0.036	0.280	2.500	6365	460	320.9
		3.00	2	50	0.044	0.330	3.000	5305	465	462.2

Cylindrical end mills Microcut-C5

Shank ø 3mm, cylindrical neck, 5xd

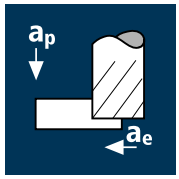
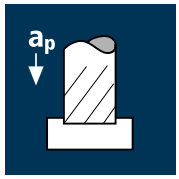
HM MG10	λ 25° γ 6°
45°	



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5714** ø-Code **050**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	MICRO M5714
050	0.50	3.00	0.45	40	0.60	2.50	7.65	-	10.0°	2	●
060	0.60	3.00	0.55	40	0.72	3.00	7.97	-	9.5°	2	●
070	0.70	3.00	0.65	40	0.84	3.50	8.28	-	8.5°	2	●
080	0.80	3.00	0.75	40	0.96	4.00	8.59	-	8.0°	2	●
090	0.90	3.00	0.85	40	1.08	4.50	8.91	-	7.5°	2	●
100	1.00	3.00	0.95	50	1.20	5.00	9.22	0.07	7.0°	2	●
108	1.20	3.00	1.10	50	1.44	6.00	9.94	0.07	5.5°	2	●
120	1.50	3.00	1.40	50	1.80	7.50	10.88	0.07	4.5°	2	●
132	1.80	3.00	1.70	50	2.16	9.00	11.82	0.07	3.5°	2	●
140	2.00	3.00	1.90	50	2.40	10.00	12.45	0.10	2.5°	2	●
152	2.30	3.00	2.10	50	2.76	11.50	13.57	0.10	2.0°	2	●
160	2.50	3.00	2.30	50	3.00	12.50	14.20	0.10	1.5°	2	●
172	2.80	3.00	2.60	50	3.36	14.00	15.14	0.10	0.5°	2	●
180	3.00	3.00	2.80	50	3.60	14.56	15.00	0.10	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Stainless steel [Cr-Ni/1.4301]	0.50	3	66	0.010	0.400	0.070	42015	1260	35.3
		0.60	3	79	0.010	0.480	0.080	41910	1255	48.3
		0.80	3	80	0.014	0.640	0.100	31830	1335	85.6
		1.00	3	80	0.018	0.800	0.130	25465	1375	143.0
		1.20	3	80	0.022	0.960	0.160	21220	1400	215.1
		1.50	3	80	0.028	1.200	0.200	16975	1425	342.2
		2.00	3	80	0.036	1.600	0.260	12730	1375	572.0
		2.50	3	80	0.046	2.000	0.330	10185	1405	927.7
		3.00	3	80	0.054	2.400	0.390	8490	1375	1287.1
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.50	3	50	0.008	0.400	0.070	31830	765	21.4
		0.60	3	50	0.008	0.480	0.080	26525	635	24.4
		0.80	3	50	0.012	0.640	0.100	19895	715	45.8
		1.00	3	50	0.014	0.800	0.130	15915	670	69.5
		1.20	3	50	0.018	0.960	0.160	13265	715	110.0
		1.50	3	50	0.022	1.200	0.200	10610	700	168.1
		2.00	3	50	0.028	1.600	0.260	7960	670	278.1
		2.50	3	50	0.036	2.000	0.330	6365	690	453.8
		3.00	3	50	0.044	2.400	0.390	5305	700	655.5
	Gold	0.50	3	180	0.012	0.400	0.070	114590	4125	115.5
		0.60	3	180	0.012	0.480	0.080	95495	3440	132.0
		0.80	3	180	0.016	0.640	0.100	71620	3440	220.0
		1.00	3	180	0.022	0.800	0.130	57295	3780	393.3
		1.20	3	180	0.026	0.960	0.160	47745	3725	572.0
		1.50	3	180	0.034	1.200	0.200	38195	3895	935.1
		2.00	3	180	0.044	1.600	0.260	28650	3780	1573.1
		2.50	3	180	0.056	2.000	0.330	22920	3850	2541.2
		3.00	3	180	0.064	2.400	0.390	19100	3665	3432.2
	Steel 850 - 1300 N/mm²	0.50	3	66	0.010	0.400	0.070	42015	1260	35.3
		0.60	3	79	0.010	0.480	0.080	41910	1255	48.3
		0.80	3	106	0.014	0.640	0.100	42175	1770	113.4
		1.00	3	120	0.018	0.800	0.130	38195	2065	214.5
		1.20	3	120	0.022	0.960	0.160	31830	2100	322.7
		1.50	3	120	0.028	1.200	0.200	25465	2140	513.4
		2.00	3	120	0.036	1.600	0.260	19100	2065	858.1
		2.50	3	120	0.046	2.000	0.330	15280	2110	1391.6
		3.00	3	120	0.054	2.400	0.390	12730	2065	1930.6
	Stainless steel [Cr-Ni/1.4301]	0.50	3	60	0.006	0.050	0.500	38195	690	17.2
		0.60	3	60	0.008	0.060	0.600	31830	765	27.5
		0.80	3	60	0.010	0.080	0.800	23875	715	45.8
		1.00	3	60	0.014	0.100	1.000	19100	800	80.2
		1.20	3	60	0.016	0.120	1.200	15915	765	110.0
		1.50	3	60	0.020	0.150	1.500	12730	765	171.9
		2.00	3	60	0.026	0.200	2.000	9550	745	297.9
		2.50	3	60	0.034	0.250	2.500	7640	780	487.0
		3.00	3	60	0.040	0.300	3.000	6365	765	687.5
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.50	3	40	0.004	0.050	0.500	25465	305	7.6
		0.60	3	40	0.006	0.060	0.600	21220	380	13.8
		0.80	3	40	0.008	0.080	0.800	15915	380	24.4
		1.00	3	40	0.012	0.100	1.000	12730	460	45.8
		1.20	3	40	0.012	0.120	1.200	10610	380	55.0
		1.50	3	40	0.016	0.150	1.500	8490	405	91.7
		2.00	3	40	0.020	0.200	2.000	6365	380	152.8
		2.50	3	40	0.028	0.250	2.500	5095	430	267.4
		3.00	3	40	0.032	0.300	3.000	4245	405	366.7
	Gold	0.50	3	160	0.008	0.050	0.500	101860	2445	61.1
		0.60	3	160	0.010	0.060	0.600	84885	2545	91.7
		0.80	3	160	0.012	0.080	0.800	63660	2290	146.7
		1.00	3	160	0.016	0.100	1.000	50930	2445	244.5
		1.20	3	160	0.020	0.120	1.200	42440	2545	366.7
		1.50	3	160	0.024	0.150	1.500	33955	2445	550.0
		2.00	3	160	0.032	0.200	2.000	25465	2445	977.8
		2.50	3	160	0.040	0.250	2.500	20370	2445	1527.9
		3.00	3	160	0.048	0.300	3.000	16975	2445	2200.2
	Steel 850 - 1300 N/mm²	0.50	3	66	0.006	0.050	0.500	42015	755	18.9
		0.60	3	79	0.008	0.060	0.600	41910	1005	36.2
		0.80	3	100	0.010	0.080	0.800	39790	1195	76.4
		1.00	3	100	0.014	0.100	1.000	31830	1335	133.7
		1.20	3	100	0.016	0.120	1.200	26525	1275	183.3
		1.50	3	100	0.020	0.150	1.500	21220	1275	286.5
		2.00	3	100	0.026	0.200	2.000	15915	1240	496.6
		2.50	3	100	0.034	0.250	2.500	12730	1300	811.7
		3.00	3	100	0.040	0.300	3.000	10610	1275	1145.9

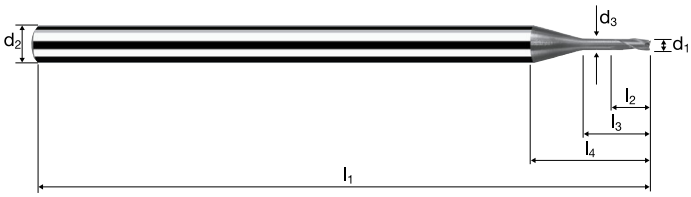
Cylindrical end mills Microcut-C5

Shank ø 3mm, cylindrical neck, 5xd

HM
XA

λ 25°
γ -10°

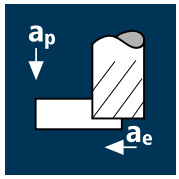
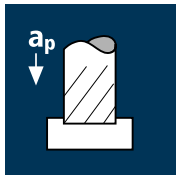
90°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **15754** ø-Code **050**

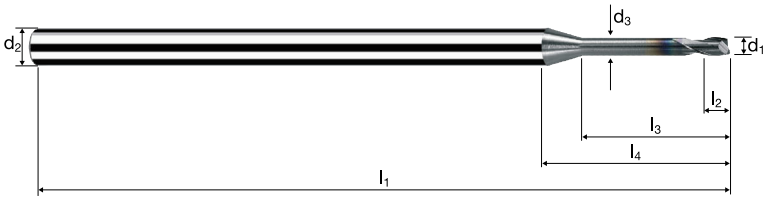
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	α	z	MICRO M15754
050	0.50	3.00	0.45	40	0.60	2.50	7.65	10.0°	3	●
060	0.60	3.00	0.55	40	0.72	3.00	7.97	9.5°	3	●
080	0.80	3.00	0.75	40	0.96	4.00	8.59	8.0°	3	●
100	1.00	3.00	0.95	50	1.20	5.00	9.22	7.0°	3	●
108	1.20	3.00	1.10	50	1.44	6.00	9.94	5.5°	3	●
120	1.50	3.00	1.40	60	1.80	7.50	10.88	4.5°	3	●
140	2.00	3.00	1.90	60	2.40	10.00	12.45	2.5°	3	●
160	2.50	3.00	2.30	60	3.00	12.50	14.20	1.5°	3	●
180	3.00	3.00	2.80	60	3.60	14.56	15.00	0.0°	3	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.50	2	66	0.012	0.300	0.060	42015	1010	18.2
		0.60	2	79	0.014	0.360	0.070	41910	1175	29.6
		0.80	2	106	0.018	0.480	0.090	42175	1520	65.6
		1.00	2	132	0.022	0.600	0.110	42015	1850	122.0
		1.20	2	158	0.026	0.720	0.130	41910	2180	204.0
		1.50	2	180	0.034	0.900	0.170	38195	2595	397.4
		2.00	2	180	0.044	1.200	0.220	28650	2520	665.5
		2.50	2	180	0.056	1.500	0.280	22920	2565	1078.1
		3.00	2	180	0.066	1.800	0.330	19100	2520	1497.5
	Steel 1100 - 1300 N/mm²	0.50	2	66	0.010	0.300	0.060	42015	840	15.1
		0.60	2	79	0.012	0.360	0.070	41910	1005	25.3
		0.80	2	106	0.016	0.480	0.090	42175	1350	58.3
		1.00	2	132	0.020	0.600	0.110	42015	1680	110.9
		1.20	2	158	0.024	0.720	0.130	41910	2010	188.3
		1.50	2	160	0.030	0.900	0.170	33955	2035	311.7
		2.00	2	160	0.040	1.200	0.220	25465	2035	537.8
		2.50	2	160	0.050	1.500	0.280	20370	2035	855.6
		3.00	2	160	0.060	1.800	0.330	16975	2035	1210.1
	Stainless steel [Cr-Ni/1.4301]	0.50	2	66	0.010	0.300	0.060	42015	840	15.1
		0.60	2	79	0.012	0.360	0.070	41910	1005	25.3
		0.80	2	80	0.014	0.480	0.090	31830	890	38.5
		1.00	2	80	0.018	0.600	0.110	25465	915	60.5
		1.20	2	80	0.020	0.720	0.130	21220	850	79.5
		1.50	2	80	0.028	0.900	0.170	16975	950	145.5
		2.00	2	80	0.036	1.200	0.220	12730	915	242.0
		2.50	2	80	0.044	1.500	0.280	10185	895	376.5
		3.00	2	80	0.052	1.800	0.330	8490	885	524.4
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.50	2	60	0.008	0.300	0.060	38195	610	11.0
		0.60	2	60	0.010	0.360	0.070	31830	635	16.0
		0.80	2	60	0.012	0.480	0.090	23875	575	24.8
		1.00	2	60	0.016	0.600	0.110	19100	610	40.3
		1.20	2	60	0.018	0.720	0.130	15915	575	53.6
		1.50	2	60	0.024	0.900	0.170	12730	610	93.5
		2.00	2	60	0.030	1.200	0.220	9550	575	151.3
		2.50	2	60	0.040	1.500	0.280	7640	610	256.7
		3.00	2	60	0.046	1.800	0.330	6365	585	347.9
	Steel 850 - 1100 N/mm²	0.50	2	66	0.010	0.050	0.500	42015	840	21.0
		0.60	2	79	0.010	0.060	0.600	41910	840	30.2
		0.80	2	106	0.014	0.080	0.800	42175	1180	75.6
		1.00	2	132	0.018	0.100	1.000	42015	1515	151.3
		1.20	2	158	0.022	0.120	1.200	41910	1845	265.5
		1.50	2	160	0.028	0.150	1.500	33955	1900	427.8
		2.00	2	160	0.036	0.200	2.000	25465	1835	733.4
		2.50	2	160	0.046	0.250	2.500	20370	1875	1171.4
		3.00	2	160	0.054	0.300	3.000	16975	1835	1650.1
	Steel 1100 - 1300 N/mm²	0.50	2	66	0.010	0.050	0.500	42015	840	21.0
		0.60	2	79	0.010	0.060	0.600	41910	840	30.2
		0.80	2	106	0.014	0.080	0.800	42175	1180	75.6
		1.00	2	132	0.018	0.100	1.000	42015	1515	151.3
		1.20	2	140	0.020	0.120	1.200	37135	1485	213.9
		1.50	2	140	0.026	0.150	1.500	29710	1545	347.6
		2.00	2	140	0.034	0.200	2.000	22280	1515	606.1
		2.50	2	140	0.044	0.250	2.500	17825	1570	980.4
		3.00	2	140	0.052	0.300	3.000	14855	1545	1390.4
	Stainless steel [Cr-Ni/1.4301]	0.50	2	66	0.008	0.050	0.500	42015	670	16.8
		0.60	2	70	0.008	0.060	0.600	37135	595	21.4
		0.80	2	70	0.012	0.080	0.800	27850	670	42.8
		1.00	2	70	0.016	0.100	1.000	22280	715	71.3
		1.20	2	70	0.020	0.120	1.200	18570	745	107.0
		1.50	2	70	0.024	0.150	1.500	14855	715	160.4
		2.00	2	70	0.032	0.200	2.000	11140	715	285.2
		2.50	2	70	0.040	0.250	2.500	8915	715	445.6
		3.00	2	70	0.048	0.300	3.000	7425	715	641.7
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.50	2	50	0.008	0.050	0.500	31830	510	12.7
		0.60	2	50	0.008	0.060	0.600	26525	425	15.3
		0.80	2	50	0.012	0.080	0.800	19895	475	30.6
		1.00	2	50	0.014	0.100	1.000	15915	445	44.6
		1.20	2	50	0.018	0.120	1.200	13265	475	68.8
		1.50	2	50	0.022	0.150	1.500	10610	465	105.0
		2.00	2	50	0.028	0.200	2.000	7960	445	178.3
		2.50	2	50	0.036	0.250	2.500	6365	460	286.5
		3.00	2	50	0.044	0.300	3.000	5305	465	420.2

Cylindrical end mills Microcut-C8

Shank ø 3mm, cylindrical neck, 8xd

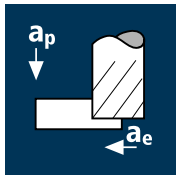
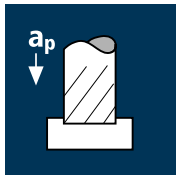
HM MG10	λ 25° γ 6°
45°	



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5716** ø-Code **050**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	MICRO M5716
050	0.50	3.00	0.45	40	0.60	4.00	9.15	-	8.5°	2	●
060	0.60	3.00	0.55	40	0.72	4.80	9.77	-	7.5°	2	●
080	0.80	3.00	0.75	40	0.96	6.40	10.99	-	6.0°	2	●
100	1.00	3.00	0.95	50	1.20	8.00	12.22	0.07	5.0°	2	●
108	1.20	3.00	1.10	50	1.44	9.60	13.54	0.07	4.0°	2	●
120	1.50	3.00	1.40	60	1.80	12.00	15.38	0.07	3.0°	2	●
140	2.00	3.00	1.90	60	2.40	16.00	18.45	0.10	2.0°	2	●
160	2.50	3.00	2.30	60	3.00	20.00	21.70	0.10	1.0°	2	●
180	3.00	3.00	2.80	60	3.60	23.56	24.00	0.10	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm² M M	0.50	2	66	0.012	0.250	0.060	42015	1010	15.1
		0.60	2	79	0.014	0.300	0.070	41910	1175	24.6
		0.80	2	106	0.018	0.400	0.090	42175	1520	54.7
		1.00	2	132	0.022	0.500	0.110	42015	1850	101.7
		1.20	2	158	0.026	0.600	0.130	41910	2180	170.0
		1.50	2	180	0.034	0.750	0.170	38195	2595	331.2
		2.00	2	180	0.044	1.000	0.220	28650	2520	554.6
		2.50	2	180	0.056	1.250	0.280	22920	2565	898.4
		3.00	2	180	0.066	1.500	0.330	19100	2520	1247.9
	Steel 1100 - 1300 N/mm² M M	0.50	2	66	0.010	0.250	0.060	42015	840	12.6
		0.60	2	79	0.012	0.300	0.070	41910	1005	21.1
		0.80	2	106	0.016	0.400	0.090	42175	1350	48.6
		1.00	2	132	0.020	0.500	0.110	42015	1680	92.4
		1.20	2	158	0.024	0.600	0.130	41910	2010	156.9
		1.50	2	160	0.030	0.750	0.170	33955	2035	259.7
		2.00	2	160	0.040	1.000	0.220	25465	2035	448.2
		2.50	2	160	0.050	1.250	0.280	20370	2035	713.0
		3.00	2	160	0.060	1.500	0.330	16975	2035	1008.4
	Stainless steel [Cr-Ni/1.4301] M	0.50	2	66	0.010	0.250	0.060	42015	840	12.6
		0.60	2	79	0.012	0.300	0.070	41910	1005	21.1
		0.80	2	80	0.014	0.400	0.090	31830	890	32.1
		1.00	2	80	0.018	0.500	0.110	25465	915	50.4
		1.20	2	80	0.020	0.600	0.130	21220	850	66.2
		1.50	2	80	0.028	0.750	0.170	16975	950	121.2
		2.00	2	80	0.036	1.000	0.220	12730	915	201.7
		2.50	2	80	0.044	1.250	0.280	10185	895	313.7
		3.00	2	80	0.052	1.500	0.330	8490	885	437.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn] M	0.50	2	60	0.008	0.250	0.060	38195	610	9.2
		0.60	2	60	0.010	0.300	0.070	31830	635	13.4
		0.80	2	60	0.012	0.400	0.090	23875	575	20.6
		1.00	2	60	0.016	0.500	0.110	19100	610	33.6
		1.20	2	60	0.018	0.600	0.130	15915	575	44.7
		1.50	2	60	0.024	0.750	0.170	12730	610	77.9
		2.00	2	60	0.030	1.000	0.220	9550	575	126.1
		2.50	2	60	0.040	1.250	0.280	7640	610	213.9
		3.00	2	60	0.046	1.500	0.330	6365	585	289.9
	Steel 850 - 1100 N/mm² M M	0.50	2	66	0.010	0.040	0.500	42015	840	16.8
		0.60	2	79	0.010	0.050	0.600	41910	840	25.1
		0.80	2	106	0.014	0.060	0.800	42175	1180	56.7
		1.00	2	132	0.018	0.080	1.000	42015	1515	121.0
		1.20	2	158	0.022	0.100	1.200	41910	1845	221.3
		1.50	2	160	0.028	0.120	1.500	33955	1900	342.2
		2.00	2	160	0.036	0.160	2.000	25465	1835	586.7
		2.50	2	160	0.046	0.200	2.500	20370	1875	937.1
		3.00	2	160	0.054	0.240	3.000	16975	1835	1320.1
	Steel 1100 - 1300 N/mm² M M	0.50	2	66	0.010	0.040	0.500	42015	840	16.8
		0.60	2	79	0.010	0.050	0.600	41910	840	25.1
		0.80	2	106	0.014	0.060	0.800	42175	1180	56.7
		1.00	2	132	0.018	0.080	1.000	42015	1515	121.0
		1.20	2	140	0.020	0.100	1.200	37135	1485	178.3
		1.50	2	140	0.026	0.120	1.500	29710	1545	278.1
		2.00	2	140	0.034	0.160	2.000	22280	1515	484.8
		2.50	2	140	0.044	0.200	2.500	17825	1570	784.3
		3.00	2	140	0.052	0.240	3.000	14855	1545	1112.3
	Stainless steel [Cr-Ni/1.4301] M	0.50	2	66	0.008	0.040	0.500	42015	670	13.4
		0.60	2	70	0.008	0.050	0.600	37135	595	17.8
		0.80	2	70	0.012	0.060	0.800	27850	670	32.1
		1.00	2	70	0.016	0.080	1.000	22280	715	57.0
		1.20	2	70	0.020	0.100	1.200	18570	745	89.1
		1.50	2	70	0.024	0.120	1.500	14855	715	128.3
		2.00	2	70	0.032	0.160	2.000	11140	715	228.2
		2.50	2	70	0.040	0.200	2.500	8915	715	356.5
		3.00	2	70	0.048	0.240	3.000	7425	715	513.4
	Titanium alloys up to 300 HB [Ti5Al2.5Sn] M	0.50	2	50	0.008	0.040	0.500	31830	510	10.2
		0.60	2	50	0.008	0.050	0.600	26525	425	12.7
		0.80	2	50	0.012	0.060	0.800	19895	475	22.9
		1.00	2	50	0.014	0.080	1.000	15915	445	35.7
		1.20	2	50	0.018	0.100	1.200	13265	475	57.3
		1.50	2	50	0.022	0.120	1.500	10610	465	84.0
		2.00	2	50	0.028	0.160	2.000	7960	445	142.6
		2.50	2	50	0.036	0.200	2.500	6365	460	229.2
		3.00	2	50	0.044	0.240	3.000	5305	465	336.1

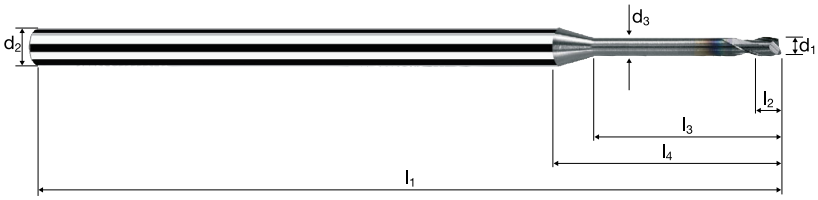
Cylindrical end mills Microcut-C10

Shank ø 3mm, cylindrical neck, 10xd

HM MG10

λ 25°
γ 6°

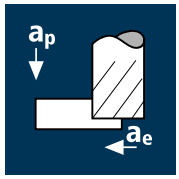
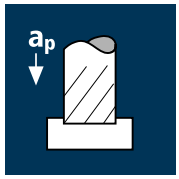
45°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5717** ø-Code **050**

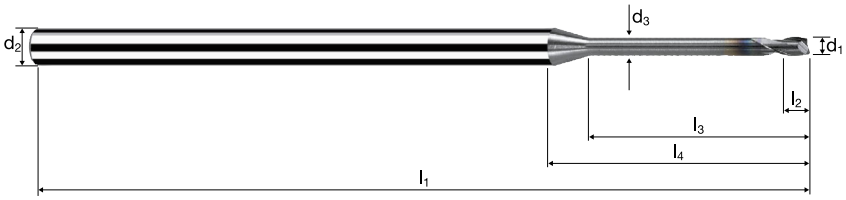
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	MICRO M5717
050	0.50	3.00	0.45	40	0.60	5.00	10.15	-	7.5°	2	●
060	0.60	3.00	0.55	40	0.72	6.00	10.97	-	7.0°	2	●
080	0.80	3.00	0.75	40	0.96	8.00	12.59	-	5.5°	2	●
100	1.00	3.00	0.95	50	1.20	10.00	14.22	0.07	4.5°	2	●
108	1.20	3.00	1.10	50	1.44	12.00	15.94	0.07	3.5°	2	●
120	1.50	3.00	1.40	60	1.80	15.00	18.38	0.07	2.5°	2	●
140	2.00	3.00	1.90	60	2.40	20.00	22.45	0.10	1.5°	2	●
160	2.50	3.00	2.30	60	3.00	25.00	26.70	0.10	1.0°	2	●
180	3.00	3.00	2.80	60	3.60	29.56	30.00	0.10	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	1.00	2	132	0.022	0.400	0.090	42015	1850	66.6
		1.20	2	158	0.026	0.480	0.110	41910	2180	115.1
		1.50	2	180	0.034	0.600	0.140	38195	2595	218.2
		2.00	2	180	0.044	0.800	0.180	28650	2520	363.0
		2.50	2	180	0.056	1.000	0.230	22920	2565	590.4
		3.00	2	180	0.066	1.200	0.270	19100	2520	816.8
	Steel 1100 - 1300 N/mm²	1.00	2	132	0.020	0.400	0.090	42015	1680	60.5
		1.20	2	158	0.024	0.480	0.110	41910	2010	106.2
		1.50	2	160	0.030	0.600	0.140	33955	2035	171.1
		2.00	2	160	0.040	0.800	0.180	25465	2035	293.4
		2.50	2	160	0.050	1.000	0.230	20370	2035	468.6
		3.00	2	160	0.060	1.200	0.270	16975	2035	660.0
	Stainless steel [Cr-Ni/1.4301]	1.00	2	80	0.018	0.400	0.090	25465	915	33.0
		1.20	2	80	0.020	0.480	0.110	21220	850	44.8
		1.50	2	80	0.028	0.600	0.140	16975	950	79.9
		2.00	2	80	0.036	0.800	0.180	12730	915	132.0
		2.50	2	80	0.044	1.000	0.230	10185	895	206.2
		3.00	2	80	0.052	1.200	0.270	8490	885	286.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	60	0.016	0.400	0.090	19100	610	22.0
		1.20	2	60	0.018	0.480	0.110	15915	575	30.3
		1.50	2	60	0.024	0.600	0.140	12730	610	51.3
		2.00	2	60	0.030	0.800	0.180	9550	575	82.5
		2.50	2	60	0.040	1.000	0.230	7640	610	140.6
		3.00	2	60	0.046	1.200	0.270	6365	585	189.8
	Steel 850 - 1100 N/mm²	1.00	2	132	0.018	0.060	1.000	42015	1515	90.8
		1.20	2	158	0.022	0.070	1.200	41910	1845	154.9
		1.50	2	160	0.028	0.090	1.500	33955	1900	256.7
		2.00	2	160	0.036	0.120	2.000	25465	1835	440.0
		2.50	2	160	0.046	0.150	2.500	20370	1875	702.8
		3.00	2	160	0.054	0.180	3.000	16975	1835	990.1
	Steel 1100 - 1300 N/mm²	1.00	2	132	0.018	0.060	1.000	42015	1515	90.8
		1.20	2	140	0.020	0.070	1.200	37135	1485	124.8
		1.50	2	140	0.026	0.090	1.500	29710	1545	208.6
		2.00	2	140	0.034	0.120	2.000	22280	1515	363.6
		2.50	2	140	0.044	0.150	2.500	17825	1570	588.2
		3.00	2	140	0.052	0.180	3.000	14855	1545	834.2
	Stainless steel [Cr-Ni/1.4301]	1.00	2	70	0.016	0.060	1.000	22280	715	42.8
		1.20	2	70	0.020	0.070	1.200	18570	745	62.4
		1.50	2	70	0.024	0.090	1.500	14855	715	96.3
		2.00	2	70	0.032	0.120	2.000	11140	715	171.1
		2.50	2	70	0.040	0.150	2.500	8915	715	267.4
		3.00	2	70	0.048	0.180	3.000	7425	715	385.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	50	0.014	0.060	1.000	15915	445	26.7
		1.20	2	50	0.018	0.070	1.200	13265	475	40.1
		1.50	2	50	0.022	0.090	1.500	10610	465	63.0
		2.00	2	50	0.028	0.120	2.000	7960	445	107.0
		2.50	2	50	0.036	0.150	2.500	6365	460	171.9
		3.00	2	50	0.044	0.180	3.000	5305	465	252.1

Cylindrical end mills Microcut-C12

Shank ø 3mm, cylindrical neck, 12xd

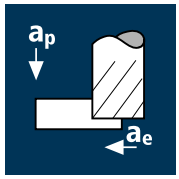
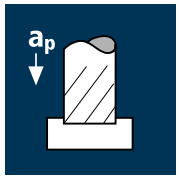
HM MG10	λ 25° γ 6°
45°	



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5721** ø-Code **100**

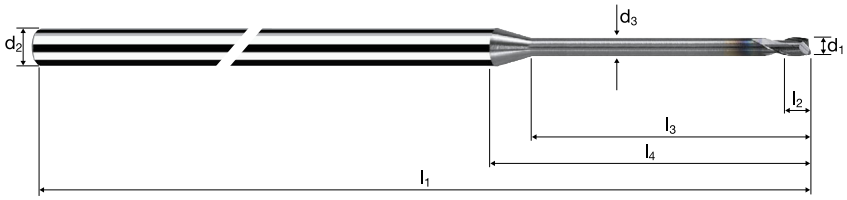
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	MICRO M5721
100	1.00	3.00	0.95	50	1.20	12.00	16.22	0.07	4.0°	2	●
108	1.20	3.00	1.10	60	1.44	14.40	18.34	0.07	3.0°	2	●
120	1.50	3.00	1.40	60	1.80	18.00	21.38	0.07	2.5°	2	●
140	2.00	3.00	1.90	60	2.40	24.00	26.45	0.10	1.5°	2	●
160	2.50	3.00	2.30	70	3.00	30.00	31.70	0.10	0.5°	2	●
180	3.00	3.00	2.80	70	3.60	35.56	36.00	0.10	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Steel 850 - 1100 N/mm²	1.00	2	132	0.018	0.300	0.090	42015	1515	40.8
		1.20	2	158	0.022	0.360	0.110	41910	1845	73.0
		1.50	2	180	0.028	0.450	0.140	38195	2140	134.8
		2.00	2	180	0.036	0.600	0.180	28650	2065	222.8
		2.50	2	180	0.046	0.750	0.230	22920	2110	363.7
		3.00	2	180	0.054	0.900	0.270	19100	2065	501.2
	Steel 1100 - 1300 N/mm²	1.00	2	132	0.016	0.300	0.090	42015	1345	36.3
		1.20	2	158	0.020	0.360	0.110	41910	1675	66.4
		1.50	2	160	0.026	0.450	0.140	33955	1765	111.2
		2.00	2	160	0.032	0.600	0.180	25465	1630	176.0
		2.50	2	160	0.042	0.750	0.230	20370	1710	295.2
		3.00	2	160	0.048	0.900	0.270	16975	1630	396.0
	Stainless steel [Cr-Ni/1.4301]	1.00	2	80	0.014	0.300	0.090	25465	715	19.3
		1.20	2	80	0.018	0.360	0.110	21220	765	30.3
		1.50	2	80	0.022	0.450	0.140	16975	745	47.1
		2.00	2	80	0.028	0.600	0.180	12730	715	77.0
		2.50	2	80	0.036	0.750	0.230	10185	735	126.5
		3.00	2	80	0.044	0.900	0.270	8490	745	181.5
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	60	0.012	0.300	0.090	19100	460	12.4
		1.20	2	60	0.016	0.360	0.110	15915	510	20.2
		1.50	2	60	0.020	0.450	0.140	12730	510	32.1
		2.00	2	60	0.026	0.600	0.180	9550	495	53.6
		2.50	2	60	0.032	0.750	0.230	7640	490	84.3
		3.00	2	60	0.038	0.900	0.270	6365	485	117.6
	Steel 850 - 1100 N/mm²	1.00	2	132	0.016	0.040	1.000	42015	1345	53.8
		1.20	2	158	0.018	0.050	1.200	41910	1510	90.5
		1.50	2	160	0.024	0.060	1.500	33955	1630	146.7
		2.00	2	160	0.030	0.080	2.000	25465	1530	244.5
		2.50	2	160	0.038	0.100	2.500	20370	1550	387.1
		3.00	2	160	0.046	0.120	3.000	16975	1560	562.3
	Steel 1100 - 1300 N/mm²	1.00	2	132	0.016	0.040	1.000	42015	1345	53.8
		1.20	2	140	0.018	0.050	1.200	37135	1335	80.2
		1.50	2	140	0.022	0.060	1.500	29710	1305	117.6
		2.00	2	140	0.028	0.080	2.000	22280	1250	199.6
		2.50	2	140	0.036	0.100	2.500	17825	1285	320.9
		3.00	2	140	0.044	0.120	3.000	14855	1305	470.6
	Stainless steel [Cr-Ni/1.4301]	1.00	2	70	0.014	0.040	1.000	22280	625	25.0
		1.20	2	70	0.016	0.050	1.200	18570	595	35.7
		1.50	2	70	0.022	0.060	1.500	14855	655	58.8
		2.00	2	70	0.026	0.080	2.000	11140	580	92.7
		2.50	2	70	0.034	0.100	2.500	8915	605	151.5
		3.00	2	70	0.040	0.120	3.000	7425	595	213.9
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	50	0.012	0.040	1.000	15915	380	15.3
		1.20	2	50	0.014	0.050	1.200	13265	370	22.3
		1.50	2	50	0.020	0.060	1.500	10610	425	38.2
		2.00	2	50	0.024	0.080	2.000	7960	380	61.1
		2.50	2	50	0.030	0.100	2.500	6365	380	95.5
		3.00	2	50	0.036	0.120	3.000	5305	380	137.5

Cylindrical end mills Microcut-C15

Shank ø 3mm, cylindrical neck, 15xd

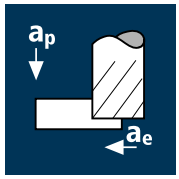
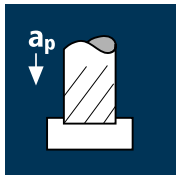
HM MG10	λ 25° γ 6°
45°	



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5723** ø-Code **100**

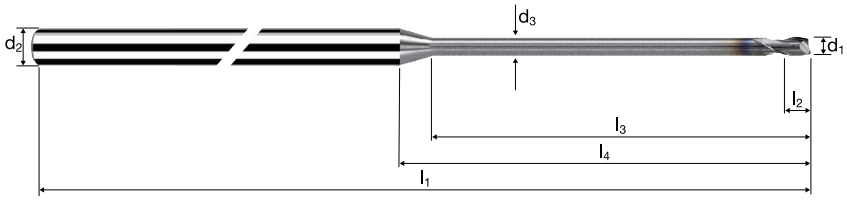
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	MICRO M5723
100	1.00	3.00	0.95	60	1.20	15.00	19.22	0.07	3.5°	2	●
108	1.20	3.00	1.10	60	1.44	18.00	21.94	0.07	2.5°	2	●
120	1.50	3.00	1.40	70	1.80	22.50	25.88	0.07	2.0°	2	●
140	2.00	3.00	1.90	70	2.40	30.00	32.45	0.10	1.0°	2	●
160	2.50	3.00	2.30	70	3.00	37.50	39.20	0.10	0.5°	2	●
180	3.00	3.00	2.80	80	3.60	44.56	45.00	0.10	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	1.00	2	132	0.018	0.200	0.070	42015	1515	21.2
		1.20	2	158	0.022	0.240	0.080	41910	1845	35.4
		1.50	2	180	0.028	0.300	0.110	38195	2140	70.6
		2.00	2	180	0.036	0.400	0.140	28650	2065	115.5
		2.50	2	180	0.046	0.500	0.180	22920	2110	189.8
		3.00	2	180	0.054	0.600	0.210	19100	2065	259.9
	Steel 1100 - 1300 N/mm²	1.00	2	132	0.016	0.200	0.070	42015	1345	18.8
		1.20	2	158	0.020	0.240	0.080	41910	1675	32.2
		1.50	2	160	0.026	0.300	0.110	33955	1765	58.3
		2.00	2	160	0.032	0.400	0.140	25465	1630	91.3
		2.50	2	160	0.042	0.500	0.180	20370	1710	154.0
		3.00	2	160	0.048	0.600	0.210	16975	1630	205.3
	Stainless steel [Cr-Ni/1.4301]	1.00	2	80	0.014	0.200	0.070	25465	715	10.0
		1.20	2	80	0.018	0.240	0.080	21220	765	14.7
		1.50	2	80	0.022	0.300	0.110	16975	745	24.6
		2.00	2	80	0.028	0.400	0.140	12730	715	39.9
		2.50	2	80	0.036	0.500	0.180	10185	735	66.0
		3.00	2	80	0.044	0.600	0.210	8490	745	94.1
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	60	0.012	0.200	0.070	19100	460	6.4
		1.20	2	60	0.016	0.240	0.080	15915	510	9.8
		1.50	2	60	0.020	0.300	0.110	12730	510	16.8
		2.00	2	60	0.026	0.400	0.140	9550	495	27.8
		2.50	2	60	0.032	0.500	0.180	7640	490	44.0
		3.00	2	60	0.038	0.600	0.210	6365	485	61.0
	Steel 850 - 1100 N/mm²	1.00	2	132	0.016	0.030	1.000	42015	1345	40.3
		1.20	2	158	0.018	0.040	1.200	41910	1510	72.4
		1.50	2	160	0.024	0.050	1.500	33955	1630	122.2
		2.00	2	160	0.030	0.060	2.000	25465	1530	183.3
		2.50	2	160	0.038	0.080	2.500	20370	1550	309.7
		3.00	2	160	0.046	0.090	3.000	16975	1560	421.7
	Steel 1100 - 1300 N/mm²	1.00	2	132	0.016	0.030	1.000	42015	1345	40.3
		1.20	2	140	0.018	0.040	1.200	37135	1335	64.2
		1.50	2	140	0.022	0.050	1.500	29710	1305	98.0
		2.00	2	140	0.028	0.060	2.000	22280	1250	149.7
		2.50	2	140	0.036	0.080	2.500	17825	1285	256.7
		3.00	2	140	0.044	0.090	3.000	14855	1305	352.9
	Stainless steel [Cr-Ni/1.4301]	1.00	2	70	0.014	0.030	1.000	22280	625	18.7
		1.20	2	70	0.016	0.040	1.200	18570	595	28.5
		1.50	2	70	0.022	0.050	1.500	14855	655	49.0
		2.00	2	70	0.026	0.060	2.000	11140	580	69.5
		2.50	2	70	0.034	0.080	2.500	8915	605	121.2
		3.00	2	70	0.040	0.090	3.000	7425	595	160.4
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	50	0.012	0.030	1.000	15915	380	11.5
		1.20	2	50	0.014	0.040	1.200	13265	370	17.8
		1.50	2	50	0.020	0.050	1.500	10610	425	31.8
		2.00	2	50	0.024	0.060	2.000	7960	380	45.8
		2.50	2	50	0.030	0.080	2.500	6365	380	76.4
		3.00	2	50	0.036	0.090	3.000	5305	380	103.1

Cylindrical end mills Microcut-C20

Shank ø 3mm, cylindrical neck, 20xd

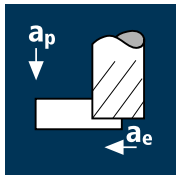
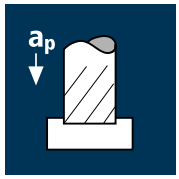
HM MG10	λ 25° γ 6°
45°	



Rm < 850	Rm 850-1100	Rm 1100-1300							Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **15725** ø-Code **100**

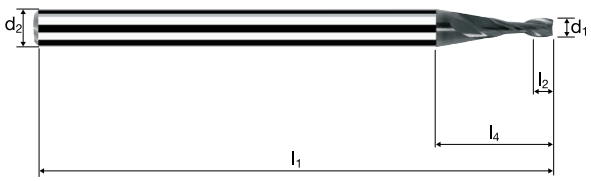
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	MICRO M15725
100	1.00	3.00	0.95	60	1.20	20.00	24.22	0.07	2.5°	2	●
108	1.20	3.00	1.10	60	1.44	24.00	27.94	0.07	2.0°	2	●
120	1.50	3.00	1.40	70	1.80	30.00	33.38	0.07	1.5°	2	●
140	2.00	3.00	1.90	80	2.40	40.00	42.45	0.10	1.0°	2	●
160	2.50	3.00	2.30	80	3.00	50.00	51.70	0.10	0.5°	2	●
180	3.00	3.00	2.80	90	3.60	59.56	60.00	0.10	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel < 850 N/mm²	0.20	2	26	0.002	0.200	0.040	41380	165	1.3
		0.40	2	53	0.004	0.400	0.080	42175	335	10.8
		0.50	2	66	0.006	0.500	0.100	42015	505	25.2
		0.60	2	79	0.008	0.600	0.120	41910	670	48.3
		0.80	2	106	0.010	0.800	0.160	42175	845	108.0
		1.00	2	132	0.012	1.000	0.200	42015	1010	201.7
		1.20	2	158	0.014	1.200	0.240	41910	1175	338.0
		1.50	2	180	0.018	1.500	0.300	38195	1375	618.8
		1.80	2	180	0.022	1.800	0.360	31830	1400	907.6
	Short-chipping brass [CuZn]	0.20	2	26	0.002	0.200	0.040	41380	165	1.3
		0.40	2	53	0.004	0.400	0.080	42175	335	10.8
		0.50	2	66	0.006	0.500	0.100	42015	505	25.2
		0.60	2	79	0.008	0.600	0.120	41910	670	48.3
		0.80	2	106	0.012	0.800	0.160	42175	1010	129.6
		1.00	2	132	0.014	1.000	0.200	42015	1175	235.3
		1.20	2	158	0.016	1.200	0.240	41910	1340	386.2
		1.50	2	190	0.020	1.500	0.300	40320	1615	725.7
		1.80	2	190	0.024	1.800	0.360	33600	1615	1045.1
	Stainless steel [Cr-Ni/1.4301]	0.20	2	26	0.002	0.200	0.040	41380	165	1.3
		0.40	2	53	0.004	0.400	0.080	42175	335	10.8
		0.50	2	66	0.004	0.500	0.100	42015	335	16.8
		0.60	2	70	0.006	0.600	0.120	37135	445	32.1
		0.80	2	70	0.008	0.800	0.160	27850	445	57.0
		1.00	2	70	0.010	1.000	0.200	22280	445	89.1
		1.20	2	70	0.012	1.200	0.240	18570	445	128.3
		1.50	2	70	0.014	1.500	0.300	14855	415	187.2
		1.80	2	70	0.018	1.800	0.360	12380	445	288.8
	Titanium alloys > 300 HB [Ti6Al4V]	0.20	2	26	0.002	0.200	0.040	41380	165	1.3
		0.40	2	50	0.002	0.400	0.080	39790	160	5.1
		0.50	2	50	0.004	0.500	0.100	31830	255	12.7
		0.60	2	50	0.006	0.600	0.120	26525	320	22.9
		0.80	2	50	0.008	0.800	0.160	19895	320	40.7
		1.00	2	50	0.008	1.000	0.200	15915	255	50.9
		1.20	2	50	0.010	1.200	0.240	13265	265	76.4
		1.50	2	50	0.012	1.500	0.300	10610	255	114.6
		1.80	2	50	0.016	1.800	0.360	8840	285	183.3
	Steel < 850 N/mm²	0.20	2	26	0.002	0.040	0.200	41380	165	1.3
		0.40	2	53	0.004	0.080	0.400	42175	335	10.8
		0.50	2	66	0.006	0.100	0.500	42015	505	25.2
		0.60	2	79	0.006	0.120	0.600	41910	505	36.2
		0.80	2	106	0.008	0.160	0.800	42175	675	86.4
		1.00	2	132	0.012	0.200	1.000	42015	1010	201.7
		1.20	2	158	0.014	0.240	1.200	41910	1175	338.0
		1.50	2	160	0.016	0.300	1.500	33955	1085	488.9
		1.80	2	160	0.020	0.360	1.800	28295	1130	733.4
	Short-chipping brass [CuZn]	0.20	2	26	0.002	0.040	0.200	41380	165	1.3
		0.40	2	53	0.004	0.080	0.400	42175	335	10.8
		0.50	2	66	0.006	0.100	0.500	42015	505	25.2
		0.60	2	79	0.006	0.120	0.600	41910	505	36.2
		0.80	2	106	0.008	0.160	0.800	42175	675	86.4
		1.00	2	132	0.012	0.200	1.000	42015	1010	201.7
		1.20	2	158	0.014	0.240	1.200	41910	1175	338.0
		1.50	2	170	0.016	0.300	1.500	36075	1155	519.5
		1.80	2	170	0.022	0.360	1.800	30065	1325	857.1
	Stainless steel [Cr-Ni/1.4301]	0.20	2	26	0.002	0.040	0.200	41380	165	1.3
		0.40	2	53	0.004	0.080	0.400	42175	335	10.8
		0.50	2	60	0.006	0.100	0.500	38195	460	22.9
		0.60	2	60	0.006	0.120	0.600	31830	380	27.5
		0.80	2	60	0.008	0.160	0.800	23875	380	48.9
		1.00	2	60	0.010	0.200	1.000	19100	380	76.4
		1.20	2	60	0.012	0.240	1.200	15915	380	110.0
		1.50	2	60	0.014	0.300	1.500	12730	355	160.4
		1.80	2	60	0.018	0.360	1.800	10610	380	247.5
	Titanium alloys > 300 HB [Ti6Al4V]	0.20	2	26	0.002	0.040	0.200	41380	165	1.3
		0.40	2	40	0.004	0.080	0.400	31830	255	8.1
		0.50	2	40	0.004	0.100	0.500	25465	205	10.2
		0.60	2	40	0.004	0.120	0.600	21220	170	12.2
		0.80	2	40	0.006	0.160	0.800	15915	190	24.4
		1.00	2	40	0.010	0.200	1.000	12730	255	50.9
		1.20	2	40	0.012	0.240	1.200	10610	255	73.3
		1.50	2	40	0.012	0.300	1.500	8490	205	91.7
		1.80	2	40	0.016	0.360	1.800	7075	225	146.7

Cylindrical end mills Micro C1.5

Shank ø 3mm, 1.5xd

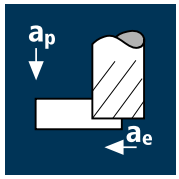
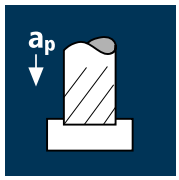
HM MG10	λ 30° γ 8°
90°	



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	CuZn Brass Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **45709** ø-Code **010**

Ø Code	d_1 ±0.01	d_2 h6	l_1	l_2	l_4	α	z	MICRO M45709
010	0.10	3.00	40	0.15	6.01	14.5°	2	●
015	0.15	3.00	40	0.23	5.99	14.5°	2	●
020	0.20	3.00	40	0.30	5.97	14.5°	2	●
025	0.25	3.00	40	0.38	5.96	14.0°	2	●
030	0.30	3.00	40	0.45	5.93	14.0°	2	●
040	0.40	3.00	40	0.60	5.90	13.5°	2	●
050	0.50	3.00	40	0.75	5.86	13.0°	2	●
060	0.60	3.00	40	0.90	5.82	12.5°	2	●
070	0.70	3.00	40	1.05	5.79	12.5°	2	●
080	0.80	3.00	40	1.20	5.75	12.0°	2	●
090	0.90	3.00	40	1.35	5.71	11.5°	2	●
100	1.00	3.00	40	1.50	5.68	11.0°	2	●
104	1.10	3.00	40	1.65	5.69	10.5°	2	●
108	1.20	3.00	40	1.80	5.65	10.0°	2	●
112	1.30	3.00	40	1.95	5.62	9.5°	2	●
116	1.40	3.00	40	2.10	5.58	9.0°	2	●
120	1.50	3.00	40	2.25	5.54	8.5°	2	●
123	1.60	3.00	40	2.40	5.51	8.0°	2	●
126	1.70	3.00	40	2.55	5.47	7.5°	2	●
130	1.80	3.00	40	2.70	5.43	7.0°	2	●
135	1.90	3.00	40	2.85	5.40	6.5°	2	●

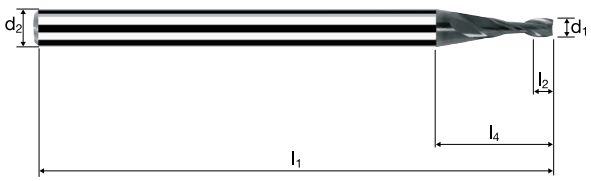
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	2.00	2	180	0.024	2.000	0.400	28650	1375	1.1
		2.10	2	180	0.024	2.100	0.420	27285	1310	1.2
		2.20	2	180	0.026	2.200	0.440	26045	1355	1.3
		2.30	2	180	0.028	2.300	0.460	24910	1395	1.5
		2.40	2	180	0.028	2.400	0.480	23875	1335	1.5
		2.50	2	180	0.030	2.500	0.500	22920	1375	1.7
		2.60	2	180	0.030	2.600	0.520	22035	1320	1.8
		2.70	2	180	0.032	2.700	0.540	21220	1360	2.0
		2.80	2	180	0.032	2.800	0.560	20465	1310	2.1
	Short-chipping brass [CuZn]	2.00	2	190	0.026	2.000	0.400	30240	1570	1.3
		2.10	2	190	0.026	2.100	0.420	28800	1500	1.3
		2.20	2	190	0.028	2.200	0.440	27490	1540	1.5
		2.30	2	190	0.030	2.300	0.460	26295	1580	1.7
		2.40	2	190	0.030	2.400	0.480	25200	1510	1.7
		2.50	2	190	0.034	2.500	0.500	24190	1645	2.1
		2.60	2	190	0.034	2.600	0.520	23260	1580	2.1
		2.70	2	190	0.036	2.700	0.540	22400	1615	2.4
		2.80	2	190	0.036	2.800	0.560	21600	1555	2.4
	Stainless steel [Cr-Ni/1.4301]	2.00	2	70	0.020	2.000	0.400	11140	445	0.4
		2.10	2	70	0.020	2.100	0.420	10610	425	0.4
		2.20	2	70	0.020	2.200	0.440	10130	405	0.4
		2.30	2	70	0.022	2.300	0.460	9690	425	0.5
		2.40	2	70	0.022	2.400	0.480	9285	410	0.5
		2.50	2	70	0.024	2.500	0.500	8915	430	0.5
		2.60	2	70	0.024	2.600	0.520	8570	410	0.6
		2.70	2	70	0.026	2.700	0.540	8250	430	0.6
		2.80	2	70	0.026	2.800	0.560	7960	415	0.6
	Titanium alloys > 300 HB [Ti6Al4V]	2.00	2	50	0.016	2.000	0.400	7960	255	0.2
		2.10	2	50	0.016	2.100	0.420	7580	245	0.2
		2.20	2	50	0.018	2.200	0.440	7235	260	0.3
		2.30	2	50	0.020	2.300	0.460	6920	275	0.3
		2.40	2	50	0.020	2.400	0.480	6630	265	0.3
		2.50	2	50	0.022	2.500	0.500	6365	280	0.4
		2.60	2	50	0.022	2.600	0.520	6120	270	0.4
		2.70	2	50	0.022	2.700	0.540	5895	260	0.4
		2.80	2	50	0.022	2.800	0.560	5685	250	0.4
	Steel < 850 N/mm²	2.00	2	160	0.022	0.400	2.000	25465	1120	0.9
		2.10	2	160	0.024	0.420	2.100	24250	1165	1.0
		2.20	2	160	0.024	0.440	2.200	23150	1110	1.1
		2.30	2	160	0.026	0.460	2.300	22145	1150	1.2
		2.40	2	160	0.026	0.480	2.400	21220	1105	1.3
		2.50	2	160	0.028	0.500	2.500	20370	1140	1.4
		2.60	2	160	0.028	0.520	2.600	19590	1095	1.5
		2.70	2	160	0.030	0.540	2.700	18865	1130	1.7
		2.80	2	160	0.032	0.560	2.800	18190	1165	1.8
	Short-chipping brass [CuZn]	2.00	2	170	0.024	0.400	2.000	27055	1300	1.0
		2.10	2	170	0.026	0.420	2.100	25770	1340	1.2
		2.20	2	170	0.026	0.440	2.200	24595	1280	1.2
		2.30	2	170	0.028	0.460	2.300	23525	1320	1.4
		2.40	2	170	0.028	0.480	2.400	22545	1265	1.5
		2.50	2	170	0.030	0.500	2.500	21645	1300	1.6
		2.60	2	170	0.030	0.520	2.600	20815	1250	1.7
		2.70	2	170	0.032	0.540	2.700	20040	1285	1.9
		2.80	2	170	0.034	0.560	2.800	19325	1315	2.1
	Stainless steel [Cr-Ni/1.4301]	2.00	2	60	0.020	0.400	2.000	9550	380	0.3
		2.10	2	60	0.022	0.420	2.100	9095	400	0.4
		2.20	2	60	0.022	0.440	2.200	8680	380	0.4
		2.30	2	60	0.022	0.460	2.300	8305	365	0.4
		2.40	2	60	0.022	0.480	2.400	7960	350	0.4
		2.50	2	60	0.024	0.500	2.500	7640	365	0.5
		2.60	2	60	0.024	0.520	2.600	7345	355	0.5
		2.70	2	60	0.026	0.540	2.700	7075	370	0.5
		2.80	2	60	0.028	0.560	2.800	6820	380	0.6
	Titanium alloys > 300 HB [Ti6Al4V]	2.00	2	40	0.018	0.400	2.000	6365	230	0.2
		2.10	2	40	0.020	0.420	2.100	6065	245	0.2
		2.20	2	40	0.020	0.440	2.200	5785	230	0.2
		2.30	2	40	0.020	0.460	2.300	5535	220	0.2
		2.40	2	40	0.020	0.480	2.400	5305	210	0.2
		2.50	2	40	0.022	0.500	2.500	5095	225	0.3
		2.60	2	40	0.022	0.520	2.600	4895	215	0.3
		2.70	2	40	0.024	0.540	2.700	4715	225	0.3
		2.80	2	40	0.026	0.560	2.800	4545	235	0.4

Cylindrical end mills Micro C1.5

Shank ø 3mm, 1.5xd

Favora® F

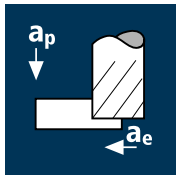
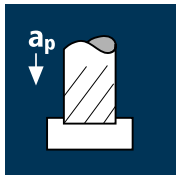
HM MG10	λ 30° γ 8°
90°	



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	CuZn Brass Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **45709** ø-Code **140**

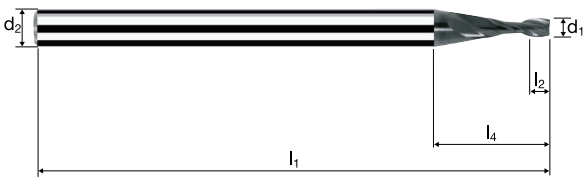
Ø Code	d_1 ±0.01	d_2 h6	l_1	l_2	l_4	α	z	MICRO M45709
140	2.00	3.00	40	3.00	5.36	6.0°	2	●
143	2.10	3.00	40	3.15	5.32	5.5°	2	●
146	2.20	3.00	40	3.30	5.29	5.0°	2	●
150	2.30	3.00	40	3.45	5.25	4.5°	2	●
155	2.40	3.00	40	3.60	5.21	4.0°	2	●
160	2.50	3.00	40	3.75	5.18	3.0°	2	●
165	2.60	3.00	45	3.90	5.14	2.5°	2	●
170	2.70	3.00	45	4.05	5.10	2.0°	2	●
172	2.80	3.00	45	4.20	5.07	1.5°	2	●
176	2.90	3.00	45	4.35	5.03	1.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel < 850 N/mm²	0.30	2	40	0.006	0.240	0.050	42440	510	6.1
		0.50	2	66	0.010	0.400	0.080	42015	840	26.9
		0.60	2	79	0.010	0.480	0.090	41910	840	36.2
		0.80	2	106	0.014	0.640	0.120	42175	1180	90.7
		1.00	2	132	0.018	0.800	0.150	42015	1515	181.5
		1.20	2	158	0.022	0.960	0.180	41910	1845	318.7
		1.50	2	180	0.028	1.200	0.230	38195	2140	590.4
		1.80	2	180	0.032	1.440	0.270	31830	2035	792.1
		2.00	2	180	0.036	1.600	0.300	28650	2065	990.1
	Steel 850 - 1100 N/mm²	0.30	2	40	0.006	0.240	0.050	42440	510	6.1
		0.50	2	66	0.010	0.400	0.080	42015	840	26.9
		0.60	2	79	0.010	0.480	0.090	41910	840	36.2
		0.80	2	106	0.012	0.640	0.120	42175	1010	77.7
		1.00	2	132	0.016	0.800	0.150	42015	1345	161.3
		1.20	2	158	0.020	0.960	0.180	41910	1675	289.7
		1.50	2	160	0.026	1.200	0.230	33955	1765	487.3
		1.80	2	160	0.028	1.440	0.270	28295	1585	616.0
		2.00	2	160	0.032	1.600	0.300	25465	1630	782.3
	Stainless steel [Cr-Ni/1.4301]	0.30	2	40	0.004	0.240	0.050	42440	340	4.1
		0.50	2	66	0.008	0.400	0.080	42015	670	21.5
		0.60	2	70	0.008	0.480	0.090	37135	595	25.7
		0.80	2	70	0.012	0.640	0.120	27850	670	51.3
		1.00	2	70	0.014	0.800	0.150	22280	625	74.9
		1.20	2	70	0.018	0.960	0.180	18570	670	115.5
		1.50	2	70	0.022	1.200	0.230	14855	655	180.4
		1.80	2	70	0.026	1.440	0.270	12380	645	250.3
		2.00	2	70	0.028	1.600	0.300	11140	625	299.5
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.30	2	40	0.004	0.240	0.050	42440	340	4.1
		0.50	2	60	0.008	0.400	0.080	38195	610	19.6
		0.60	2	60	0.008	0.480	0.090	31830	510	22.0
		0.80	2	60	0.010	0.640	0.120	23875	475	36.7
		1.00	2	60	0.012	0.800	0.150	19100	460	55.0
		1.20	2	60	0.016	0.960	0.180	15915	510	88.0
		1.50	2	60	0.020	1.200	0.230	12730	510	140.6
		1.80	2	60	0.022	1.440	0.270	10610	465	181.5
		2.00	2	60	0.026	1.600	0.300	9550	495	238.4
	Steel < 850 N/mm²	0.30	2	40	0.006	0.040	0.300	42440	510	6.1
		0.50	2	66	0.008	0.060	0.500	42015	670	20.2
		0.60	2	79	0.010	0.070	0.600	41910	840	35.2
		0.80	2	106	0.014	0.100	0.800	42175	1180	94.5
		1.00	2	132	0.016	0.120	1.000	42015	1345	161.3
		1.20	2	158	0.020	0.140	1.200	41910	1675	281.6
		1.50	2	160	0.026	0.180	1.500	33955	1765	476.7
		1.80	2	160	0.030	0.220	1.800	28295	1700	672.3
		2.00	2	160	0.034	0.240	2.000	25465	1730	831.2
	Steel 850 - 1100 N/mm²	0.30	2	40	0.006	0.040	0.300	42440	510	6.1
		0.50	2	66	0.008	0.060	0.500	42015	670	20.2
		0.60	2	79	0.010	0.070	0.600	41910	840	35.2
		0.80	2	106	0.014	0.100	0.800	42175	1180	94.5
		1.00	2	132	0.016	0.120	1.000	42015	1345	161.3
		1.20	2	140	0.020	0.140	1.200	37135	1485	249.6
		1.50	2	140	0.024	0.180	1.500	29710	1425	385.0
		1.80	2	140	0.028	0.220	1.800	24755	1385	549.0
		2.00	2	140	0.032	0.240	2.000	22280	1425	684.5
	Stainless steel [Cr-Ni/1.4301]	0.30	2	40	0.006	0.040	0.300	42440	510	6.1
		0.50	2	60	0.008	0.060	0.500	38195	610	18.3
		0.60	2	60	0.008	0.070	0.600	31830	510	21.4
		0.80	2	60	0.012	0.100	0.800	23875	575	45.8
		1.00	2	60	0.014	0.120	1.000	19100	535	64.2
		1.20	2	60	0.018	0.140	1.200	15915	575	96.3
		1.50	2	60	0.022	0.180	1.500	12730	560	151.3
		1.80	2	60	0.026	0.220	1.800	10610	550	218.5
		2.00	2	60	0.030	0.240	2.000	9550	575	275.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.30	2	40	0.004	0.040	0.300	42440	340	4.1
		0.50	2	50	0.006	0.060	0.500	31830	380	11.5
		0.60	2	50	0.008	0.070	0.600	26525	425	17.8
		0.80	2	50	0.012	0.100	0.800	19895	475	38.2
		1.00	2	50	0.012	0.120	1.000	15915	380	45.8
		1.20	2	50	0.016	0.140	1.200	13265	425	71.3
		1.50	2	50	0.020	0.180	1.500	10610	425	114.6
		1.80	2	50	0.024	0.220	1.800	8840	425	168.1
		2.00	2	50	0.028	0.240	2.000	7960	445	213.9

Cylindrical end mills

Shank ø 3mm, 3xd

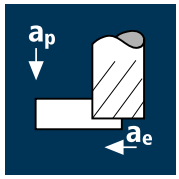
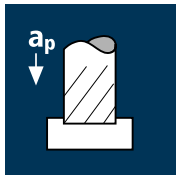
HM MG10	λ 30° γ 12°
90°	



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	Copper Aluminium

Example: **Order-N°.** Coating **M** Article-N°. **45710** ø-Code **030**

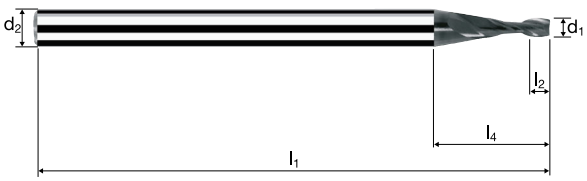
Ø Code	d_1 ±0.01	d_2 h6	l_1	l_2	l_4	α	z	MICRO 5710	MICRO M45710
030	0.30	3.00	40	1.00	8.97	9.0°	2	●	●
040	0.40	3.00	40	1.00	8.69	9.0°	2	●	●
050	0.50	3.00	40	1.50	8.90	8.5°	2	●	●
060	0.60	3.00	40	1.50	8.62	8.5°	2	●	●
070	0.70	3.00	40	2.00	8.83	8.0°	2	●	●
080	0.80	3.00	40	2.00	8.55	8.0°	2	●	●
090	0.90	3.00	40	2.50	8.77	7.5°	2	●	●
100	1.00	3.00	40	3.00	8.98	7.0°	2	●	●
104	1.10	3.00	40	3.00	8.75	6.5°	2	●	●
108	1.20	3.00	40	4.00	9.47	6.0°	2	●	●
112	1.30	3.00	40	4.00	9.18	5.5°	2	●	●
116	1.40	3.00	40	4.00	8.90	5.5°	2	●	●
120	1.50	3.00	40	4.00	8.62	5.5°	2	●	●
123	1.60	3.00	40	5.00	9.33	4.5°	2	●	●
126	1.70	3.00	40	5.00	7.41	5.5°	2	●	●
130	1.80	3.00	40	5.00	7.28	5.5°	2	●	●
135	1.90	3.00	40	5.00	7.14	5.0°	2	●	●
140	2.00	3.00	40	5.00	7.00	4.5°	2	●	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	2.10	2	180	0.038	1.680	0.320	27285	2075	1.1
		2.20	2	180	0.040	1.760	0.330	26045	2085	1.2
		2.30	2	180	0.042	1.840	0.350	24910	2095	1.3
		2.40	2	180	0.044	1.920	0.360	23875	2100	1.5
		2.50	2	180	0.046	2.000	0.380	22920	2110	1.6
		3.00	2	180	0.054	2.400	0.450	19100	2065	2.2
	Steel 850 - 1100 N/mm²	2.10	2	160	0.034	1.680	0.320	24250	1650	0.9
		2.20	2	160	0.036	1.760	0.330	23150	1665	1.0
		2.30	2	160	0.038	1.840	0.350	22145	1685	1.1
		2.40	2	160	0.040	1.920	0.360	21220	1700	1.2
		2.50	2	160	0.042	2.000	0.380	20370	1710	1.3
		3.00	2	160	0.048	2.400	0.450	16975	1630	1.8
	Stainless steel [Cr-Ni/1.4301]	2.10	2	70	0.030	1.680	0.320	10610	635	0.3
		2.20	2	70	0.032	1.760	0.330	10130	650	0.4
		2.30	2	70	0.034	1.840	0.350	9690	660	0.4
		2.40	2	70	0.036	1.920	0.360	9285	670	0.5
		2.50	2	70	0.036	2.000	0.380	8915	640	0.5
		3.00	2	70	0.044	2.400	0.450	7425	655	0.7
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.10	2	60	0.026	1.680	0.320	9095	475	0.3
		2.20	2	60	0.028	1.760	0.330	8680	485	0.3
		2.30	2	60	0.030	1.840	0.350	8305	500	0.3
		2.40	2	60	0.030	1.920	0.360	7960	475	0.3
		2.50	2	60	0.032	2.000	0.380	7640	490	0.4
		3.00	2	60	0.038	2.400	0.450	6365	485	0.5
	Steel < 850 N/mm²	2.10	2	160	0.036	0.250	2.100	24250	1745	0.9
		2.20	2	160	0.036	0.260	2.200	23150	1665	1.0
		2.30	2	160	0.038	0.280	2.300	22145	1685	1.1
		2.40	2	160	0.040	0.290	2.400	21220	1700	1.2
		2.50	2	160	0.042	0.300	2.500	20370	1710	1.3
		3.00	2	160	0.050	0.360	3.000	16975	1700	1.8
	Steel 850 - 1100 N/mm²	2.10	2	140	0.034	0.250	2.100	21220	1445	0.8
		2.20	2	140	0.034	0.260	2.200	20255	1375	0.8
		2.30	2	140	0.036	0.280	2.300	19375	1395	0.9
		2.40	2	140	0.038	0.290	2.400	18570	1410	1.0
		2.50	2	140	0.040	0.300	2.500	17825	1425	1.1
		3.00	2	140	0.048	0.360	3.000	14855	1425	1.5
	Stainless steel [Cr-Ni/1.4301]	2.10	2	60	0.032	0.250	2.100	9095	580	0.3
		2.20	2	60	0.032	0.260	2.200	8680	555	0.3
		2.30	2	60	0.034	0.280	2.300	8305	565	0.4
		2.40	2	60	0.036	0.290	2.400	7960	575	0.4
		2.50	2	60	0.036	0.300	2.500	7640	550	0.4
		3.00	2	60	0.044	0.360	3.000	6365	560	0.6
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.10	2	50	0.028	0.250	2.100	7580	425	0.2
		2.20	2	50	0.028	0.260	2.200	7235	405	0.2
		2.30	2	50	0.030	0.280	2.300	6920	415	0.3
		2.40	2	50	0.032	0.290	2.400	6630	425	0.3
		2.50	2	50	0.034	0.300	2.500	6365	435	0.3
		3.00	2	50	0.040	0.360	3.000	5305	425	0.5

Cylindrical end mills

Shank ø 3mm, 3xd

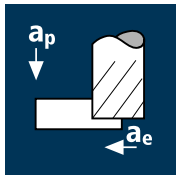
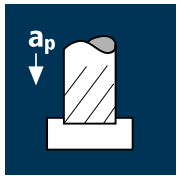
HM MG10	λ 30° γ 12°
90°	



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	Copper Aluminium

Example: **Order-N°.** Coating **M** Article-N°. **45710** ø-Code **143**

								MICRO	
								5710	M45710
Ø Code	d_1 ±0.01	d_2 h6	l_1	l_2	l_4	α	z		
143	2.10	3.00	40	6.00	7.87	4.0°	2	●	●
146	2.20	3.00	40	6.00	7.73	3.5°	2	●	●
150	2.30	3.00	40	6.00	7.59	3.0°	2	●	●
155	2.40	3.00	40	6.00	7.45	2.5°	2	●	●
160	2.50	3.00	40	7.00	8.32	2.0°	2	●	●
180	3.00	4.00	44	10.00	12.36	2.5°	2	●	●

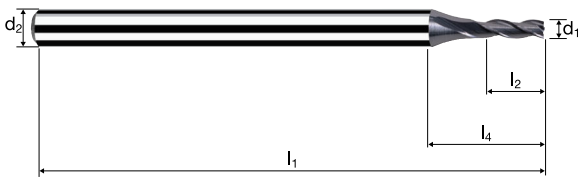
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel < 850 N/mm²	0.40	3	53	0.004	0.480	0.040	42175	505	9.7
		0.60	3	79	0.008	0.720	0.060	41910	1005	43.5
		0.80	3	106	0.010	0.960	0.080	42175	1265	97.2
		1.00	3	132	0.012	1.200	0.100	42015	1515	181.5
		1.20	3	158	0.014	1.440	0.120	41910	1760	304.2
		1.40	3	180	0.016	1.680	0.140	40925	1965	462.0
		1.60	3	180	0.018	1.920	0.160	35810	1935	594.0
		1.80	3	180	0.022	2.160	0.180	31830	2100	816.8
		2.00	3	180	0.024	2.400	0.200	28650	2065	990.1
	Short-chipping brass [CuZn]	0.40	3	53	0.004	0.480	0.040	42175	505	9.7
		0.60	3	79	0.008	0.720	0.060	41910	1005	43.5
		0.80	3	106	0.012	0.960	0.080	42175	1520	116.6
		1.00	3	132	0.014	1.200	0.100	42015	1765	211.8
		1.20	3	158	0.016	1.440	0.120	41910	2010	347.6
		1.40	3	185	0.018	1.680	0.140	42060	2270	534.2
		1.60	3	190	0.020	1.920	0.160	37800	2270	696.7
		1.80	3	190	0.024	2.160	0.180	33600	2420	940.6
		2.00	3	190	0.026	2.400	0.200	30240	2360	1132.2
	Stainless steel [Cr-Ni/1.4301]	0.40	3	53	0.004	0.480	0.040	42175	505	9.7
		0.60	3	70	0.006	0.720	0.060	37135	670	28.9
		0.80	3	70	0.008	0.960	0.080	27850	670	51.3
		1.00	3	70	0.010	1.200	0.100	22280	670	80.2
		1.20	3	70	0.012	1.440	0.120	18570	670	115.5
		1.40	3	70	0.012	1.680	0.140	15915	575	134.8
		1.60	3	70	0.014	1.920	0.160	13925	585	179.7
		1.80	3	70	0.018	2.160	0.180	12380	670	259.9
		2.00	3	70	0.020	2.400	0.200	11140	670	320.9
	Titanium alloys > 300 HB [Ti6Al4V]	0.40	3	50	0.002	0.480	0.040	39790	240	4.6
		0.60	3	50	0.006	0.720	0.060	26525	475	20.6
		0.80	3	50	0.008	0.960	0.080	19895	475	36.7
		1.00	3	50	0.008	1.200	0.100	15915	380	45.8
		1.20	3	50	0.010	1.440	0.120	13265	400	68.8
		1.40	3	50	0.012	1.680	0.140	11370	410	96.3
		1.60	3	50	0.012	1.920	0.160	9945	360	110.0
		1.80	3	50	0.016	2.160	0.180	8840	425	165.0
		2.00	3	50	0.016	2.400	0.200	7960	380	183.3
	Steel < 850 N/mm²	0.40	3	53	0.004	0.050	0.400	42175	505	10.1
		0.60	3	79	0.006	0.070	0.600	41910	755	31.7
		0.80	3	106	0.008	0.100	0.800	42175	1010	81.0
		1.00	3	132	0.012	0.120	1.000	42015	1515	181.5
		1.20	3	158	0.014	0.140	1.200	41910	1760	295.7
		1.40	3	160	0.016	0.170	1.400	36380	1745	415.6
		1.60	3	160	0.018	0.190	1.600	31830	1720	522.5
		1.80	3	160	0.020	0.220	1.800	28295	1700	672.3
		2.00	3	160	0.022	0.240	2.000	25465	1680	806.7
	Short-chipping brass [CuZn]	0.40	3	53	0.004	0.050	0.400	42175	505	10.1
		0.60	3	79	0.006	0.070	0.600	41910	755	31.7
		0.80	3	106	0.008	0.100	0.800	42175	1010	81.0
		1.00	3	132	0.012	0.120	1.000	42015	1515	181.5
		1.20	3	158	0.014	0.140	1.200	41910	1760	295.7
		1.40	3	170	0.016	0.170	1.400	38650	1855	441.6
		1.60	3	170	0.018	0.190	1.600	33820	1825	555.2
		1.80	3	170	0.022	0.220	1.800	30065	1985	785.7
		2.00	3	170	0.024	0.240	2.000	27055	1950	935.1
	Stainless steel [Cr-Ni/1.4301]	0.40	3	53	0.004	0.050	0.400	42175	505	10.1
		0.60	3	60	0.006	0.070	0.600	31830	575	24.1
		0.80	3	60	0.008	0.100	0.800	23875	575	45.8
		1.00	3	60	0.010	0.120	1.000	19100	575	68.8
		1.20	3	60	0.012	0.140	1.200	15915	575	96.3
		1.40	3	60	0.014	0.170	1.400	13640	575	136.4
		1.60	3	60	0.016	0.190	1.600	11935	575	174.2
		1.80	3	60	0.018	0.220	1.800	10610	575	226.9
		2.00	3	60	0.020	0.240	2.000	9550	575	275.0
	Titanium alloys > 300 HB [Ti6Al4V]	0.40	3	40	0.004	0.050	0.400	31830	380	7.6
		0.60	3	40	0.004	0.070	0.600	21220	255	10.7
		0.80	3	40	0.006	0.100	0.800	15915	285	22.9
		1.00	3	40	0.010	0.120	1.000	12730	380	45.8
		1.20	3	40	0.012	0.140	1.200	10610	380	64.2
		1.40	3	40	0.012	0.170	1.400	9095	325	77.9
		1.60	3	40	0.014	0.190	1.600	7960	335	101.6
		1.80	3	40	0.016	0.220	1.800	7075	340	134.5
		2.00	3	40	0.018	0.240	2.000	6365	345	165.0

Cylindrical end mills Micro C3

Shank ø 3mm, 3xd

Favora® F

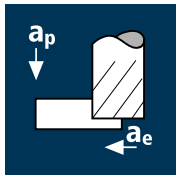
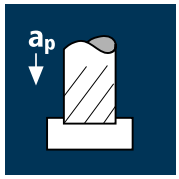
HM MG10	λ 30° γ 8°
90°	



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	CuZn Brass Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **45713** ø-Code **040**

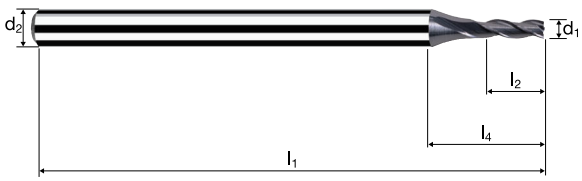
Ø Code	d_1 ±0.01	d_2 h6	l_1	l_2	l_4	α	z	MICRO M45713
040	0.40	3.00	40	1.20	6.50	12.5°	3	●
050	0.50	3.00	40	1.50	6.61	11.5°	3	●
060	0.60	3.00	40	1.80	6.72	11.0°	3	●
070	0.70	3.00	40	2.10	6.84	10.5°	3	●
080	0.80	3.00	40	2.40	6.95	10.0°	3	●
090	0.90	3.00	40	2.70	7.06	9.0°	3	●
100	1.00	3.00	40	3.00	7.18	8.5°	3	●
104	1.10	3.00	40	3.30	7.34	8.0°	3	●
108	1.20	3.00	40	3.60	7.45	7.5°	3	●
112	1.30	3.00	40	3.90	7.57	7.0°	3	●
116	1.40	3.00	40	4.20	7.68	6.5°	3	●
120	1.50	3.00	40	4.50	7.79	6.0°	3	●
123	1.60	3.00	40	4.80	7.91	5.5°	3	●
126	1.70	3.00	40	5.10	8.02	5.0°	3	●
130	1.80	3.00	40	5.40	8.13	4.5°	3	●
135	1.90	3.00	40	5.70	8.25	4.5°	3	●
140	2.00	3.00	40	6.00	8.36	4.0°	3	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	2.10	3	180	0.024	2.520	0.210	27285	1965	1.0
		2.20	3	180	0.026	2.640	0.220	26045	2030	1.2
		2.30	3	180	0.028	2.760	0.230	24910	2095	1.3
		2.40	3	180	0.028	2.880	0.240	23875	2005	1.4
		2.50	3	180	0.030	3.000	0.250	22920	2065	1.5
		2.60	3	180	0.030	3.120	0.260	22035	1985	1.6
		2.70	3	180	0.032	3.240	0.270	21220	2035	1.8
		2.80	3	180	0.032	3.360	0.280	20465	1965	1.8
		2.90	3	180	0.034	3.480	0.290	19755	2015	2.0
	Short-chipping brass [CuZn]	2.10	3	190	0.026	2.520	0.210	28800	2245	1.2
		2.20	3	190	0.028	2.640	0.220	27490	2310	1.3
		2.30	3	190	0.030	2.760	0.230	26295	2365	1.5
		2.40	3	190	0.030	2.880	0.240	25200	2270	1.6
		2.50	3	190	0.034	3.000	0.250	24190	2470	1.9
		2.60	3	190	0.034	3.120	0.260	23260	2375	1.9
		2.70	3	190	0.036	3.240	0.270	22400	2420	2.1
		2.80	3	190	0.036	3.360	0.280	21600	2335	2.2
		2.90	3	190	0.038	3.480	0.290	20855	2375	2.4
	Stainless steel [Cr-Ni/1.4301]	2.10	3	70	0.020	2.520	0.210	10610	635	0.3
		2.20	3	70	0.020	2.640	0.220	10130	610	0.4
		2.30	3	70	0.022	2.760	0.230	9690	640	0.4
		2.40	3	70	0.022	2.880	0.240	9285	615	0.4
		2.50	3	70	0.024	3.000	0.250	8915	640	0.5
		2.60	3	70	0.024	3.120	0.260	8570	615	0.5
		2.70	3	70	0.026	3.240	0.270	8250	645	0.6
		2.80	3	70	0.026	3.360	0.280	7960	620	0.6
		2.90	3	70	0.028	3.480	0.290	7685	645	0.7
	Titanium alloys > 300 HB [Ti6Al4V]	2.10	3	50	0.016	2.520	0.210	7580	365	0.2
		2.20	3	50	0.018	2.640	0.220	7235	390	0.2
		2.30	3	50	0.020	2.760	0.230	6920	415	0.3
		2.40	3	50	0.020	2.880	0.240	6630	400	0.3
		2.50	3	50	0.022	3.000	0.250	6365	420	0.3
		2.60	3	50	0.022	3.120	0.260	6120	405	0.3
		2.70	3	50	0.022	3.240	0.270	5895	390	0.3
		2.80	3	50	0.022	3.360	0.280	5685	375	0.4
		2.90	3	50	0.024	3.480	0.290	5490	395	0.4
	Steel < 850 N/mm²	2.10	3	160	0.024	0.250	2.100	24250	1745	0.9
		2.20	3	160	0.024	0.260	2.200	23150	1665	1.0
		2.30	3	160	0.026	0.280	2.300	22145	1725	1.1
		2.40	3	160	0.026	0.290	2.400	21220	1655	1.2
		2.50	3	160	0.028	0.300	2.500	20370	1710	1.3
		2.60	3	160	0.028	0.310	2.600	19590	1645	1.3
		2.70	3	160	0.030	0.320	2.700	18865	1700	1.5
		2.80	3	160	0.032	0.340	2.800	18190	1745	1.7
		2.90	3	160	0.032	0.350	2.900	17560	1685	1.7
	Short-chipping brass [CuZn]	2.10	3	170	0.026	0.250	2.100	25770	2010	1.1
		2.20	3	170	0.026	0.260	2.200	24595	1920	1.1
		2.30	3	170	0.028	0.280	2.300	23525	1975	1.3
		2.40	3	170	0.028	0.290	2.400	22545	1895	1.3
		2.50	3	170	0.030	0.300	2.500	21645	1950	1.5
		2.60	3	170	0.030	0.310	2.600	20815	1875	1.5
		2.70	3	170	0.032	0.320	2.700	20040	1925	1.7
		2.80	3	170	0.034	0.340	2.800	19325	1970	1.9
		2.90	3	170	0.034	0.350	2.900	18660	1905	1.9
	Stainless steel [Cr-Ni/1.4301]	2.10	3	60	0.022	0.250	2.100	9095	600	0.3
		2.20	3	60	0.022	0.260	2.200	8680	575	0.3
		2.30	3	60	0.022	0.280	2.300	8305	550	0.4
		2.40	3	60	0.022	0.290	2.400	7960	525	0.4
		2.50	3	60	0.024	0.300	2.500	7640	550	0.4
		2.60	3	60	0.024	0.310	2.600	7345	530	0.4
		2.70	3	60	0.026	0.320	2.700	7075	550	0.5
		2.80	3	60	0.028	0.340	2.800	6820	575	0.5
		2.90	3	60	0.028	0.350	2.900	6585	555	0.6
	Titanium alloys > 300 HB [Ti6Al4V]	2.10	3	40	0.020	0.250	2.100	6065	365	0.2
		2.20	3	40	0.020	0.260	2.200	5785	345	0.2
		2.30	3	40	0.020	0.280	2.300	5535	330	0.2
		2.40	3	40	0.020	0.290	2.400	5305	320	0.2
		2.50	3	40	0.022	0.300	2.500	5095	335	0.3
		2.60	3	40	0.022	0.310	2.600	4895	325	0.3
		2.70	3	40	0.024	0.320	2.700	4715	340	0.3
		2.80	3	40	0.026	0.340	2.800	4545	355	0.3
		2.90	3	40	0.026	0.350	2.900	4390	340	0.3

Cylindrical end mills Micro C3

Shank ø 3mm, 3xd

HM MG10	λ 30° γ 8°
90°	

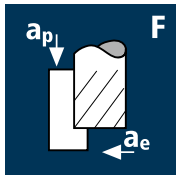


Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	CuZn Brass Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **45713** ø-Code **143**

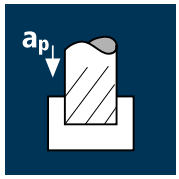
Ø Code	d_1 ±0.01	d_2 h6	l_1	l_2	l_4	α	z	MICRO M45713
143	2.10	3.00	40	6.30	8.47	3.5°	3	●
146	2.20	3.00	40	6.60	8.59	3.0°	3	●
150	2.30	3.00	40	6.90	8.70	2.5°	3	●
155	2.40	3.00	40	7.20	8.81	2.5°	3	●
160	2.50	3.00	40	7.50	8.93	2.0°	3	●
165	2.60	3.00	45	7.80	9.04	1.5°	3	●
170	2.70	3.00	45	8.10	9.15	1.0°	3	●
172	2.80	3.00	45	8.40	9.27	1.0°	3	●
176	2.90	3.00	45	8.70	9.38	0.5°	3	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
Steel < 850 N/mm²	2.00	3	120	0.005	2.000	0.300	19100	285
	3.00	3	120	0.010	3.000	0.500	12730	380
	4.00	3	120	0.015	4.000	0.600	9550	430
	5.00	3	120	0.015	5.000	0.800	7640	345
	6.00	3	120	0.020	6.000	0.900	6365	380
	8.00	3	120	0.025	8.000	1.200	4775	360
	10.00	3	120	0.035	10.000	1.500	3820	400
Steel 850 - 1100 N/mm²	2.00	3	75	0.005	2.000	0.300	11935	180
	3.00	3	75	0.010	3.000	0.500	7960	240
	4.00	3	75	0.015	4.000	0.600	5970	270
	5.00	3	75	0.015	5.000	0.800	4775	215
	6.00	3	75	0.020	6.000	0.900	3980	240
	8.00	3	75	0.025	8.000	1.200	2985	225
	10.00	3	75	0.035	10.000	1.500	2385	250
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.00	3	60	0.005	2.000	0.300	9550	145
	3.00	3	60	0.010	3.000	0.500	6365	190
	4.00	3	60	0.015	4.000	0.600	4775	215
	5.00	3	60	0.015	5.000	0.800	3820	170
	6.00	3	60	0.020	6.000	0.900	3185	190
	8.00	3	60	0.025	8.000	1.200	2385	180
	10.00	3	60	0.035	10.000	1.500	1910	200
Stainless steel [Cr-Ni/1.4301]	2.00	3	80	0.005	2.000	0.300	12730	190
	3.00	3	80	0.010	3.000	0.500	8490	255
	4.00	3	80	0.015	4.000	0.600	6365	285
	5.00	3	80	0.015	5.000	0.800	5095	230
	6.00	3	80	0.020	6.000	0.900	4245	255
	8.00	3	80	0.025	8.000	1.200	3185	240
	10.00	3	80	0.035	10.000	1.500	2545	265

Application

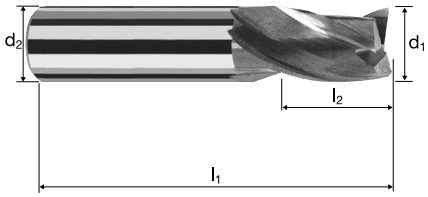


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Steel < 850 N/mm²	2.00	3	95	0.005	1.600	2.000	15120	225	0.7
	3.00	3	95	0.010	2.400	3.000	10080	300	2.2
	4.00	3	95	0.010	3.200	4.000	7560	225	2.9
	5.00	3	95	0.015	4.000	5.000	6050	270	5.4
	6.00	3	95	0.015	4.800	6.000	5040	225	6.5
	8.00	3	95	0.020	6.400	8.000	3780	225	11.6
	10.00	3	95	0.030	8.000	10.000	3025	270	21.8
Steel 850 - 1100 N/mm²	2.00	3	60	0.005	1.600	2.000	9550	145	0.5
	3.00	3	60	0.010	2.400	3.000	6365	190	1.4
	4.00	3	60	0.010	3.200	4.000	4775	145	1.8
	5.00	3	60	0.015	4.000	5.000	3820	170	3.4
	6.00	3	60	0.015	4.800	6.000	3185	145	4.1
	8.00	3	60	0.020	6.400	8.000	2385	145	7.3
	10.00	3	60	0.025	8.000	10.000	1910	145	11.5
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.00	3	45	0.005	1.600	2.000	7160	105	0.3
	3.00	3	45	0.010	2.400	3.000	4775	145	1.0
	4.00	3	45	0.010	3.200	4.000	3580	105	1.4
	5.00	3	45	0.015	4.000	5.000	2865	130	2.6
	6.00	3	45	0.015	4.800	6.000	2385	105	3.1
	8.00	3	45	0.020	6.400	8.000	1790	105	5.5
	10.00	3	45	0.025	8.000	10.000	1430	105	8.6
Stainless steel [Cr-Ni/1.4301]	2.00	3	55	0.005	1.600	2.000	8755	130	0.4
	3.00	3	55	0.010	2.400	3.000	5835	175	1.3
	4.00	3	55	0.010	3.200	4.000	4375	130	1.7
	5.00	3	55	0.015	4.000	5.000	3500	160	3.2
	6.00	3	55	0.015	4.800	6.000	2920	130	3.8
	8.00	3	55	0.020	6.400	8.000	2190	130	6.7
	10.00	3	55	0.025	8.000	10.000	1750	130	10.5

Cylindrical end mills Cut-X V

Smooth-edged, short-shank version

HM MG10	λ 30° γ 12°
90°	
Vario	



Roughing

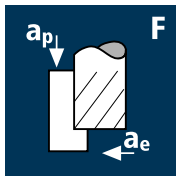
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	Nickel-Alloys Copper Platinum

Example: **Order-N°.** Coating **T** Article-N°. **15232** ø-Code **120**

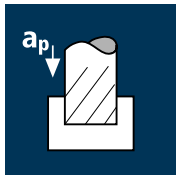
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	α	z	POLYCHROM P15232	TRIBO T15232
120	1.50	6.00	38	3.00	11.92	11.5°	3	●	●
140	2.00	6.00	38	3.00	11.15	11.0°	3	●	●
160	2.50	6.00	38	3.00	10.88	10.0°	3	●	●
180	3.00	6.00	38	4.00	11.96	8.0°	3	●	●
200	3.50	6.00	38	4.00	11.02	7.0°	3	●	●
220	4.00	6.00	38	5.00	11.59	5.5°	3	●	●
240	4.50	6.00	38	5.00	10.66	4.5°	3	●	●
260	5.00	6.00	38	6.00	10.72	3.0°	3	●	●
300	6.00	6.00	38	7.00	-	0.0°	3	●	●
391	8.00	8.00	41	9.00	-	0.0°	3	●	●
450	10.00	10.00	48	11.00	-	0.0°	3	●	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
Steel < 850 N/mm²	2.00	3	60	0.005	2.000	0.200	9550	145
	3.00	3	60	0.010	3.000	0.300	6365	190
	4.00	3	60	0.015	4.000	0.400	4775	215
	5.00	3	60	0.015	5.000	0.500	3820	170
	6.00	3	60	0.020	6.000	0.600	3185	190
	8.00	3	60	0.025	8.000	0.800	2385	180
	10.00	3	60	0.035	10.000	1.000	1910	200
Short-chipping brass [CuZn]	2.00	3	140	0.005	2.000	0.200	22280	335
	3.00	3	140	0.010	3.000	0.300	14855	445
	4.00	3	140	0.010	4.000	0.400	11140	335
	5.00	3	140	0.020	5.000	0.500	8915	535
	6.00	3	140	0.025	6.000	0.600	7425	555
	8.00	3	140	0.030	8.000	0.800	5570	500
	10.00	3	140	0.040	10.000	1.000	4455	535
Gold	2.00	3	160	0.005	2.000	0.200	25465	380
	3.00	3	160	0.010	3.000	0.300	16975	510
	4.00	3	160	0.010	4.000	0.400	12730	380
	5.00	3	160	0.020	5.000	0.500	10185	610
	6.00	3	160	0.025	6.000	0.600	8490	635
	8.00	3	160	0.030	8.000	0.800	6365	575
	10.00	3	160	0.040	10.000	1.000	5095	610
Wrought aluminium Si < 6%	2.00	3	250	0.005	2.000	0.200	39790	595
	3.00	3	250	0.010	3.000	0.300	26525	795
	4.00	3	250	0.015	4.000	0.400	19895	895
	5.00	3	250	0.020	5.000	0.500	15915	955
	6.00	3	250	0.025	6.000	0.600	13265	995
	8.00	3	250	0.030	8.000	0.800	9945	895
	10.00	3	250	0.040	10.000	1.000	7960	955

Application

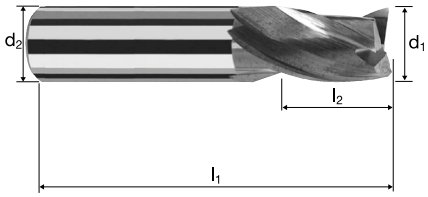


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Steel < 850 N/mm²	2.00	3	45	0.005	1.000	2.000	7160	105	0.2
	3.00	3	45	0.010	1.500	3.000	4775	145	0.6
	4.00	3	45	0.010	2.000	4.000	3580	105	0.9
	5.00	3	45	0.015	2.500	5.000	2865	130	1.6
	6.00	3	45	0.015	3.000	6.000	2385	105	1.9
	8.00	3	45	0.020	4.000	8.000	1790	105	3.4
	10.00	3	45	0.030	5.000	10.000	1430	130	6.4
Short-chipping brass [CuZn]	2.00	3	120	0.005	1.000	2.000	19100	285	0.6
	3.00	3	120	0.005	1.500	3.000	12730	190	0.9
	4.00	3	120	0.010	2.000	4.000	9550	285	2.3
	5.00	3	120	0.015	2.500	5.000	7640	345	4.3
	6.00	3	120	0.015	3.000	6.000	6365	285	5.2
	8.00	3	120	0.025	4.000	8.000	4775	360	11.5
	10.00	3	120	0.035	5.000	10.000	3820	400	20.1
Gold	2.00	3	140	0.005	1.000	2.000	22280	335	0.7
	3.00	3	140	0.005	1.500	3.000	14855	225	1.0
	4.00	3	140	0.010	2.000	4.000	11140	335	2.7
	5.00	3	140	0.015	2.500	5.000	8915	400	5.0
	6.00	3	140	0.015	3.000	6.000	7425	335	6.0
	8.00	3	140	0.025	4.000	8.000	5570	420	13.4
	10.00	3	140	0.035	5.000	10.000	4455	470	23.4
Wrought aluminium Si < 6%	2.00	3	200	0.005	1.000	2.000	31830	475	1.0
	3.00	3	200	0.005	1.500	3.000	21220	320	1.4
	4.00	3	200	0.010	2.000	4.000	15915	475	3.8
	5.00	3	200	0.015	2.500	5.000	12730	575	7.2
	6.00	3	200	0.015	3.000	6.000	10610	475	8.6
	8.00	3	200	0.025	4.000	8.000	7960	595	19.1
	10.00	3	200	0.035	5.000	10.000	6365	670	33.4

Cylindrical end mills Cut-X V

Smooth-edged, short-shank version

HM MG10	λ 30° γ 12°
90°	
Vario	



Roughing

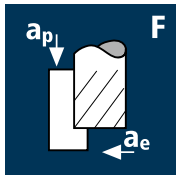
Finishing

Rm < 850	Rm 850-1100								Aluminium Copper / CuZn Brass Gold

Example: **Order-N°.** Coating | Article-N°. **15232** | ø-Code **120**

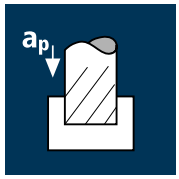
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	α	z	15232	
120	1.50	6.00	38	3.00	11.92	11.5°	3	●	
140	2.00	6.00	38	3.00	11.15	11.0°	3	●	
160	2.50	6.00	38	3.00	10.88	10.0°	3	●	
180	3.00	6.00	38	4.00	11.96	8.0°	3	●	
200	3.50	6.00	38	4.00	11.02	7.0°	3	●	
220	4.00	6.00	38	5.00	11.59	5.5°	3	●	
240	4.50	6.00	38	5.00	10.66	4.5°	3	●	
260	5.00	6.00	38	6.00	10.72	3.0°	3	●	
300	6.00	6.00	38	7.00	-	0.0°	3	●	
391	8.00	8.00	41	9.00	-	0.0°	3	●	
450	10.00	10.00	48	11.00	-	0.0°	3	●	

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
Steel < 850 N/mm²	2.00	3	115	0.005	2.000	0.200	18305	275
	3.00	3	115	0.010	3.000	0.300	12200	365
	4.00	3	115	0.015	4.000	0.400	9150	410
	5.00	3	115	0.015	5.000	0.500	7320	330
	6.00	3	115	0.020	6.000	0.600	6100	365
	8.00	3	115	0.025	8.000	0.800	4575	345
	10.00	3	115	0.035	10.000	1.000	3660	385
Steel 850 - 1100 N/mm²	2.00	3	75	0.005	2.000	0.200	11935	180
	3.00	3	75	0.010	3.000	0.300	7960	240
	4.00	3	75	0.015	4.000	0.400	5970	270
	5.00	3	75	0.015	5.000	0.500	4775	215
	6.00	3	75	0.020	6.000	0.600	3980	240
	8.00	3	75	0.025	8.000	0.800	2985	225
	10.00	3	75	0.035	10.000	1.000	2385	250
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.00	3	40	0.005	2.000	0.200	6365	95
	3.00	3	40	0.010	3.000	0.300	4245	125
	4.00	3	40	0.015	4.000	0.400	3185	145
	5.00	3	40	0.015	5.000	0.500	2545	115
	6.00	3	40	0.020	6.000	0.600	2120	125
	8.00	3	40	0.025	8.000	0.800	1590	120
	10.00	3	40	0.035	10.000	1.000	1275	135
Stainless steel [Cr-Ni/1.4301]	2.00	3	80	0.005	2.000	0.200	12730	190
	3.00	3	80	0.010	3.000	0.300	8490	255
	4.00	3	80	0.015	4.000	0.400	6365	285
	5.00	3	80	0.015	5.000	0.500	5095	230
	6.00	3	80	0.020	6.000	0.600	4245	255
	8.00	3	80	0.025	8.000	0.800	3185	240
	10.00	3	80	0.035	10.000	1.000	2545	265

Application

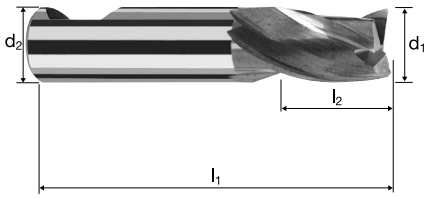


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Steel < 850 N/mm²	2.00	3	85	0.005	1.000	2.000	13530	205	0.4
	3.00	3	85	0.010	1.500	3.000	9020	270	1.2
	4.00	3	85	0.010	2.000	4.000	6765	205	1.6
	5.00	3	85	0.015	2.500	5.000	5410	245	3.0
	6.00	3	85	0.015	3.000	6.000	4510	205	3.7
	8.00	3	85	0.020	4.000	8.000	3380	205	6.5
	10.00	3	85	0.030	5.000	10.000	2705	245	12.2
Steel 850 - 1100 N/mm²	2.00	3	60	0.005	1.000	2.000	9550	145	0.3
	3.00	3	60	0.010	1.500	3.000	6365	190	0.9
	4.00	3	60	0.010	2.000	4.000	4775	145	1.1
	5.00	3	60	0.015	2.500	5.000	3820	170	2.1
	6.00	3	60	0.015	3.000	6.000	3185	145	2.6
	8.00	3	60	0.020	4.000	8.000	2385	145	4.6
	10.00	3	60	0.025	5.000	10.000	1910	145	7.2
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.00	3	30	0.005	1.000	2.000	4775	70	0.1
	3.00	3	30	0.010	1.500	3.000	3185	95	0.4
	4.00	3	30	0.010	2.000	4.000	2385	70	0.6
	5.00	3	30	0.015	2.500	5.000	1910	85	1.1
	6.00	3	30	0.015	3.000	6.000	1590	70	1.3
	8.00	3	30	0.020	4.000	8.000	1195	70	2.3
	10.00	3	30	0.025	5.000	10.000	955	70	3.6
Stainless steel [Cr-Ni/1.4301]	2.00	3	55	0.005	1.000	2.000	8755	130	0.3
	3.00	3	55	0.010	1.500	3.000	5835	175	0.8
	4.00	3	55	0.010	2.000	4.000	4375	130	1.1
	5.00	3	55	0.015	2.500	5.000	3500	160	2.0
	6.00	3	55	0.015	3.000	6.000	2920	130	2.4
	8.00	3	55	0.020	4.000	8.000	2190	130	4.2
	10.00	3	55	0.025	5.000	10.000	1750	130	6.6

Cylindrical end mills Cut-X

Smooth-edged, short-shank version

HM MG10	λ 30° γ 12°
90°	



Roughing

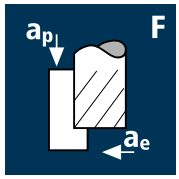
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Nickel-Alloys

Example: **Order-N°.** Coating **T** Article-N°. **5336** ø-Code **120**

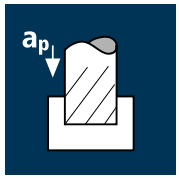
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	α	z	POLYCHROM P5336	TRIBO T5336 / T5236
120	1.50	6.00	38	3.00	11.92	11.5°	3	●	●
140	2.00	6.00	38	3.00	11.15	11.0°	3	●	●
160	2.50	6.00	38	3.00	10.88	10.0°	3	●	●
180	3.00	6.00	38	4.00	11.96	8.0°	3	●	●
200	3.50	6.00	38	4.00	11.02	7.0°	3	●	●
220	4.00	6.00	38	5.00	11.59	5.5°	3	●	●
240	4.50	6.00	38	5.00	10.66	4.5°	3	●	●
260	5.00	6.00	38	6.00	10.72	3.0°	3	●	●
300	6.00	6.00	38	7.00	-	0.0°	3	●	●
331	7.00	8.00	41	8.00	12.72	2.5°	3	●	●
391	8.00	8.00	41	9.00	-	0.0°	3	●	●
420	9.00	10.00	48	10.00	14.72	2.5°	3	●	●
450	10.00	10.00	48	11.00	-	0.0°	3	●	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
Steel < 850 N/mm²	2.00	3	115	0.005	2.000	0.200	18305	275
	3.00	3	115	0.010	3.000	0.300	12200	365
	4.00	3	115	0.015	4.000	0.400	9150	410
	5.00	3	115	0.015	5.000	0.500	7320	330
	6.00	3	115	0.020	6.000	0.600	6100	365
	8.00	3	115	0.025	8.000	0.800	4575	345
	10.00	3	115	0.035	10.000	1.000	3660	385
Steel 850 - 1100 N/mm²	2.00	3	75	0.005	2.000	0.200	11935	180
	3.00	3	75	0.010	3.000	0.300	7960	240
	4.00	3	75	0.015	4.000	0.400	5970	270
	5.00	3	75	0.015	5.000	0.500	4775	215
	6.00	3	75	0.020	6.000	0.600	3980	240
	8.00	3	75	0.025	8.000	0.800	2985	225
	10.00	3	75	0.035	10.000	1.000	2385	250
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.00	3	40	0.005	2.000	0.200	6365	95
	3.00	3	40	0.010	3.000	0.300	4245	125
	4.00	3	40	0.015	4.000	0.400	3185	145
	5.00	3	40	0.015	5.000	0.500	2545	115
	6.00	3	40	0.020	6.000	0.600	2120	125
	8.00	3	40	0.025	8.000	0.800	1590	120
	10.00	3	40	0.035	10.000	1.000	1275	135
Stainless steel [Cr-Ni/1.4301]	2.00	3	80	0.005	2.000	0.200	12730	190
	3.00	3	80	0.010	3.000	0.300	8490	255
	4.00	3	80	0.015	4.000	0.400	6365	285
	5.00	3	80	0.015	5.000	0.500	5095	230
	6.00	3	80	0.020	6.000	0.600	4245	255
	8.00	3	80	0.025	8.000	0.800	3185	240
	10.00	3	80	0.035	10.000	1.000	2545	265

Application

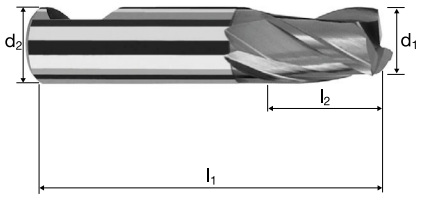


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Steel < 850 N/mm²	2.00	3	85	0.005	1.000	2.000	13530	205	0.4
	3.00	3	85	0.010	1.500	3.000	9020	270	1.2
	4.00	3	85	0.010	2.000	4.000	6765	205	1.6
	5.00	3	85	0.015	2.500	5.000	5410	245	3.0
	6.00	3	85	0.015	3.000	6.000	4510	205	3.7
	8.00	3	85	0.020	4.000	8.000	3380	205	6.5
	10.00	3	85	0.030	5.000	10.000	2705	245	12.2
Steel 850 - 1100 N/mm²	2.00	3	60	0.005	1.000	2.000	9550	145	0.3
	3.00	3	60	0.010	1.500	3.000	6365	190	0.9
	4.00	3	60	0.010	2.000	4.000	4775	145	1.1
	5.00	3	60	0.015	2.500	5.000	3820	170	2.1
	6.00	3	60	0.015	3.000	6.000	3185	145	2.6
	8.00	3	60	0.020	4.000	8.000	2385	145	4.6
	10.00	3	60	0.025	5.000	10.000	1910	145	7.2
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.00	3	30	0.005	1.000	2.000	4775	70	0.1
	3.00	3	30	0.010	1.500	3.000	3185	95	0.4
	4.00	3	30	0.010	2.000	4.000	2385	70	0.6
	5.00	3	30	0.015	2.500	5.000	1910	85	1.1
	6.00	3	30	0.015	3.000	6.000	1590	70	1.3
	8.00	3	30	0.020	4.000	8.000	1195	70	2.3
	10.00	3	30	0.025	5.000	10.000	955	70	3.6
Stainless steel [Cr-Ni/1.4301]	2.00	3	55	0.005	1.000	2.000	8755	130	0.3
	3.00	3	55	0.010	1.500	3.000	5835	175	0.8
	4.00	3	55	0.010	2.000	4.000	4375	130	1.1
	5.00	3	55	0.015	2.500	5.000	3500	160	2.0
	6.00	3	55	0.015	3.000	6.000	2920	130	2.4
	8.00	3	55	0.020	4.000	8.000	2190	130	4.2
	10.00	3	55	0.025	5.000	10.000	1750	130	6.6

Cylindrical end mills Cut-X

Smooth-edged, short-shank version

HM MG10	λ 30° γ 12°



Roughing

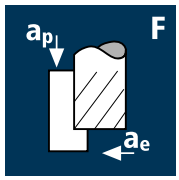
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Nickel-Alloys

Example: **Order-N°.** Coating **T** Article-N°. **5335** ø-Code **140**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P5335	TRIBO T5335
140	2.00	6.00	38	3.00	11.15	0.10	11.0°	3	●	●
180	3.00	6.00	38	4.00	11.96	0.10	8.0°	3	●	●
220	4.00	6.00	38	5.00	11.59	0.10	5.5°	3	●	●
260	5.00	6.00	38	6.00	10.72	0.15	3.0°	3	●	●
300	6.00	6.00	38	7.00	-	0.15	0.0°	3	●	●
391	8.00	8.00	41	9.00	-	0.15	0.0°	3	●	●
450	10.00	10.00	48	11.00	-	0.20	0.0°	3	●	●

Application

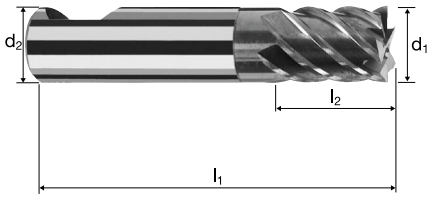


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
Steel < 850 N/mm²	3.00	4	160	0.010	3.000	0.150	16975	680
	4.00	4	160	0.010	4.000	0.200	12730	510
	5.00	4	160	0.015	5.000	0.250	10185	610
	6.00	6	160	0.015	6.000	0.300	8490	765
	8.00	6	160	0.025	8.000	0.400	6365	955
	10.00	6	160	0.030	10.000	0.500	5095	915
Steel 850 - 1100 N/mm²	3.00	4	100	0.010	3.000	0.150	10610	425
	4.00	4	100	0.010	4.000	0.200	7960	320
	5.00	4	100	0.015	5.000	0.250	6365	380
	6.00	6	100	0.015	6.000	0.300	5305	475
	8.00	6	100	0.025	8.000	0.400	3980	595
	10.00	6	100	0.030	10.000	0.500	3185	575
Steel 1100 - 1300 N/mm²	3.00	4	75	0.010	3.000	0.150	7960	320
	4.00	4	75	0.010	4.000	0.200	5970	240
	5.00	4	75	0.015	5.000	0.250	4775	285
	6.00	6	75	0.015	6.000	0.300	3980	360
	8.00	6	75	0.025	8.000	0.400	2985	450
	10.00	6	75	0.030	10.000	0.500	2385	430
Stainless steel [Cr-Ni/1.4301]	3.00	4	90	0.010	3.000	0.150	9550	380
	4.00	4	90	0.010	4.000	0.200	7160	285
	5.00	4	90	0.015	5.000	0.250	5730	345
	6.00	6	90	0.015	6.000	0.300	4775	430
	8.00	6	90	0.025	8.000	0.400	3580	535
	10.00	6	90	0.030	10.000	0.500	2865	515
Cast iron (lamellar / spheroidal)	3.00	4	120	0.010	3.000	0.150	12730	510
	4.00	4	120	0.010	4.000	0.200	9550	380
	5.00	4	120	0.015	5.000	0.250	7640	460
	6.00	6	120	0.015	6.000	0.300	6365	575
	8.00	6	120	0.025	8.000	0.400	4775	715
	10.00	6	120	0.030	10.000	0.500	3820	690
Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	4	65	0.010	3.000	0.150	6895	275
	4.00	4	65	0.010	4.000	0.200	5175	205
	5.00	4	65	0.015	5.000	0.250	4140	250
	6.00	6	65	0.015	6.000	0.300	3450	310
	8.00	6	65	0.025	8.000	0.400	2585	390
	10.00	6	65	0.030	10.000	0.500	2070	370
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	3.00	4	95	0.010	3.000	0.150	10080	405
	4.00	4	95	0.010	4.000	0.200	7560	300
	5.00	4	95	0.015	5.000	0.250	6050	365
	6.00	6	95	0.015	6.000	0.300	5040	455
	8.00	6	95	0.025	8.000	0.400	3780	565
	10.00	6	95	0.030	10.000	0.500	3025	545
Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3.00	4	50	0.010	3.000	0.150	5305	210
	4.00	4	50	0.010	4.000	0.200	3980	160
	5.00	4	50	0.015	5.000	0.250	3185	190
	6.00	6	50	0.015	6.000	0.300	2655	240
	8.00	6	50	0.025	8.000	0.400	1990	300
	10.00	6	50	0.030	10.000	0.500	1590	285

Cylindrical end mills Cut-X multi

Finishing, short-shank version

HM MG10	λ 45° γ 10°
90°	



Roughing

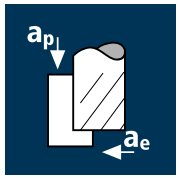
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **T** Article-N°. **5337** ø-Code **180**

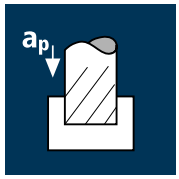
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	α	z	POLYCHROM P5337	TRIBO T5337 / T5237
180	3.00	6.00	38	4.00	11.96	8.0°	4	●	●
220	4.00	6.00	38	5.00	11.59	5.5°	4	●	●
260	5.00	6.00	38	6.00	10.72	3.0°	4	●	●
300	6.00	6.00	38	7.00	-	0.0°	6	●	●
391	8.00	8.00	41	9.00	-	0.0°	6	●	●
450	10.00	10.00	48	11.00	-	0.0°	6	●	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
Steel < 850 N/mm²	2.00	3	105	0.005	2.000	0.100	16710	250
	3.00	3	105	0.010	3.000	0.150	11140	335
	4.00	3	105	0.015	4.000	0.200	8355	375
	5.00	3	105	0.015	5.000	0.250	6685	300
	6.00	3	105	0.020	6.000	0.300	5570	335
	7.00	3	105	0.025	7.000	0.350	4775	360
	8.00	3	105	0.025	8.000	0.400	4180	315
	9.00	3	105	0.035	9.000	0.450	3715	390
	10.00	3	105	0.035	10.000	0.500	3340	350
Steel 850 - 1100 N/mm²	2.00	3	65	0.005	2.000	0.100	10345	155
	3.00	3	65	0.010	3.000	0.150	6895	205
	4.00	3	65	0.015	4.000	0.200	5175	235
	5.00	3	65	0.015	5.000	0.250	4140	185
	6.00	3	65	0.020	6.000	0.300	3450	205
	7.00	3	65	0.025	7.000	0.350	2955	220
	8.00	3	65	0.025	8.000	0.400	2585	195
	9.00	3	65	0.035	9.000	0.450	2300	240
	10.00	3	65	0.035	10.000	0.500	2070	215
Gold	2.00	3	160	0.005	2.000	0.100	25465	380
	3.00	3	160	0.010	3.000	0.150	16975	510
	4.00	3	160	0.015	4.000	0.200	12730	575
	5.00	3	160	0.015	5.000	0.250	10185	460
	6.00	3	160	0.020	6.000	0.300	8490	510
	7.00	3	160	0.020	7.000	0.350	7275	435
	8.00	3	160	0.025	8.000	0.400	6365	475
	9.00	3	160	0.025	9.000	0.450	5660	425
	10.00	3	160	0.035	10.000	0.500	5095	535
Stainless steel [Cr-Ni/1.4301]	2.00	3	65	0.005	2.000	0.100	10345	155
	3.00	3	65	0.010	3.000	0.150	6895	205
	4.00	3	65	0.015	4.000	0.200	5175	235
	5.00	3	65	0.015	5.000	0.250	4140	185
	6.00	3	65	0.020	6.000	0.300	3450	205
	7.00	3	65	0.025	7.000	0.350	2955	220
	8.00	3	65	0.025	8.000	0.400	2585	195
	9.00	3	65	0.035	9.000	0.450	2300	240
	10.00	3	65	0.035	10.000	0.500	2070	215

Application



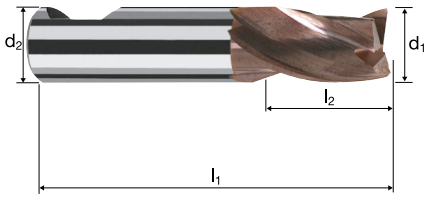
Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
Steel < 850 N/mm²	2.00	3	75	0.005	0.800	2.000	11935	180	0.3
	3.00	3	75	0.010	1.200	3.000	7960	240	0.9
	4.00	3	75	0.010	1.600	4.000	5970	180	1.1
	5.00	3	75	0.015	2.000	5.000	4775	215	2.1
	6.00	3	75	0.015	2.400	6.000	3980	180	2.6
	7.00	3	75	0.020	2.800	7.000	3410	205	4.0
	8.00	3	75	0.020	3.200	8.000	2985	180	4.6
	9.00	3	75	0.030	3.600	9.000	2655	240	7.7
	10.00	3	75	0.030	4.000	10.000	2385	215	8.6
Steel 850 - 1100 N/mm²	2.00	3	50	0.005	0.800	2.000	7960	120	0.2
	3.00	3	50	0.010	1.200	3.000	5305	160	0.6
	4.00	3	50	0.010	1.600	4.000	3980	120	0.8
	5.00	3	50	0.015	2.000	5.000	3185	145	1.4
	6.00	3	50	0.015	2.400	6.000	2655	120	1.7
	7.00	3	50	0.020	2.800	7.000	2275	135	2.7
	8.00	3	50	0.020	3.200	8.000	1990	120	3.1
	9.00	3	50	0.025	3.600	9.000	1770	135	4.3
	10.00	3	50	0.025	4.000	10.000	1590	120	4.8
Gold	2.00	3	140	0.005	0.800	2.000	22280	335	0.5
	3.00	3	140	0.010	1.200	3.000	14855	445	1.6
	4.00	3	140	0.010	1.600	4.000	11140	335	2.1
	5.00	3	140	0.015	2.000	5.000	8915	400	4.0
	6.00	3	140	0.020	2.400	6.000	7425	445	6.4
	7.00	3	140	0.020	2.800	7.000	6365	380	7.5
	8.00	3	140	0.025	3.200	8.000	5570	420	10.7
	9.00	3	140	0.025	3.600	9.000	4950	370	12.0
	10.00	3	140	0.030	4.000	10.000	4455	400	16.0
Stainless steel [Cr-Ni/1.4301]	2.00	3	50	0.005	0.800	2.000	7960	120	0.2
	3.00	3	50	0.010	1.200	3.000	5305	160	0.6
	4.00	3	50	0.010	1.600	4.000	3980	120	0.8
	5.00	3	50	0.015	2.000	5.000	3185	145	1.4
	6.00	3	50	0.015	2.400	6.000	2655	120	1.7
	7.00	3	50	0.020	2.800	7.000	2275	135	2.7
	8.00	3	50	0.020	3.200	8.000	1990	120	3.1
	9.00	3	50	0.025	3.600	9.000	1770	135	4.3
	10.00	3	50	0.025	4.000	10.000	1590	120	4.8

Cylindrical end mills

Smooth-edged, short-shank version

Favora® F

HM MG10	λ 30° γ 12°
90°	



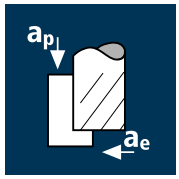
Roughing

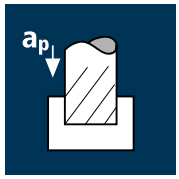
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		Aluminium Copper Gold / Platinum

Example: **Order-N°.** Coating **U** Article-N°. **45336** ø-Code **120**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	α	z	5336 / 5236	UNICUT-4X U45336
120	1.50	6.00	38	3.00	11.92	11.5°	3	●	●
140	2.00	6.00	38	3.00	11.15	11.0°	3	●	●
160	2.50	6.00	38	3.00	10.88	10.0°	3	●	●
180	3.00	6.00	38	4.00	11.96	8.0°	3	●	●
200	3.50	6.00	38	4.00	11.02	7.0°	3	●	●
220	4.00	6.00	38	5.00	11.59	5.5°	3	●	●
240	4.50	6.00	38	5.00	10.66	4.5°	3	●	●
260	5.00	6.00	38	6.00	10.72	3.0°	3	●	●
300	6.00	6.00	38	7.00	-	0.0°	3	●	●
331	7.00	8.00	41	8.00	12.72	2.5°	3	●	●
391	8.00	8.00	41	9.00	-	0.0°	3	●	●
420	9.00	10.00	48	10.00	14.72	2.5°	3	●	●
450	10.00	10.00	48	11.00	-	0.0°	3	●	●

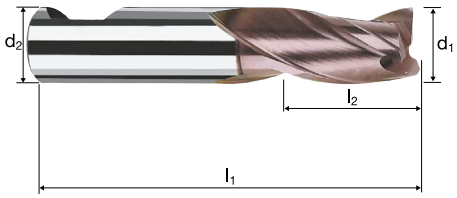
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm² U	1.00	3	60	0.005	1.000	0.100	19100	285
		2.00	3	60	0.010	2.000	0.200	9550	285
		2.50	3	60	0.010	2.500	0.250	7640	230
		3.00	3	60	0.010	3.000	0.300	6365	190
		3.50	3	60	0.015	3.500	0.350	5455	245
		4.00	3	60	0.015	4.000	0.400	4775	215
		5.00	3	60	0.020	5.000	0.500	3820	230
		5.50	3	60	0.020	5.500	0.550	3470	210
		6.00	3	60	0.025	6.000	0.600	3185	240
	Steel 850 - 1100 N/mm² U	1.00	3	48	0.005	1.000	0.100	15280	230
		2.00	3	48	0.010	2.000	0.200	7640	230
		2.50	3	48	0.010	2.500	0.250	6110	185
		3.00	3	48	0.010	3.000	0.300	5095	155
		3.50	3	48	0.015	3.500	0.350	4365	195
		4.00	3	48	0.015	4.000	0.400	3820	170
		5.00	3	48	0.020	5.000	0.500	3055	185
		5.50	3	48	0.020	5.500	0.550	2780	165
		6.00	3	48	0.025	6.000	0.600	2545	190
	Stainless steel [Cr-Ni/1.4301] U	1.00	3	25	0.005	1.000	0.100	7960	120
		2.00	3	25	0.010	2.000	0.200	3980	120
		2.50	3	25	0.010	2.500	0.250	3185	95
		3.00	3	25	0.010	3.000	0.300	2655	80
		3.50	3	25	0.015	3.500	0.350	2275	100
		4.00	3	25	0.015	4.000	0.400	1990	90
		5.00	3	25	0.020	5.000	0.500	1590	95
		5.50	3	25	0.020	5.500	0.550	1445	85
		6.00	3	25	0.025	6.000	0.600	1325	100
	Stainless steel [Cr-Ni-Mo-.../1.4429] U	1.00	3	22	0.005	1.000	0.100	7005	105
		2.00	3	22	0.010	2.000	0.200	3500	105
		2.50	3	22	0.010	2.500	0.250	2800	85
		3.00	3	22	0.010	3.000	0.300	2335	70
		3.50	3	22	0.015	3.500	0.350	2000	90
		4.00	3	22	0.015	4.000	0.400	1750	80
		5.00	3	22	0.020	5.000	0.500	1400	85
		5.50	3	22	0.020	5.500	0.550	1275	75
		6.00	3	22	0.025	6.000	0.600	1165	90

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Steel < 850 N/mm² U	1.00	3	55	0.005	0.500	1.000	17505	265	131.3
		2.00	3	55	0.010	1.000	2.000	8755	265	525.2
		2.50	3	55	0.010	1.250	2.500	7005	210	656.5
		3.00	3	55	0.010	1.500	3.000	5835	175	787.8
		3.50	3	55	0.015	1.750	3.500	5000	225	1378.7
		4.00	3	55	0.015	2.000	4.000	4375	195	1575.6
		5.00	3	55	0.020	2.500	5.000	3500	210	2626.1
		5.50	3	55	0.020	2.750	5.500	3185	190	2888.7
		6.00	3	55	0.025	3.000	6.000	2920	220	3939.1
	Steel 850 - 1100 N/mm² U	1.00	3	45	0.005	0.500	1.000	14325	215	107.4
		2.00	3	45	0.010	1.000	2.000	7160	215	429.7
		2.50	3	45	0.010	1.250	2.500	5730	170	537.1
		3.00	3	45	0.010	1.500	3.000	4775	145	644.6
		3.50	3	45	0.015	1.750	3.500	4095	185	1128.0
		4.00	3	45	0.015	2.000	4.000	3580	160	1289.2
		5.00	3	45	0.020	2.500	5.000	2865	170	2148.6
		5.50	3	45	0.020	2.750	5.500	2605	155	2363.5
		6.00	3	45	0.025	3.000	6.000	2385	180	3222.9
	Stainless steel [Cr-Ni/1.4301] U	1.00	3	22	0.005	0.500	1.000	7005	105	52.5
		2.00	3	22	0.010	1.000	2.000	3500	105	210.1
		2.50	3	22	0.010	1.250	2.500	2800	85	262.6
		3.00	3	22	0.010	1.500	3.000	2335	70	315.1
		3.50	3	22	0.015	1.750	3.500	2000	90	551.5
		4.00	3	22	0.015	2.000	4.000	1750	80	630.3
		5.00	3	22	0.020	2.500	5.000	1400	85	1050.4
		5.50	3	22	0.020	2.750	5.500	1275	75	1155.5
		6.00	3	22	0.025	3.000	6.000	1165	90	1575.6
	Stainless steel [Cr-Ni-Mo-.../1.4429] U	1.00	3	20	0.005	0.500	1.000	6365	95	47.7
		2.00	3	20	0.010	1.000	2.000	3185	95	191.0
		2.50	3	20	0.010	1.250	2.500	2545	75	238.7
		3.00	3	20	0.010	1.500	3.000	2120	65	286.5
		3.50	3	20	0.015	1.750	3.500	1820	80	501.3
		4.00	3	20	0.015	2.000	4.000	1590	70	573.0
		5.00	3	20	0.020	2.500	5.000	1275	75	954.9
		5.50	3	20	0.020	2.750	5.500	1155	70	1050.4
		6.00	3	20	0.025	3.000	6.000	1060	80	1432.4

Cylindrical end mills

Smooth-edged, short-shank version

HSS PM/F	λ 30° γ 15°
90°	



Roughing

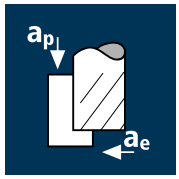
Finishing

Rm < 850	Rm 850-1100						Inox Stainless		Copper

Example: **Order-N°.** Coating **U** Article-N°. **0400** ø-Code **100**

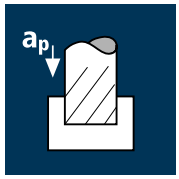
Ø Code	d_1 f8	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U0400
100	1.00	6.00	34	3.00	10.48	14.0°	3	●
120	1.50	6.00	34	3.00	9.99	13.0°	3	●
130	1.80	6.00	35	4.00	10.78	11.5°	3	●
140	2.00	6.00	35	4.00	10.61	11.0°	3	●
150	2.30	6.00	36	5.00	12.00	9.0°	3	●
160	2.50	6.00	36	5.00	12.00	8.5°	3	●
170	2.80	6.00	36	5.00	12.00	8.0°	3	●
180	3.00	6.00	36	5.00	12.00	7.5°	3	●
190	3.30	6.00	37	6.00	13.00	6.0°	3	●
200	3.50	6.00	37	6.00	13.00	5.5°	3	●
210	3.80	6.00	38	7.00	14.00	4.5°	3	●
220	4.00	6.00	38	7.00	14.00	4.5°	3	●
230	4.30	6.00	38	7.00	14.00	3.5°	3	●
240	4.50	6.00	38	7.00	14.00	3.5°	3	●
250	4.80	6.00	39	8.00	15.00	2.5°	3	●
260	5.00	6.00	39	8.00	15.00	2.0°	3	●
270	5.30	6.00	39	8.00	15.00	1.5°	3	●
280	5.50	6.00	39	8.00	15.00	1.0°	3	●
290	5.75	6.00	39	8.00	15.00	0.0°	3	●
300	6.00	6.00	39	8.00	-	0.0°	3	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
Steel < 850 N/mm²	6.50	3	60	0.025	6.500	0.650	2940	220
	7.00	3	60	0.030	7.000	0.700	2730	245
	7.50	3	60	0.030	7.500	0.750	2545	230
	8.00	3	60	0.030	8.000	0.800	2385	215
	8.50	3	60	0.035	8.500	0.850	2245	235
	9.00	3	60	0.035	9.000	0.900	2120	225
	9.50	3	60	0.040	9.500	0.950	2010	240
	10.00	3	60	0.040	10.000	1.000	1910	230
Steel 850 - 1100 N/mm²	6.50	3	48	0.025	6.500	0.650	2350	175
	7.00	3	48	0.030	7.000	0.700	2185	195
	7.50	3	48	0.030	7.500	0.750	2035	185
	8.00	3	48	0.030	8.000	0.800	1910	170
	8.50	3	48	0.035	8.500	0.850	1800	190
	9.00	3	48	0.035	9.000	0.900	1700	180
	9.50	3	48	0.040	9.500	0.950	1610	195
	10.00	3	48	0.040	10.000	1.000	1530	185
Stainless steel [Cr-Ni/1.4301]	6.50	3	25	0.025	6.500	0.650	1225	90
	7.00	3	25	0.030	7.000	0.700	1135	100
	7.50	3	25	0.030	7.500	0.750	1060	95
	8.00	3	25	0.030	8.000	0.800	995	90
	8.50	3	25	0.035	8.500	0.850	935	100
	9.00	3	25	0.035	9.000	0.900	885	95
	9.50	3	25	0.040	9.500	0.950	840	100
	10.00	3	25	0.040	10.000	1.000	795	95
Stainless steel [Cr-Ni-Mo-.../1.4429]	6.50	3	22	0.025	6.500	0.650	1075	80
	7.00	3	22	0.030	7.000	0.700	1000	90
	7.50	3	22	0.030	7.500	0.750	935	85
	8.00	3	22	0.030	8.000	0.800	875	80
	8.50	3	22	0.035	8.500	0.850	825	85
	9.00	3	22	0.035	9.000	0.900	780	80
	9.50	3	22	0.040	9.500	0.950	735	90
	10.00	3	22	0.040	10.000	1.000	700	85

Application

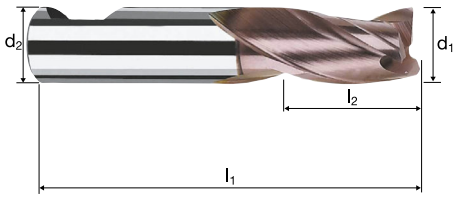


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
Steel < 850 N/mm²	6.50	3	55	0.025	3.250	6.500	2695	200	4.3
	7.00	3	55	0.030	3.500	7.000	2500	225	5.5
	7.50	3	55	0.030	3.750	7.500	2335	210	5.9
	8.00	3	55	0.030	4.000	8.000	2190	195	6.3
	8.50	3	55	0.035	4.250	8.500	2060	215	7.8
	9.00	3	55	0.035	4.500	9.000	1945	205	8.3
	9.50	3	55	0.040	4.750	9.500	1845	220	10.0
	10.00	3	55	0.040	5.000	10.000	1750	210	10.5
Steel 850 - 1100 N/mm²	6.50	3	45	0.025	3.250	6.500	2205	165	3.5
	7.00	3	45	0.030	3.500	7.000	2045	185	4.5
	7.50	3	45	0.030	3.750	7.500	1910	170	4.8
	8.00	3	45	0.030	4.000	8.000	1790	160	5.2
	8.50	3	45	0.035	4.250	8.500	1685	175	6.4
	9.00	3	45	0.035	4.500	9.000	1590	165	6.8
	9.50	3	45	0.040	4.750	9.500	1510	180	8.2
	10.00	3	45	0.040	5.000	10.000	1430	170	8.6
Stainless steel [Cr-Ni/1.4301]	6.50	3	22	0.025	3.250	6.500	1075	80	1.7
	7.00	3	22	0.030	3.500	7.000	1000	90	2.2
	7.50	3	22	0.030	3.750	7.500	935	85	2.4
	8.00	3	22	0.030	4.000	8.000	875	80	2.5
	8.50	3	22	0.035	4.250	8.500	825	85	3.1
	9.00	3	22	0.035	4.500	9.000	780	80	3.3
	9.50	3	22	0.040	4.750	9.500	735	90	4.0
	10.00	3	22	0.040	5.000	10.000	700	85	4.2
Stainless steel [Cr-Ni-Mo-.../1.4429]	6.50	3	20	0.025	3.250	6.500	980	75	1.6
	7.00	3	20	0.030	3.500	7.000	910	80	2.0
	7.50	3	20	0.030	3.750	7.500	850	75	2.1
	8.00	3	20	0.030	4.000	8.000	795	70	2.3
	8.50	3	20	0.035	4.250	8.500	750	80	2.8
	9.00	3	20	0.035	4.500	9.000	705	75	3.0
	9.50	3	20	0.040	4.750	9.500	670	80	3.6
	10.00	3	20	0.040	5.000	10.000	635	75	3.8

Cylindrical end mills

Smooth-edged, short-shank version

HSS-E Co8	λ 30° γ 15°
90°	



Roughing

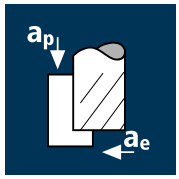
Finishing

Rm < 850	Rm 850-1100						Inox Stainless		Copper

Example: **Order-N°.** Coating **U** Article-N°. **0400** ø-Code **311**

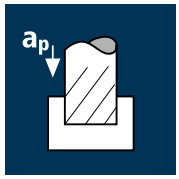
Ø Code	d_1 f8	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U0400
311	6.50	8.00	42	10.00	17.50	2.5°	3	●
331	7.00	8.00	42	10.00	17.50	2.0°	3	●
351	7.50	8.00	42	10.00	17.50	1.0°	3	●
391	8.00	8.00	43	11.00	-	0.0°	3	●
410	8.50	10.00	48	11.00	20.50	2.5°	3	●
420	9.00	10.00	48	11.00	20.50	1.5°	3	●
430	9.50	10.00	48	11.00	20.50	1.0°	3	●
450	10.00	10.00	50	13.00	-	0.0°	3	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
Steel < 850 N/mm²	2.00	3	60	0.005	3.000	0.200	9550	145
	3.00	3	60	0.010	4.500	0.300	6365	190
	4.00	3	60	0.015	6.000	0.400	4775	215
	5.00	3	60	0.015	7.500	0.500	3820	170
	6.00	3	60	0.020	9.000	0.600	3185	190
	7.00	3	60	0.025	10.500	0.700	2730	205
	8.00	3	60	0.025	12.000	0.800	2385	180
	9.00	3	60	0.030	13.500	0.900	2120	190
	10.00	3	60	0.035	15.000	1.000	1910	200
Steel 850 - 1100 N/mm²	2.00	3	48	0.005	3.000	0.200	7640	115
	3.00	3	48	0.010	4.500	0.300	5095	155
	4.00	3	48	0.015	6.000	0.400	3820	170
	5.00	3	48	0.015	7.500	0.500	3055	140
	6.00	3	48	0.020	9.000	0.600	2545	155
	7.00	3	48	0.025	10.500	0.700	2185	165
	8.00	3	48	0.025	12.000	0.800	1910	145
	9.00	3	48	0.030	13.500	0.900	1700	155
	10.00	3	48	0.035	15.000	1.000	1530	160
Stainless steel [Cr-Ni/1.4301]	2.00	3	25	0.005	3.000	0.200	3980	60
	3.00	3	25	0.010	4.500	0.300	2655	80
	4.00	3	25	0.015	6.000	0.400	1990	90
	5.00	3	25	0.015	7.500	0.500	1590	70
	6.00	3	25	0.020	9.000	0.600	1325	80
	7.00	3	25	0.025	10.500	0.700	1135	85
	8.00	3	25	0.025	12.000	0.800	995	75
	9.00	3	25	0.030	13.500	0.900	885	80
	10.00	3	25	0.035	15.000	1.000	795	85
Stainless steel [Cr-Ni-Mo-.../1.4429]	2.00	3	22	0.005	3.000	0.200	3500	55
	3.00	3	22	0.010	4.500	0.300	2335	70
	4.00	3	22	0.015	6.000	0.400	1750	80
	5.00	3	22	0.015	7.500	0.500	1400	65
	6.00	3	22	0.020	9.000	0.600	1165	70
	7.00	3	22	0.025	10.500	0.700	1000	75
	8.00	3	22	0.025	12.000	0.800	875	65
	9.00	3	22	0.030	13.500	0.900	780	70
	10.00	3	22	0.035	15.000	1.000	700	75

Application

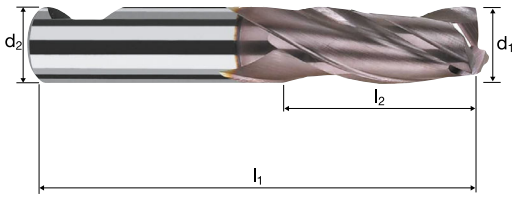


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Steel < 850 N/mm²	2.00	3	55	0.005	1.000	2.000	8755	130	0.3
	3.00	3	55	0.010	1.500	3.000	5835	175	0.8
	4.00	3	55	0.010	2.000	4.000	4375	130	1.1
	5.00	3	55	0.015	2.500	5.000	3500	160	2.0
	6.00	3	55	0.015	3.000	6.000	2920	130	2.4
	7.00	3	55	0.020	3.500	7.000	2500	150	3.7
	8.00	3	55	0.025	4.000	8.000	2190	165	5.3
	9.00	3	55	0.025	4.500	9.000	1945	145	5.9
	10.00	3	55	0.030	5.000	10.000	1750	160	7.9
Steel 850 - 1100 N/mm²	2.00	3	45	0.005	1.000	2.000	7160	105	0.2
	3.00	3	45	0.010	1.500	3.000	4775	145	0.6
	4.00	3	45	0.010	2.000	4.000	3580	105	0.9
	5.00	3	45	0.015	2.500	5.000	2865	130	1.6
	6.00	3	45	0.015	3.000	6.000	2385	105	1.9
	7.00	3	45	0.020	3.500	7.000	2045	125	3.0
	8.00	3	45	0.025	4.000	8.000	1790	135	4.3
	9.00	3	45	0.025	4.500	9.000	1590	120	4.8
	10.00	3	45	0.030	5.000	10.000	1430	130	6.4
Stainless steel [Cr-Ni/1.4301]	2.00	3	22	0.005	1.000	2.000	3500	55	0.1
	3.00	3	22	0.010	1.500	3.000	2335	70	0.3
	4.00	3	22	0.010	2.000	4.000	1750	55	0.4
	5.00	3	22	0.015	2.500	5.000	1400	65	0.8
	6.00	3	22	0.015	3.000	6.000	1165	55	0.9
	7.00	3	22	0.020	3.500	7.000	1000	60	1.5
	8.00	3	22	0.025	4.000	8.000	875	65	2.1
	9.00	3	22	0.025	4.500	9.000	780	60	2.4
	10.00	3	22	0.030	5.000	10.000	700	65	3.2
Stainless steel [Cr-Ni-Mo-.../1.4429]	2.00	3	20	0.005	1.000	2.000	3185	50	0.1
	3.00	3	20	0.010	1.500	3.000	2120	65	0.3
	4.00	3	20	0.010	2.000	4.000	1590	50	0.4
	5.00	3	20	0.015	2.500	5.000	1275	55	0.7
	6.00	3	20	0.015	3.000	6.000	1060	50	0.9
	7.00	3	20	0.020	3.500	7.000	910	55	1.3
	8.00	3	20	0.025	4.000	8.000	795	60	1.9
	9.00	3	20	0.025	4.500	9.000	705	55	2.1
	10.00	3	20	0.030	5.000	10.000	635	55	2.9

Cylindrical end mills

Smooth-edged, short-shank version

HSS PM/F	λ 30° γ 15°
90°	



Roughing

Finishing

Rm < 850	Rm 850-1100						Inox Stainless		Copper

Example: **Order-N°.** Coating **U** Article-N°. **0410** ø-Code **140**

									UNICUT-4X
									U0410
Ø Code	d_1 f8	d_2 h6		l_1	l_2	l_4	α	z	
140	2.00	6.00		38	7.00	13.61	8.5°	3	●
160	2.50	6.00		39	8.00	15.00	7.0°	3	●
180	3.00	6.00		39	8.00	15.00	6.0°	3	●
200	3.50	6.00		41	10.00	17.00	4.5°	3	●
220	4.00	6.00		42	11.00	18.00	3.5°	3	●
240	4.50	6.00		42	11.00	18.00	2.5°	3	●
260	5.00	6.00		44	13.00	20.00	1.5°	3	●
280	5.50	6.00		44	13.00	20.00	1.0°	3	●
300	6.00	6.00		44	13.00	-	0.0°	3	●
311	6.50	8.00		48	16.00	23.50	2.0°	3	●
331	7.00	8.00		48	16.00	23.50	1.5°	3	●
351	7.50	8.00		48	16.00	23.50	1.0°	3	●
391	8.00	8.00		51	19.00	-	0.0°	3	●
410	8.50	10.00		56	19.00	28.50	2.0°	3	●
420	9.00	10.00		56	19.00	28.50	1.5°	3	●
430	9.50	10.00		56	19.00	28.50	1.0°	3	●
450	10.00	10.00		59	22.00	-	0.0°	3	●

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End milling tools for 3D machining
Ball nose

Tolerance r ±0.003

N° 7500	**Sphero-XP**	X-Generation X	3xd F SF	d_1 1 – 12	**Rm** 1100-1500	**HRC** 48- >60			369

Tolerance r ±0.005

N° 7470	**Sphero-X**	X-Generation X	3xd R F	d_1 1 – 16	**Rm** 1300-1500	**HRC** 48- >60	**HSS**		371
N° 7420 ToolSchool	**Sphero-XR**	X-Generation X	3xd R PF	d_1 1 – 12	**Rm** 1100-1500	**HRC** 48-60			373
N° 7400	**Sphero-XF**	X-Generation X	3xd F SF	d_1 1 – 12	**Rm** 1100-1500	**HRC** 48- >60			375
N° 7460	**Sphero-XF Multi**	X-Generation X	3xd F SF	d_1 6 – 12	**Rm** 1100-1500	**HRC** 48- >60			377
N° 7540	**Sphero-SB**	Base-X B	3xd PF F	d_1 1 – 16	**Inox** Stainless				379
N° 7550	**Sphero-Alu** new!	Base-X B	3xd PF F	d_1 2 – 20	**Al** Aluminium Alloy	**Cu** Copper	**Plastic** Thermoplast		381
N° 7472	**Sphero-X** new!	X-Generation X	4.5xd R F	d_1 1 – 16	**Rm** 1300-1500	**HRC** 48- >60	**HSS**		383
N° 7402	**Sphero-XF** new!	X-Generation X	4.5xd F SF	d_1 1 – 12	**Rm** 1100-1500	**HRC** 48- >60			385

End milling tools for 3D machining
Ball nose

Tolerance r ±0.005

N° 7474	**Sphero-X**	X-Generation X	6xd	R F	d_1 1 – 16	**Rm** 1300-1500	**HRC** 48- >60	**HSS**	387
N° 7424 ToolSchool	**Sphero-XR**	X-Generation X	6xd	R PF	d_1 1 – 12	**Rm** 1100-1500	**HRC** 48-60		389
N° 7404	**Sphero-XF**	X-Generation X	6xd	F SF	d_1 1 – 12	**Rm** 1100-1500	**HRC** 48- >60		391
N° 7464	**Sphero-XF Multi**	X-Generation X	6xd	F SF	d_1 6 – 12	**Rm** 1100-1500	**HRC** 48- >60		393
N° 7544	**Sphero-SB**	Base-X B	6xd	PF F	d_1 1 – 16	**Inox** Stainless			395
N° 7554	**Sphero-Alu** new!	Base-X B	6xd	PF F	d_1 3 – 16	**Al** Aluminium Alloy	**Cu** Copper	**Plastic** Thermoplast	397
N° 7478	**Sphero-X**	X-Generation X	9xd	F	d_1 1 – 16	**Rm** 1300-1500	**HRC** 48- >60	**HSS**	399
N° 7428 ToolSchool	**Sphero-XR**	X-Generation X	9xd	PF	d_1 1 – 12	**Rm** 1100-1500	**HRC** 48-60		401
N° 7408	**Sphero-XF**	X-Generation X	9xd	F SF	d_1 1 – 12	**Rm** 1100-1500	**HRC** 48- >60		403

End milling tools for 3D machining
Ball nose

Tolerance r ±0.01

N° 7450	**Sphero-XR4**	X-Generation **X**	**3xd** **R** **PF**	d_1 3 – 12	**Rm** 1300-1500	**HRC** 48-60		405
N° 7454	**Sphero-XR4**	X-Generation **X**	**6xd** **R** **PF**	d_1 3 – 12	**Rm** 1300-1500	**HRC** 48-60		407
N° 7458	**Sphero-XR4**	X-Generation **X**	**9xd** **PF**	d_1 3 – 12	**Rm** 1300-1500	**HRC** 48-60		409

Tolerance r f8 (-/-)

N° 5286	**Sphericut**	Base-X **B**	**3xd** **PF** **F**	d_1 1 – 16	**Rm** 1100-1500	**HRC** 48-56		411
N° 5290 ToolSchool	**Sphericut-Alu**	Base-X **B**	**3xd** **PF** **F**	d_1 2 – 20	**Al** Aluminium Alloy	**Cu** Copper	**Plastic** Thermoplast	413
N° 45298		Favora® **F**	**3xd** **PF** **F**	d_1 3 – 12	**Rm** 850-1300			415
N° 5288	**Sphericut**	Base-X **B**	**3xd** **PF** **F**	d_1 1 – 16	**Rm** 1100-1500	**HRC** 48-56		417
N° 5292 ToolSchool	**Sphericut-Alu**	Base-X **B**	**3xd** **PF** **F**	d_1 3 – 16	**Al** Aluminium Alloy	**Cu** Copper	**Plastic** Thermoplast	419
N° 5289	**Sphericut**	Base-X **B**	**5xd** **PF** **F**	d_1 3 – 12	**Rm** 1100-1500	**HRC** 48-56		421

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End milling tools for 3D machining
Circular arc milling cutter

Spherical

N° 8530

ArCut X

X-Generation X | PF F | r_1 2, 3, 4 r_2 750, 1000 | HRC <48-56 | Inox Ti | Al Aluminium Alloy | 423

Spherical, micro

N° 8535

ArCut X

X-Generation X | PF F | r_1 0.5, 1, 2 r_2 250, 350 | HRC <48-56 | Inox Ti | Al Aluminium Alloy | 425

Toric

N° 8540

ArCut X

X-Generation X | PF F | r_1 1.25, 2, 3.5 r_2 30, 40, 50 | HRC <48-56 | Inox Ti | Al Aluminium Alloy | 427

Toric, integral

N° 8545

ArCut X

X-Generation X | PF F | r_1 0.8, 1 r_2 200, 350 | HRC <48-56 | Inox Ti | Al Aluminium Alloy | 429

Flat surfaces

N° 8550

ArCut X

X-Generation X | PF F | r_1 1 r_2 250 | HRC <48-56 | Inox Ti | Al Aluminium Alloy | 431

End milling tools for 3D machining
Corner radius

Tolerance r 0/+0.015

N° 7210	**XSpeed-H** new!	X-Generation X	3xd HDC PF/F	r 0.2, 0.5	HRC 56- >60	HSS		433
N° 7200	**XSpeed**	X-Generation X	3xd PF F	r 0.5, 1.0	Rm 1100-1500	HRC 48- >60		435
N° 7100	**Toro-X**	X-Generation X	3xd R PF	r 0.2, 0.5, 1.0, 2.0	Rm 1300-1500	HRC 48-60		439
N° 7204	**XSpeed**	X-Generation X	6xd PF F	r 0.5, 1.0	Rm 1100-1500	HRC 48- >60		443
N° 7104	**Toro-X**	X-Generation X	6xd R PF	r 0.2, 0.5, 1.0, 2.0	Rm 1300-1500	HRC 48-60		447

Tolerance r 0/+0.03

N° 5250	**Multispeed**	X-Generation X	3xd PF F	r 0.5, 0.8, 1.0, 1.5	Rm <850-1300	Inox Stainless		451
N° 7340	**Toro-SB**	Base-X B	3xd R PF	r 0.2, 0.5, 1.0, 1.5, 2.0	Rm <850	Inox Stainless		453
N° 5252	**Multispeed**	X-Generation X	5xd PF F	r 0.8, 1.0, 1.5	Rm <850-1300	Inox Stainless		457
N° 7344	**Toro-SB**	Base-X B	6xd R PF	r 0.2, 0.5, 1.0	Rm <850	Inox Stainless		459

N° 8507 / 8607	**HX-RNVS** new!	X-Generation X	Roughing HPC Roughing HDC Finishing	r 0.2, 0.5, 1.0, 1.5, 2.0, 2.5 3.0	HRC 56- >60	HSS		175
N° 8107 / 8207	**MFC-R** (MB-RNVDS)	Base-X B	Roughing HPC Roughing HDC Finishing	r 0.2, 0.5, 1.0, 1.5, 2.0, 2.5	Rm <850-1500	HRC 48-56	Inox / Ti	195

End milling tools for 3D machining
HFC

Cylindrical neck

N° 7600	**XFeed**	X-Generation X	3xd R	d_1 1 – 16	**Rm** 850-1500	**HRC** 48- >60		463
N° 7620	**XFeed-R**	X-Generation X	3xd R	d_1 6 – 16	**Rm** 1100-1500	**HRC** 48-56		465
N° 7604	**XFeed**	X-Generation X	6xd R	d_1 3 – 16	**Rm** 850-1500	**HRC** 48- >60		467
N° 7624	**XFeed-R**	X-Generation X	6xd R	d_1 6 – 16	**Rm** 1100-1500	**HRC** 48-56		469
N° 7608	**XFeed**	X-Generation X	9xd R	d_1 3 – 16	**Rm** 850-1500	**HRC** 48- >60		471

End milling tools for 3D machining
Milling of carbides

Ball nose

N° 5580

SpheroCarb

X-Generation | X | 3xd | F | SF | d_1 1 – 12 | HM <1200 HV | HM <1600 HV | 473

N° 35700

Sphero-CVD

X-Generation | X | 3xd | R | F | d_1 6 – 12 | HM <1200 HV | HM <1600 HV | 475

Corner radius

N° 35400

Toro-CVD

X-Generation | X | 3xd | R | F | r 0.5 | HM <1200 HV | HM <1600 HV | 477

End milling tools for 3D machining
CBN

Ball nose

N° 31700

Sphero-CBN

X-Generation X | 3xd | SF | d_1 4 – 12 | HRC 56- >60 | 479

Corner radius

N° 31420

XSpeed-CBN

X-Generation X | 3xd | SF | r 0.5 | HRC 56- >60 | 481

N° 31410

XSpeed-CBN

X-Generation X | 3xd | SF | r 1.0, 1.25, 1.5, 2.0, 2.5, 3.0 | HRC 56- >60 | 483

End milling tools for 3D machining
Micro with ball nose

Shank ø 6mm

N° 6460	MicroHX	X-Generation X	1xd	d_1 0.4 – 2.0	Rm 1300-1500	HRC 48- >60	HSS	485
N° 6461	MicroHX	X-Generation X	2xd	d_1 0.4 – 2.0	Rm 1300-1500	HRC 48- >60	HSS	487
N° 6481	MicroHX	X-Generation X	2.5xd	d_1 0.4 – 1.0	Rm 1300-1500	HRC 48- >60	HSS	489
N° 6462	MicroHX	X-Generation X	3xd	d_1 0.4 – 3.0	Rm 1300-1500	HRC 48- >60	HSS	491
N° 6482	MicroHX	X-Generation X	3.5xd	d_1 0.4 – 1.0	Rm 1300-1500	HRC 48- >60	HSS	493
N° 6463	MicroHX	X-Generation X	4xd	d_1 0.4 – 2.0	Rm 1300-1500	HRC 48- >60	HSS	495
N° 6483	MicroHX	X-Generation X	4.5xd	d_1 0.4 – 1.0	Rm 1300-1500	HRC 48- >60	HSS	497
N° 6464	MicroHX	X-Generation X	5xd	d_1 0.4 – 3.0	Rm 1300-1500	HRC 48- >60	HSS	499

End milling tools for 3D machining
Micro with ball nose

Shank ø 6mm

N° 6560	MicroX	X-Generation X	1xd	d_1 0.1 – 2.0	Rm 850-1500	HRC 48-60	Inox / Ti	501
N° 6561	MicroX	X-Generation X	2xd	d_1 0.1 – 2.0	Rm 850-1500	HRC 48-60	Inox / Ti	503
N° 6581	MicroX	X-Generation X	2.5xd	d_1 0.1 – 1.0	Rm 850-1500	HRC 48-60	Inox / Ti	505
N° 6562	MicroX	X-Generation X	3xd	d_1 0.1 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	507
N° 6582	MicroX	X-Generation X	3.5xd	d_1 0.1 – 1.0	Rm 850-1500	HRC 48-60	Inox / Ti	509
N° 6563	MicroX	X-Generation X	4xd	d_1 0.1 – 2.0	Rm 850-1500	HRC 48-60	Inox / Ti	511
N° 6583	MicroX	X-Generation X	4.5xd	d_1 0.1 – 1.0	Rm 850-1500	HRC 48-60	Inox / Ti	513
N° 6564	MicroX	X-Generation X	5xd	d_1 0.1 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	515
N° 6565	MicroX	X-Generation X	6xd	d_1 0.2 – 2.0	Rm 850-1500	HRC 48-60	Inox / Ti	517
N° 6579	MicroX	X-Generation X	7xd	d_1 0.2 – 2.0	Rm 850-1500	HRC 48-60	Inox / Ti	519
N° 6566	MicroX	X-Generation X	8xd	d_1 0.2 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	521
N° 6567	MicroX	X-Generation X	9xd	d_1 0.2 – 2.0	Rm 850-1500	HRC 48-60	Inox / Ti	523
N° 6568	MicroX	X-Generation X	10xd	d_1 0.2 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	525

End milling tools for 3D machining
Micro with ball nose

Shank ø 6mm, conical neck 0.9°

N° 6765	**MicroX**	X-Generation X	**6xd**	d_1 0.5 – 2.0	**Rm** 850-1500	**HRC** 48-60	**Inox** / **Ti**	527
N° 6766	**MicroX**	X-Generation X	**8xd**	d_1 0.5 – 3.0	**Rm** 850-1500	**HRC** 48-60	**Inox** / **Ti**	529
N° 6768	**MicroX**	X-Generation X	**10xd**	d_1 0.5 – 3.0	**Rm** 850-1500	**HRC** 48-60	**Inox** / **Ti**	531
N° 6770	**MicroX**	X-Generation X	**12xd**	d_1 0.5 – 3.0	**Rm** 850-1500	**HRC** 48-60	**Inox** / **Ti**	533
N° 6772	**MicroX**	X-Generation X	**15xd**	d_1 0.5 – 3.0	**Rm** 850-1500	**HRC** 48-60	**Inox** / **Ti**	535
N° 6774	**MicroX**	X-Generation X	**20xd**	d_1 0.5 – 3.0	**Rm** 850-1500	**HRC** 48-60	**Inox** / **Ti**	537

End milling tools for 3D machining
Micro with ball nose

Shank ø 3mm

N° 15781 ToolSchool	**Microcut-B1H**	X-Generation X	**1xd**	d_1 0.2 – 3.0	**Rm** 1100-1500	**HRC** 48-60		539
N° 5792 ToolSchool	**Microcut-B3H**	X-Generation X	**3xd**	d_1 0.5 – 3.0	**Rm** 1100-1500	**HRC** 48-60		541
N° 5794 ToolSchool	**Microcut-B5H**	X-Generation X	**5xd**	d_1 0.5 – 3.0	**Rm** 1100-1500	**HRC** 48-60		543
N° 5796 ToolSchool	**Microcut-B8H**	X-Generation X	**8xd**	d_1 0.5 – 3.0	**Rm** 1100-1500	**HRC** 48-60		545
N° 5782	**Microcut-B3**	Base-X B	**3xd**	d_1 0.2 – 3.0	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	547
N° 5784	**Microcut-B5**	Base-X B	**5xd**	d_1 0.5 – 3.0	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	549
N° 5786	**Microcut-B8**	Base-X B	**8xd**	d_1 0.5 – 3.0	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	551
N° 5787	**Microcut-B10**	Base-X B	**10xd**	d_1 0.5 – 3.0	**Rm** <850-1300			553
N° 5791	**Microcut-B12**	Base-X B	**12xd**	d_1 1.0 – 3.0	**Rm** <850-1300			555
N° 5793	**Microcut-B15**	Base-X B	**15xd**	d_1 1.0 – 3.0	**Rm** <850-1300			557
N° 15795	**Microcut-B20**	Base-X B	**20xd**	d_1 1.0 – 3.0	**Rm** <850-1100			559
N° 45785		Favora® F	**3xd**	d_1 0.3 – 3.0	**Rm** <850-1100			561

End milling tools for 3D machining
Micro with corner radius

Shank ø 6mm

N° 6531		MicroX	X-Generation X	2xd	r 0.05, 0.1, 0.2, 0.3, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	563
N° 6532		MicroX	X-Generation X	3xd	r 0.05, 0.1, 0.2, 0.3, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	565
N° 6533		MicroX	X-Generation X	4xd	r 0.05, 0.1, 0.2, 0.3, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	569
N° 6534		MicroX	X-Generation X	5xd	r 0.05, 0.1, 0.2, 0.3, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	571
N° 6535		MicroX	X-Generation X	6xd	r 0.05, 0.1, 0.2, 0.3, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	575
N° 6536		MicroX	X-Generation X	8xd	r 0.05, 0.1, 0.2, 0.3, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	577
N° 6538		MicroX	X-Generation X	10xd	r 0.05, 0.1, 0.2, 0.3, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	581

Shank ø 6mm, conical neck 0.9°

N° 6735		MicroX	X-Generation X	6xd	r 0.1, 0.2, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	585
N° 6736		MicroX	X-Generation X	8xd	r 0.1, 0.2, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	587
N° 6738		MicroX	X-Generation X	10xd	r 0.1, 0.2, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	589
N° 6740		MicroX	X-Generation X	12xd	r 0.1, 0.2, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	591
N° 6742		MicroX	X-Generation X	15xd	r 0.1, 0.2, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	593
N° 6744		MicroX	X-Generation X	20xd	r 0.1, 0.2, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	595

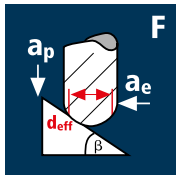
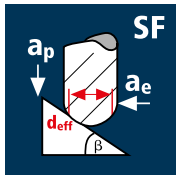
End milling tools for 3D machining
Micro with corner radius

Shank ø 6mm, Z4

N° 6632	**MicroX**	X-Generation **X**	**3xd**	r 0.1, 0.2, 0.5	**Rm** 1100-1500	**HRC** 48-60		597
N° 6634	**MicroX**	X-Generation **X**	**5xd**	r 0.1, 0.2, 0.5	**Rm** 1100-1500	**HRC** 48-60		599

Shank ø 3mm

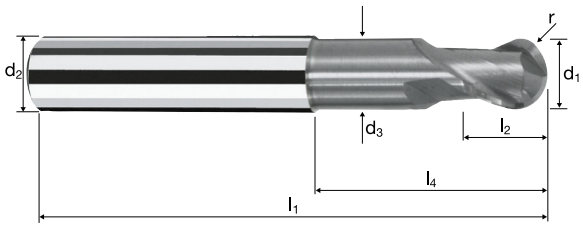
N° 5762 ToolSchool	**Microcut-T3H**	X-Generation **X**	**3xd**	r 0.2	**Rm** 1100-1500	**HRC** 48-60		601
N° 5764 ToolSchool	**Microcut-T5H**	X-Generation **X**	**5xd**	r 0.2	**Rm** 1100-1500	**HRC** 48-60		603
N° 5752	**Microcut-T3**	Base-X **B**	**3xd**	r 0.2	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	605
N° 5754	**Microcut-T5**	Base-X **B**	**5xd**	r 0.2	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	607
N° 5756	**Microcut-T8**	Base-X **B**	**8xd**	r 0.2	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	609

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	1.00	2	124	0.030	0.050	0.050	0.94	41990	2520	45°
		2.00	2	243	0.035	0.070	0.070	1.84	42040	2945	45°
		3.00	2	300	0.040	0.100	0.100	2.74	34850	2790	45°
		4.00	2	300	0.070	0.120	0.120	3.62	26380	3695	45°
		5.00	2	300	0.080	0.150	0.150	4.53	21080	3375	45°
		6.00	2	300	0.085	0.150	0.150	5.36	17815	3030	45°
		8.00	2	300	0.095	0.170	0.170	7.05	13545	2575	45°
		10.00	2	300	0.100	0.200	0.200	8.77	10890	2180	45°
		12.00	2	300	0.105	0.250	0.250	10.56	9045	1900	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	124	0.030	0.050	0.050	0.94	41990	2520	45°
		2.00	2	243	0.035	0.070	0.070	1.84	42040	2945	45°
		3.00	2	250	0.040	0.100	0.100	2.74	29045	2325	45°
		4.00	2	250	0.065	0.120	0.120	3.62	21985	2860	45°
		5.00	2	250	0.075	0.150	0.150	4.53	17565	2635	45°
		6.00	2	250	0.080	0.150	0.150	5.36	14845	2375	45°
		8.00	2	250	0.090	0.170	0.170	7.05	11290	2030	45°
		10.00	2	250	0.095	0.200	0.200	8.77	9075	1725	45°
		12.00	2	250	0.100	0.250	0.250	10.56	7535	1505	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	200	0.030	0.070	0.070	1.84	34600	2075	45°
		3.00	2	200	0.035	0.100	0.100	2.74	23235	1625	45°
		4.00	2	200	0.065	0.120	0.120	3.62	17585	2285	45°
		5.00	2	200	0.070	0.150	0.150	4.53	14055	1965	45°
		6.00	2	200	0.075	0.150	0.150	5.36	11875	1780	45°
		8.00	2	200	0.085	0.170	0.170	7.05	9030	1535	45°
		10.00	2	200	0.090	0.200	0.200	8.77	7260	1305	45°
		12.00	2	200	0.095	0.250	0.250	10.56	6030	1145	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	150	0.030	0.070	0.070	1.84	25950	1555	45°
		3.00	2	150	0.035	0.100	0.100	2.74	17425	1220	45°
		4.00	2	150	0.060	0.120	0.120	3.62	13190	1585	45°
		5.00	2	150	0.070	0.150	0.150	4.53	10540	1475	45°
		6.00	2	150	0.070	0.150	0.150	5.36	8910	1245	45°
		8.00	2	150	0.080	0.170	0.170	7.05	6775	1085	45°
		10.00	2	150	0.085	0.200	0.200	8.77	5445	925	45°
		12.00	2	150	0.090	0.250	0.250	10.56	4520	815	45°
	Hardened tool steel 42 - 48 HRC	1.00	2	116	0.025	0.020	0.020	0.88	41960	2100	45°
		2.00	2	220	0.030	0.020	0.020	1.67	41935	2515	45°
		3.00	2	330	0.035	0.030	0.030	2.50	42015	2940	45°
		4.00	2	400	0.050	0.030	0.030	3.27	38935	3895	45°
		5.00	2	400	0.055	0.030	0.030	4.04	31515	3465	45°
		6.00	2	400	0.060	0.030	0.030	4.80	26525	3185	45°
		8.00	2	400	0.065	0.030	0.030	6.31	20180	2625	45°
		10.00	2	400	0.070	0.040	0.040	7.91	16095	2255	45°
		12.00	2	400	0.075	0.040	0.040	9.41	13530	2030	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	116	0.025	0.020	0.020	0.88	41960	2100	45°
		2.00	2	220	0.030	0.020	0.020	1.67	41935	2515	45°
		3.00	2	330	0.035	0.030	0.030	2.50	42015	2940	45°
		4.00	2	350	0.050	0.030	0.030	3.27	34070	3405	45°
		5.00	2	350	0.050	0.030	0.030	4.04	27575	2760	45°
		6.00	2	350	0.055	0.030	0.030	4.80	23210	2555	45°
		8.00	2	350	0.060	0.030	0.030	6.31	17655	2120	45°
		10.00	2	350	0.065	0.040	0.040	7.91	14085	1830	45°
		12.00	2	350	0.070	0.040	0.040	9.41	11840	1660	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	116	0.025	0.020	0.020	0.88	41960	2100	45°
		2.00	2	220	0.025	0.020	0.020	1.67	41935	2095	45°
		3.00	2	280	0.030	0.030	0.030	2.50	35650	2140	45°
		4.00	2	280	0.045	0.030	0.030	3.27	27255	2455	45°
		5.00	2	280	0.050	0.030	0.030	4.04	22060	2205	45°
		6.00	2	280	0.055	0.030	0.030	4.80	18570	2040	45°
		8.00	2	280	0.060	0.030	0.030	6.31	14125	1695	45°
		10.00	2	280	0.065	0.040	0.040	7.91	11270	1465	45°
		12.00	2	280	0.070	0.040	0.040	9.41	9470	1325	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	116	0.020	0.020	0.020	0.88	41960	1680	45°
		2.00	2	180	0.025	0.020	0.020	1.67	34310	1715	45°
		3.00	2	180	0.030	0.030	0.030	2.50	22920	1375	45°
		4.00	2	180	0.045	0.030	0.030	3.27	17520	1575	45°
		5.00	2	180	0.045	0.030	0.030	4.04	14180	1275	45°
		6.00	2	180	0.050	0.030	0.030	4.80	11935	1195	45°
		8.00	2	180	0.055	0.030	0.030	6.31	9080	1000	45°
		10.00	2	180	0.060	0.040	0.040	7.91	7245	870	45°
		12.00	2	180	0.065	0.040	0.040	9.41	6090	790	45°

Ball nose end mills Sphero-XP

Tolerance r ±0.003, 3xd

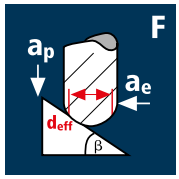
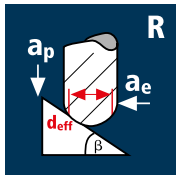
HM XA	λ 30° γ -10°



	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	Copper

Example: **Order-N°.** Coating **X** Article-N°. **7500** ø-Code **100**

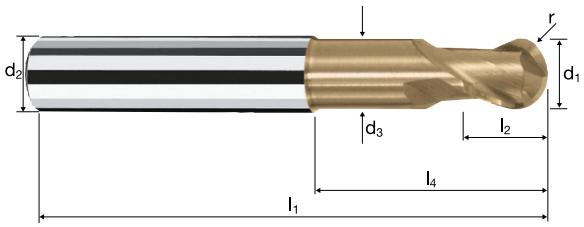
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.003	α	z	X-AL **X7500**
100	1.00	6.00	0.95	57	1.50	3.00	13.08	0.500	11.8°	2	●
140	2.00	6.00	1.90	57	3.00	6.00	14.31	1.000	9.0°	2	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	1.500	6.4°	2	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	2.000	4.0°	2	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	2.500	2.0°	2	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	6.000	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	200	0.030	0.070	0.070	1.84	34600	2075	45°
		3.00	2	200	0.035	0.100	0.100	2.74	23235	1625	45°
		4.00	2	200	0.065	0.120	0.120	3.62	17585	2285	45°
		5.00	2	200	0.070	0.150	0.150	4.53	14055	1965	45°
		6.00	2	200	0.075	0.150	0.150	5.36	11875	1780	45°
		8.00	2	200	0.085	0.170	0.170	7.05	9030	1535	45°
		10.00	2	200	0.090	0.200	0.200	8.77	7260	1305	45°
		12.00	2	200	0.095	0.250	0.250	10.56	6030	1145	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	150	0.030	0.070	0.070	1.84	25950	1555	45°
		3.00	2	150	0.035	0.100	0.100	2.74	17425	1220	45°
		4.00	2	150	0.060	0.120	0.120	3.62	13190	1585	45°
		5.00	2	150	0.065	0.150	0.150	4.53	10540	1370	45°
		6.00	2	150	0.070	0.150	0.150	5.36	8910	1245	45°
		8.00	2	150	0.080	0.170	0.170	7.05	6775	1085	45°
		10.00	2	150	0.085	0.200	0.200	8.77	5445	925	45°
		12.00	2	150	0.090	0.250	0.250	10.56	4520	815	45°
	Hardened tool steel 60 - 64 HRC	1.00	2	90	0.020	0.040	0.040	0.93	30805	1230	45°
		2.00	2	90	0.025	0.055	0.055	1.80	15915	795	45°
		3.00	2	90	0.030	0.075	0.075	2.68	10690	640	45°
		4.00	2	90	0.050	0.090	0.090	3.54	8095	810	45°
		5.00	2	90	0.055	0.115	0.115	4.43	6465	710	45°
		6.00	2	90	0.060	0.115	0.115	5.24	5465	655	45°
		8.00	2	90	0.070	0.130	0.130	6.90	4150	580	45°
		10.00	2	90	0.070	0.150	0.150	8.58	3340	465	45°
		12.00	2	90	0.075	0.190	0.190	10.34	2770	415	45°
	Hardened tool steel 64 - 70 HRC	1.00	2	60	0.015	0.025	0.025	0.89	21460	645	45°
		2.00	2	60	0.020	0.035	0.035	1.74	10975	440	45°
		3.00	2	60	0.020	0.050	0.050	2.59	7375	295	45°
		4.00	2	60	0.035	0.060	0.060	3.43	5570	390	45°
		5.00	2	60	0.040	0.075	0.075	4.29	4450	355	45°
		6.00	2	60	0.040	0.075	0.075	5.08	3760	300	45°
		8.00	2	60	0.050	0.085	0.085	6.70	2850	285	45°
		10.00	2	60	0.050	0.100	0.100	8.34	2290	230	45°
		12.00	2	60	0.055	0.125	0.125	10.03	1905	210	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	124	0.045	0.120	0.120	0.94	41990	3780	30°
		2.00	2	130	0.070	0.240	0.240	1.89	21895	3065	30°
		3.00	2	130	0.075	0.360	0.360	2.83	14620	2195	30°
		4.00	2	130	0.090	0.480	0.480	3.77	10975	1975	30°
		5.00	2	130	0.100	0.600	0.600	4.71	8785	1755	30°
		6.00	2	130	0.110	0.720	0.720	5.66	7310	1610	30°
		8.00	2	130	0.125	0.960	0.960	7.54	5490	1370	30°
		10.00	2	130	0.145	1.100	1.100	9.32	4440	1290	30°
		12.00	2	130	0.155	1.200	1.200	11.04	3750	1160	30°
	Hardened tool steel 56 - 60 HRC	1.00	2	80	0.025	0.100	0.100	0.92	27680	1385	30°
		2.00	2	80	0.040	0.190	0.190	1.83	13915	1115	30°
		3.00	2	80	0.045	0.290	0.290	2.75	9260	835	30°
		4.00	2	80	0.055	0.380	0.380	3.65	6975	765	30°
		5.00	2	80	0.060	0.480	0.480	4.57	5570	670	30°
		6.00	2	80	0.065	0.580	0.580	5.49	4640	605	30°
		8.00	2	80	0.075	0.770	0.770	7.32	3480	520	30°
		10.00	2	80	0.085	0.880	0.880	9.03	2820	480	30°
		12.00	2	80	0.095	0.960	0.960	10.68	2385	455	30°
	Hardened tool steel 60 - 64 HRC	1.00	2	60	0.020	0.080	0.080	0.89	21460	860	30°
		2.00	2	60	0.030	0.140	0.140	1.74	10975	660	30°
		3.00	2	60	0.035	0.220	0.220	2.63	7260	510	30°
		4.00	2	60	0.040	0.290	0.290	3.51	5440	435	30°
		5.00	2	60	0.045	0.360	0.360	4.38	4360	390	30°
		6.00	2	60	0.050	0.430	0.430	5.25	3640	365	30°
		8.00	2	60	0.055	0.580	0.580	7.01	2725	300	30°
		10.00	2	60	0.065	0.660	0.660	8.64	2210	285	30°
		12.00	2	60	0.070	0.720	0.720	10.22	1870	260	30°
	Hardened tool steel 64 - 70 HRC	1.00	2	40	0.020	0.080	0.080	0.89	14305	570	30°
		2.00	2	40	0.030	0.140	0.140	1.74	7315	440	30°
		3.00	2	40	0.035	0.220	0.220	2.63	4840	340	30°
		4.00	2	40	0.040	0.290	0.290	3.51	3625	290	30°
		5.00	2	40	0.045	0.360	0.360	4.38	2905	260	30°
		6.00	2	40	0.050	0.430	0.430	5.25	2425	245	30°
		8.00	2	40	0.055	0.580	0.580	7.01	1815	200	30°
		10.00	2	40	0.065	0.660	0.660	8.64	1475	190	30°
		12.00	2	40	0.070	0.720	0.720	10.22	1245	175	30°

Ball nose end mills Sphero-X

Tolerance r ±0.005, 3xd

HM XA	λ 30° γ -10°

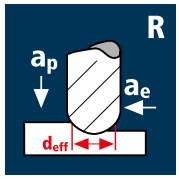


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			HSS

Example: **Order-N°.** Coating **V** Article-N°. **7470** ø-Code **100**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-V V7470
100	1.00	6.00	0.95	57	1.50	3.00	13.08	0.500	11.8°	2	●
140	2.00	6.00	1.90	57	3.00	6.00	14.31	1.000	9.0°	2	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	1.500	6.4°	2	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	2.000	4.0°	2	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	2.500	2.0°	2	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	92	17.00	42.13	43.00	8.000	0.0°	2	●

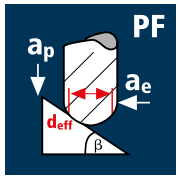
Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Hardened tool steel 42 - 48 HRC									
1.00	2	102	0.040	0.180	0.400	0.77	42165	3375	0.2
2.00	2	160	0.065	0.350	0.800	1.52	33505	4355	1.2
3.00	2	160	0.075	0.530	1.200	2.29	22240	3335	2.1
4.00	2	160	0.090	0.700	1.600	3.04	16755	3015	3.4
5.00	2	160	0.100	0.880	2.000	3.81	13365	2675	4.7
6.00	2	160	0.110	1.260	2.400	4.89	10415	2290	6.9
8.00	2	160	0.125	1.680	3.200	6.52	7810	1955	10.5
10.00	2	160	0.145	2.100	4.000	8.15	6250	1810	15.2
12.00	2	160	0.150	2.520	4.800	9.78	5210	1560	18.9
Hardened tool steel 48 - 52 HRC									
1.00	2	102	0.035	0.180	0.400	0.77	42165	2950	0.2
2.00	2	130	0.060	0.350	0.800	1.52	27225	3265	0.9
3.00	2	130	0.070	0.530	1.200	2.29	18070	2530	1.6
4.00	2	130	0.085	0.700	1.600	3.04	13610	2315	2.6
5.00	2	130	0.090	0.880	2.000	3.81	10860	1955	3.4
6.00	2	130	0.100	1.260	2.400	4.89	8460	1690	5.1
8.00	2	130	0.115	1.680	3.200	6.52	6345	1460	7.8
10.00	2	130	0.135	2.100	4.000	8.15	5075	1370	11.5
12.00	2	130	0.140	2.520	4.800	9.78	4230	1185	14.3
Hardened tool steel 52 - 56 HRC									
1.00	2	102	0.035	0.180	0.400	0.77	42165	2950	0.2
2.00	2	110	0.055	0.350	0.800	1.52	23035	2535	0.7
3.00	2	110	0.065	0.530	1.200	2.29	15290	1990	1.3
4.00	2	110	0.075	0.700	1.600	3.04	11520	1730	1.9
5.00	2	110	0.085	0.880	2.000	3.81	9190	1560	2.7
6.00	2	110	0.095	1.260	2.400	4.89	7160	1360	4.1
8.00	2	110	0.105	1.680	3.200	6.52	5370	1130	6.1
10.00	2	110	0.125	2.100	4.000	8.15	4295	1075	9.0
12.00	2	110	0.130	2.520	4.800	9.78	3580	930	11.3
Hardened tool steel 56 - 60 HRC									
1.00	2	50	0.015	0.140	0.300	0.69	23065	690	0.0
2.00	2	50	0.025	0.270	0.600	1.37	11615	580	0.1
3.00	2	50	0.030	0.410	0.900	2.06	7725	465	0.2
4.00	2	50	0.035	0.420	0.960	2.45	6495	455	0.2
5.00	2	50	0.040	0.530	0.900	3.08	5165	415	0.2
6.00	2	50	0.045	0.760	0.720	3.99	3990	360	0.2
8.00	2	50	0.050	1.010	0.960	5.31	2995	300	0.3
10.00	2	50	0.060	1.260	1.200	6.64	2395	290	0.4
12.00	2	50	0.060	1.510	1.440	7.96	2000	240	0.5

Application



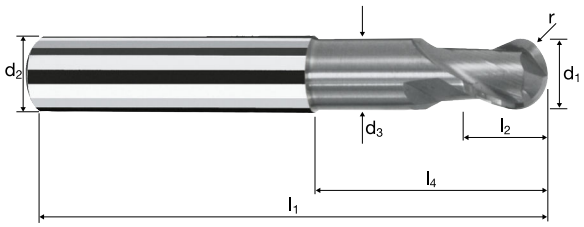
Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
1.00	2	132	0.055	0.120	0.120	1.00	42015	4620	45°
2.00	2	200	0.095	0.240	0.240	1.99	31990	6080	45°
3.00	2	200	0.105	0.360	0.360	2.99	21290	4470	45°
4.00	2	200	0.125	0.480	0.480	3.99	15955	3990	45°
5.00	2	200	0.140	0.600	0.600	4.98	12785	3580	45°
6.00	2	200	0.155	0.720	0.720	5.98	10645	3300	45°
8.00	2	200	0.170	0.960	0.960	7.98	7980	2710	45°
10.00	2	200	0.200	1.200	1.200	9.97	6385	2555	45°
12.00	2	200	0.210	1.440	1.440	11.96	5325	2235	45°
Hardened tool steel 48 - 52 HRC									
1.00	2	132	0.050	0.120	0.120	1.00	42015	4200	45°
2.00	2	160	0.085	0.150	0.150	1.95	26120	4440	45°
3.00	2	160	0.095	0.180	0.180	2.87	17745	3370	45°
4.00	2	160	0.115	0.200	0.200	3.78	13475	3100	45°
5.00	2	160	0.130	0.250	0.250	4.72	10790	2805	45°
6.00	2	160	0.145	0.300	0.300	5.67	8980	2605	45°
8.00	2	160	0.155	0.400	0.400	7.56	6735	2090	45°
10.00	2	160	0.185	0.500	0.500	9.45	5390	1995	45°
12.00	2	160	0.195	0.600	0.600	11.34	4490	1750	45°
Hardened tool steel 52 - 56 HRC									
1.00	2	120	0.045	0.120	0.120	1.00	38195	3440	45°
2.00	2	120	0.080	0.150	0.150	1.95	19590	3135	45°
3.00	2	120	0.090	0.180	0.180	2.87	13310	2395	45°
4.00	2	120	0.105	0.200	0.200	3.78	10105	2120	45°
5.00	2	120	0.120	0.250	0.250	4.72	8095	1940	45°
6.00	2	120	0.130	0.300	0.300	5.67	6735	1750	45°
8.00	2	120	0.145	0.400	0.400	7.56	5055	1465	45°
10.00	2	120	0.170	0.500	0.500	9.45	4040	1375	45°
12.00	2	120	0.180	0.600	0.600	11.34	3370	1215	45°
Hardened tool steel 56 - 60 HRC									
1.00	2	90	0.040	0.100	0.100	0.99	28935	2315	45°
2.00	2	90	0.070	0.120	0.120	1.92	14920	2090	45°
3.00	2	90	0.080	0.140	0.140	2.82	10160	1625	45°
4.00	2	90	0.095	0.160	0.160	3.71	7720	1465	45°
5.00	2	90	0.105	0.200	0.200	4.64	6175	1295	45°
6.00	2	90	0.115	0.240	0.240	5.57	5145	1185	45°
8.00	2	90	0.130	0.320	0.320	7.42	3860	1005	45°
10.00	2	90	0.150	0.400	0.400	9.28	3085	925	45°
12.00	2	90	0.160	0.480	0.480	11.13	2575	825	45°

Ball nose end mills Sphero-XR

Tolerance r ±0.005, 3xd

HM XT	λ 30° γ -10°

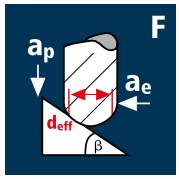
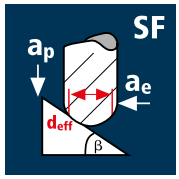


ToolSchool

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			

Example: **Order-N°.** Coating **X** Article-N°. **7420** ø-Code **100**

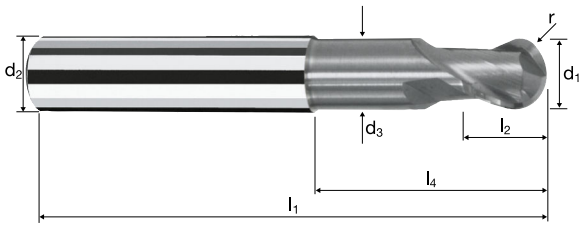
Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL X7420
100	1.00	6.00	0.95	57	1.50	3.00	13.08	0.500	11.8°	2	●
140	2.00	6.00	1.90	57	3.00	6.00	14.31	1.000	9.0°	2	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	1.500	6.4°	2	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	2.000	4.0°	2	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	2.500	2.0°	2	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	6.000	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	1.00	2	124	0.030	0.050	0.050	0.94	41990	2520	45°
		2.00	2	243	0.035	0.070	0.070	1.84	42040	2945	45°
		3.00	2	300	0.040	0.100	0.100	2.74	34850	2790	45°
		4.00	2	300	0.070	0.120	0.120	3.62	26380	3695	45°
		5.00	2	300	0.080	0.150	0.150	4.53	21080	3375	45°
		6.00	2	300	0.085	0.150	0.150	5.36	17815	3030	45°
		8.00	2	300	0.095	0.170	0.170	7.05	13545	2575	45°
		10.00	2	300	0.100	0.200	0.200	8.77	10890	2180	45°
		12.00	2	300	0.105	0.250	0.250	10.56	9045	1900	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	124	0.030	0.050	0.050	0.94	41990	2520	45°
		2.00	2	243	0.035	0.070	0.070	1.84	42040	2945	45°
		3.00	2	250	0.040	0.100	0.100	2.74	29045	2325	45°
		4.00	2	250	0.065	0.120	0.120	3.62	21985	2860	45°
		5.00	2	250	0.075	0.150	0.150	4.53	17565	2635	45°
		6.00	2	250	0.080	0.150	0.150	5.36	14845	2375	45°
		8.00	2	250	0.090	0.170	0.170	7.05	11290	2030	45°
		10.00	2	250	0.095	0.200	0.200	8.77	9075	1725	45°
		12.00	2	250	0.100	0.250	0.250	10.56	7535	1505	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	200	0.030	0.070	0.070	1.84	34600	2075	45°
		3.00	2	200	0.035	0.100	0.100	2.74	23235	1625	45°
		4.00	2	200	0.065	0.120	0.120	3.62	17585	2285	45°
		5.00	2	200	0.070	0.150	0.150	4.53	14055	1965	45°
		6.00	2	200	0.075	0.150	0.150	5.36	11875	1780	45°
		8.00	2	200	0.085	0.170	0.170	7.05	9030	1535	45°
		10.00	2	200	0.090	0.200	0.200	8.77	7260	1305	45°
		12.00	2	200	0.095	0.250	0.250	10.56	6030	1145	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	150	0.030	0.070	0.070	1.84	25950	1555	45°
		3.00	2	150	0.035	0.100	0.100	2.74	17425	1220	45°
		4.00	2	150	0.060	0.120	0.120	3.62	13190	1585	45°
		5.00	2	150	0.070	0.150	0.150	4.53	10540	1475	45°
		6.00	2	150	0.070	0.150	0.150	5.36	8910	1245	45°
		8.00	2	150	0.080	0.170	0.170	7.05	6775	1085	45°
		10.00	2	150	0.085	0.200	0.200	8.77	5445	925	45°
		12.00	2	150	0.090	0.250	0.250	10.56	4520	815	45°
	Hardened tool steel 42 - 48 HRC	1.00	2	116	0.025	0.020	0.020	0.88	41960	2100	45°
		2.00	2	220	0.030	0.020	0.020	1.67	41935	2515	45°
		3.00	2	330	0.035	0.030	0.030	2.50	42015	2940	45°
		4.00	2	400	0.050	0.030	0.030	3.27	38935	3895	45°
		5.00	2	400	0.055	0.030	0.030	4.04	31515	3465	45°
		6.00	2	400	0.060	0.030	0.030	4.80	26525	3185	45°
		8.00	2	400	0.065	0.030	0.030	6.31	20180	2625	45°
		10.00	2	400	0.070	0.040	0.040	7.91	16095	2255	45°
		12.00	2	400	0.075	0.040	0.040	9.41	13530	2030	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	116	0.025	0.020	0.020	0.88	41960	2100	45°
		2.00	2	220	0.030	0.020	0.020	1.67	41935	2515	45°
		3.00	2	330	0.035	0.030	0.030	2.50	42015	2940	45°
		4.00	2	350	0.050	0.030	0.030	3.27	34070	3405	45°
		5.00	2	350	0.050	0.030	0.030	4.04	27575	2760	45°
		6.00	2	350	0.055	0.030	0.030	4.80	23210	2555	45°
		8.00	2	350	0.060	0.030	0.030	6.31	17655	2120	45°
		10.00	2	350	0.065	0.040	0.040	7.91	14085	1830	45°
		12.00	2	350	0.070	0.040	0.040	9.41	11840	1660	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	116	0.025	0.020	0.020	0.88	41960	2100	45°
		2.00	2	220	0.025	0.020	0.020	1.67	41935	2095	45°
		3.00	2	280	0.030	0.030	0.030	2.50	35650	2140	45°
		4.00	2	280	0.045	0.030	0.030	3.27	27255	2455	45°
		5.00	2	280	0.050	0.030	0.030	4.04	22060	2205	45°
		6.00	2	280	0.055	0.030	0.030	4.80	18570	2040	45°
		8.00	2	280	0.060	0.030	0.030	6.31	14125	1695	45°
		10.00	2	280	0.065	0.040	0.040	7.91	11270	1465	45°
		12.00	2	280	0.070	0.040	0.040	9.41	9470	1325	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	116	0.020	0.020	0.020	0.88	41960	1680	45°
		2.00	2	180	0.025	0.020	0.020	1.67	34310	1715	45°
		3.00	2	180	0.030	0.030	0.030	2.50	22920	1375	45°
		4.00	2	180	0.045	0.030	0.030	3.27	17520	1575	45°
		5.00	2	180	0.045	0.030	0.030	4.04	14180	1275	45°
		6.00	2	180	0.050	0.030	0.030	4.80	11935	1195	45°
		8.00	2	180	0.055	0.030	0.030	6.31	9080	1000	45°
		10.00	2	180	0.060	0.040	0.040	7.91	7245	870	45°
		12.00	2	180	0.065	0.040	0.040	9.41	6090	790	45°

Ball nose end mills Sphero-XF

Tolerance r ±0.005, 3xd

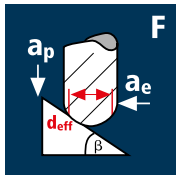
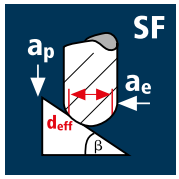
HM XA	λ 30° γ -10°



	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS Copper

Example: **Order-N°.** Coating **X** Article-N°. **7400** ø-Code **100**

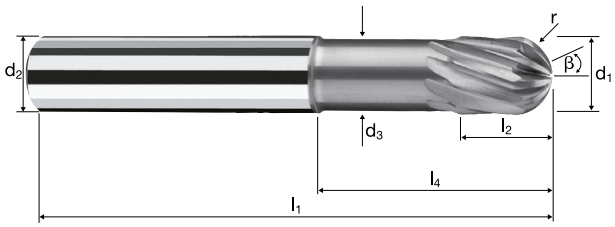
Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL **X7400**
100	1.00	6.00	0.95	57	1.50	3.00	13.08	0.500	11.8°	2	●
140	2.00	6.00	1.90	57	3.00	6.00	14.31	1.000	9.0°	2	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	1.500	6.4°	2	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	2.000	4.0°	2	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	2.500	2.0°	2	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	6.000	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	6.00	8	300	0.055	0.120	0.120	5.26	18155	7990	45°
		8.00	10	300	0.060	0.140	0.140	6.94	13760	8255	45°
		10.00	12	300	0.065	0.160	0.160	8.62	11080	8640	45°
		12.00	16	300	0.070	0.180	0.180	10.29	9280	10395	45°
	Hardened tool steel 48 - 52 HRC	6.00	8	250	0.050	0.120	0.120	5.26	15130	6050	45°
		8.00	10	250	0.055	0.140	0.140	6.94	11465	6305	45°
		10.00	12	250	0.060	0.160	0.160	8.62	9230	6645	45°
		12.00	16	250	0.065	0.180	0.180	10.29	7735	8045	45°
	Hardened tool steel 52 - 56 HRC	6.00	8	200	0.050	0.120	0.120	5.26	12105	4840	45°
		8.00	10	200	0.055	0.140	0.140	6.94	9175	5045	45°
		10.00	12	200	0.060	0.160	0.160	8.62	7385	5315	45°
		12.00	16	200	0.065	0.180	0.180	10.29	6185	6435	45°
	Hardened tool steel 56 - 60 HRC	6.00	8	150	0.045	0.120	0.120	5.26	9075	3270	45°
		8.00	10	150	0.050	0.140	0.140	6.94	6880	3440	45°
		10.00	12	150	0.055	0.160	0.160	8.62	5540	3655	45°
		12.00	16	150	0.060	0.180	0.180	10.29	4640	4455	45°
	Hardened tool steel 42 - 48 HRC	6.00	8	400	0.030	0.030	0.030	4.80	26525	6365	45°
		8.00	10	400	0.035	0.030	0.030	6.31	20180	7060	45°
		10.00	12	400	0.035	0.040	0.040	7.91	16095	6760	45°
		12.00	16	400	0.040	0.040	0.040	9.41	13530	8660	45°
	Hardened tool steel 48 - 52 HRC	6.00	8	350	0.030	0.030	0.030	4.80	23210	5570	45°
		8.00	10	350	0.035	0.030	0.030	6.31	17655	6180	45°
		10.00	12	350	0.035	0.040	0.040	7.91	14085	5915	45°
		12.00	16	350	0.040	0.040	0.040	9.41	11840	7575	45°
	Hardened tool steel 52 - 56 HRC	6.00	8	280	0.025	0.030	0.030	4.80	18570	3715	45°
		8.00	10	280	0.030	0.030	0.030	6.31	14125	4235	45°
		10.00	12	280	0.030	0.040	0.040	7.91	11270	4055	45°
		12.00	16	280	0.035	0.040	0.040	9.41	9470	5305	45°
	Hardened tool steel 56 - 60 HRC	6.00	8	180	0.025	0.030	0.030	4.80	11935	2385	45°
		8.00	10	180	0.030	0.030	0.030	6.31	9080	2725	45°
		10.00	12	180	0.030	0.040	0.040	7.91	7245	2610	45°
		12.00	16	180	0.035	0.040	0.040	9.41	6090	3410	45°

Ball nose end mills Sphero-XF Multi

Tolerance r ±0.005, 3xd

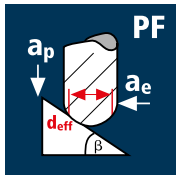
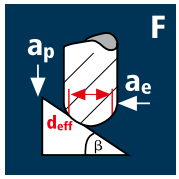
HM XA	λ 30° γ -10°



	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS Copper

Example: **Order-N°.** Coating **X** Article-N°. **7460** ø-Code **300**

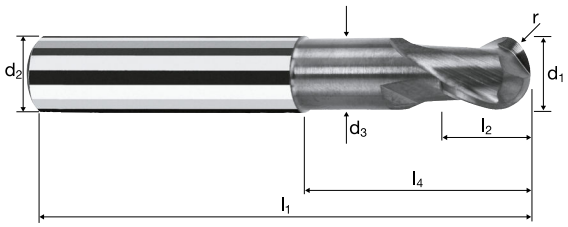
Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	β	z	X-AL	**X7460**
300	6.00	6.00	5.50	57	7.00	19.34	20.00	3.000	25°	8		●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	4.000	25°	10		●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	5.000	25°	12		●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	6.000	25°	16		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Stainless steel [Cr-Ni/1.4301]	1.00	2	100	0.030	0.110	0.110	0.99	32155	1930	45°
		2.00	2	100	0.055	0.220	0.220	1.99	15995	1760	45°
		3.00	2	100	0.060	0.330	0.330	2.98	10680	1280	45°
		4.00	2	100	0.070	0.440	0.440	3.98	8000	1120	45°
		5.00	2	100	0.080	0.550	0.550	4.97	6405	1025	45°
		6.00	2	100	0.085	0.660	0.660	5.96	5340	910	45°
		8.00	2	100	0.100	0.880	0.880	7.95	4005	800	45°
		10.00	2	100	0.115	1.100	1.100	9.94	3200	735	45°
		12.00	2	100	0.120	1.320	1.320	11.93	2670	640	45°
	Stainless steel [Cr-Ni-Mo-.../1.4429]	1.00	2	90	0.028	0.110	0.110	0.99	28935	1620	45°
		2.00	2	90	0.050	0.220	0.220	1.99	14395	1440	45°
		3.00	2	90	0.054	0.330	0.330	2.98	9615	1040	45°
		4.00	2	90	0.064	0.440	0.440	3.98	7200	920	45°
		5.00	2	90	0.072	0.550	0.550	4.97	5765	830	45°
		6.00	2	90	0.076	0.660	0.660	5.96	4805	730	45°
		8.00	2	90	0.090	0.880	0.880	7.95	3605	650	45°
		10.00	2	90	0.104	1.100	1.100	9.94	2880	600	45°
		12.00	2	90	0.108	1.320	1.320	11.93	2400	520	45°
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	1.00	2	60	0.025	0.110	0.110	0.99	19290	965	45°
		2.00	2	60	0.045	0.220	0.220	1.99	9595	865	45°
		3.00	2	60	0.050	0.330	0.330	2.98	6410	640	45°
		4.00	2	60	0.060	0.440	0.440	3.98	4800	575	45°
		5.00	2	60	0.070	0.550	0.550	4.97	3845	540	45°
		6.00	2	60	0.070	0.660	0.660	5.96	3205	450	45°
		8.00	2	60	0.085	0.880	0.880	7.95	2400	410	45°
		10.00	2	60	0.100	1.100	1.100	9.94	1920	385	45°
		12.00	2	60	0.100	1.320	1.320	11.93	1600	320	45°
	Steel < 850 N/mm²	1.00	2	132	0.040	0.120	0.120	1.00	42015	3360	45°
		2.00	2	240	0.070	0.240	0.240	1.99	38390	5375	45°
		3.00	2	240	0.075	0.360	0.360	2.99	25550	3830	45°
		4.00	2	240	0.090	0.480	0.480	3.99	19145	3445	45°
		5.00	2	240	0.100	0.600	0.600	4.98	15340	3070	45°
		6.00	2	240	0.105	0.720	0.720	5.98	12775	2685	45°
		8.00	2	240	0.125	0.960	0.960	7.98	9575	2395	45°
		10.00	2	240	0.145	1.200	1.200	9.97	7660	2220	45°
		12.00	2	240	0.150	1.440	1.440	11.96	6385	1915	45°
	Stainless steel [Cr-Ni/1.4301]	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	140	0.030	0.070	0.070	1.84	24220	1455	45°
		3.00	2	140	0.035	0.090	0.090	2.72	16385	1145	45°
		4.00	2	140	0.055	0.110	0.110	3.60	12380	1360	45°
		5.00	2	140	0.060	0.130	0.130	4.48	9945	1195	45°
		6.00	2	140	0.065	0.150	0.150	5.36	8315	1080	45°
		8.00	2	140	0.075	0.170	0.170	7.05	6320	950	45°
		10.00	2	140	0.080	0.200	0.200	8.77	5080	815	45°
		12.00	2	140	0.085	0.250	0.250	10.56	4220	715	45°
	Stainless steel [Cr-Ni-Mo-.../1.4429]	1.00	2	124	0.022	0.050	0.050	0.94	41990	1850	45°
		2.00	2	125	0.028	0.070	0.070	1.84	21625	1210	45°
		3.00	2	125	0.032	0.090	0.090	2.72	14630	935	45°
		4.00	2	125	0.050	0.110	0.110	3.60	11050	1105	45°
		5.00	2	125	0.054	0.130	0.130	4.48	8880	960	45°
		6.00	2	125	0.058	0.150	0.150	5.36	7425	860	45°
		8.00	2	125	0.068	0.170	0.170	7.05	5645	770	45°
		10.00	2	125	0.072	0.200	0.200	8.77	4535	655	45°
		12.00	2	125	0.076	0.250	0.250	10.56	3770	575	45°
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	1.00	2	70	0.025	0.050	0.050	0.94	23705	1185	45°
		2.00	2	70	0.025	0.070	0.070	1.84	12110	605	45°
		3.00	2	70	0.030	0.090	0.090	2.72	8190	490	45°
		4.00	2	70	0.050	0.110	0.110	3.60	6190	620	45°
		5.00	2	70	0.055	0.130	0.130	4.48	4975	545	45°
		6.00	2	70	0.060	0.150	0.150	5.36	4155	500	45°
		8.00	2	70	0.070	0.170	0.170	7.05	3160	440	45°
		10.00	2	70	0.070	0.200	0.200	8.77	2540	355	45°
		12.00	2	70	0.075	0.250	0.250	10.56	2110	315	45°
	Steel < 850 N/mm²	1.00	2	124	0.030	0.050	0.050	0.94	41990	2520	45°
		2.00	2	243	0.035	0.070	0.070	1.84	42040	2945	45°
		3.00	2	359	0.040	0.090	0.090	2.72	42010	3360	45°
		4.00	2	360	0.065	0.110	0.110	3.60	31830	4140	45°
		5.00	2	360	0.070	0.130	0.130	4.48	25580	3580	45°
		6.00	2	360	0.080	0.150	0.150	5.36	21380	3420	45°
		8.00	2	360	0.090	0.170	0.170	7.05	16255	2925	45°
		10.00	2	360	0.095	0.200	0.200	8.77	13065	2485	45°
		12.00	2	360	0.100	0.250	0.250	10.56	10850	2170	45°

Ball nose end mills Sphero-SB

Tolerance r ±0.005, 3xd

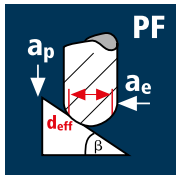
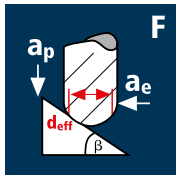
HM MG10	λ 30° γ 5°



Rm < 850	Rm 850-1100						Inox Stainless	Ti Titanium	Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **7540** ø-Code **100**

Ø Code	d_1	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	POLYCHROM P7540
100	1.00	6.00	0.95	57	1.50	3.00	13.08	0.500	11.8°	2	●
140	2.00	6.00	1.90	57	3.00	6.00	14.31	1.000	9.0°	2	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	1.500	6.4°	2	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	2.000	4.0°	2	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	2.500	2.0°	2	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	92	17.00	42.13	43.00	8.000	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	β [°]
	Wrought aluminium Si < 6%	2.00	2	264	0.065	0.300	0.300	2.00	42015	5460	45°
		3.00	2	396	0.075	0.450	0.450	3.00	42015	6305	45°
		4.00	2	528	0.090	0.600	0.600	4.00	42015	7565	45°
		5.00	2	650	0.090	0.750	0.750	5.00	41380	7450	45°
		6.00	2	650	0.090	0.900	0.900	6.00	34485	6205	45°
		8.00	2	650	0.115	1.200	1.200	8.00	25865	5950	45°
		10.00	2	650	0.125	1.500	1.500	10.00	20690	5175	45°
		12.00	2	650	0.135	1.800	1.800	12.00	17240	4655	45°
		16.00	2	650	0.160	2.400	2.400	16.00	12930	4140	45°
	Unalloyed copper	2.00	2	264	0.060	0.300	0.300	2.00	42015	5040	45°
		3.00	2	396	0.070	0.450	0.450	3.00	42015	5880	45°
		4.00	2	500	0.080	0.600	0.600	4.00	39790	6365	45°
		5.00	2	500	0.080	0.750	0.750	5.00	31830	5095	45°
		6.00	2	500	0.080	0.900	0.900	6.00	26525	4245	45°
		8.00	2	500	0.105	1.200	1.200	8.00	19895	4180	45°
		10.00	2	500	0.115	1.500	1.500	10.00	15915	3660	45°
		12.00	2	500	0.120	1.800	1.800	12.00	13265	3185	45°
		16.00	2	500	0.145	2.400	2.400	16.00	9945	2885	45°
	Thermoplastics	2.00	2	264	0.065	0.300	0.300	2.00	42015	5460	45°
		3.00	2	396	0.075	0.450	0.450	3.00	42015	6305	45°
		4.00	2	528	0.090	0.600	0.600	4.00	42015	7565	45°
		5.00	2	660	0.090	0.750	0.750	5.00	42015	7565	45°
		6.00	2	792	0.090	0.900	0.900	6.00	42015	7565	45°
		8.00	2	1000	0.115	1.200	1.200	8.00	39790	9150	45°
		10.00	2	1000	0.125	1.500	1.500	10.00	31830	7960	45°
		12.00	2	1000	0.135	1.800	1.800	12.00	26525	7160	45°
		16.00	2	1000	0.160	2.400	2.400	16.00	19895	6365	45°
	Cast aluminium Si 6% - 15%	2.00	2	264	0.045	0.300	0.300	2.00	42015	3780	45°
		3.00	2	396	0.055	0.450	0.450	3.00	42015	4620	45°
		4.00	2	450	0.065	0.600	0.600	4.00	35810	4655	45°
		5.00	2	450	0.065	0.750	0.750	5.00	28650	3725	45°
		6.00	2	450	0.065	0.900	0.900	6.00	23875	3105	45°
		8.00	2	450	0.080	1.200	1.200	8.00	17905	2865	45°
		10.00	2	450	0.090	1.500	1.500	10.00	14325	2580	45°
		12.00	2	450	0.095	1.800	1.800	12.00	11935	2270	45°
		16.00	2	450	0.110	2.400	2.400	16.00	8950	1970	45°
	Wrought aluminium Si < 6%	2.00	2	253	0.035	0.120	0.120	1.92	41945	2935	45°
		3.00	2	373	0.040	0.150	0.150	2.83	41955	3355	45°
		4.00	2	492	0.055	0.170	0.170	3.73	41985	4620	45°
		5.00	2	612	0.055	0.200	0.200	4.64	41985	4620	45°
		6.00	2	730	0.055	0.220	0.220	5.53	42020	4620	45°
		8.00	2	900	0.065	0.240	0.240	7.25	39515	5135	45°
		10.00	2	900	0.070	0.270	0.270	8.98	31900	4465	45°
		12.00	2	900	0.075	0.300	0.300	10.71	26750	4010	45°
		16.00	2	900	0.090	0.340	0.340	14.10	20320	3655	45°
	Unalloyed copper	2.00	2	253	0.030	0.120	0.120	1.92	41945	2515	45°
		3.00	2	373	0.035	0.150	0.150	2.83	41955	2935	45°
		4.00	2	492	0.050	0.170	0.170	3.73	41985	4200	45°
		5.00	2	600	0.050	0.200	0.200	4.64	41160	4115	45°
		6.00	2	600	0.050	0.220	0.220	5.53	34535	3455	45°
		8.00	2	600	0.060	0.240	0.240	7.25	26345	3160	45°
		10.00	2	600	0.065	0.270	0.270	8.98	21270	2765	45°
		12.00	2	600	0.070	0.300	0.300	10.71	17830	2495	45°
		16.00	2	600	0.080	0.340	0.340	14.10	13545	2165	45°
	Thermoplastics	2.00	2	253	0.035	0.120	0.120	1.92	41945	2935	45°
		3.00	2	373	0.040	0.150	0.150	2.83	41955	3355	45°
		4.00	2	492	0.055	0.170	0.170	3.73	41985	4620	45°
		5.00	2	612	0.055	0.200	0.200	4.64	41985	4620	45°
		6.00	2	730	0.055	0.220	0.220	5.53	42020	4620	45°
		8.00	2	957	0.065	0.240	0.240	7.25	42015	5460	45°
		10.00	2	1185	0.070	0.270	0.270	8.98	42005	5880	45°
		12.00	2	1200	0.075	0.300	0.300	10.71	35665	5350	45°
		16.00	2	1200	0.090	0.340	0.340	14.10	27090	4875	45°
	Cast aluminium Si 6% - 15%	2.00	2	253	0.025	0.120	0.120	1.92	41945	2095	45°
		3.00	2	373	0.030	0.150	0.150	2.83	41955	2515	45°
		4.00	2	492	0.040	0.170	0.170	3.73	41985	3360	45°
		5.00	2	550	0.040	0.200	0.200	4.64	37730	3020	45°
		6.00	2	550	0.040	0.220	0.220	5.53	31660	2535	45°
		8.00	2	550	0.045	0.240	0.240	7.25	24150	2175	45°
		10.00	2	550	0.050	0.270	0.270	8.98	19495	1950	45°
		12.00	2	550	0.055	0.300	0.300	10.71	16345	1800	45°
		16.00	2	550	0.065	0.340	0.340	14.10	12415	1615	45°

Ball nose end mills Sphero-Alu

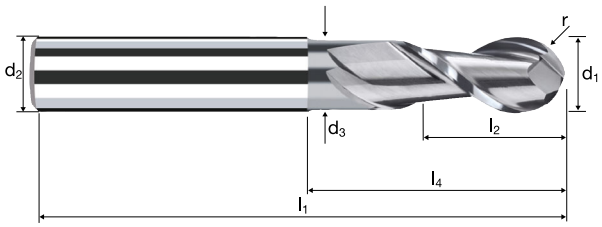
Tolerance r ±0.005, 3xd

HM MG10	λ 40° γ 20°

h4

r

R F

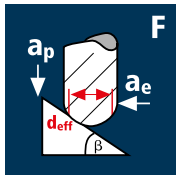
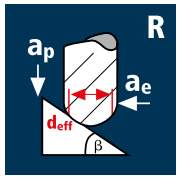


new!

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating | Article-N°. **7550** | ø-Code **140**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z		7550
140	2.00	6.00	1.90	57	4.00	6.00	14.31	1.000	8.2°	2		●
180	3.00	6.00	2.80	57	6.00	9.00	15.63	1.500	5.7°	2		●
220	4.00	6.00	3.70	57	8.00	12.00	16.95	2.000	3.6°	2		●
260	5.00	6.00	4.60	57	10.00	15.00	18.27	2.500	1.8°	2		●
300	6.00	6.00	5.50	57	12.00	19.34	20.00	3.000	0.0°	2		●
391	8.00	8.00	7.40	63	16.00	25.29	26.00	4.000	0.0°	2		●
450	10.00	10.00	9.20	72	20.00	30.20	31.00	5.000	0.0°	2		●
501	12.00	12.00	11.00	83	24.00	36.13	37.00	6.000	0.0°	2		●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	8.000	0.0°	2		●
682	20.00	20.00	19.00	104	40.00	52.13	53.00	10.000	0.0°	2		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	200	0.030	0.070	0.070	1.84	34600	2075	45°
		3.00	2	200	0.035	0.100	0.100	2.74	23235	1625	45°
		4.00	2	200	0.065	0.120	0.120	3.62	17585	2285	45°
		5.00	2	200	0.070	0.150	0.150	4.53	14055	1965	45°
		6.00	2	200	0.075	0.150	0.150	5.36	11875	1780	45°
		8.00	2	200	0.085	0.170	0.170	7.05	9030	1535	45°
		10.00	2	200	0.090	0.200	0.200	8.77	7260	1305	45°
		12.00	2	200	0.095	0.250	0.250	10.56	6030	1145	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	150	0.030	0.070	0.070	1.84	25950	1555	45°
		3.00	2	150	0.035	0.100	0.100	2.74	17425	1220	45°
		4.00	2	150	0.060	0.120	0.120	3.62	13190	1585	45°
		5.00	2	150	0.065	0.150	0.150	4.53	10540	1370	45°
		6.00	2	150	0.070	0.150	0.150	5.36	8910	1245	45°
		8.00	2	150	0.080	0.170	0.170	7.05	6775	1085	45°
		10.00	2	150	0.085	0.200	0.200	8.77	5445	925	45°
		12.00	2	150	0.090	0.250	0.250	10.56	4520	815	45°
	Hardened tool steel 60 - 64 HRC	1.00	2	90	0.020	0.040	0.040	0.93	30805	1230	45°
		2.00	2	90	0.025	0.055	0.055	1.80	15915	795	45°
		3.00	2	90	0.030	0.075	0.075	2.68	10690	640	45°
		4.00	2	90	0.050	0.090	0.090	3.54	8095	810	45°
		5.00	2	90	0.055	0.115	0.115	4.43	6465	710	45°
		6.00	2	90	0.060	0.115	0.115	5.24	5465	655	45°
		8.00	2	90	0.070	0.130	0.130	6.90	4150	580	45°
		10.00	2	90	0.070	0.150	0.150	8.58	3340	465	45°
		12.00	2	90	0.075	0.190	0.190	10.34	2770	415	45°
	Hardened tool steel 64 - 70 HRC	1.00	2	60	0.015	0.025	0.025	0.89	21460	645	45°
		2.00	2	60	0.020	0.035	0.035	1.74	10975	440	45°
		3.00	2	60	0.020	0.050	0.050	2.59	7375	295	45°
		4.00	2	60	0.035	0.060	0.060	3.43	5570	390	45°
		5.00	2	60	0.040	0.075	0.075	4.29	4450	355	45°
		6.00	2	60	0.040	0.075	0.075	5.08	3760	300	45°
		8.00	2	60	0.050	0.085	0.085	6.70	2850	285	45°
		10.00	2	60	0.050	0.100	0.100	8.34	2290	230	45°
		12.00	2	60	0.055	0.125	0.125	10.03	1905	210	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	123	0.045	0.110	0.110	0.93	42100	3790	30°
		2.00	2	130	0.070	0.220	0.220	1.86	22245	3115	30°
		3.00	2	130	0.075	0.330	0.330	2.80	14780	2215	30°
		4.00	2	130	0.090	0.440	0.440	3.73	11095	1995	30°
		5.00	2	130	0.100	0.550	0.550	4.66	8880	1775	30°
		6.00	2	130	0.110	0.660	0.660	5.59	7405	1630	30°
		8.00	2	130	0.125	0.880	0.880	7.46	5545	1385	30°
		10.00	2	130	0.145	1.000	1.000	9.20	4500	1305	30°
		12.00	2	130	0.155	1.080	1.080	10.87	3805	1180	30°
	Hardened tool steel 56 - 60 HRC	1.00	2	80	0.025	0.090	0.090	0.91	27985	1400	30°
		2.00	2	80	0.040	0.180	0.180	1.81	14070	1125	30°
		3.00	2	80	0.045	0.260	0.260	2.70	9430	850	30°
		4.00	2	80	0.055	0.350	0.350	3.61	7055	775	30°
		5.00	2	80	0.060	0.440	0.440	4.51	5645	680	30°
		6.00	2	80	0.065	0.530	0.530	5.42	4700	610	30°
		8.00	2	80	0.075	0.700	0.700	7.22	3525	530	30°
		10.00	2	80	0.085	0.800	0.800	8.90	2860	485	30°
		12.00	2	80	0.095	0.860	0.860	10.50	2425	460	30°
	Hardened tool steel 60 - 64 HRC	1.00	2	60	0.020	0.070	0.070	0.87	21950	880	30°
		2.00	2	60	0.030	0.140	0.140	1.74	10975	660	30°
		3.00	2	60	0.035	0.200	0.200	2.60	7345	515	30°
		4.00	2	60	0.040	0.260	0.260	3.45	5535	445	30°
		5.00	2	60	0.045	0.330	0.330	4.32	4420	400	30°
		6.00	2	60	0.050	0.400	0.400	5.19	3680	370	30°
		8.00	2	60	0.055	0.530	0.530	6.92	2760	305	30°
		10.00	2	60	0.065	0.600	0.600	8.51	2245	290	30°
		12.00	2	60	0.070	0.650	0.650	10.05	1900	265	30°
	Hardened tool steel 64 - 70 HRC	1.00	2	40	0.020	0.070	0.070	0.87	14635	585	30°
		2.00	2	40	0.030	0.140	0.140	1.74	7315	440	30°
		3.00	2	40	0.035	0.200	0.200	2.60	4895	345	30°
		4.00	2	40	0.040	0.260	0.260	3.45	3690	295	30°
		5.00	2	40	0.045	0.330	0.330	4.32	2945	265	30°
		6.00	2	40	0.050	0.400	0.400	5.19	2455	245	30°
		8.00	2	40	0.055	0.530	0.530	6.92	1840	200	30°
		10.00	2	40	0.065	0.600	0.600	8.51	1495	195	30°
		12.00	2	40	0.070	0.650	0.650	10.05	1265	175	30°

Ball nose end mills Sphero-X

Tolerance r ±0.005, 4.5xd

HM
XA

λ 30°
γ -10°

h5

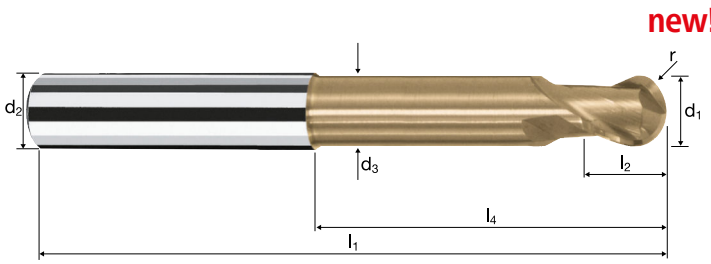
sc

d1

r

R

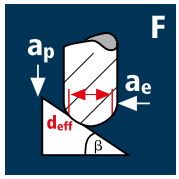
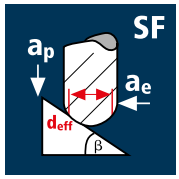
F



		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			HSS

Example: **Order-N°.** Coating **V** Article-N°. **7472** ø-Code **100**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z		DURO-V V7472
100	1.00	6.00	0.95	61	1.50	4.50	14.58	0.500	10.0°	2		●
140	2.00	6.00	1.90	61	3.00	9.00	17.31	1.000	6.8°	2		●
180	3.00	6.00	2.80	61	4.00	13.50	20.13	1.500	4.5°	2		●
220	4.00	6.00	3.70	66	5.00	18.00	22.95	2.000	2.7°	2		●
260	5.00	6.00	4.60	66	6.00	22.50	25.77	2.500	1.4°	2		●
300	6.00	6.00	5.50	69	7.00	30.34	31.00	3.000	0.0°	2		●
391	8.00	8.00	7.40	80	9.00	39.29	40.00	4.000	0.0°	2		●
450	10.00	10.00	9.20	90	11.00	47.20	48.00	5.000	0.0°	2		●
501	12.00	12.00	11.00	105	13.00	54.13	55.00	6.000	0.0°	2		●
610	16.00	16.00	15.00	125	17.00	74.13	75.00	8.000	0.0°	2		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	1.00	2	124	0.030	0.050	0.050	0.94	41990	2520	45°
		2.00	2	243	0.035	0.070	0.070	1.84	42040	2945	45°
		3.00	2	300	0.040	0.100	0.100	2.74	34850	2790	45°
		4.00	2	300	0.070	0.120	0.120	3.62	26380	3695	45°
		5.00	2	300	0.080	0.150	0.150	4.53	21080	3375	45°
		6.00	2	300	0.085	0.150	0.150	5.36	17815	3030	45°
		8.00	2	300	0.095	0.170	0.170	7.05	13545	2575	45°
		10.00	2	300	0.100	0.200	0.200	8.77	10890	2180	45°
		12.00	2	300	0.105	0.250	0.250	10.56	9045	1900	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	124	0.030	0.050	0.050	0.94	41990	2520	45°
		2.00	2	243	0.035	0.070	0.070	1.84	42040	2945	45°
		3.00	2	250	0.040	0.100	0.100	2.74	29045	2325	45°
		4.00	2	250	0.065	0.120	0.120	3.62	21985	2860	45°
		5.00	2	250	0.075	0.150	0.150	4.53	17565	2635	45°
		6.00	2	250	0.080	0.150	0.150	5.36	14845	2375	45°
		8.00	2	250	0.090	0.170	0.170	7.05	11290	2030	45°
		10.00	2	250	0.095	0.200	0.200	8.77	9075	1725	45°
		12.00	2	250	0.100	0.250	0.250	10.56	7535	1505	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	200	0.030	0.070	0.070	1.84	34600	2075	45°
		3.00	2	200	0.035	0.100	0.100	2.74	23235	1625	45°
		4.00	2	200	0.065	0.120	0.120	3.62	17585	2285	45°
		5.00	2	200	0.070	0.150	0.150	4.53	14055	1965	45°
		6.00	2	200	0.075	0.150	0.150	5.36	11875	1780	45°
		8.00	2	200	0.085	0.170	0.170	7.05	9030	1535	45°
		10.00	2	200	0.090	0.200	0.200	8.77	7260	1305	45°
		12.00	2	200	0.095	0.250	0.250	10.56	6030	1145	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	150	0.030	0.070	0.070	1.84	25950	1555	45°
		3.00	2	150	0.035	0.100	0.100	2.74	17425	1220	45°
		4.00	2	150	0.060	0.120	0.120	3.62	13190	1585	45°
		5.00	2	150	0.070	0.150	0.150	4.53	10540	1475	45°
		6.00	2	150	0.070	0.150	0.150	5.36	8910	1245	45°
		8.00	2	150	0.080	0.170	0.170	7.05	6775	1085	45°
		10.00	2	150	0.085	0.200	0.200	8.77	5445	925	45°
		12.00	2	150	0.090	0.250	0.250	10.56	4520	815	45°
	Hardened tool steel 42 - 48 HRC	1.00	2	116	0.025	0.020	0.020	0.88	41960	2100	45°
		2.00	2	220	0.030	0.020	0.020	1.67	41935	2515	45°
		3.00	2	330	0.035	0.030	0.030	2.50	42015	2940	45°
		4.00	2	400	0.050	0.030	0.030	3.27	38935	3895	45°
		5.00	2	400	0.055	0.030	0.030	4.04	31515	3465	45°
		6.00	2	400	0.060	0.030	0.030	4.80	26525	3185	45°
		8.00	2	400	0.065	0.030	0.030	6.31	20180	2625	45°
		10.00	2	400	0.070	0.040	0.040	7.91	16095	2255	45°
		12.00	2	400	0.075	0.040	0.040	9.41	13530	2030	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	116	0.025	0.020	0.020	0.88	41960	2100	45°
		2.00	2	220	0.030	0.020	0.020	1.67	41935	2515	45°
		3.00	2	330	0.035	0.030	0.030	2.50	42015	2940	45°
		4.00	2	350	0.050	0.030	0.030	3.27	34070	3405	45°
		5.00	2	350	0.050	0.030	0.030	4.04	27575	2760	45°
		6.00	2	350	0.055	0.030	0.030	4.80	23210	2555	45°
		8.00	2	350	0.060	0.030	0.030	6.31	17655	2120	45°
		10.00	2	350	0.065	0.040	0.040	7.91	14085	1830	45°
		12.00	2	350	0.070	0.040	0.040	9.41	11840	1660	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	116	0.025	0.020	0.020	0.88	41960	2100	45°
		2.00	2	220	0.025	0.020	0.020	1.67	41935	2095	45°
		3.00	2	280	0.030	0.030	0.030	2.50	35650	2140	45°
		4.00	2	280	0.045	0.030	0.030	3.27	27255	2455	45°
		5.00	2	280	0.050	0.030	0.030	4.04	22060	2205	45°
		6.00	2	280	0.055	0.030	0.030	4.80	18570	2040	45°
		8.00	2	280	0.060	0.030	0.030	6.31	14125	1695	45°
		10.00	2	280	0.065	0.040	0.040	7.91	11270	1465	45°
		12.00	2	280	0.070	0.040	0.040	9.41	9470	1325	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	116	0.020	0.020	0.020	0.88	41960	1680	45°
		2.00	2	180	0.025	0.020	0.020	1.67	34310	1715	45°
		3.00	2	180	0.030	0.030	0.030	2.50	22920	1375	45°
		4.00	2	180	0.045	0.030	0.030	3.27	17520	1575	45°
		5.00	2	180	0.045	0.030	0.030	4.04	14180	1275	45°
		6.00	2	180	0.050	0.030	0.030	4.80	11935	1195	45°
		8.00	2	180	0.055	0.030	0.030	6.31	9080	1000	45°
		10.00	2	180	0.060	0.040	0.040	7.91	7245	870	45°
		12.00	2	180	0.065	0.040	0.040	9.41	6090	790	45°

Ball nose end mills Sphero-XF

Tolerance r ±0.005, 4.5xd

HM XA	λ 30° γ -10°

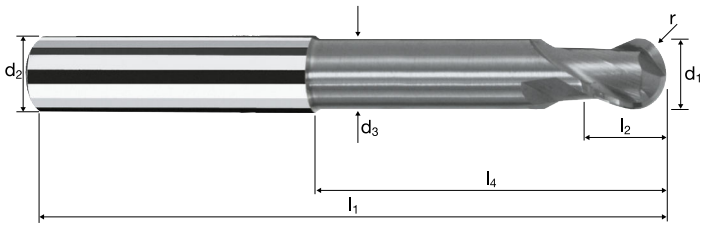
h5

d1

r

F

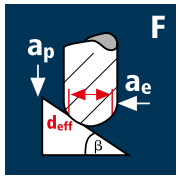
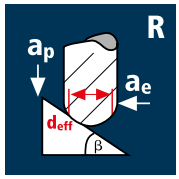
new!



	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS Copper

Example: **Order-N°.** Coating **X** Article-N°. **7402** ø-Code **100**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X7402
100	1.00	6.00	0.95	61	1.50	4.50	14.58	0.500	10.0°	2		●
140	2.00	6.00	1.90	61	3.00	9.00	17.31	1.000	6.8°	2		●
180	3.00	6.00	2.80	61	4.00	13.50	20.13	1.500	4.5°	2		●
220	4.00	6.00	3.70	66	5.00	18.00	22.95	2.000	2.7°	2		●
260	5.00	6.00	4.60	66	6.00	22.50	25.77	2.500	1.4°	2		●
300	6.00	6.00	5.50	69	7.00	30.34	31.00	3.000	0.0°	2		●
391	8.00	8.00	7.40	80	9.00	39.29	40.00	4.000	0.0°	2		●
450	10.00	10.00	9.20	90	11.00	47.20	48.00	5.000	0.0°	2		●
501	12.00	12.00	11.00	105	13.00	54.13	55.00	6.000	0.0°	2		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	200	0.030	0.070	0.070	1.84	34600	2075	45°
		3.00	2	200	0.035	0.100	0.100	2.74	23235	1625	45°
		5.00	2	200	0.070	0.150	0.150	4.53	14055	1965	45°
		4.00	2	200	0.065	0.120	0.120	3.62	17585	2285	45°
		6.00	2	200	0.075	0.150	0.150	5.36	11875	1780	45°
		8.00	2	200	0.085	0.170	0.170	7.05	9030	1535	45°
		10.00	2	200	0.090	0.200	0.200	8.77	7260	1305	45°
		12.00	2	200	0.095	0.250	0.250	10.56	6030	1145	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	150	0.030	0.070	0.070	1.84	25950	1555	45°
		3.00	2	150	0.035	0.100	0.100	2.74	17425	1220	45°
		5.00	2	150	0.065	0.150	0.150	4.53	10540	1370	45°
		4.00	2	150	0.060	0.120	0.120	3.62	13190	1585	45°
		6.00	2	150	0.070	0.150	0.150	5.36	8910	1245	45°
		8.00	2	150	0.080	0.170	0.170	7.05	6775	1085	45°
		10.00	2	150	0.085	0.200	0.200	8.77	5445	925	45°
		12.00	2	150	0.090	0.250	0.250	10.56	4520	815	45°
	Hardened tool steel 60 - 64 HRC	1.00	2	90	0.020	0.040	0.040	0.93	30805	1230	45°
		2.00	2	90	0.025	0.055	0.055	1.80	15915	795	45°
		3.00	2	90	0.030	0.075	0.075	2.68	10690	640	45°
		5.00	2	90	0.055	0.115	0.115	4.43	6465	710	45°
		4.00	2	90	0.050	0.090	0.090	3.54	8095	810	45°
		6.00	2	90	0.060	0.115	0.115	5.24	5465	655	45°
		8.00	2	90	0.070	0.130	0.130	6.90	4150	580	45°
		10.00	2	90	0.070	0.150	0.150	8.58	3340	465	45°
		12.00	2	90	0.075	0.190	0.190	10.34	2770	415	45°
	Hardened tool steel 64 - 70 HRC	1.00	2	60	0.015	0.025	0.025	0.89	21460	645	45°
		2.00	2	60	0.020	0.035	0.035	1.74	10975	440	45°
		3.00	2	60	0.020	0.050	0.050	2.59	7375	295	45°
		5.00	2	60	0.040	0.075	0.075	4.29	4450	355	45°
		4.00	2	60	0.035	0.060	0.060	3.43	5570	390	45°
		6.00	2	60	0.040	0.075	0.075	5.08	3760	300	45°
		8.00	2	60	0.050	0.085	0.085	6.70	2850	285	45°
		10.00	2	60	0.050	0.100	0.100	8.34	2290	230	45°
		12.00	2	60	0.055	0.125	0.125	10.03	1905	210	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	121	0.045	0.100	0.100	0.92	41865	3770	30°
		2.00	2	130	0.070	0.200	0.200	1.84	22490	3150	30°
		3.00	2	130	0.075	0.300	0.300	2.76	14995	2250	30°
		5.00	2	130	0.100	0.500	0.500	4.60	8995	1800	30°
		4.00	2	130	0.090	0.400	0.400	3.68	11245	2025	30°
		6.00	2	130	0.110	0.600	0.600	5.52	7495	1650	30°
		8.00	2	130	0.125	0.800	0.800	7.36	5620	1405	30°
		10.00	2	130	0.145	0.900	0.900	9.06	4565	1325	30°
		12.00	2	130	0.155	0.960	0.960	10.68	3875	1200	30°
	Hardened tool steel 56 - 60 HRC	1.00	2	80	0.025	0.080	0.080	0.89	28610	1430	30°
		2.00	2	80	0.040	0.160	0.160	1.78	14305	1145	30°
		3.00	2	80	0.045	0.240	0.240	2.67	9535	860	30°
		5.00	2	80	0.060	0.400	0.400	4.45	5720	685	30°
		4.00	2	80	0.055	0.320	0.320	3.56	7155	785	30°
		6.00	2	80	0.065	0.480	0.480	5.34	4770	620	30°
		8.00	2	80	0.075	0.640	0.640	7.12	3575	535	30°
		10.00	2	80	0.085	0.720	0.720	8.76	2905	495	30°
		12.00	2	80	0.095	0.770	0.770	10.32	2470	470	30°
	Hardened tool steel 60 - 64 HRC	1.00	2	60	0.020	0.060	0.060	0.85	22470	900	30°
		2.00	2	60	0.030	0.120	0.120	1.70	11235	675	30°
		3.00	2	60	0.035	0.180	0.180	2.55	7490	525	30°
		5.00	2	60	0.045	0.300	0.300	4.26	4485	405	30°
		4.00	2	60	0.040	0.240	0.240	3.41	5600	450	30°
		6.00	2	60	0.050	0.360	0.360	5.11	3735	375	30°
		8.00	2	60	0.055	0.480	0.480	6.81	2805	310	30°
		10.00	2	60	0.065	0.540	0.540	8.37	2280	295	30°
		12.00	2	60	0.070	0.580	0.580	9.88	1935	270	30°
	Hardened tool steel 64 - 70 HRC	1.00	2	40	0.020	0.060	0.060	0.85	14980	600	30°
		2.00	2	40	0.030	0.120	0.120	1.70	7490	450	30°
		3.00	2	40	0.035	0.180	0.180	2.55	4995	350	30°
		5.00	2	40	0.045	0.300	0.300	4.26	2990	270	30°
		4.00	2	40	0.040	0.240	0.240	3.41	3735	300	30°
		6.00	2	40	0.050	0.360	0.360	5.11	2490	250	30°
		8.00	2	40	0.055	0.480	0.480	6.81	1870	205	30°
		10.00	2	40	0.065	0.540	0.540	8.37	1520	200	30°
		12.00	2	40	0.070	0.580	0.580	9.88	1290	180	30°

Ball nose end mills Sphero-X

Tolerance r ±0.005, 6xd

HM
XA

λ 30°
γ -10°

h5

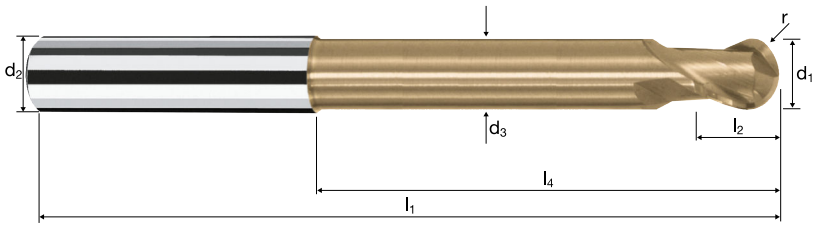
sc

d1

r

R

F

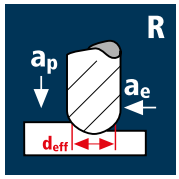


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			HSS

Example: **Order-N°.** Coating **V** Article-N°. **7474** ø-Code **100**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-V V7474
100	1.00	6.00	0.95	66	1.50	6.00	16.08	0.500	9.5°	2	●
140	2.00	6.00	1.90	66	3.00	12.00	20.31	1.000	6.1°	2	●
180	3.00	6.00	2.80	66	4.00	18.00	24.63	1.500	3.9°	2	●
220	4.00	6.00	3.70	69	5.00	24.00	28.95	2.000	2.2°	2	●
260	5.00	6.00	4.60	75	6.00	30.00	33.27	2.500	1.0°	2	●
300	6.00	6.00	5.50	80	7.00	42.34	43.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	135	17.00	85.13	86.00	8.000	0.0°	2	●

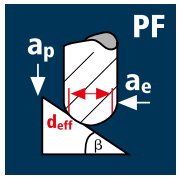
Application



Material

Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC	1.00	2	88	0.040	0.130	0.300	0.67	41810	3345	130.4
	2.00	2	160	0.065	0.260	0.600	1.35	37725	4905	765.1
	3.00	2	160	0.075	0.390	0.900	2.02	25215	3780	1327.4
	4.00	2	160	0.090	0.520	1.200	2.69	18935	3410	2126.5
	5.00	2	160	0.100	0.650	1.500	3.36	15160	3030	2955.7
	6.00	2	160	0.110	1.020	1.800	4.51	11295	2485	4561.3
	8.00	2	160	0.125	1.360	2.400	6.01	8475	2120	6914.9
	10.00	2	160	0.145	1.700	3.000	7.51	6780	1965	10029.9
	12.00	2	160	0.150	2.040	3.600	9.02	5645	1695	12439.9
Hardened tool steel 48 - 52 HRC	1.00	2	88	0.035	0.130	0.300	0.67	41810	2925	114.1
	2.00	2	130	0.060	0.260	0.600	1.35	30650	3680	573.8
	3.00	2	130	0.070	0.390	0.900	2.02	20485	2870	1006.6
	4.00	2	130	0.085	0.520	1.200	2.69	15385	2615	1631.8
	5.00	2	130	0.090	0.650	1.500	3.36	12315	2215	2161.4
	6.00	2	130	0.100	1.020	1.800	4.51	9175	1835	3369.1
	8.00	2	130	0.115	1.360	2.400	6.01	6885	1585	5168.9
	10.00	2	130	0.135	1.700	3.000	7.51	5510	1490	7587.3
	12.00	2	130	0.140	2.040	3.600	9.02	4590	1285	9433.6
Hardened tool steel 52 - 56 HRC	1.00	2	88	0.035	0.130	0.300	0.67	41810	2925	114.1
	2.00	2	110	0.055	0.260	0.600	1.35	25935	2855	445.1
	3.00	2	110	0.065	0.390	0.900	2.02	17335	2255	790.9
	4.00	2	110	0.075	0.520	1.200	2.69	13015	1950	1218.3
	5.00	2	110	0.085	0.650	1.500	3.36	10420	1770	1727.3
	6.00	2	110	0.095	1.020	1.800	4.51	7765	1475	2708.3
	8.00	2	110	0.105	1.360	2.400	6.01	5825	1225	3993.4
	10.00	2	110	0.125	1.700	3.000	7.51	4660	1165	5944.5
	12.00	2	110	0.130	2.040	3.600	9.02	3880	1010	7412.1
Hardened tool steel 56 - 60 HRC	1.00	2	50	0.015	0.100	0.230	0.60	26525	795	18.3
	2.00	2	50	0.025	0.200	0.450	1.20	13265	665	59.7
	3.00	2	50	0.030	0.300	0.680	1.80	8840	530	108.2
	4.00	2	50	0.035	0.310	0.720	2.14	7435	520	116.2
	5.00	2	50	0.040	0.390	0.670	2.68	5940	475	124.1
	6.00	2	50	0.045	0.610	0.540	3.63	4385	395	130.0
	8.00	2	50	0.050	0.820	0.720	4.85	3280	330	193.7
	10.00	2	50	0.060	1.020	0.900	6.05	2630	315	289.8
	12.00	2	50	0.060	1.220	1.080	7.25	2195	265	347.1

Application



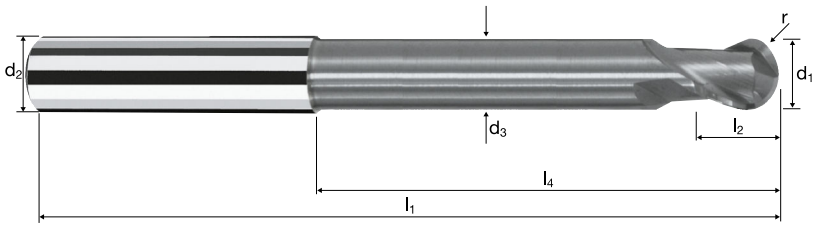
Material

Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	1.00	2	132	0.055	0.120	0.120	1.00	42015	4620	45°
	2.00	2	200	0.095	0.200	0.200	1.98	32155	6110	45°
	3.00	2	200	0.105	0.300	0.300	2.97	21435	4500	45°
	4.00	2	200	0.125	0.400	0.400	3.96	16075	4020	45°
	5.00	2	200	0.140	0.500	0.500	4.95	12860	3600	45°
	6.00	2	200	0.155	0.600	0.600	5.94	10720	3320	45°
	8.00	2	200	0.170	0.800	0.800	7.92	8040	2735	45°
	10.00	2	200	0.200	1.000	1.000	9.90	6430	2570	45°
	12.00	2	200	0.210	1.200	1.200	11.88	5360	2250	45°
Hardened tool steel 48 - 52 HRC	1.00	2	132	0.050	0.120	0.120	1.00	42015	4200	45°
	2.00	2	160	0.085	0.150	0.150	1.95	26120	4440	45°
	3.00	2	160	0.095	0.180	0.180	2.87	17745	3370	45°
	4.00	2	160	0.115	0.200	0.200	3.78	13475	3100	45°
	5.00	2	160	0.130	0.250	0.250	4.72	10790	2805	45°
	6.00	2	160	0.145	0.300	0.300	5.67	8980	2605	45°
	8.00	2	160	0.155	0.400	0.400	7.56	6735	2090	45°
	10.00	2	160	0.185	0.500	0.500	9.45	5390	1995	45°
	12.00	2	160	0.195	0.600	0.600	11.34	4490	1750	45°
Hardened tool steel 52 - 56 HRC	1.00	2	120	0.045	0.120	0.120	1.00	38195	3440	45°
	2.00	2	120	0.080	0.150	0.150	1.95	19590	3135	45°
	3.00	2	120	0.090	0.180	0.180	2.87	13310	2395	45°
	4.00	2	120	0.105	0.200	0.200	3.78	10105	2120	45°
	5.00	2	120	0.120	0.250	0.250	4.72	8095	1940	45°
	6.00	2	120	0.130	0.300	0.300	5.67	6735	1750	45°
	8.00	2	120	0.145	0.400	0.400	7.56	5055	1465	45°
	10.00	2	120	0.170	0.500	0.500	9.45	4040	1375	45°
	12.00	2	120	0.180	0.600	0.600	11.34	3370	1215	45°
Hardened tool steel 56 - 60 HRC	1.00	2	90	0.040	0.100	0.100	0.99	28935	2315	45°
	2.00	2	90	0.070	0.120	0.120	1.92	14920	2090	45°
	3.00	2	90	0.080	0.140	0.140	2.82	10160	1625	45°
	4.00	2	90	0.095	0.160	0.160	3.71	7720	1465	45°
	5.00	2	90	0.105	0.200	0.200	4.64	6175	1295	45°
	6.00	2	90	0.115	0.240	0.240	5.57	5145	1185	45°
	8.00	2	90	0.130	0.320	0.320	7.42	3860	1005	45°
	10.00	2	90	0.150	0.400	0.400	9.28	3085	925	45°
	12.00	2	90	0.160	0.480	0.480	11.13	2575	825	45°

Ball nose end mills Sphero-XR

Tolerance r ±0.005, 6xd

HM XT	λ 30° γ -10°

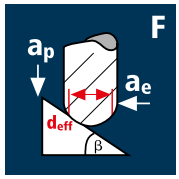
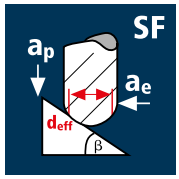


ToolSchool

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			

Example: **Order-N°.** Coating **X** Article-N°. **7424** ø-Code **100**

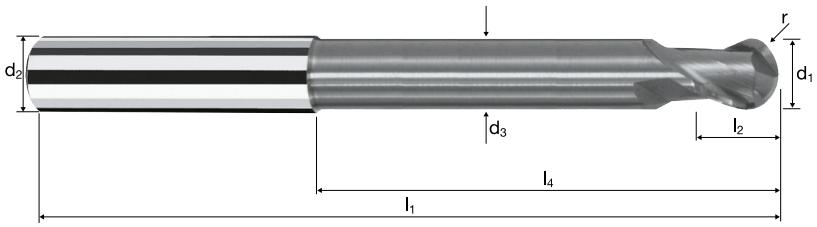
Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL X7424
100	1.00	6.00	0.95	66	1.50	6.00	16.08	0.500	9.5°	2	●
140	2.00	6.00	1.90	66	3.00	12.00	20.31	1.000	6.1°	2	●
180	3.00	6.00	2.80	66	4.00	18.00	24.63	1.500	3.9°	2	●
220	4.00	6.00	3.70	69	5.00	24.00	28.95	2.000	2.2°	2	●
260	5.00	6.00	4.60	75	6.00	30.00	33.27	2.500	1.0°	2	●
300	6.00	6.00	5.50	80	7.00	42.34	43.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	6.000	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	1.00	2	124	0.030	0.050	0.050	0.94	41990	2520	45°
		2.00	2	243	0.035	0.070	0.070	1.84	42040	2945	45°
		3.00	2	300	0.040	0.100	0.100	2.74	34850	2790	45°
		4.00	2	300	0.070	0.120	0.120	3.62	26380	3695	45°
		5.00	2	300	0.080	0.150	0.150	4.53	21080	3375	45°
		6.00	2	300	0.085	0.150	0.150	5.36	17815	3030	45°
		8.00	2	300	0.095	0.170	0.170	7.05	13545	2575	45°
		10.00	2	300	0.100	0.200	0.200	8.77	10890	2180	45°
		12.00	2	300	0.105	0.250	0.250	10.56	9045	1900	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	124	0.030	0.050	0.050	0.94	41990	2520	45°
		2.00	2	243	0.035	0.070	0.070	1.84	42040	2945	45°
		3.00	2	250	0.040	0.100	0.100	2.74	29045	2325	45°
		4.00	2	250	0.065	0.120	0.120	3.62	21985	2860	45°
		5.00	2	250	0.075	0.150	0.150	4.53	17565	2635	45°
		6.00	2	250	0.080	0.150	0.150	5.36	14845	2375	45°
		8.00	2	250	0.090	0.170	0.170	7.05	11290	2030	45°
		10.00	2	250	0.095	0.200	0.200	8.77	9075	1725	45°
		12.00	2	250	0.100	0.250	0.250	10.56	7535	1505	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	200	0.030	0.070	0.070	1.84	34600	2075	45°
		3.00	2	200	0.035	0.100	0.100	2.74	23235	1625	45°
		4.00	2	200	0.065	0.120	0.120	3.62	17585	2285	45°
		5.00	2	200	0.070	0.150	0.150	4.53	14055	1965	45°
		6.00	2	200	0.075	0.150	0.150	5.36	11875	1780	45°
		8.00	2	200	0.085	0.170	0.170	7.05	9030	1535	45°
		10.00	2	200	0.090	0.200	0.200	8.77	7260	1305	45°
		12.00	2	200	0.095	0.250	0.250	10.56	6030	1145	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	150	0.030	0.070	0.070	1.84	25950	1555	45°
		3.00	2	150	0.035	0.100	0.100	2.74	17425	1220	45°
		4.00	2	150	0.060	0.120	0.120	3.62	13190	1585	45°
		5.00	2	150	0.070	0.150	0.150	4.53	10540	1475	45°
		6.00	2	150	0.070	0.150	0.150	5.36	8910	1245	45°
		8.00	2	150	0.080	0.170	0.170	7.05	6775	1085	45°
		10.00	2	150	0.085	0.200	0.200	8.77	5445	925	45°
		12.00	2	150	0.090	0.250	0.250	10.56	4520	815	45°
	Hardened tool steel 42 - 48 HRC	1.00	2	116	0.025	0.020	0.020	0.88	41960	2100	45°
		2.00	2	220	0.030	0.020	0.020	1.67	41935	2515	45°
		3.00	2	330	0.035	0.030	0.030	2.50	42015	2940	45°
		4.00	2	400	0.050	0.030	0.030	3.27	38935	3895	45°
		5.00	2	400	0.055	0.030	0.030	4.04	31515	3465	45°
		6.00	2	400	0.060	0.030	0.030	4.80	26525	3185	45°
		8.00	2	400	0.065	0.030	0.030	6.31	20180	2625	45°
		10.00	2	400	0.070	0.040	0.040	7.91	16095	2255	45°
		12.00	2	400	0.075	0.040	0.040	9.41	13530	2030	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	116	0.025	0.020	0.020	0.88	41960	2100	45°
		2.00	2	220	0.030	0.020	0.020	1.67	41935	2515	45°
		3.00	2	330	0.035	0.030	0.030	2.50	42015	2940	45°
		4.00	2	350	0.050	0.030	0.030	3.27	34070	3405	45°
		5.00	2	350	0.050	0.030	0.030	4.04	27575	2760	45°
		6.00	2	350	0.055	0.030	0.030	4.80	23210	2555	45°
		8.00	2	350	0.060	0.030	0.030	6.31	17655	2120	45°
		10.00	2	350	0.065	0.040	0.040	7.91	14085	1830	45°
		12.00	2	350	0.070	0.040	0.040	9.41	11840	1660	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	116	0.025	0.020	0.020	0.88	41960	2100	45°
		2.00	2	220	0.025	0.020	0.020	1.67	41935	2095	45°
		3.00	2	280	0.030	0.030	0.030	2.50	35650	2140	45°
		4.00	2	280	0.045	0.030	0.030	3.27	27255	2455	45°
		5.00	2	280	0.050	0.030	0.030	4.04	22060	2205	45°
		6.00	2	280	0.055	0.030	0.030	4.80	18570	2040	45°
		8.00	2	280	0.060	0.030	0.030	6.31	14125	1695	45°
		10.00	2	280	0.065	0.040	0.040	7.91	11270	1465	45°
		12.00	2	280	0.070	0.040	0.040	9.41	9470	1325	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	116	0.020	0.020	0.020	0.88	41960	1680	45°
		2.00	2	180	0.025	0.020	0.020	1.67	34310	1715	45°
		3.00	2	180	0.030	0.030	0.030	2.50	22920	1375	45°
		4.00	2	180	0.045	0.030	0.030	3.27	17520	1575	45°
		5.00	2	180	0.045	0.030	0.030	4.04	14180	1275	45°
		6.00	2	180	0.050	0.030	0.030	4.80	11935	1195	45°
		8.00	2	180	0.055	0.030	0.030	6.31	9080	1000	45°
		10.00	2	180	0.060	0.040	0.040	7.91	7245	870	45°
		12.00	2	180	0.065	0.040	0.040	9.41	6090	790	45°

Ball nose end mills Sphero-XF

Tolerance r ±0.005, 6xd

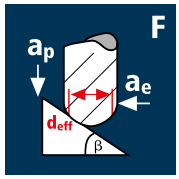
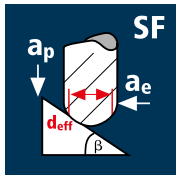
HM XA	λ 30° γ -10°



	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS Copper

Example: **Order-N°.** Coating **X** Article-N°. **7404** ø-Code **100**

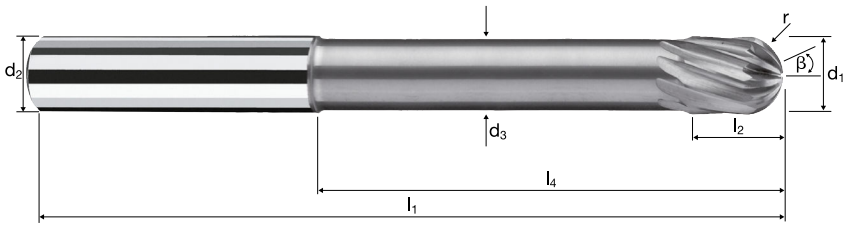
Ø Code	d1	d2 h5	d3	l1	l2	l3	l4	r ±0.005	α	z	X-AL X7404
100	1.00	6.00	0.95	66	1.50	6.00	16.08	0.500	9.5°	2	●
140	2.00	6.00	1.90	66	3.00	12.00	20.31	1.000	6.1°	2	●
180	3.00	6.00	2.80	66	4.00	18.00	24.63	1.500	3.9°	2	●
220	4.00	6.00	3.70	69	5.00	24.00	28.95	2.000	2.2°	2	●
260	5.00	6.00	4.60	75	6.00	30.00	33.27	2.500	1.0°	2	●
300	6.00	6.00	5.50	80	7.00	42.34	43.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	6.000	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	6.00	8	300	0.055	0.120	0.120	5.26	18155	7990	45°
		8.00	10	300	0.060	0.140	0.140	6.94	13760	8255	45°
		10.00	12	300	0.065	0.160	0.160	8.62	11080	8640	45°
		12.00	16	300	0.070	0.180	0.180	10.29	9280	10395	45°
	Hardened tool steel 48 - 52 HRC	6.00	8	250	0.050	0.120	0.120	5.26	15130	6050	45°
		8.00	10	250	0.055	0.140	0.140	6.94	11465	6305	45°
		10.00	12	250	0.060	0.160	0.160	8.62	9230	6645	45°
		12.00	16	250	0.065	0.180	0.180	10.29	7735	8045	45°
	Hardened tool steel 52 - 56 HRC	6.00	8	200	0.050	0.120	0.120	5.26	12105	4840	45°
		8.00	10	200	0.055	0.140	0.140	6.94	9175	5045	45°
		10.00	12	200	0.060	0.160	0.160	8.62	7385	5315	45°
		12.00	16	200	0.065	0.180	0.180	10.29	6185	6435	45°
	Hardened tool steel 56 - 60 HRC	6.00	8	150	0.045	0.120	0.120	5.26	9075	3270	45°
		8.00	10	150	0.050	0.140	0.140	6.94	6880	3440	45°
		10.00	12	150	0.055	0.160	0.160	8.62	5540	3655	45°
		12.00	16	150	0.060	0.180	0.180	10.29	4640	4455	45°
	Hardened tool steel 42 - 48 HRC	6.00	8	400	0.030	0.030	0.030	4.80	26525	6365	45°
		8.00	10	400	0.035	0.030	0.030	6.31	20180	7060	45°
		10.00	12	400	0.035	0.040	0.040	7.91	16095	6760	45°
		12.00	16	400	0.040	0.040	0.040	9.41	13530	8660	45°
	Hardened tool steel 48 - 52 HRC	6.00	8	350	0.030	0.030	0.030	4.80	23210	5570	45°
		8.00	10	350	0.035	0.030	0.030	6.31	17655	6180	45°
		10.00	12	350	0.035	0.040	0.040	7.91	14085	5915	45°
		12.00	16	350	0.040	0.040	0.040	9.41	11840	7575	45°
	Hardened tool steel 52 - 56 HRC	6.00	8	280	0.025	0.030	0.030	4.80	18570	3715	45°
		8.00	10	280	0.030	0.030	0.030	6.31	14125	4235	45°
		10.00	12	280	0.030	0.040	0.040	7.91	11270	4055	45°
		12.00	16	280	0.035	0.040	0.040	9.41	9470	5305	45°
	Hardened tool steel 56 - 60 HRC	6.00	8	180	0.025	0.030	0.030	4.80	11935	2385	45°
		8.00	10	180	0.030	0.030	0.030	6.31	9080	2725	45°
		10.00	12	180	0.030	0.040	0.040	7.91	7245	2610	45°
		12.00	16	180	0.035	0.040	0.040	9.41	6090	3410	45°

Ball nose end mills Sphero-XF Multi

Tolerance r ±0.005, 6xd

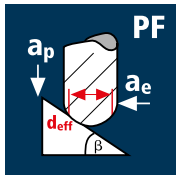
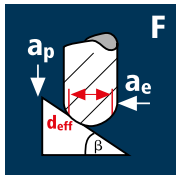
HM XA	λ 30° γ -10°



	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS Copper

Example: **Order-N°.** Coating **X** Article-N°. **7464** ø-Code **300**

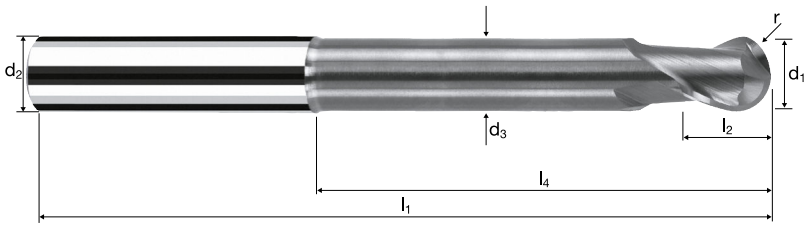
Ø Code	d1	d2 h5	d3	l1	l2	l3	r ±0.005	β	z	X-AL X7464
300	6.00	6.00	5.50	80	7.00	42.34	3.000	25°	8	●
391	8.00	8.00	7.40	90	9.00	52.29	4.000	25°	10	●
450	10.00	10.00	9.20	105	11.00	63.20	5.000	25°	12	●
501	12.00	12.00	11.00	120	13.00	73.13	6.000	25°	16	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Stainless steel [Cr-Ni/1.4301]	1.00	2	100	0.030	0.080	0.080	0.98	32480	1950	45°
		2.00	2	100	0.045	0.160	0.160	1.96	16240	1460	45°
		3.00	2	100	0.055	0.240	0.240	2.93	10865	1195	45°
		4.00	2	100	0.060	0.320	0.320	3.91	8140	975	45°
		5.00	2	100	0.070	0.400	0.400	4.89	6510	910	45°
		6.00	2	100	0.075	0.480	0.480	5.87	5425	815	45°
		8.00	2	100	0.085	0.640	0.640	7.82	4070	690	45°
		10.00	2	100	0.100	0.800	0.800	9.78	3255	650	45°
		12.00	2	100	0.105	0.960	0.960	11.73	2715	570	45°
	Stainless steel [Cr-Ni-Mo-.../1.4429]	1.00	2	90	0.028	0.080	0.080	0.98	29235	1635	45°
		2.00	2	90	0.040	0.160	0.160	1.96	14615	1170	45°
		3.00	2	90	0.050	0.240	0.240	2.93	9775	980	45°
		4.00	2	90	0.054	0.320	0.320	3.91	7325	790	45°
		5.00	2	90	0.064	0.400	0.400	4.89	5860	750	45°
		6.00	2	90	0.068	0.480	0.480	5.87	4880	665	45°
		8.00	2	90	0.076	0.640	0.640	7.82	3665	555	45°
		10.00	2	90	0.090	0.800	0.800	9.78	2930	525	45°
		12.00	2	90	0.094	0.960	0.960	11.73	2440	460	45°
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	1.00	2	60	0.025	0.080	0.080	0.98	19490	975	45°
		2.00	2	60	0.040	0.160	0.160	1.96	9745	780	45°
		3.00	2	60	0.045	0.240	0.240	2.93	6520	585	45°
		4.00	2	60	0.050	0.320	0.320	3.91	4885	490	45°
		5.00	2	60	0.060	0.400	0.400	4.89	3905	470	45°
		6.00	2	60	0.065	0.480	0.480	5.87	3255	425	45°
		8.00	2	60	0.070	0.640	0.640	7.82	2440	340	45°
		10.00	2	60	0.085	0.800	0.800	9.78	1955	330	45°
		12.00	2	60	0.090	0.960	0.960	11.73	1630	295	45°
	Steel < 850 N/mm²	1.00	2	129	0.040	0.090	0.090	0.98	41900	3350	45°
		2.00	2	240	0.055	0.170	0.170	1.96	38975	4285	45°
		3.00	2	240	0.070	0.260	0.260	2.95	25895	3625	45°
		4.00	2	240	0.075	0.350	0.350	3.93	19440	2915	45°
		5.00	2	240	0.090	0.440	0.440	4.92	15525	2795	45°
		6.00	2	240	0.095	0.520	0.520	5.89	12970	2465	45°
		8.00	2	240	0.105	0.700	0.700	7.86	9720	2040	45°
		10.00	2	240	0.125	0.870	0.870	9.83	7770	1945	45°
		12.00	2	240	0.130	1.050	1.050	11.80	6475	1685	45°
	Stainless steel [Cr-Ni/1.4301]	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	140	0.030	0.070	0.070	1.84	24220	1455	45°
		3.00	2	140	0.030	0.090	0.090	2.72	16385	985	45°
		4.00	2	140	0.050	0.110	0.110	3.60	12380	1240	45°
		5.00	2	140	0.055	0.130	0.130	4.48	9945	1095	45°
		6.00	2	140	0.060	0.150	0.150	5.36	8315	1000	45°
		8.00	2	140	0.065	0.170	0.170	7.05	6320	820	45°
		10.00	2	140	0.070	0.200	0.200	8.77	5080	710	45°
		12.00	2	140	0.075	0.250	0.250	10.56	4220	635	45°
	Stainless steel [Cr-Ni-Mo-.../1.4429]	1.00	2	124	0.022	0.050	0.050	0.94	41990	1850	45°
		2.00	2	125	0.028	0.070	0.070	1.84	21625	1210	45°
		3.00	2	125	0.028	0.090	0.090	2.72	14630	820	45°
		4.00	2	125	0.046	0.110	0.110	3.60	11050	1015	45°
		5.00	2	125	0.050	0.130	0.130	4.48	8880	890	45°
		6.00	2	125	0.054	0.150	0.150	5.36	7425	800	45°
		8.00	2	125	0.058	0.170	0.170	7.05	5645	655	45°
		10.00	2	125	0.064	0.200	0.200	8.77	4535	580	45°
		12.00	2	125	0.068	0.250	0.250	10.56	3770	510	45°
	Heat resistant steel Duplex steel [1.4462] [17-4 PH]	1.00	2	70	0.025	0.050	0.050	0.94	23705	1185	45°
		2.00	2	70	0.025	0.070	0.070	1.84	12110	605	45°
		3.00	2	70	0.025	0.090	0.090	2.72	8190	410	45°
		4.00	2	70	0.045	0.110	0.110	3.60	6190	555	45°
		5.00	2	70	0.050	0.130	0.130	4.48	4975	495	45°
		6.00	2	70	0.055	0.150	0.150	5.36	4155	455	45°
		8.00	2	70	0.060	0.170	0.170	7.05	3160	380	45°
		10.00	2	70	0.065	0.200	0.200	8.77	2540	330	45°
		12.00	2	70	0.070	0.250	0.250	10.56	2110	295	45°
	Steel < 850 N/mm²	1.00	2	124	0.030	0.050	0.050	0.94	41990	2520	45°
		2.00	2	243	0.035	0.070	0.070	1.84	42040	2945	45°
		3.00	2	359	0.035	0.090	0.090	2.72	42010	2940	45°
		4.00	2	360	0.060	0.110	0.110	3.60	31830	3820	45°
		5.00	2	360	0.065	0.130	0.130	4.48	25580	3325	45°
		6.00	2	360	0.070	0.150	0.150	5.36	21380	2995	45°
		8.00	2	360	0.080	0.170	0.170	7.05	16255	2600	45°
		10.00	2	360	0.085	0.200	0.200	8.77	13065	2220	45°
		12.00	2	360	0.090	0.250	0.250	10.56	10850	1955	45°

Ball nose end mills Sphero-SB

Tolerance r ±0.005, 6xd

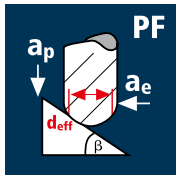
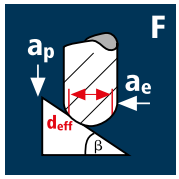
HM MG10	λ 30° γ 5°



Rm < 850	Rm 850-1100						Inox Stainless	Ti Titanium	Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **7544** ø-Code **100**

Ø Code	d_1	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	POLYCHROM P7544
100	1.00	6.00	0.95	66	1.50	6.00	16.08	0.500	9.5°	2	●
140	2.00	6.00	1.90	66	3.00	12.00	20.31	1.000	6.1°	2	●
180	3.00	6.00	2.80	66	4.00	18.00	24.63	1.500	3.9°	2	●
220	4.00	6.00	3.70	69	5.00	24.00	28.95	2.000	2.2°	2	●
260	5.00	6.00	4.60	75	6.00	30.00	33.27	2.500	1.0°	2	●
300	6.00	6.00	5.50	80	7.00	42.34	43.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	135	17.00	85.13	86.00	8.000	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Wrought aluminium Si < 6%	3.00	2	395	0.070	0.360	0.360	2.99	42050	5885	45°
		4.00	2	500	0.080	0.480	0.480	3.99	39890	6380	45°
		5.00	2	500	0.080	0.600	0.600	4.98	31960	5115	45°
		6.00	2	500	0.085	0.720	0.720	5.98	26615	4525	45°
		8.00	2	500	0.105	0.960	0.960	7.98	19945	4190	45°
		10.00	2	500	0.115	1.200	1.200	9.97	15965	3670	45°
		12.00	2	500	0.120	1.440	1.440	11.96	13305	3195	45°
		16.00	2	500	0.145	1.920	1.920	15.95	9980	2895	45°
	Unalloyed copper	3.00	2	350	0.065	0.360	0.360	2.99	37260	4845	45°
		4.00	2	350	0.070	0.480	0.480	3.99	27920	3910	45°
		5.00	2	350	0.070	0.600	0.600	4.98	22370	3130	45°
		6.00	2	350	0.075	0.720	0.720	5.98	18630	2795	45°
		8.00	2	350	0.095	0.960	0.960	7.98	13960	2655	45°
		10.00	2	350	0.105	1.200	1.200	9.97	11175	2345	45°
		12.00	2	350	0.110	1.440	1.440	11.96	9315	2050	45°
		16.00	2	350	0.130	1.920	1.920	15.95	6985	1815	45°
	Thermoplastics	3.00	2	395	0.070	0.360	0.360	2.99	42050	5885	45°
		4.00	2	526	0.080	0.480	0.480	3.99	41965	6715	45°
		5.00	2	657	0.080	0.600	0.600	4.98	41995	6720	45°
		6.00	2	789	0.085	0.720	0.720	5.98	42000	7140	45°
		8.00	2	800	0.105	0.960	0.960	7.98	31910	6700	45°
		10.00	2	800	0.115	1.200	1.200	9.97	25540	5875	45°
		12.00	2	800	0.120	1.440	1.440	11.96	21290	5110	45°
		16.00	2	800	0.145	1.920	1.920	15.95	15965	4630	45°
	Cast aluminium Si 6% - 15%	3.00	2	300	0.065	0.360	0.360	2.99	31935	4150	45°
		4.00	2	300	0.065	0.480	0.480	3.99	23935	3110	45°
		5.00	2	300	0.070	0.600	0.600	4.98	19175	2685	45°
		6.00	2	300	0.070	0.720	0.720	5.98	15970	2235	45°
		8.00	2	300	0.075	0.960	0.960	7.98	11965	1795	45°
		10.00	2	300	0.090	1.200	1.200	9.97	9580	1725	45°
		12.00	2	300	0.095	1.440	1.440	11.96	7985	1515	45°
		16.00	2	300	0.110	1.920	1.920	15.95	5985	1315	45°
	Wrought aluminium Si < 6%	3.00	2	367	0.050	0.120	0.120	2.78	42020	4200	45°
		4.00	2	487	0.045	0.150	0.150	3.69	42010	3780	45°
		5.00	2	604	0.065	0.170	0.170	4.58	41980	5455	45°
		6.00	2	700	0.060	0.200	0.200	5.48	40660	4880	45°
		8.00	2	700	0.065	0.220	0.220	7.20	30945	4025	45°
		10.00	2	700	0.070	0.240	0.240	8.90	25035	3505	45°
		12.00	2	700	0.075	0.270	0.270	10.62	20980	3145	45°
		16.00	2	700	0.090	0.300	0.300	13.96	15960	2875	45°
	Unalloyed copper	3.00	2	367	0.045	0.120	0.120	2.78	42020	3780	45°
		4.00	2	487	0.040	0.150	0.150	3.69	42010	3360	45°
		5.00	2	500	0.060	0.170	0.170	4.58	34750	4170	45°
		6.00	2	500	0.055	0.200	0.200	5.48	29045	3195	45°
		8.00	2	500	0.060	0.220	0.220	7.20	22105	2655	45°
		10.00	2	500	0.065	0.240	0.240	8.90	17885	2325	45°
		12.00	2	500	0.070	0.270	0.270	10.62	14985	2100	45°
		16.00	2	500	0.080	0.300	0.300	13.96	11400	1825	45°
	Thermoplastics	3.00	2	367	0.050	0.120	0.120	2.78	42020	4200	45°
		4.00	2	487	0.045	0.150	0.150	3.69	42010	3780	45°
		5.00	2	604	0.065	0.170	0.170	4.58	41980	5455	45°
		6.00	2	723	0.060	0.200	0.200	5.48	41995	5040	45°
		8.00	2	900	0.065	0.220	0.220	7.20	39790	5175	45°
		10.00	2	900	0.070	0.240	0.240	8.90	32190	4505	45°
		12.00	2	900	0.075	0.270	0.270	10.62	26975	4045	45°
		16.00	2	900	0.090	0.300	0.300	13.96	20520	3695	45°
	Cast aluminium Si 6% - 15%	3.00	2	367	0.035	0.120	0.120	2.78	42020	2940	45°
		4.00	2	400	0.030	0.150	0.150	3.69	34505	2070	45°
		5.00	2	400	0.050	0.170	0.170	4.58	27800	2780	45°
		6.00	2	400	0.045	0.200	0.200	5.48	23235	2090	45°
		8.00	2	400	0.055	0.220	0.220	7.20	17685	1945	45°
		10.00	2	400	0.055	0.240	0.240	8.90	14305	1575	45°
		12.00	2	400	0.060	0.270	0.270	10.62	11990	1440	45°
		16.00	2	400	0.070	0.300	0.300	13.96	9120	1275	45°

Ball nose end mills Sphero-Alu

Tolerance r ±0.005, 6xd

HM MG10

λ 40°
γ 20°

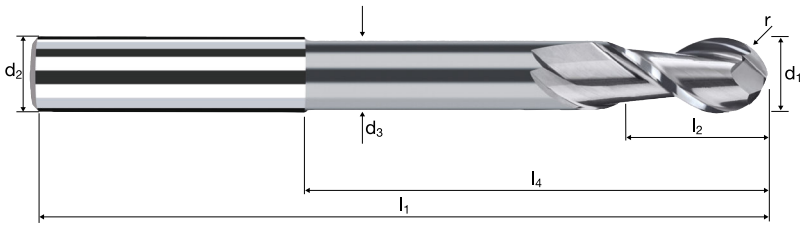
h4

r

R

F

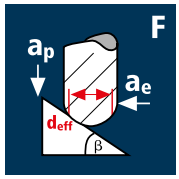
new!



			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating | Article-N°. **7554** | ø-Code **180**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z		**7554**
180	3.00	6.00	2.80	66	6.00	18.00	24.63	1.500	3.7°	2		●
220	4.00	6.00	3.70	69	8.00	24.00	28.95	2.000	2.2°	2		●
260	5.00	6.00	4.60	75	10.00	30.00	33.27	2.500	1.1°	2		●
300	6.00	6.00	5.50	80	12.00	42.34	43.00	3.000	0.0°	2		●
391	8.00	8.00	7.40	90	16.00	52.29	53.00	4.000	0.0°	2		●
450	10.00	10.00	9.20	105	20.00	63.20	64.00	5.000	0.0°	2		●
501	12.00	12.00	11.00	120	24.00	73.13	74.00	6.000	0.0°	2		●
610	16.00	16.00	15.00	135	32.00	85.13	86.00	8.000	0.0°	2		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	140	0.025	0.070	0.070	1.84	24220	1210	45°
		3.00	2	140	0.030	0.100	0.100	2.74	16265	975	45°
		4.00	2	140	0.055	0.120	0.120	3.62	12310	1355	45°
		5.00	2	140	0.060	0.150	0.150	4.53	9835	1180	45°
		6.00	2	140	0.065	0.150	0.150	5.36	8315	1080	45°
		8.00	2	140	0.070	0.170	0.170	7.05	6320	885	45°
		10.00	2	140	0.075	0.200	0.200	8.77	5080	760	45°
		12.00	2	140	0.080	0.250	0.250	10.56	4220	675	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	100	0.025	0.050	0.050	0.94	33865	1695	45°
		2.00	2	100	0.025	0.070	0.070	1.84	17300	865	45°
		3.00	2	100	0.030	0.100	0.100	2.74	11615	695	45°
		4.00	2	100	0.050	0.120	0.120	3.62	8795	880	45°
		5.00	2	100	0.055	0.150	0.150	4.53	7025	775	45°
		6.00	2	100	0.060	0.150	0.150	5.36	5940	715	45°
		8.00	2	100	0.065	0.170	0.170	7.05	4515	585	45°
		10.00	2	100	0.070	0.200	0.200	8.77	3630	510	45°
		12.00	2	100	0.075	0.250	0.250	10.56	3015	450	45°
	Hardened tool steel 60 - 64 HRC	1.00	2	70	0.020	0.040	0.040	0.93	23960	960	45°
		2.00	2	70	0.020	0.055	0.055	1.80	12380	495	45°
		3.00	2	70	0.025	0.075	0.075	2.68	8315	415	45°
		4.00	2	70	0.045	0.090	0.090	3.54	6295	565	45°
		5.00	2	70	0.045	0.115	0.115	4.43	5030	455	45°
		6.00	2	70	0.050	0.115	0.115	5.24	4250	425	45°
		8.00	2	70	0.055	0.130	0.130	6.90	3230	355	45°
		10.00	2	70	0.060	0.150	0.150	8.58	2595	310	45°
		12.00	2	70	0.065	0.190	0.190	10.34	2155	280	45°
	Hardened tool steel 64 - 70 HRC	1.00	2	45	0.015	0.025	0.025	0.89	16095	485	45°
		2.00	2	45	0.015	0.035	0.035	1.74	8230	245	45°
		3.00	2	45	0.020	0.050	0.050	2.59	5530	220	45°
		4.00	2	45	0.030	0.060	0.060	3.43	4175	250	45°
		5.00	2	45	0.035	0.075	0.075	4.29	3340	235	45°
		6.00	2	45	0.035	0.075	0.075	5.08	2820	195	45°
		8.00	2	45	0.040	0.085	0.085	6.70	2140	170	45°
		10.00	2	45	0.040	0.100	0.100	8.34	1715	135	45°
		12.00	2	45	0.045	0.125	0.125	10.03	1430	130	45°

Ball nose end mills Sphero-X

Tolerance r ±0.005, 9xd

HM
XA

λ 30°
γ -10°

h5

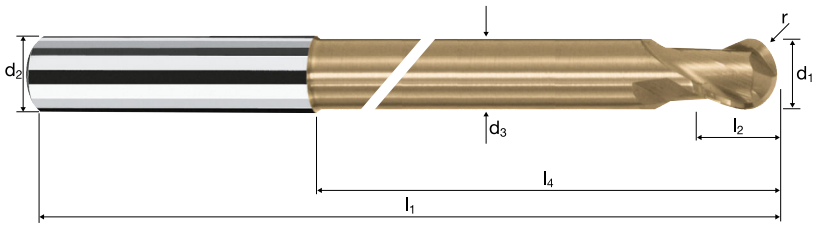
sc

d1

r

R

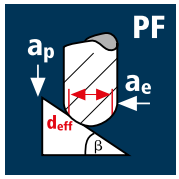
F



		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			HSS

Example: **Order-N°.** Coating **V** Article-N°. **7478** ø-Code **100**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-V V7478
100	1.00	6.00	0.95	69	1.50	9.00	19.08	0.500	8.0°	2	●
140	2.00	6.00	1.90	69	3.00	18.00	26.31	1.000	4.7°	2	●
180	3.00	6.00	2.80	75	4.00	27.00	33.63	1.500	2.8°	2	●
220	4.00	6.00	3.70	80	5.00	36.00	40.95	2.000	1.5°	2	●
260	5.00	6.00	4.60	87	6.00	45.00	48.27	2.500	0.7°	2	●
300	6.00	6.00	5.50	100	7.00	62.34	63.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	120	9.00	82.29	83.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	135	11.00	93.20	94.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	160	13.00	113.13	114.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	180	17.00	130.13	131.00	8.000	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	1.00	2	132	0.050	0.120	0.120	1.00	42015	4200	45°
		2.00	2	160	0.080	0.160	0.160	1.96	25985	4160	45°
		3.00	2	160	0.090	0.240	0.240	2.93	17380	3130	45°
		4.00	2	160	0.105	0.320	0.320	3.91	13025	2735	45°
		5.00	2	160	0.120	0.400	0.400	4.89	10415	2500	45°
		6.00	2	160	0.130	0.480	0.480	5.87	8675	2255	45°
		8.00	2	160	0.150	0.640	0.640	7.82	6515	1955	45°
		10.00	2	160	0.170	0.800	0.800	9.78	5210	1770	45°
		12.00	2	160	0.180	0.960	0.960	11.73	4340	1565	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	120	0.045	0.120	0.120	1.00	38195	3440	45°
		2.00	2	120	0.075	0.150	0.150	1.95	19590	2940	45°
		3.00	2	120	0.085	0.180	0.180	2.87	13310	2265	45°
		4.00	2	120	0.095	0.200	0.200	3.78	10105	1920	45°
		5.00	2	120	0.110	0.250	0.250	4.72	8095	1780	45°
		6.00	2	120	0.120	0.300	0.300	5.67	6735	1615	45°
		8.00	2	120	0.140	0.400	0.400	7.56	5055	1415	45°
		10.00	2	120	0.155	0.500	0.500	9.45	4040	1255	45°
		12.00	2	120	0.165	0.600	0.600	11.34	3370	1110	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	100	0.045	0.120	0.120	1.00	31830	2865	45°
		2.00	2	100	0.070	0.150	0.150	1.95	16325	2285	45°
		3.00	2	100	0.075	0.180	0.180	2.87	11090	1665	45°
		4.00	2	100	0.090	0.200	0.200	3.78	8420	1515	45°
		5.00	2	100	0.100	0.250	0.250	4.72	6745	1350	45°
		6.00	2	100	0.110	0.300	0.300	5.67	5615	1235	45°
		8.00	2	100	0.130	0.400	0.400	7.56	4210	1095	45°
		10.00	2	100	0.145	0.500	0.500	9.45	3370	975	45°
		12.00	2	100	0.155	0.600	0.600	11.34	2805	870	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	60	0.040	0.100	0.100	0.99	19290	1545	45°
		2.00	2	60	0.060	0.120	0.120	1.92	9945	1195	45°
		3.00	2	60	0.070	0.140	0.140	2.82	6775	950	45°
		4.00	2	60	0.080	0.160	0.160	3.71	5150	825	45°
		5.00	2	60	0.090	0.200	0.200	4.64	4115	740	45°
		6.00	2	60	0.100	0.240	0.240	5.57	3430	685	45°
		8.00	2	60	0.115	0.320	0.320	7.42	2575	590	45°
		10.00	2	60	0.130	0.400	0.400	9.28	2060	535	45°
		12.00	2	60	0.135	0.480	0.480	11.13	1715	465	45°

Ball nose end mills Sphero-XR

Tolerance r ±0.005, 9xd

X-Generation X

II

HM
XT

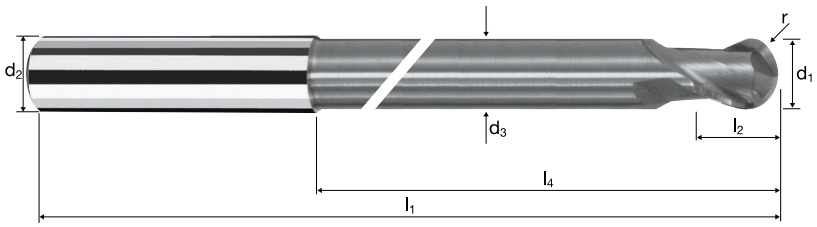
λ 30°
γ -10°

h5

d1

r

R

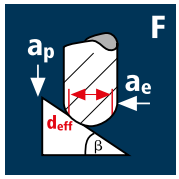
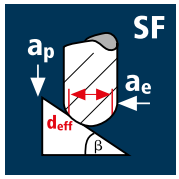


ToolSchool

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			

Example: **Order-N°.** Coating **X** Article-N°. **7428** ø-Code **100**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL **X7428**
100	1.00	6.00	0.95	69	1.50	9.00	19.08	0.500	8.0°	2	●
140	2.00	6.00	1.90	69	3.00	18.00	26.31	1.000	4.7°	2	●
180	3.00	6.00	2.80	75	4.00	27.00	33.63	1.500	2.8°	2	●
220	4.00	6.00	3.70	80	5.00	36.00	40.95	2.000	1.5°	2	●
260	5.00	6.00	4.60	87	6.00	45.00	48.27	2.500	0.7°	2	●
300	6.00	6.00	5.50	100	7.00	62.34	63.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	120	9.00	82.29	83.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	135	11.00	93.20	94.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	160	13.00	113.13	114.00	6.000	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	220	0.030	0.070	0.070	1.84	38060	2285	45°
		3.00	2	220	0.035	0.100	0.100	2.74	25560	1790	45°
		4.00	2	220	0.060	0.120	0.120	3.62	19345	2320	45°
		5.00	2	220	0.065	0.150	0.150	4.53	15460	2010	45°
		6.00	2	220	0.070	0.150	0.150	5.36	13065	1830	45°
		8.00	2	220	0.080	0.170	0.170	7.05	9935	1590	45°
		10.00	2	220	0.085	0.200	0.200	8.77	7985	1355	45°
		12.00	2	220	0.090	0.250	0.250	10.56	6630	1195	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	180	0.030	0.070	0.070	1.84	31140	1870	45°
		3.00	2	180	0.035	0.100	0.100	2.74	20910	1465	45°
		4.00	2	180	0.055	0.120	0.120	3.62	15830	1740	45°
		5.00	2	180	0.060	0.150	0.150	4.53	12650	1520	45°
		6.00	2	180	0.065	0.150	0.150	5.36	10690	1390	45°
		8.00	2	180	0.075	0.170	0.170	7.05	8125	1220	45°
		10.00	2	180	0.080	0.200	0.200	8.77	6535	1045	45°
		12.00	2	180	0.085	0.250	0.250	10.56	5425	920	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	140	0.025	0.070	0.070	1.84	24220	1210	45°
		3.00	2	140	0.030	0.100	0.100	2.74	16265	975	45°
		4.00	2	140	0.055	0.120	0.120	3.62	12310	1355	45°
		5.00	2	140	0.060	0.150	0.150	4.53	9835	1180	45°
		6.00	2	140	0.065	0.150	0.150	5.36	8315	1080	45°
		8.00	2	140	0.070	0.170	0.170	7.05	6320	885	45°
		10.00	2	140	0.075	0.200	0.200	8.77	5080	760	45°
		12.00	2	140	0.080	0.250	0.250	10.56	4220	675	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	100	0.020	0.050	0.050	0.94	33865	1355	45°
		2.00	2	100	0.025	0.070	0.070	1.84	17300	865	45°
		3.00	2	100	0.030	0.100	0.100	2.74	11615	695	45°
		4.00	2	100	0.050	0.120	0.120	3.62	8795	880	45°
		5.00	2	100	0.055	0.150	0.150	4.53	7025	775	45°
		6.00	2	100	0.060	0.150	0.150	5.36	5940	715	45°
		8.00	2	100	0.070	0.170	0.170	7.05	4515	630	45°
		10.00	2	100	0.070	0.200	0.200	8.77	3630	510	45°
		12.00	2	100	0.075	0.250	0.250	10.56	3015	450	45°
	Hardened tool steel 42 - 48 HRC	1.00	2	116	0.020	0.020	0.020	0.88	41960	1680	45°
		2.00	2	220	0.025	0.020	0.020	1.67	41935	2095	45°
		3.00	2	300	0.025	0.030	0.030	2.50	38195	1910	45°
		4.00	2	300	0.040	0.030	0.030	3.27	29205	2335	45°
		5.00	2	300	0.045	0.030	0.030	4.04	23635	2125	45°
		6.00	2	300	0.050	0.030	0.030	4.80	19895	1990	45°
		8.00	2	300	0.055	0.030	0.030	6.31	15135	1665	45°
		10.00	2	300	0.055	0.040	0.040	7.91	12070	1330	45°
		12.00	2	300	0.060	0.040	0.040	9.41	10150	1220	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	116	0.020	0.020	0.020	0.88	41960	1680	45°
		2.00	2	220	0.025	0.020	0.020	1.67	41935	2095	45°
		3.00	2	260	0.025	0.030	0.030	2.50	33105	1655	45°
		4.00	2	260	0.040	0.030	0.030	3.27	25310	2025	45°
		5.00	2	260	0.045	0.030	0.030	4.04	20485	1845	45°
		6.00	2	260	0.050	0.030	0.030	4.80	17240	1725	45°
		8.00	2	260	0.050	0.030	0.030	6.31	13115	1310	45°
		10.00	2	260	0.050	0.040	0.040	7.91	10465	1045	45°
		12.00	2	260	0.055	0.040	0.040	9.41	8795	965	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	116	0.020	0.020	0.020	0.88	41960	1680	45°
		2.00	2	200	0.025	0.020	0.020	1.67	38120	1905	45°
		3.00	2	200	0.025	0.030	0.030	2.50	25465	1275	45°
		4.00	2	200	0.035	0.030	0.030	3.27	19470	1365	45°
		5.00	2	200	0.040	0.030	0.030	4.04	15760	1260	45°
		6.00	2	200	0.045	0.030	0.030	4.80	13265	1195	45°
		8.00	2	200	0.050	0.030	0.030	6.31	10090	1010	45°
		10.00	2	200	0.050	0.040	0.040	7.91	8050	805	45°
		12.00	2	200	0.055	0.040	0.040	9.41	6765	745	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	116	0.015	0.020	0.020	0.88	41960	1260	45°
		2.00	2	120	0.020	0.020	0.020	1.67	22875	915	45°
		3.00	2	120	0.020	0.030	0.030	2.50	15280	610	45°
		4.00	2	120	0.035	0.030	0.030	3.27	11680	820	45°
		5.00	2	120	0.040	0.030	0.030	4.04	9455	755	45°
		6.00	2	120	0.045	0.030	0.030	4.80	7960	715	45°
		8.00	2	120	0.045	0.030	0.030	6.31	6055	545	45°
		10.00	2	120	0.045	0.040	0.040	7.91	4830	435	45°
		12.00	2	120	0.050	0.040	0.040	9.41	4060	405	45°

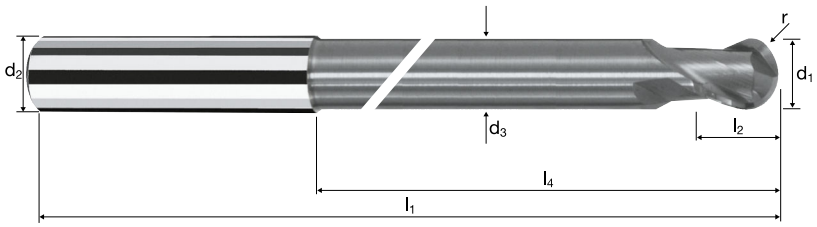
Ball nose end mills Sphero-XF

Tolerance r ±0.005, 9xd

X-Generation

II

HM XA	λ 30° γ -10°

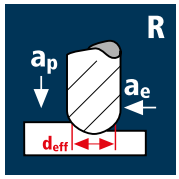


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS Copper

Example: **Order-N°.** Coating **X** Article-N°. **7408** ø-Code **100**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL **X7408**
100	1.00	6.00	0.95	69	1.50	9.00	19.08	0.500	8.0°	2	●
140	2.00	6.00	1.90	69	3.00	18.00	26.31	1.000	4.7°	2	●
180	3.00	6.00	2.80	75	4.00	27.00	33.63	1.500	2.8°	2	●
220	4.00	6.00	3.70	80	5.00	36.00	40.95	2.000	1.5°	2	●
260	5.00	6.00	4.60	87	6.00	45.00	48.27	2.500	0.7°	2	●
300	6.00	6.00	5.50	100	7.00	62.34	63.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	120	9.00	82.29	83.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	135	11.00	93.20	94.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	160	13.00	113.13	114.00	6.000	0.0°	2	●

Application

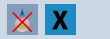


Material

Hardened tool steel 42 - 48 HRC

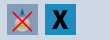
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
3.00	4	160	0.050	0.530	1.200	2.29	22240	4450	2.8
4.00	4	160	0.060	0.700	1.600	3.04	16755	4020	4.5
5.00	4	160	0.065	0.880	2.000	3.81	13365	3475	6.1
6.00	4	160	0.070	1.260	2.400	4.89	10415	2915	8.8
8.00	4	160	0.080	1.680	3.200	6.52	7810	2500	13.4
10.00	4	160	0.095	2.100	4.000	8.15	6250	2375	19.9
12.00	4	160	0.100	2.520	4.800	9.78	5210	2085	25.2

Hardened tool steel 48 - 52 HRC



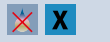
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
3.00	4	130	0.045	0.530	1.200	2.29	18070	3255	2.1
4.00	4	130	0.055	0.700	1.600	3.04	13610	2995	3.4
5.00	4	130	0.060	0.880	2.000	3.81	10860	2605	4.6
6.00	4	130	0.065	1.050	2.400	4.56	9075	2360	5.9
8.00	4	130	0.075	1.400	3.200	6.08	6805	2040	9.1
10.00	4	130	0.085	2.100	4.000	8.15	5075	1725	14.5
12.00	4	130	0.090	2.520	4.800	9.78	4230	1525	18.4

Hardened tool steel 52 - 56 HRC



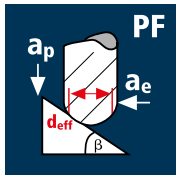
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
3.00	4	110	0.045	0.530	1.200	2.29	15290	2750	1.8
4.00	4	110	0.050	0.700	1.600	3.04	11520	2305	2.6
5.00	4	110	0.055	0.880	2.000	3.81	9190	2020	3.6
6.00	4	110	0.060	1.050	2.400	4.56	7680	1845	4.6
8.00	4	110	0.070	1.400	3.200	6.08	5760	1610	7.2
10.00	4	110	0.080	2.100	4.000	8.15	4295	1375	11.5
12.00	4	110	0.085	2.520	4.800	9.78	3580	1215	14.7

Hardened tool steel 56 - 60 HRC



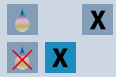
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
3.00	4	50	0.020	0.410	0.900	2.06	7725	620	0.2
4.00	4	50	0.025	0.550	1.200	2.75	5785	580	0.4
5.00	4	50	0.025	0.690	1.500	3.45	4615	460	0.5
6.00	4	50	0.030	0.760	1.440	3.99	3990	480	0.5
8.00	4	50	0.030	1.010	1.440	5.31	2995	360	0.5
10.00	4	50	0.040	1.260	1.200	6.64	2395	385	0.6
12.00	4	50	0.040	1.510	1.440	7.96	2000	320	0.7

Application



Material

Hardened tool steel 42 - 48 HRC

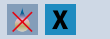


d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
3.00	4	200	0.070	0.330	0.330	2.98	21365	5980	45°
4.00	4	200	0.080	0.440	0.440	3.98	15995	5120	45°
5.00	4	200	0.090	0.550	0.550	4.97	12810	4610	45°
6.00	4	200	0.100	0.660	0.660	5.96	10680	4275	45°
8.00	4	200	0.110	0.880	0.880	7.95	8010	3525	45°
10.00	4	200	0.130	1.100	1.100	9.94	6405	3330	45°
12.00	4	200	0.135	1.320	1.320	11.93	5335	2880	45°

Hardened tool steel 48 - 52 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
3.00	4	160	0.065	0.150	0.150	2.83	17995	4680	45°
4.00	4	160	0.075	0.200	0.200	3.78	13475	4040	45°
5.00	4	160	0.085	0.250	0.250	4.72	10790	3670	45°
6.00	4	160	0.090	0.300	0.300	5.67	8980	3235	45°
8.00	4	160	0.100	0.400	0.400	7.56	6735	2695	45°
10.00	4	160	0.120	0.500	0.500	9.45	5390	2585	45°
12.00	4	160	0.125	0.600	0.600	11.34	4490	2245	45°

Hardened tool steel 52 - 56 HRC



d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
3.00	4	120	0.060	0.150	0.150	2.83	13495	3240	45°
4.00	4	120	0.070	0.200	0.200	3.78	10105	2830	45°
5.00	4	120	0.075	0.250	0.250	4.72	8095	2430	45°
6.00	4	120	0.085	0.300	0.300	5.67	6735	2290	45°
8.00	4	120	0.095	0.400	0.400	7.56	5055	1920	45°
10.00	4	120	0.110	0.500	0.500	9.45	4040	1780	45°
12.00	4	120	0.115	0.600	0.600	11.34	3370	1550	45°

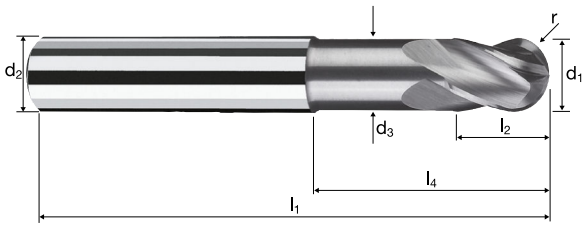
Hardened tool steel 56 - 60 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
3.00	4	90	0.055	0.120	0.120	2.78	10305	2265	45°
4.00	4	90	0.060	0.160	0.160	3.71	7720	1855	45°
5.00	4	90	0.070	0.200	0.200	4.64	6175	1730	45°
6.00	4	90	0.075	0.240	0.240	5.57	5145	1545	45°
8.00	4	90	0.085	0.320	0.320	7.42	3860	1315	45°
10.00	4	90	0.100	0.400	0.400	9.28	3085	1235	45°
12.00	4	90	0.100	0.480	0.480	11.13	2575	1030	45°

Ball nose end mills Sphero-XR4

Tolerance r ±0.01, 3xd

HM XT	λ 30° γ -10°
h5	
R	

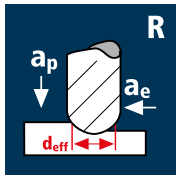


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			

Example: **Order-N°.** Coating **X** Article-N°. **7450** ø-Code **180**

Ø Code	d_1 0/-0.02	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	X-AL **X7450**
180	3.00	6.00	2.80	57	4.00	9.00	15.63	1.500	6.4°	4	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	2.000	4.0°	4	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	2.500	2.0°	4	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	3.000	0.0°	4	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	4.000	0.0°	4	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	5.000	0.0°	4	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	6.000	0.0°	4	●

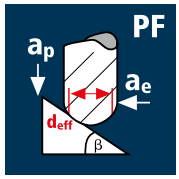
Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
Hardened tool steel 42 - 48 HRC									
3.00	4	160	0.050	0.390	0.900	2.02	25215	5045	1.8
4.00	4	160	0.060	0.520	1.200	2.69	18935	4545	2.8
5.00	4	160	0.065	0.650	1.500	3.36	15160	3940	3.8
6.00	4	160	0.070	1.020	1.800	4.51	11295	3160	5.8
8.00	4	160	0.080	1.360	2.400	6.01	8475	2710	8.9
10.00	4	160	0.095	1.700	3.000	7.51	6780	2575	13.1
12.00	4	160	0.100	2.040	3.600	9.02	5645	2260	16.6
Hardened tool steel 48 - 52 HRC									
3.00	4	130	0.045	0.390	0.900	2.02	20485	3685	1.3
4.00	4	130	0.055	0.520	1.200	2.69	15385	3385	2.1
5.00	4	130	0.060	0.650	1.500	3.36	12315	2955	2.9
6.00	4	130	0.065	0.780	1.800	4.04	10245	2665	3.7
8.00	4	130	0.075	1.040	2.400	5.38	7690	2305	5.8
10.00	4	130	0.085	1.700	3.000	7.51	5510	1875	9.6
12.00	4	130	0.090	2.040	3.600	9.02	4590	1650	12.1
Hardened tool steel 52 - 56 HRC									
3.00	4	110	0.045	0.390	0.900	2.02	17335	3120	1.1
4.00	4	110	0.050	0.520	1.200	2.69	13015	2605	1.6
5.00	4	110	0.055	0.650	1.500	3.36	10420	2295	2.2
6.00	4	110	0.060	0.780	1.800	4.04	8665	2080	2.9
8.00	4	110	0.070	1.040	2.400	5.38	6510	1820	4.5
10.00	4	110	0.080	1.700	3.000	7.51	4660	1490	7.6
12.00	4	110	0.085	2.040	3.600	9.02	3880	1320	9.7
Hardened tool steel 56 - 60 HRC									
3.00	4	50	0.020	0.300	0.680	1.80	8840	705	0.1
4.00	4	50	0.025	0.410	0.900	2.43	6550	655	0.2
5.00	4	50	0.025	0.510	1.130	3.03	5255	525	0.3
6.00	4	50	0.030	0.610	1.080	3.63	4385	525	0.3
8.00	4	50	0.030	0.820	1.080	4.85	3280	395	0.3
10.00	4	50	0.040	1.020	0.900	6.05	2630	420	0.4
12.00	4	50	0.040	1.220	1.080	7.25	2195	350	0.5

Application



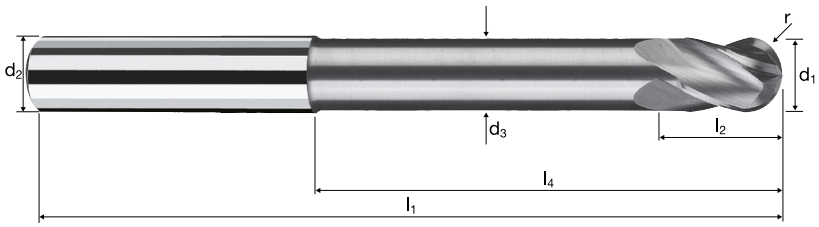
Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
3.00	4	200	0.070	0.270	0.270	2.95	21580	6040	45°
4.00	4	200	0.080	0.360	0.360	3.94	16160	5170	45°
5.00	4	200	0.090	0.450	0.450	4.92	12940	4660	45°
6.00	4	200	0.100	0.540	0.540	5.91	10770	4310	45°
8.00	4	200	0.110	0.720	0.720	7.88	8080	3555	45°
10.00	4	200	0.130	0.900	0.900	9.85	6465	3360	45°
12.00	4	200	0.135	1.080	1.080	11.81	5390	2910	45°
Hardened tool steel 48 - 52 HRC									
3.00	4	160	0.065	0.150	0.150	2.83	17995	4680	45°
4.00	4	160	0.075	0.200	0.200	3.78	13475	4040	45°
5.00	4	160	0.085	0.250	0.250	4.72	10790	3670	45°
6.00	4	160	0.090	0.300	0.300	5.67	8980	3235	45°
8.00	4	160	0.100	0.400	0.400	7.56	6735	2695	45°
10.00	4	160	0.120	0.500	0.500	9.45	5390	2585	45°
12.00	4	160	0.125	0.600	0.600	11.34	4490	2245	45°
Hardened tool steel 52 - 56 HRC									
3.00	4	120	0.060	0.150	0.150	2.83	13495	3240	45°
4.00	4	120	0.070	0.200	0.200	3.78	10105	2830	45°
5.00	4	120	0.075	0.250	0.250	4.72	8095	2430	45°
6.00	4	120	0.085	0.300	0.300	5.67	6735	2290	45°
8.00	4	120	0.095	0.400	0.400	7.56	5055	1920	45°
10.00	4	120	0.110	0.500	0.500	9.45	4040	1780	45°
12.00	4	120	0.115	0.600	0.600	11.34	3370	1550	45°
Hardened tool steel 56 - 60 HRC									
3.00	4	90	0.055	0.120	0.120	2.78	10305	2265	45°
4.00	4	90	0.060	0.160	0.160	3.71	7720	1855	45°
5.00	4	90	0.070	0.200	0.200	4.64	6175	1730	45°
6.00	4	90	0.075	0.240	0.240	5.57	5145	1545	45°
8.00	4	90	0.085	0.320	0.320	7.42	3860	1315	45°
10.00	4	90	0.100	0.400	0.400	9.28	3085	1235	45°
12.00	4	90	0.100	0.480	0.480	11.13	2575	1030	45°

Ball nose end mills Sphero-XR4

Tolerance r ±0.01, 6xd

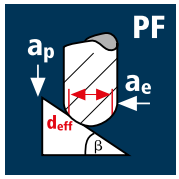
HM XT	λ 30° γ -10°
h5	
R	



		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			

Example: **Order-N°.** Coating **X** Article-N°. **7454** ø-Code **180**

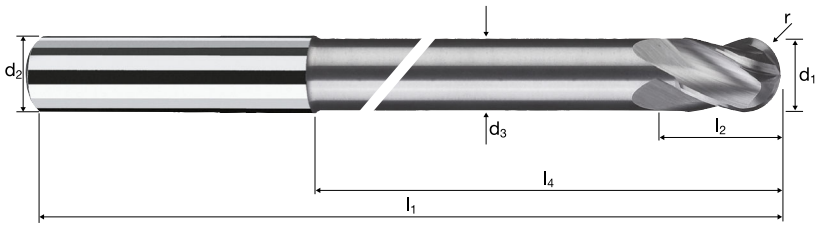
Ø Code	d_1 0/-0.02	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	X-AL **X7454**
180	3.00	6.00	2.80	66	4.00	18.00	24.63	1.500	3.9°	4	●
220	4.00	6.00	3.70	69	5.00	24.00	28.95	2.000	2.2°	4	●
260	5.00	6.00	4.60	75	6.00	30.00	33.27	2.500	1.0°	4	●
300	6.00	6.00	5.50	80	7.00	42.34	43.00	3.000	0.0°	4	●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	4.000	0.0°	4	●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	5.000	0.0°	4	●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	6.000	0.0°	4	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	3.00	4	160	0.060	0.210	0.210	2.91	17500	4200	45°
		4.00	4	160	0.070	0.280	0.280	3.88	13125	3675	45°
		5.00	4	160	0.080	0.350	0.350	4.84	10525	3365	45°
		6.00	4	160	0.085	0.420	0.420	5.81	8765	2980	45°
		8.00	4	160	0.095	0.560	0.560	7.75	6570	2495	45°
		10.00	4	160	0.110	0.700	0.700	9.69	5255	2315	45°
		12.00	4	160	0.115	0.840	0.840	11.63	4380	2015	45°
	Hardened tool steel 48 - 52 HRC	3.00	4	120	0.055	0.150	0.150	2.83	13495	2970	45°
		4.00	4	120	0.065	0.200	0.200	3.78	10105	2625	45°
		5.00	4	120	0.075	0.250	0.250	4.72	8095	2430	45°
		6.00	4	120	0.080	0.300	0.300	5.67	6735	2155	45°
		8.00	4	120	0.085	0.400	0.400	7.56	5055	1720	45°
		10.00	4	120	0.100	0.500	0.500	9.45	4040	1615	45°
		12.00	4	120	0.105	0.600	0.600	11.34	3370	1415	45°
	Hardened tool steel 52 - 56 HRC	3.00	4	100	0.050	0.150	0.150	2.83	11250	2250	45°
		4.00	4	100	0.060	0.200	0.200	3.78	8420	2020	45°
		5.00	4	100	0.070	0.250	0.250	4.72	6745	1890	45°
		6.00	4	100	0.070	0.300	0.300	5.67	5615	1570	45°
		8.00	4	100	0.080	0.400	0.400	7.56	4210	1345	45°
		10.00	4	100	0.095	0.500	0.500	9.45	3370	1280	45°
		12.00	4	100	0.100	0.600	0.600	11.34	2805	1125	45°
	Hardened tool steel 56 - 60 HRC	3.00	4	60	0.045	0.120	0.120	2.78	6870	1235	45°
		4.00	4	60	0.055	0.160	0.160	3.71	5150	1135	45°
		5.00	4	60	0.060	0.200	0.200	4.64	4115	990	45°
		6.00	4	60	0.065	0.240	0.240	5.57	3430	890	45°
		8.00	4	60	0.070	0.320	0.320	7.42	2575	720	45°
		10.00	4	60	0.085	0.400	0.400	9.28	2060	700	45°
		12.00	4	60	0.085	0.480	0.480	11.13	1715	585	45°

Ball nose end mills Sphero-XR4

Tolerance r ±0.01, 9xd

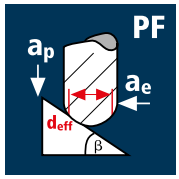
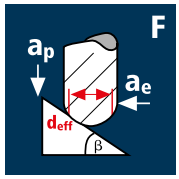
HM XT	λ 30° γ -10°
h5	
R	



		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			

Example: **Order-N°.** Coating **X** Article-N°. **7458** ø-Code **180**

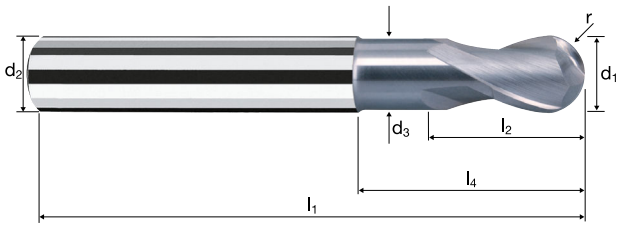
Ø Code	d_1 0/-0.02	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	X-AL **X7458**
180	3.00	6.00	2.80	75	4.00	27.00	33.63	1.500	2.8°	4	●
220	4.00	6.00	3.70	80	5.00	36.00	40.95	2.000	1.5°	4	●
260	5.00	6.00	4.60	87	6.00	45.00	48.27	2.500	0.7°	4	●
300	6.00	6.00	5.50	100	7.00	62.34	63.00	3.000	0.0°	4	●
391	8.00	8.00	7.40	120	9.00	82.29	83.00	4.000	0.0°	4	●
450	10.00	10.00	9.20	135	11.00	93.20	94.00	5.000	0.0°	4	●
501	12.00	12.00	11.00	160	13.00	113.13	114.00	6.000	0.0°	4	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
	Steel 1100 - 1300 N/mm²	1.00	2	131	0.040	0.100	0.100	0.99	42120	3370	45°
		2.00	2	180	0.065	0.200	0.200	1.98	28935	3760	45°
		3.00	2	180	0.075	0.300	0.300	2.97	19290	2895	45°
		4.00	2	180	0.090	0.400	0.400	3.96	14470	2605	45°
		6.00	2	180	0.110	0.600	0.600	5.94	9645	2120	45°
		8.00	2	180	0.125	0.800	0.800	7.92	7235	1810	45°
		10.00	2	180	0.145	1.000	1.000	9.90	5785	1680	45°
		12.00	2	180	0.150	1.200	1.200	11.88	4825	1445	45°
		16.00	2	180	0.180	1.600	1.600	15.84	3615	1300	45°
	Hardened tool steel 42 - 48 HRC	1.00	2	131	0.035	0.100	0.100	0.99	42120	2950	45°
		2.00	2	160	0.060	0.200	0.200	1.98	25720	3085	45°
		3.00	2	160	0.070	0.300	0.300	2.97	17150	2400	45°
		4.00	2	160	0.085	0.400	0.400	3.96	12860	2185	45°
		6.00	2	160	0.100	0.600	0.600	5.94	8575	1715	45°
		8.00	2	160	0.115	0.800	0.800	7.92	6430	1480	45°
		10.00	2	160	0.135	1.000	1.000	9.90	5145	1390	45°
		12.00	2	160	0.140	1.200	1.200	11.88	4285	1200	45°
		16.00	2	160	0.165	1.600	1.600	15.84	3215	1060	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	132	0.035	0.120	0.120	1.00	42015	2940	45°
		2.00	2	140	0.055	0.150	0.150	1.95	22855	2515	45°
		3.00	2	140	0.065	0.180	0.180	2.87	15525	2020	45°
		4.00	2	140	0.075	0.200	0.200	3.78	11790	1770	45°
		6.00	2	140	0.095	0.300	0.300	5.67	7860	1495	45°
		8.00	2	140	0.105	0.400	0.400	7.56	5895	1240	45°
		10.00	2	140	0.125	0.500	0.500	9.45	4715	1180	45°
		12.00	2	140	0.130	0.600	0.600	11.34	3930	1020	45°
		16.00	2	140	0.155	0.800	0.800	15.11	2950	915	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	100	0.030	0.120	0.120	1.00	31830	1910	45°
		2.00	2	100	0.050	0.150	0.150	1.95	16325	1630	45°
		3.00	2	100	0.060	0.180	0.180	2.87	11090	1330	45°
		4.00	2	100	0.070	0.200	0.200	3.78	8420	1180	45°
		6.00	2	100	0.090	0.300	0.300	5.67	5615	1010	45°
		8.00	2	100	0.100	0.400	0.400	7.56	4210	840	45°
		10.00	2	100	0.115	0.500	0.500	9.45	3370	775	45°
		12.00	2	100	0.120	0.600	0.600	11.34	2805	675	45°
		16.00	2	100	0.145	0.800	0.800	15.11	2105	610	45°
	Steel 1100 - 1300 N/mm²	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	243	0.030	0.070	0.070	1.84	42040	2520	45°
		3.00	2	280	0.035	0.100	0.100	2.74	32530	2275	45°
		4.00	2	280	0.055	0.120	0.120	3.62	24620	2710	45°
		6.00	2	280	0.065	0.150	0.150	5.36	16630	2160	45°
		8.00	2	280	0.075	0.170	0.170	7.05	12640	1895	45°
		10.00	2	280	0.080	0.200	0.200	8.77	10165	1625	45°
		12.00	2	280	0.085	0.250	0.250	10.56	8440	1435	45°
		16.00	2	280	0.100	0.280	0.280	13.88	6420	1285	45°
	Hardened tool steel 42 - 48 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	243	0.030	0.070	0.070	1.84	42040	2520	45°
		3.00	2	250	0.035	0.100	0.100	2.74	29045	2035	45°
		4.00	2	250	0.050	0.120	0.120	3.62	21985	2200	45°
		6.00	2	250	0.060	0.150	0.150	5.36	14845	1780	45°
		8.00	2	250	0.070	0.170	0.170	7.05	11290	1580	45°
		10.00	2	250	0.075	0.200	0.200	8.77	9075	1360	45°
		12.00	2	250	0.080	0.250	0.250	10.56	7535	1205	45°
		16.00	2	250	0.095	0.280	0.280	13.88	5735	1090	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	124	0.025	0.050	0.050	0.94	41990	2100	45°
		2.00	2	200	0.025	0.070	0.070	1.84	34600	1730	45°
		3.00	2	200	0.030	0.100	0.100	2.74	23235	1395	45°
		4.00	2	200	0.050	0.120	0.120	3.62	17585	1760	45°
		6.00	2	200	0.060	0.150	0.150	5.36	11875	1425	45°
		8.00	2	200	0.070	0.170	0.170	7.05	9030	1265	45°
		10.00	2	200	0.070	0.200	0.200	8.77	7260	1015	45°
		12.00	2	200	0.075	0.250	0.250	10.56	6030	905	45°
		16.00	2	200	0.090	0.280	0.280	13.88	4585	825	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	124	0.020	0.050	0.050	0.94	41990	1680	45°
		2.00	2	150	0.025	0.070	0.070	1.84	25950	1295	45°
		3.00	2	150	0.030	0.100	0.100	2.74	17425	1045	45°
		4.00	2	150	0.045	0.120	0.120	3.62	13190	1185	45°
		6.00	2	150	0.055	0.150	0.150	5.36	8910	980	45°
		8.00	2	150	0.065	0.170	0.170	7.05	6775	880	45°
		10.00	2	150	0.070	0.200	0.200	8.77	5445	760	45°
		12.00	2	150	0.070	0.250	0.250	10.56	4520	635	45°
		16.00	2	150	0.085	0.280	0.280	13.88	3440	585	45°

Ball nose end mills Sphericut

Tolerance r f8 (-/-), 3xd

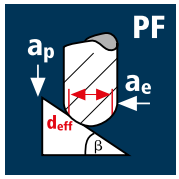
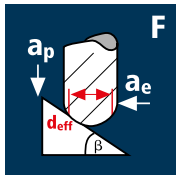
HM Plus	λ 30° γ -10°



		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60				GG(G)

Example: **Order-N°.** Coating **P** Article-N°. **5286** ø-Code **100**

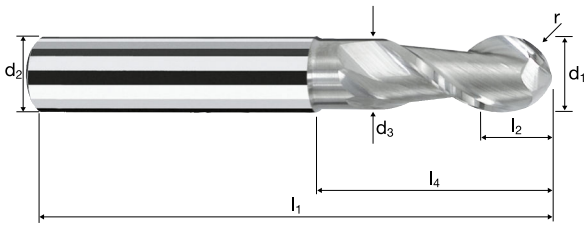
Ø Code	d_1 ±	d_2 h6	d_3	l_1	l_2	l_3	l_4	r f8	α	z	POLYCHROM P5286
100	1.00	3.00	-	40	1.00	-	5.93	0.500	13.2°	2	●
120	1.50	3.00	-	40	2.00	-	5.99	0.750	10.4°	2	●
138	2.00	3.00	-	40	2.50	-	5.96	1.000	8.3°	2	●
140	2.00	6.00	1.90	57	3.00	6.00	14.31	1.000	9.0°	2	●
178	3.00	3.00	-	40	4.00	-	-	1.500	0.0°	2	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	1.500	6.4°	2	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	2.000	4.0°	2	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	2.500	2.0°	2	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	92	17.00	42.13	43.00	8.000	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	β [°]
	Wrought aluminium Si < 6% C	2.00	2	264	0.065	0.300	0.300	2.00	42015	5460	45°
		3.00	2	396	0.075	0.450	0.450	3.00	42015	6305	45°
		4.00	2	528	0.090	0.600	0.600	4.00	42015	7565	45°
		5.00	2	650	0.090	0.750	0.750	5.00	41380	7450	45°
		6.00	2	650	0.090	0.900	0.900	6.00	34485	6205	45°
		8.00	2	650	0.115	1.200	1.200	8.00	25865	5950	45°
		10.00	2	650	0.125	1.500	1.500	10.00	20690	5175	45°
		12.00	2	650	0.135	1.800	1.800	12.00	17240	4655	45°
		16.00	2	650	0.160	2.400	2.400	16.00	12930	4140	45°
	Unalloyed copper C	2.00	2	264	0.060	0.300	0.300	2.00	42015	5040	45°
		3.00	2	396	0.070	0.450	0.450	3.00	42015	5880	45°
		4.00	2	500	0.080	0.600	0.600	4.00	39790	6365	45°
		5.00	2	500	0.080	0.750	0.750	5.00	31830	5095	45°
		6.00	2	500	0.080	0.900	0.900	6.00	26525	4245	45°
		8.00	2	500	0.105	1.200	1.200	8.00	19895	4180	45°
		10.00	2	500	0.115	1.500	1.500	10.00	15915	3660	45°
		12.00	2	500	0.120	1.800	1.800	12.00	13265	3185	45°
		16.00	2	500	0.145	2.400	2.400	16.00	9945	2885	45°
	Thermoplastics	2.00	2	264	0.065	0.300	0.300	2.00	42015	5460	45°
		3.00	2	396	0.075	0.450	0.450	3.00	42015	6305	45°
		4.00	2	528	0.090	0.600	0.600	4.00	42015	7565	45°
		5.00	2	660	0.090	0.750	0.750	5.00	42015	7565	45°
		6.00	2	792	0.090	0.900	0.900	6.00	42015	7565	45°
		8.00	2	1056	0.115	1.200	1.200	8.00	42015	9665	45°
		10.00	2	1200	0.125	1.500	1.500	10.00	38195	9550	45°
		12.00	2	1200	0.135	1.800	1.800	12.00	31830	8595	45°
		16.00	2	1200	0.160	2.400	2.400	16.00	23875	7640	45°
	Cast aluminium Si 6% - 15% C	2.00	2	264	0.045	0.300	0.300	2.00	42015	3780	45°
		3.00	2	396	0.055	0.450	0.450	3.00	42015	4620	45°
		4.00	2	450	0.065	0.600	0.600	4.00	35810	4655	45°
		5.00	2	450	0.065	0.750	0.750	5.00	28650	3725	45°
		6.00	2	450	0.065	0.900	0.900	6.00	23875	3105	45°
		8.00	2	450	0.080	1.200	1.200	8.00	17905	2865	45°
		10.00	2	450	0.090	1.500	1.500	10.00	14325	2580	45°
		12.00	2	450	0.095	1.800	1.800	12.00	11935	2270	45°
		16.00	2	450	0.110	2.400	2.400	16.00	8950	1970	45°
	Wrought aluminium Si < 6% C	2.00	2	253	0.035	0.120	0.120	1.92	41945	2935	45°
		3.00	2	373	0.040	0.150	0.150	2.83	41955	3355	45°
		4.00	2	492	0.055	0.170	0.170	3.73	41985	4620	45°
		5.00	2	612	0.055	0.200	0.200	4.64	41985	4620	45°
		6.00	2	730	0.055	0.220	0.220	5.53	42020	4620	45°
		8.00	2	900	0.065	0.240	0.240	7.25	39515	5135	45°
		10.00	2	900	0.070	0.270	0.270	8.98	31900	4465	45°
		12.00	2	900	0.075	0.300	0.300	10.71	26750	4010	45°
		16.00	2	900	0.090	0.340	0.340	14.10	20320	3655	45°
	Unalloyed copper C	2.00	2	253	0.030	0.120	0.120	1.92	41945	2515	45°
		3.00	2	373	0.035	0.150	0.150	2.83	41955	2935	45°
		4.00	2	492	0.050	0.170	0.170	3.73	41985	4200	45°
		5.00	2	600	0.050	0.200	0.200	4.64	41160	4115	45°
		6.00	2	600	0.050	0.220	0.220	5.53	34535	3455	45°
		8.00	2	600	0.060	0.240	0.240	7.25	26345	3160	45°
		10.00	2	600	0.065	0.270	0.270	8.98	21270	2765	45°
		12.00	2	600	0.070	0.300	0.300	10.71	17830	2495	45°
		16.00	2	600	0.080	0.340	0.340	14.10	13545	2165	45°
	Thermoplastics	2.00	2	253	0.035	0.120	0.120	1.92	41945	2935	45°
		3.00	2	373	0.040	0.150	0.150	2.83	41955	3355	45°
		4.00	2	492	0.055	0.170	0.170	3.73	41985	4620	45°
		5.00	2	612	0.055	0.200	0.200	4.64	41985	4620	45°
		6.00	2	730	0.055	0.220	0.220	5.53	42020	4620	45°
		8.00	2	957	0.065	0.240	0.240	7.25	42015	5460	45°
		10.00	2	1185	0.070	0.270	0.270	8.98	42005	5880	45°
		12.00	2	1200	0.075	0.300	0.300	10.71	35665	5350	45°
		16.00	2	1200	0.090	0.340	0.340	14.10	27090	4875	45°
	Cast aluminium Si 6% - 15% C	2.00	2	253	0.025	0.120	0.120	1.92	41945	2095	45°
		3.00	2	373	0.030	0.150	0.150	2.83	41955	2515	45°
		4.00	2	492	0.040	0.170	0.170	3.73	41985	3360	45°
		5.00	2	550	0.040	0.200	0.200	4.64	37730	3020	45°
		6.00	2	550	0.040	0.220	0.220	5.53	31660	2535	45°
		8.00	2	550	0.045	0.240	0.240	7.25	24150	2175	45°
		10.00	2	550	0.050	0.270	0.270	8.98	19495	1950	45°
		12.00	2	550	0.055	0.300	0.300	10.71	16345	1800	45°
		16.00	2	550	0.065	0.340	0.340	14.10	12415	1615	45°

Ball nose end mills Sphericut-Alu

Tolerance r f8 (-/-), 3xd

HM MG10	λ 40° γ 20°

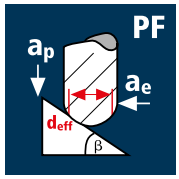
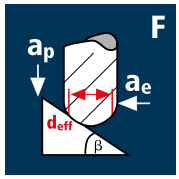


ToolSchool

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **5290** ø-Code **140**

Ø Code	d_1 ±	d_2 h6	d_3	l_1	l_2	l_3	l_4	r f8	α	z	5290	CELERO C5290
140	2.00	6.00	1.90	57	4.00	6.00	14.31	1.000	9.0°	2	●	●
180	3.00	6.00	2.80	57	6.00	9.00	15.63	1.500	6.4°	2	●	●
220	4.00	6.00	3.70	57	8.00	12.00	16.95	2.000	4.0°	2	●	●
260	5.00	6.00	4.60	57	10.00	15.00	18.27	2.500	2.0°	2	●	●
300	6.00	6.00	5.50	57	12.00	19.34	20.00	3.000	0.0°	2	●	●
391	8.00	8.00	7.40	63	16.00	25.29	26.00	4.000	0.0°	2	●	●
450	10.00	10.00	9.20	72	20.00	30.20	31.00	5.000	0.0°	2	●	●
501	12.00	12.00	11.00	83	24.00	36.13	37.00	6.000	0.0°	2	●	●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	8.000	0.0°	2	●	●
682	20.00	20.00	19.00	104	40.00	52.13	53.00	10.000	0.0°	2	●	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 850 - 1100 N/mm²	3.00	2	200	0.070	0.240	0.240	2.93	21730	3040	45°
		4.00	2	200	0.080	0.320	0.320	3.91	16280	2605	45°
		5.00	2	200	0.090	0.400	0.400	4.89	13020	2345	45°
		6.00	2	200	0.100	0.480	0.480	5.87	10845	2170	45°
		8.00	2	200	0.110	0.640	0.640	7.82	8140	1790	45°
		10.00	2	200	0.130	0.800	0.800	9.78	6510	1690	45°
		12.00	2	200	0.135	0.960	0.960	11.73	5425	1465	45°
	Steel 1100 - 1300 N/mm²	3.00	2	160	0.065	0.240	0.240	2.93	17380	2260	45°
		4.00	2	160	0.075	0.320	0.320	3.91	13025	1955	45°
		5.00	2	160	0.085	0.400	0.400	4.89	10415	1770	45°
		6.00	2	160	0.090	0.480	0.480	5.87	8675	1560	45°
		8.00	2	160	0.100	0.640	0.640	7.82	6515	1305	45°
		10.00	2	160	0.120	0.800	0.800	9.78	5210	1250	45°
		12.00	2	160	0.125	0.960	0.960	11.73	4340	1085	45°
	Steel 1300 - 1500 N/mm²	3.00	2	140	0.060	0.240	0.240	2.93	15210	1825	45°
		4.00	2	140	0.070	0.320	0.320	3.91	11395	1595	45°
		5.00	2	140	0.075	0.400	0.400	4.89	9115	1365	45°
		6.00	2	140	0.085	0.480	0.480	5.87	7590	1290	45°
		8.00	2	140	0.095	0.640	0.640	7.82	5700	1085	45°
		10.00	2	140	0.110	0.800	0.800	9.78	4555	1000	45°
		12.00	2	140	0.115	0.960	0.960	11.73	3800	875	45°
	Steel 1500 - 1800 N/mm²	3.00	2	80	0.055	0.190	0.190	2.89	8810	970	45°
		4.00	2	80	0.065	0.260	0.260	3.86	6595	860	45°
		5.00	2	80	0.070	0.320	0.320	4.81	5295	740	45°
		6.00	2	80	0.080	0.380	0.380	5.77	4415	705	45°
		8.00	2	80	0.090	0.510	0.510	7.70	3305	595	45°
		10.00	2	80	0.105	0.640	0.640	9.63	2645	555	45°
		12.00	2	80	0.110	0.770	0.770	11.55	2205	485	45°
	Steel 850 - 1100 N/mm²	3.00	2	300	0.025	0.100	0.100	2.74	34850	1745	45°
		4.00	2	300	0.050	0.120	0.120	3.62	26380	2640	45°
		5.00	2	300	0.055	0.130	0.130	4.48	21315	2345	45°
		6.00	2	300	0.060	0.150	0.150	5.36	17815	2140	45°
		8.00	2	300	0.065	0.170	0.170	7.05	13545	1760	45°
		10.00	2	300	0.070	0.200	0.200	8.77	10890	1525	45°
		12.00	2	300	0.075	0.250	0.250	10.56	9045	1355	45°
	Steel 1100 - 1300 N/mm²	3.00	2	260	0.025	0.100	0.100	2.74	30205	1510	45°
		4.00	2	260	0.050	0.120	0.120	3.62	22860	2285	45°
		5.00	2	260	0.050	0.130	0.130	4.48	18475	1845	45°
		6.00	2	260	0.055	0.150	0.150	5.36	15440	1700	45°
		8.00	2	260	0.060	0.170	0.170	7.05	11740	1410	45°
		10.00	2	260	0.065	0.200	0.200	8.77	9435	1225	45°
		12.00	2	260	0.070	0.250	0.250	10.56	7835	1095	45°
	Steel 1300 - 1500 N/mm²	3.00	2	200	0.025	0.100	0.100	2.74	23235	1160	45°
		4.00	2	200	0.045	0.120	0.120	3.62	17585	1585	45°
		5.00	2	200	0.050	0.130	0.130	4.48	14210	1420	45°
		6.00	2	200	0.055	0.150	0.150	5.36	11875	1305	45°
		8.00	2	200	0.060	0.170	0.170	7.05	9030	1085	45°
		10.00	2	200	0.065	0.200	0.200	8.77	7260	945	45°
		12.00	2	200	0.070	0.250	0.250	10.56	6030	845	45°
	Steel 1500 - 1800 N/mm²	3.00	2	100	0.020	0.080	0.080	2.69	11835	475	45°
		4.00	2	100	0.045	0.100	0.100	3.57	8915	800	45°
		5.00	2	100	0.045	0.110	0.110	4.42	7200	650	45°
		6.00	2	100	0.050	0.130	0.130	5.29	6015	600	45°
		8.00	2	100	0.055	0.150	0.150	6.98	4560	500	45°
		10.00	2	100	0.060	0.180	0.180	8.70	3660	440	45°
		12.00	2	100	0.065	0.220	0.220	10.45	3045	395	45°

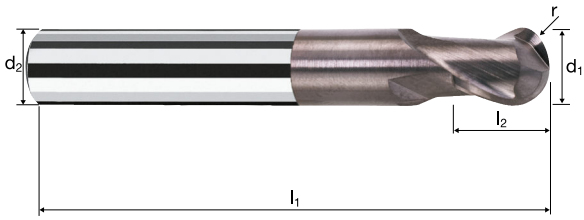
Ball nose end mills

Tolerance r f8 (-/-), 3xd

Favora® F

II

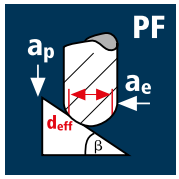
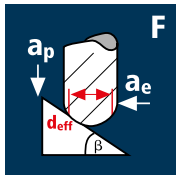
HM MG10	λ 30° γ -10°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500						GG(G)

Example: **Order-N°.** Coating **U** Article-N°. **45298** ø-Code **180**

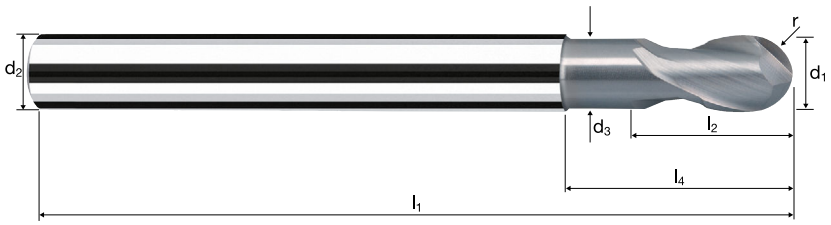
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r f8	α	z	UNICUT-4X U45298
180	3.00	6.00	57	4.00	11.76	1.500	10.4°	2	●
220	4.00	6.00	57	5.00	11.39	2.000	8.3°	2	●
260	5.00	6.00	57	6.00	10.52	2.500	5.3°	2	●
300	6.00	6.00	57	7.00	-	3.000	0.0°	2	●
391	8.00	8.00	63	9.00	-	4.000	0.0°	2	●
450	10.00	10.00	72	11.00	-	5.000	0.0°	2	●
501	12.00	12.00	83	13.00	-	6.000	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 1100 - 1300 N/mm²	1.00	2	129	0.035	0.080	0.080	0.98	41900	2935	45°
		2.00	2	180	0.060	0.160	0.160	1.96	29235	3510	45°
		3.00	2	180	0.070	0.240	0.240	2.93	19555	2740	45°
		4.00	2	180	0.080	0.320	0.320	3.91	14655	2345	45°
		6.00	2	180	0.100	0.480	0.480	5.87	9760	1950	45°
		8.00	2	180	0.110	0.640	0.640	7.82	7325	1610	45°
		10.00	2	180	0.130	0.800	0.800	9.78	5860	1525	45°
		12.00	2	180	0.135	0.960	0.960	11.73	4885	1320	45°
		16.00	2	180	0.160	1.280	1.280	15.64	3665	1170	45°
	Hardened tool steel 42 - 48 HRC	1.00	2	129	0.030	0.080	0.080	0.98	41900	2515	45°
		2.00	2	160	0.055	0.160	0.160	1.96	25985	2860	45°
		3.00	2	160	0.065	0.240	0.240	2.93	17380	2260	45°
		4.00	2	160	0.075	0.320	0.320	3.91	13025	1955	45°
		6.00	2	160	0.090	0.480	0.480	5.87	8675	1560	45°
		8.00	2	160	0.100	0.640	0.640	7.82	6515	1305	45°
		10.00	2	160	0.120	0.800	0.800	9.78	5210	1250	45°
		12.00	2	160	0.125	0.960	0.960	11.73	4340	1085	45°
		16.00	2	160	0.145	1.280	1.280	15.64	3255	945	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	129	0.030	0.080	0.080	0.98	41900	2515	45°
		2.00	2	140	0.050	0.120	0.120	1.92	23210	2320	45°
		3.00	2	140	0.060	0.160	0.160	2.85	15635	1875	45°
		4.00	2	140	0.070	0.200	0.200	3.78	11790	1650	45°
		6.00	2	140	0.085	0.300	0.300	5.67	7860	1335	45°
		8.00	2	140	0.095	0.400	0.400	7.56	5895	1120	45°
		10.00	2	140	0.110	0.500	0.500	9.45	4715	1035	45°
		12.00	2	140	0.115	0.600	0.600	11.34	3930	905	45°
		16.00	2	140	0.135	0.800	0.800	15.11	2950	795	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	100	0.030	0.080	0.080	0.98	32480	1950	45°
		2.00	2	100	0.050	0.120	0.120	1.92	16580	1660	45°
		3.00	2	100	0.055	0.160	0.160	2.85	11170	1230	45°
		4.00	2	100	0.065	0.200	0.200	3.78	8420	1095	45°
		6.00	2	100	0.080	0.300	0.300	5.67	5615	900	45°
		8.00	2	100	0.090	0.400	0.400	7.56	4210	760	45°
		10.00	2	100	0.105	0.500	0.500	9.45	3370	705	45°
		12.00	2	100	0.110	0.600	0.600	11.34	2805	620	45°
		16.00	2	100	0.130	0.800	0.800	15.11	2105	550	45°
	Steel 1100 - 1300 N/mm²	1.00	2	123	0.025	0.040	0.040	0.93	42100	2105	45°
		2.00	2	239	0.030	0.060	0.060	1.81	42030	2520	45°
		3.00	2	280	0.030	0.090	0.090	2.72	32765	1965	45°
		4.00	2	280	0.050	0.110	0.110	3.60	24755	2475	45°
		6.00	2	280	0.060	0.130	0.130	5.29	16850	2020	45°
		8.00	2	280	0.065	0.150	0.150	6.98	12770	1660	45°
		10.00	2	280	0.070	0.180	0.180	8.70	10245	1435	45°
		12.00	2	280	0.075	0.220	0.220	10.45	8530	1280	45°
		16.00	2	280	0.090	0.250	0.250	13.77	6475	1165	45°
	Hardened tool steel 42 - 48 HRC	1.00	2	123	0.025	0.040	0.040	0.93	42100	2105	45°
		2.00	2	239	0.030	0.060	0.060	1.81	42030	2520	45°
		3.00	2	250	0.030	0.090	0.090	2.72	29255	1755	45°
		4.00	2	250	0.050	0.110	0.110	3.60	22105	2210	45°
		6.00	2	250	0.055	0.130	0.130	5.29	15045	1655	45°
		8.00	2	250	0.060	0.150	0.150	6.98	11400	1370	45°
		10.00	2	250	0.065	0.180	0.180	8.70	9145	1190	45°
		12.00	2	250	0.070	0.220	0.220	10.45	7615	1065	45°
		16.00	2	250	0.085	0.250	0.250	13.77	5780	980	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	123	0.025	0.040	0.040	0.93	42100	2105	45°
		2.00	2	200	0.025	0.090	0.090	1.87	34045	1700	45°
		3.00	2	200	0.045	0.110	0.110	2.76	23065	2075	45°
		4.00	2	200	0.045	0.110	0.110	3.60	17685	1590	45°
		6.00	2	200	0.055	0.130	0.130	5.29	12035	1325	45°
		8.00	2	200	0.060	0.150	0.150	6.98	9120	1095	45°
		10.00	2	200	0.065	0.180	0.180	8.70	7315	950	45°
		12.00	2	200	0.070	0.220	0.220	10.45	6090	855	45°
		16.00	2	200	0.080	0.250	0.250	13.77	4625	740	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	123	0.020	0.040	0.040	0.93	42100	1685	45°
		2.00	2	150	0.025	0.090	0.090	1.87	25535	1275	45°
		3.00	2	150	0.025	0.110	0.110	2.76	17300	865	45°
		4.00	2	150	0.045	0.110	0.110	3.60	13265	1195	45°
		6.00	2	150	0.050	0.130	0.130	5.29	9025	905	45°
		8.00	2	150	0.055	0.150	0.150	6.98	6840	750	45°
		10.00	2	150	0.060	0.180	0.180	8.70	5490	660	45°
		12.00	2	150	0.065	0.220	0.220	10.45	4570	595	45°
		16.00	2	150	0.075	0.250	0.250	13.77	3465	520	45°

Ball nose end mills Sphericut

Tolerance r f8 (-/-), 3xd

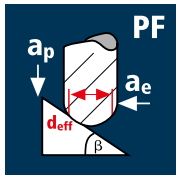
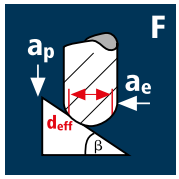
HM Plus	λ 30° γ -10°



		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60				GG(G)

Example: **Order-N°.** Coating **P** Article-N°. **5288** ø-Code **100**

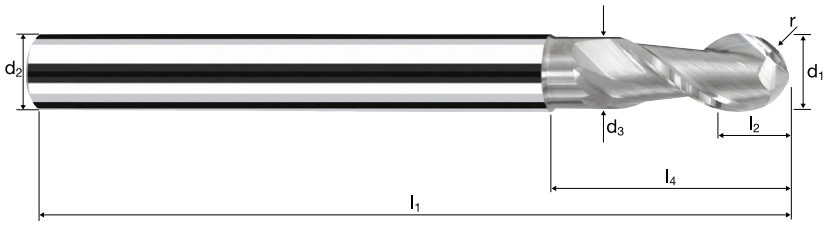
Ø Code	d_1 ±	d_2 h6	d_3	l_1	l_2	l_3	l_4	r f8	α	z	POLYCHROM **P5288**
100	1.00	3.00	-	60	1.00	-	5.93	0.500	13.2°	2	●
138	2.00	3.00	-	60	2.50	-	5.96	1.000	8.3°	2	●
140	2.00	6.00	1.90	75	3.00	6.00	14.31	1.000	9.0°	2	●
178	3.00	3.00	-	60	4.00	-	-	1.500	0.0°	2	●
180	3.00	6.00	2.80	75	4.00	9.00	15.63	1.500	6.4°	2	●
220	4.00	6.00	3.70	75	5.00	12.00	16.95	2.000	4.0°	2	●
260	5.00	6.00	4.60	80	6.00	15.00	18.27	2.500	2.0°	2	●
300	6.00	6.00	5.50	80	7.00	19.34	20.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	90	9.00	25.29	26.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	100	11.00	30.20	31.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	120	13.00	36.13	37.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	140	17.00	42.13	43.00	8.000	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Wrought aluminium Si < 6%	3.00	2	395	0.070	0.360	0.360	2.99	42050	5885	45°
		4.00	2	500	0.080	0.480	0.480	3.99	39890	6380	45°
		5.00	2	500	0.080	0.600	0.600	4.98	31960	5115	45°
		6.00	2	500	0.085	0.720	0.720	5.98	26615	4525	45°
		8.00	2	500	0.105	0.960	0.960	7.98	19945	4190	45°
		10.00	2	500	0.115	1.200	1.200	9.97	15965	3670	45°
		12.00	2	500	0.120	1.440	1.440	11.96	13305	3195	45°
		16.00	2	500	0.145	1.920	1.920	15.95	9980	2895	45°
	Unalloyed copper	3.00	2	350	0.065	0.360	0.360	2.99	37260	4845	45°
		4.00	2	350	0.070	0.480	0.480	3.99	27920	3910	45°
		5.00	2	350	0.070	0.600	0.600	4.98	22370	3130	45°
		6.00	2	350	0.075	0.720	0.720	5.98	18630	2795	45°
		8.00	2	350	0.095	0.960	0.960	7.98	13960	2655	45°
		10.00	2	350	0.105	1.200	1.200	9.97	11175	2345	45°
		12.00	2	350	0.110	1.440	1.440	11.96	9315	2050	45°
		16.00	2	350	0.130	1.920	1.920	15.95	6985	1815	45°
	Thermoplastics	3.00	2	395	0.070	0.360	0.360	2.99	42050	5885	45°
		4.00	2	526	0.080	0.480	0.480	3.99	41965	6715	45°
		5.00	2	657	0.080	0.600	0.600	4.98	41995	6720	45°
		6.00	2	789	0.085	0.720	0.720	5.98	42000	7140	45°
		8.00	2	800	0.105	0.960	0.960	7.98	31910	6700	45°
		10.00	2	800	0.115	1.200	1.200	9.97	25540	5875	45°
		12.00	2	800	0.120	1.440	1.440	11.96	21290	5110	45°
		16.00	2	800	0.145	1.920	1.920	15.95	15965	4630	45°
	Cast aluminium Si 6% - 15%	3.00	2	300	0.065	0.360	0.360	2.99	31935	4150	45°
		4.00	2	300	0.065	0.480	0.480	3.99	23935	3110	45°
		5.00	2	300	0.070	0.600	0.600	4.98	19175	2685	45°
		6.00	2	300	0.070	0.720	0.720	5.98	15970	2235	45°
		8.00	2	300	0.075	0.960	0.960	7.98	11965	1795	45°
		10.00	2	300	0.090	1.200	1.200	9.97	9580	1725	45°
		12.00	2	300	0.095	1.440	1.440	11.96	7985	1515	45°
		16.00	2	300	0.110	1.920	1.920	15.95	5985	1315	45°
	Wrought aluminium Si < 6%	3.00	2	367	0.050	0.120	0.120	2.78	42020	4200	45°
		4.00	2	487	0.045	0.150	0.150	3.69	42010	3780	45°
		5.00	2	604	0.065	0.170	0.170	4.58	41980	5455	45°
		6.00	2	700	0.060	0.200	0.200	5.48	40660	4880	45°
		8.00	2	700	0.065	0.220	0.220	7.20	30945	4025	45°
		10.00	2	700	0.070	0.240	0.240	8.90	25035	3505	45°
		12.00	2	700	0.075	0.270	0.270	10.62	20980	3145	45°
		16.00	2	700	0.090	0.300	0.300	13.96	15960	2875	45°
	Unalloyed copper	3.00	2	367	0.045	0.120	0.120	2.78	42020	3780	45°
		4.00	2	487	0.040	0.150	0.150	3.69	42010	3360	45°
		5.00	2	500	0.060	0.170	0.170	4.58	34750	4170	45°
		6.00	2	500	0.055	0.200	0.200	5.48	29045	3195	45°
		8.00	2	500	0.060	0.220	0.220	7.20	22105	2655	45°
		10.00	2	500	0.065	0.240	0.240	8.90	17885	2325	45°
		12.00	2	500	0.070	0.270	0.270	10.62	14985	2100	45°
		16.00	2	500	0.080	0.300	0.300	13.96	11400	1825	45°
	Thermoplastics	3.00	2	367	0.050	0.120	0.120	2.78	42020	4200	45°
		4.00	2	487	0.045	0.150	0.150	3.69	42010	3780	45°
		5.00	2	604	0.065	0.170	0.170	4.58	41980	5455	45°
		6.00	2	723	0.060	0.200	0.200	5.48	41995	5040	45°
		8.00	2	900	0.065	0.220	0.220	7.20	39790	5175	45°
		10.00	2	900	0.070	0.240	0.240	8.90	32190	4505	45°
		12.00	2	900	0.075	0.270	0.270	10.62	26975	4045	45°
		16.00	2	900	0.090	0.300	0.300	13.96	20520	3695	45°
	Cast aluminium Si 6% - 15%	3.00	2	367	0.035	0.120	0.120	2.78	42020	2940	45°
		4.00	2	400	0.030	0.150	0.150	3.69	34505	2070	45°
		5.00	2	400	0.050	0.170	0.170	4.58	27800	2780	45°
		6.00	2	400	0.045	0.200	0.200	5.48	23235	2090	45°
		8.00	2	400	0.055	0.220	0.220	7.20	17685	1945	45°
		10.00	2	400	0.055	0.240	0.240	8.90	14305	1575	45°
		12.00	2	400	0.060	0.270	0.270	10.62	11990	1440	45°
		16.00	2	400	0.070	0.300	0.300	13.96	9120	1275	45°

Ball nose end mills Sphericut-Alu

Tolerance r f8 (-/-), 3xd

HM MG10	λ 40° γ 20°

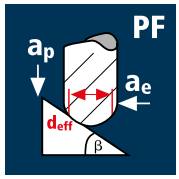
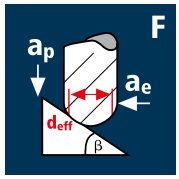


ToolSchool

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **5292** ø-Code **180**

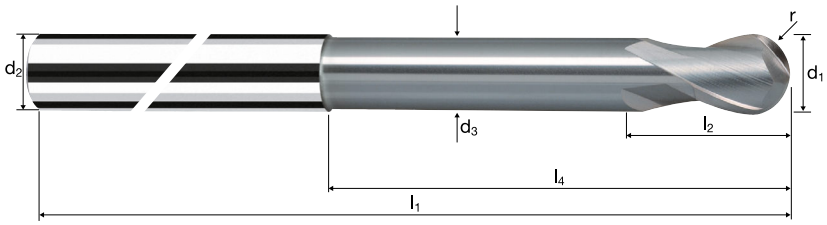
Ø Code	d_1 ±	d_2 h6	d_3	l_1	l_2	l_3	l_4	r f8	α	z	CELERO C5292
180	3.00	6.00	2.80	75	6.00	9.00	15.63	1.500	6.4°	2	●
220	4.00	6.00	3.70	75	8.00	12.00	16.95	2.000	4.0°	2	●
260	5.00	6.00	4.60	80	10.00	15.00	18.27	2.500	2.0°	2	●
300	6.00	6.00	5.50	80	12.00	19.34	20.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	90	16.00	25.29	26.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	100	20.00	30.20	31.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	120	24.00	36.13	37.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	140	32.00	42.13	43.00	8.000	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 1100 - 1300 N/mm²	3.00	2	160	0.060	0.180	0.180	2.87	17745	2130	45°
		4.00	2	160	0.070	0.240	0.240	3.83	13300	1860	45°
		5.00	2	160	0.080	0.300	0.300	4.79	10630	1700	45°
		6.00	2	160	0.085	0.360	0.360	5.75	8855	1505	45°
		8.00	2	160	0.100	0.480	0.480	7.66	6650	1330	45°
		10.00	2	160	0.115	0.600	0.600	9.58	5315	1225	45°
		12.00	2	160	0.120	0.720	0.720	11.50	4430	1065	45°
	Hardened tool steel 42 - 48 HRC	3.00	2	140	0.055	0.180	0.180	2.87	15525	1710	45°
		4.00	2	140	0.065	0.240	0.240	3.83	11635	1515	45°
		5.00	2	140	0.075	0.300	0.300	4.79	9305	1395	45°
		6.00	2	140	0.080	0.360	0.360	5.75	7750	1240	45°
		8.00	2	140	0.090	0.480	0.480	7.66	5820	1045	45°
		10.00	2	140	0.105	0.600	0.600	9.58	4650	975	45°
		12.00	2	140	0.110	0.720	0.720	11.50	3875	855	45°
	Hardened tool steel 48 - 52 HRC	3.00	2	120	0.050	0.150	0.150	2.83	13495	1350	45°
		4.00	2	120	0.060	0.200	0.200	3.78	10105	1215	45°
		5.00	2	120	0.070	0.250	0.250	4.72	8095	1135	45°
		6.00	2	120	0.070	0.300	0.300	5.67	6735	945	45°
		8.00	2	120	0.085	0.400	0.400	7.56	5055	860	45°
		10.00	2	120	0.100	0.500	0.500	9.45	4040	810	45°
		12.00	2	120	0.100	0.600	0.600	11.34	3370	675	45°
	Hardened tool steel 52 - 56 HRC	3.00	2	80	0.050	0.150	0.150	2.83	9000	900	45°
		4.00	2	80	0.055	0.200	0.200	3.78	6735	740	45°
		5.00	2	80	0.065	0.250	0.250	4.72	5395	700	45°
		6.00	2	80	0.070	0.300	0.300	5.67	4490	630	45°
		8.00	2	80	0.080	0.400	0.400	7.56	3370	540	45°
		10.00	2	80	0.090	0.500	0.500	9.45	2695	485	45°
		12.00	2	80	0.095	0.600	0.600	11.34	2245	425	45°
	Steel 1100 - 1300 N/mm²	3.00	2	250	0.025	0.040	0.040	2.55	31205	1560	45°
		4.00	2	250	0.045	0.060	0.060	3.43	23200	2090	45°
		5.00	2	250	0.045	0.090	0.090	4.35	18295	1645	45°
		6.00	2	250	0.045	0.110	0.110	5.23	15215	1370	45°
		8.00	2	250	0.050	0.130	0.130	6.90	11535	1155	45°
		10.00	2	250	0.055	0.150	0.150	8.58	9275	1020	45°
		12.00	2	250	0.060	0.180	0.180	10.29	7735	930	45°
	Hardened tool steel 42 - 48 HRC	3.00	2	220	0.025	0.040	0.040	2.55	27460	1375	45°
		4.00	2	220	0.045	0.060	0.060	3.43	20415	1835	45°
		5.00	2	220	0.045	0.090	0.090	4.35	16100	1450	45°
		6.00	2	220	0.045	0.110	0.110	5.23	13390	1205	45°
		8.00	2	220	0.050	0.130	0.130	6.90	10150	1015	45°
		10.00	2	220	0.050	0.150	0.150	8.58	8160	815	45°
		12.00	2	220	0.055	0.180	0.180	10.29	6805	750	45°
	Hardened tool steel 48 - 52 HRC	3.00	2	180	0.025	0.040	0.040	2.55	22470	1125	45°
		4.00	2	180	0.040	0.060	0.060	3.43	16705	1335	45°
		5.00	2	180	0.040	0.090	0.090	4.35	13170	1055	45°
		6.00	2	180	0.040	0.110	0.110	5.23	10955	875	45°
		8.00	2	180	0.045	0.130	0.130	6.90	8305	745	45°
		10.00	2	180	0.050	0.150	0.150	8.58	6680	670	45°
		12.00	2	180	0.055	0.180	0.180	10.29	5570	610	45°
	Hardened tool steel 52 - 56 HRC	3.00	2	120	0.020	0.040	0.040	2.55	14980	600	45°
		4.00	2	120	0.040	0.060	0.060	3.43	11135	890	45°
		5.00	2	120	0.040	0.090	0.090	4.35	8780	700	45°
		6.00	2	120	0.040	0.110	0.110	5.23	7305	585	45°
		8.00	2	120	0.045	0.130	0.130	6.90	5535	500	45°
		10.00	2	120	0.045	0.150	0.150	8.58	4450	400	45°
		12.00	2	120	0.050	0.180	0.180	10.29	3710	370	45°

Ball nose end mills Sphericut

Tolerance r f8 (-/-), 5xd

HM MG10	λ 30° γ -10°

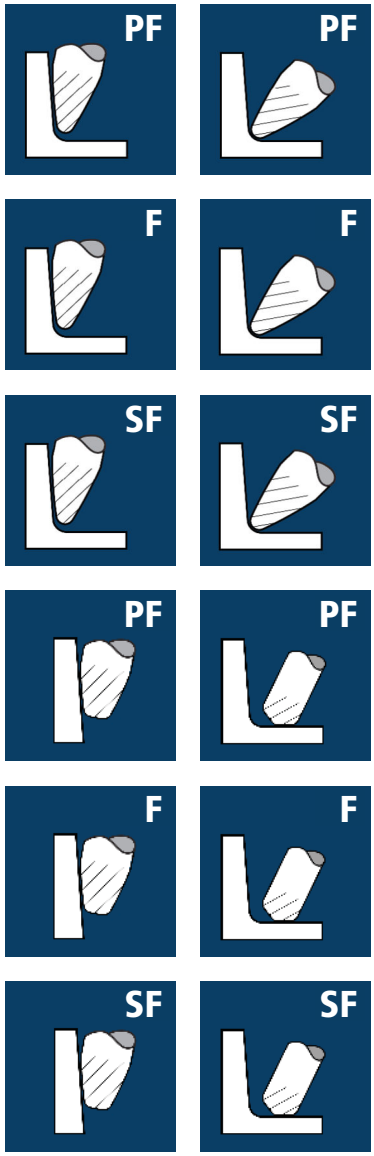


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60				GG(G)

Example: **Order-N°.** Coating **P** Article-N°. **5289** ø-Code **180**

Ø Code	d_1 -/-	d_2 h6	d_3	l_1	l_2	l_3	l_4	r f8	α	z	POLYCHROM P5289
180	3.00	6.00	2.80	90	4.00	24.00	30.63	1.500	3.1°	2	●
220	4.00	6.00	3.70	90	5.00	27.00	31.95	2.000	2.0°	2	●
260	5.00	6.00	4.60	110	6.00	45.00	48.27	2.500	0.7°	2	●
300	6.00	6.00	5.50	110	7.00	49.34	50.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	110	9.00	45.29	46.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	130	11.00	60.20	61.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	140	13.00	56.13	57.00	6.000	0.0°	2	●

Applications



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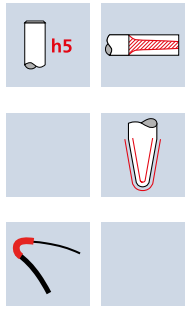
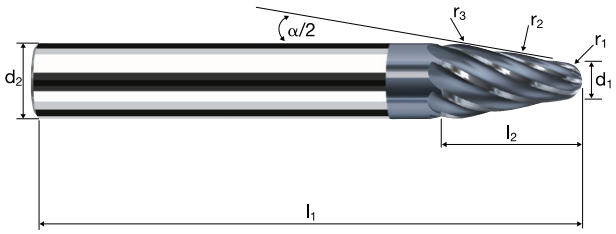
Circular arc milling cutter ArCut X

Spherical, form tolerance ±0.01

HM MG10	λ 30° γ 10°



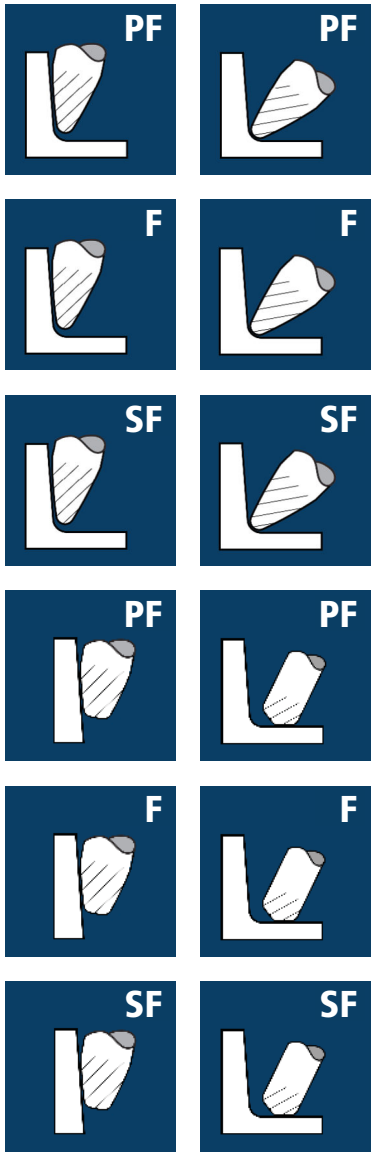


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

Example: **Order-N°.** Coating **P** Article-N°. **8530** ø-Code **220**

Ø Code	d_1	α/2	d_2 h5	l_1	l_2	r1	r2	r3	z	8530	POLYCHROM P8530
220	4.00	30.0°	16.00	108	14.50	2.00	750	3.00	4	●	●
221	4.00	30.0°	16.00	108	14.50	2.00	750	3.00	6	●	●
300	6.00	20.0°	16.00	108	18.50	3.00	1000	5.00	4	●	●
301	6.00	20.0°	16.00	108	18.50	3.00	1000	5.00	8	●	●
388	8.00	10.0°	16.00	108	28.50	4.00	1000	5.00	4	●	●
389	8.00	10.0°	16.00	108	28.50	4.00	1000	5.00	8	●	●
391	8.00	6.0°	16.00	123	44.00	4.00	1000	5.00	4	●	●
393	8.00	6.0°	16.00	123	44.00	4.00	1000	5.00	8	●	●

Applications



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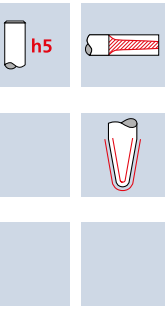
Circular arc milling cutter ArCut X

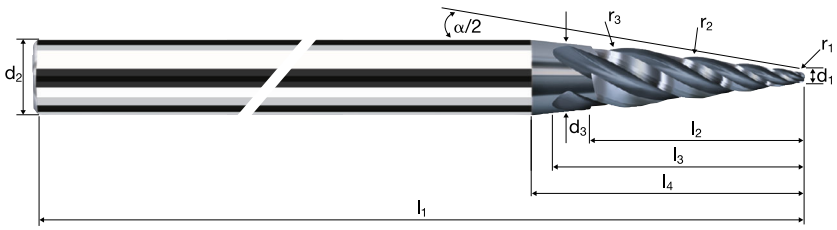
Spherical, form tolerance ±0.005

X-Generation X

II

HM MG10	λ 30° γ 10°



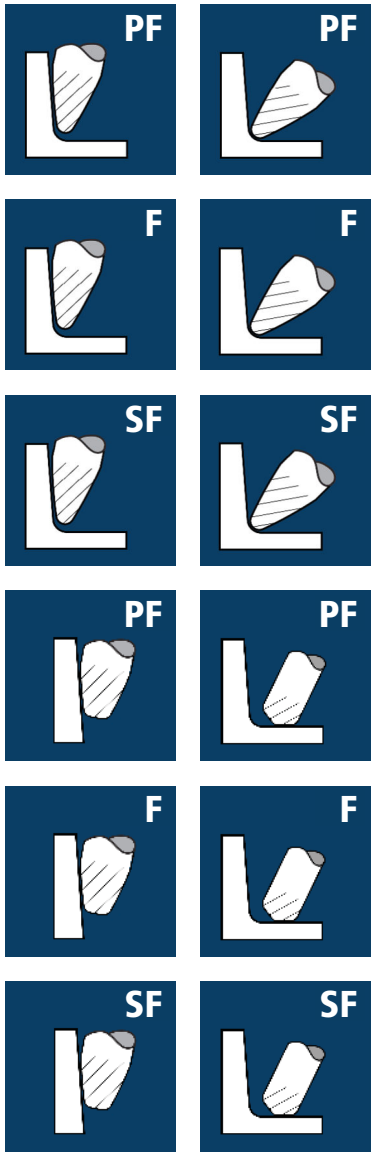


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

Example: **Order-N°.** Coating **P** Article-N°. **8535** ø-Code **100**

Ø Code	d_1	α/2	d_2 h5	d_3	l_1	l_2	l_3	l_4	r1	r2	r3	z	8535	POLYCHROM P8535
100	1.00	8.0°	6.00	5.00	70	16.00	17.50	22.50	0.50	350	1.00	4	●	●
140	2.00	15.0°	8.00	7.00	80	11.50	17.50	22.50	1.00	350	1.00	4	●	●
145	2.00	30.0°	8.00	-	80	8.00	-	-	1.00	250	1.00	4	●	●
220	4.00	14.0°	12.00	9.00	97	13.50	17.50	22.50	2.00	350	1.00	4	●	●

Applications



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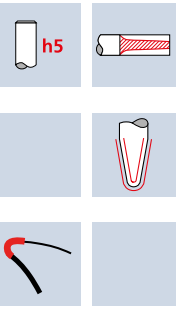
Circular arc milling cutter ArCut X

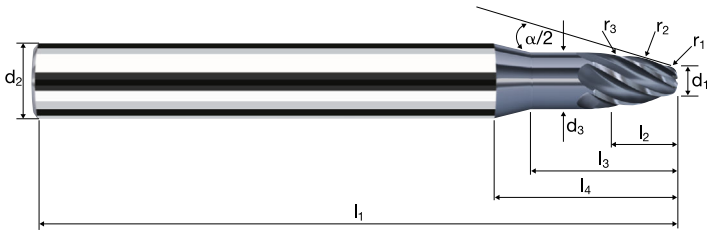
Toric, form tolerance ±0.010

X-Generation X

II

HM MG10	λ 30° γ 10°



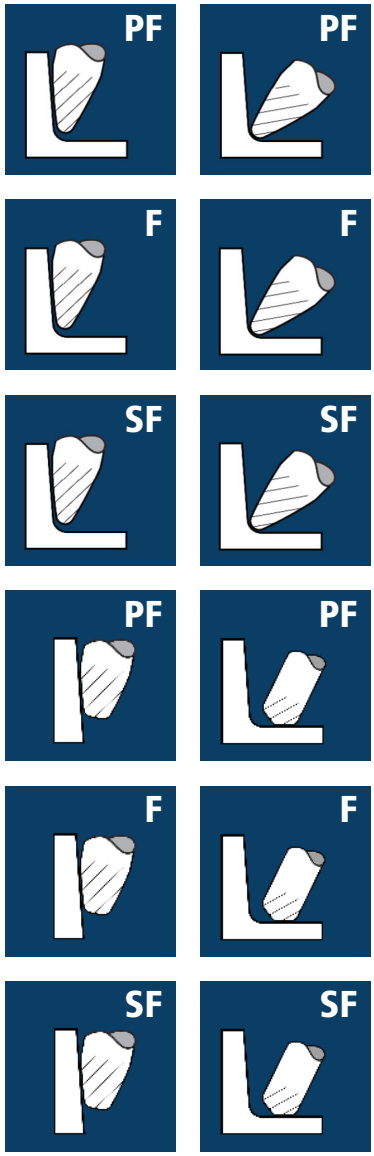


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

Example: **Order-N°.** Coating **P** Article-N°. **8540** ø-Code **220**

Ø Code	d_1	α/2	d_2 h5	d_3	l_1	l_2	l_3	l_4	r1	r2	r3	z	8540	POLYCHROM P8540
220	4.00	12.5°	10.00	7.50	84	11.00	20.00	25.00	1.25	30	1.00	4	●	●
221	4.00	12.5°	10.00	7.50	84	11.00	20.00	25.00	1.25	30	1.00	6	●	●
300	6.00	15.0°	12.00	-	97	15.00	-	-	2.00	40	2.00	4	●	●
301	6.00	15.0°	12.00	-	97	15.00	-	-	2.00	40	2.00	6	●	●
450	10.00	17.5°	16.00	-	108	15.00	-	-	3.50	50	2.00	4	●	●
453	10.00	17.5°	16.00	-	108	15.00	-	-	3.50	50	2.00	8	●	●

Applications



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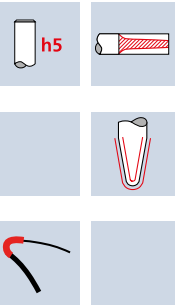
Circular arc milling cutter ArCut X

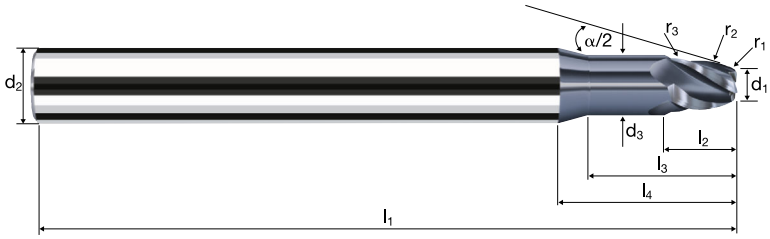
Toric, integral, form tolerance ±0.010

X-Generation X

II

HM MG10	λ 30° γ 10°



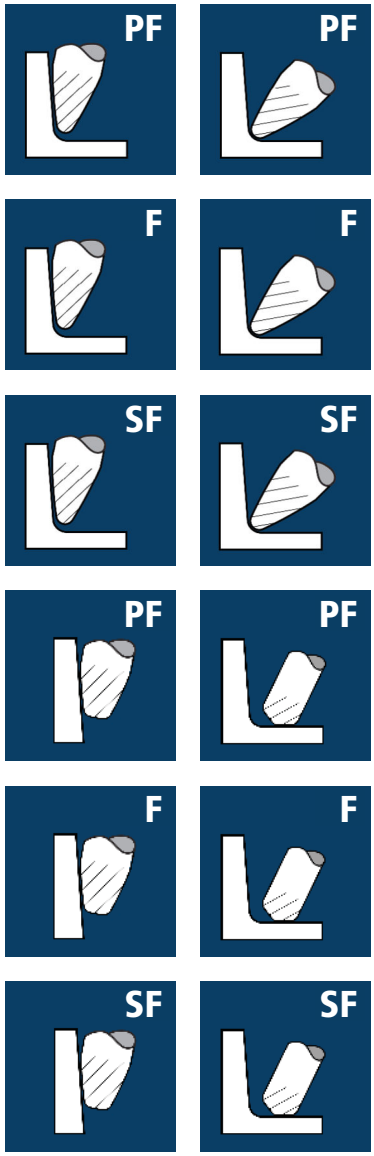


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

Example: **Order-N°.** Coating **P** Article-N°. **8545** ø-Code **180**

Ø Code	d_1	α/2	d_2 h5	d_3	l_1	l_2	l_3	l_4	r1	r2	r3	z	8545	POLYCHROM P8545
180	3.00	14.0°	8.00	5.50	80	7.50	10.00	20.00	0.80	200	1.00	4	●	●
300	6.00	14.0°	12.00	9.50	110	10.00	25.00	30.00	1.00	350	2.00	4	●	●

Applications



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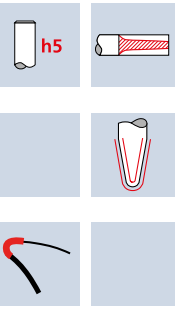
Circular arc milling cutter ArCut X

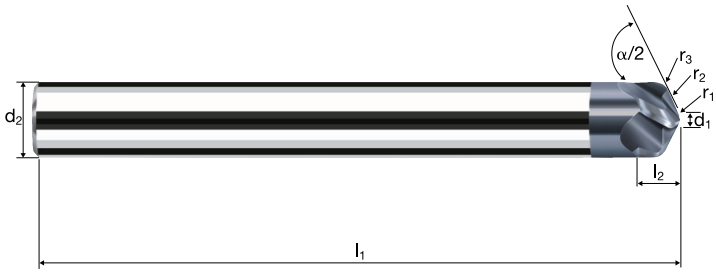
Flat surfaces, form tolerance ±0.010

X-Generation X

II

HM MG10	λ 30° γ 10°



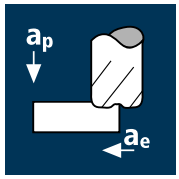


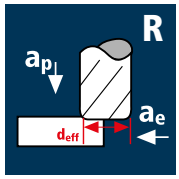
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

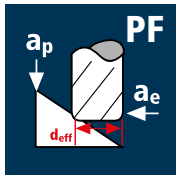
Example: **Order-N°.** Coating **P** Article-N°. **8550** ø-Code **140**

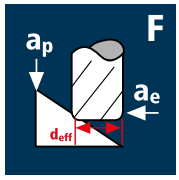
Ø Code	d_1	α/2	d_2 h5	l_1	l_2	r1	r2	r3	z	8550	POLYCHROM P8550
140	2.00	65.0°	10.00	84	4.00	1.00	250	1.75	4	●	●
300	6.00	70.0°	20.00	104	5.50	1.00	250	1.00	8	●	●

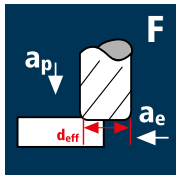
Application

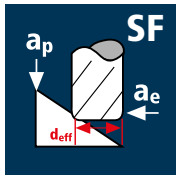


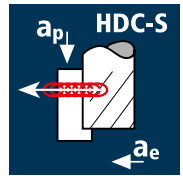


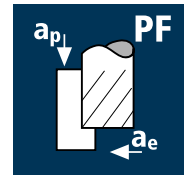


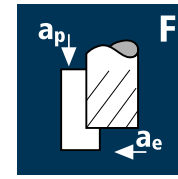












Cutting data XSpeed-H

Always up to date

The new corner radius XSpeed-H end mill has been developed for HSC and HDC machining of hardened steels (>55 HRC). The detailed information and cutting data for the XSpeed-H tools can be found in the latest product brochure and in our cutting data calculator ToolExpert.

Scan this QR code to start the cutting data calculator ToolExpert 2.0

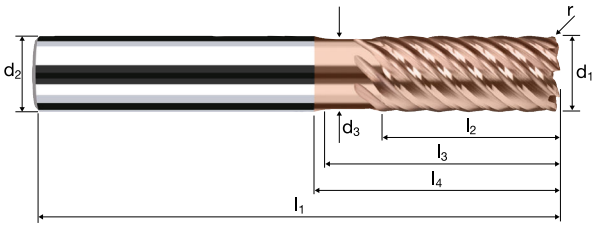
Corner radius end mills XSpeed-H

Tolerance r 0/+0.015, 3xd

HM
XA

λ 45°
γ -10°

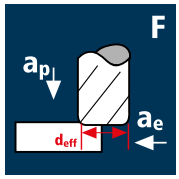
new!



HRC 48-56 | HRC 56-60 | HRC > 60 | HSS

Code	Ø	d1 0/-0.01	d2 h4	d3	l1	l2	l3	l4	r 0/+0.015	α	z	DURO-Si
Example: Order-N°.												H7210
138		2.00	6.00	1.90	57	5.00	6.00	14.31	0.200	8.2°	6	●
178		3.00	6.00	2.80	57	8.00	9.00	15.63	0.200	5.7°	6	●
218		4.00	6.00	3.70	57	11.00	12.00	16.95	0.200	3.6°	6	●
258		5.00	6.00	4.60	57	13.00	15.00	18.27	0.200	1.8°	6	●
297		6.00	6.00	5.50	57	13.00	19.34	20.00	0.200	0.0°	8	●
385		8.00	8.00	7.40	63	19.00	25.29	26.00	0.200	0.0°	8	●
445		10.00	10.00	9.20	72	22.00	30.20	31.00	0.200	0.0°	8	●
496		12.00	12.00	11.00	83	26.00	36.13	37.00	0.200	0.0°	8	●
140		2.00	6.00	1.90	57	5.00	6.00	14.31	0.500	8.2°	6	●
180		3.00	6.00	2.80	57	8.00	9.00	15.63	0.500	5.7°	6	●
220		4.00	6.00	3.70	57	11.00	12.00	16.95	0.500	3.6°	6	●
260		5.00	6.00	4.60	57	13.00	15.00	18.27	0.500	1.8°	6	●
300		6.00	6.00	5.50	57	13.00	19.34	20.00	0.500	0.0°	8	●
388		8.00	8.00	7.40	63	19.00	25.29	26.00	0.500	0.0°	8	●
448		10.00	10.00	9.20	72	22.00	30.20	31.00	0.500	0.0°	8	●
498		12.00	12.00	11.00	83	13.00	36.13	37.00	0.500	0.0°	8	●

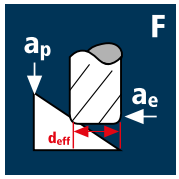
Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 48 - 52 HRC									
2.00	4	150	0.020	0.050	0.700	1.44	33155	2655	0.50
3.00	4	150	0.025	0.050	1.050	2.44	19570	1955	0.50
4.00	4	150	0.030	0.060	1.400	3.47	13760	1650	0.50
5.00	4	150	0.035	0.060	1.750	4.47	10680	1495	0.50
6.00	6	150	0.040	0.080	2.100	5.54	8620	2070	0.50
8.00	6	150	0.045	0.080	2.800	7.54	6330	1710	0.50
10.00	6	150	0.050	0.100	3.500	9.60	4975	1490	0.50
12.00	6	150	0.055	0.100	4.200	11.60	4115	1360	0.50
16.00	6	150	0.065	0.120	5.600	15.65	3050	1190	0.50
Hardened tool steel 52 - 56 HRC									
2.00	4	120	0.020	0.050	0.700	1.44	26525	2120	0.50
3.00	4	120	0.025	0.050	1.050	2.44	15655	1565	0.50
4.00	4	120	0.030	0.060	1.400	3.47	11010	1320	0.50
5.00	4	120	0.035	0.060	1.750	4.47	8545	1195	0.50
6.00	6	120	0.040	0.080	2.100	5.54	6895	1655	0.50
8.00	6	120	0.045	0.080	2.800	7.54	5065	1370	0.50
10.00	6	120	0.050	0.100	3.500	9.60	3980	1195	0.50
12.00	6	120	0.055	0.100	4.200	11.60	3295	1085	0.50
16.00	6	120	0.065	0.120	5.600	15.65	2440	950	0.50
Hardened tool steel 56 - 60 HRC									
2.00	4	80	0.015	0.050	0.700	1.44	17685	1060	0.50
3.00	4	80	0.020	0.050	1.050	2.44	10435	835	0.50
4.00	4	80	0.025	0.060	1.400	3.47	7340	735	0.50
5.00	4	80	0.030	0.060	1.750	4.47	5695	685	0.50
6.00	6	80	0.030	0.080	2.100	5.54	4595	825	0.50
8.00	6	80	0.035	0.080	2.800	7.54	3375	710	0.50
10.00	6	80	0.040	0.100	3.500	9.60	2655	635	0.50
12.00	6	80	0.045	0.100	4.200	11.60	2195	595	0.50
16.00	6	80	0.050	0.120	5.600	15.65	1625	490	0.50
Hardened tool steel > 60 HRC									
2.00	4	40	0.015	0.050	0.700	1.44	8840	530	0.50
3.00	4	40	0.020	0.050	1.050	2.44	5220	415	0.50
4.00	4	40	0.025	0.060	1.400	3.47	3670	365	0.50
5.00	4	40	0.030	0.060	1.750	4.47	2850	340	0.50
6.00	6	40	0.030	0.080	2.100	5.54	2300	415	0.50
8.00	6	40	0.035	0.080	2.800	7.54	1690	355	0.50
10.00	6	40	0.040	0.100	3.500	9.60	1325	320	0.50
12.00	6	40	0.045	0.100	4.200	11.60	1100	295	0.50
16.00	6	40	0.050	0.120	5.600	15.65	815	245	0.50

Application



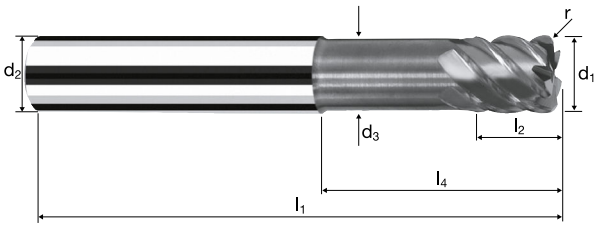
Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 48 - 52 HRC									
2.00	4	256	0.020	0.050	0.050	1.94	42005	3360	45°
3.00	4	300	0.025	0.050	0.050	2.94	32480	3250	45°
4.00	4	300	0.030	0.060	0.060	3.96	24115	2895	45°
5.00	4	300	0.035	0.060	0.060	4.96	19255	2695	45°
6.00	6	300	0.040	0.080	0.080	5.98	15970	3830	45°
8.00	6	300	0.045	0.080	0.080	7.98	11965	3230	45°
10.00	6	300	0.050	0.100	0.100	9.99	9560	2870	45°
12.00	6	300	0.055	0.100	0.100	11.99	7965	2630	45°
16.00	6	300	0.065	0.120	0.120	16.00	5970	2330	45°
Hardened tool steel 52 - 56 HRC									
2.00	4	250	0.020	0.050	0.050	1.94	41020	3280	45°
3.00	4	250	0.025	0.050	0.050	2.94	27065	2705	45°
4.00	4	250	0.030	0.060	0.060	3.96	20095	2410	45°
5.00	4	250	0.035	0.060	0.060	4.96	16045	2245	45°
6.00	6	250	0.040	0.080	0.080	5.98	13305	3195	45°
8.00	6	250	0.045	0.080	0.080	7.98	9970	2690	45°
10.00	6	250	0.050	0.100	0.100	9.99	7965	2390	45°
12.00	6	250	0.050	0.100	0.100	11.99	6635	1990	45°
16.00	6	250	0.060	0.120	0.120	16.00	4975	1790	45°
Hardened tool steel 56 - 60 HRC									
2.00	4	180	0.015	0.050	0.050	1.94	29535	1770	45°
3.00	4	180	0.020	0.050	0.050	2.94	19490	1560	45°
4.00	4	180	0.025	0.060	0.060	3.96	14470	1445	45°
5.00	4	180	0.030	0.060	0.060	4.96	11550	1385	45°
6.00	6	180	0.035	0.080	0.080	5.98	9580	2010	45°
8.00	6	180	0.040	0.080	0.080	7.98	7180	1725	45°
10.00	6	180	0.045	0.100	0.100	9.99	5735	1550	45°
12.00	6	180	0.045	0.100	0.100	11.99	4780	1290	45°
16.00	6	180	0.055	0.120	0.120	16.00	3580	1180	45°
Hardened tool steel > 60 HRC									
2.00	4	100	0.010	0.050	0.050	1.94	16410	655	45°
3.00	4	100	0.015	0.050	0.050	2.94	10825	650	45°
4.00	4	100	0.015	0.060	0.060	3.96	8040	480	45°
5.00	4	100	0.020	0.060	0.060	4.96	6420	515	45°
6.00	6	100	0.020	0.080	0.080	5.98	5325	640	45°
8.00	6	100	0.025	0.080	0.080	7.98	3990	600	45°
10.00	6	100	0.025	0.100	0.100	9.99	3185	480	45°
12.00	6	100	0.030	0.100	0.100	11.99	2655	480	45°
16.00	6	100	0.035	0.120	0.120	16.00	1990	420	45°

Corner radius end mills XSpeed

Tolerance r 0/+0.015, 3xd

HM XT	λ 55° γ -10°

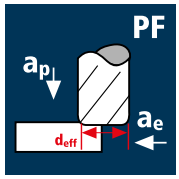


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS

Example: **Order-N°.** Coating **X** Article-N°. **7200** ø-Code **140**

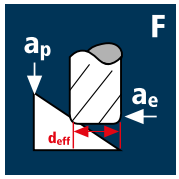
Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	X-AL **X7200**
140	2.00	6.00	1.90	57	3.00	6.00	14.31	0.500	8.7°	4	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	0.500	6.0°	4	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	0.500	3.7°	4	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	0.500	1.7°	4	●
295	6.00	6.00	5.50	57	7.00	19.34	20.00	0.500	0.0°	4	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	0.500	0.0°	6	●
386	8.00	8.00	7.40	63	9.00	25.29	26.00	0.500	0.0°	4	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	0.500	0.0°	6	●
440	10.00	10.00	9.20	72	11.00	30.20	31.00	0.500	0.0°	4	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	0.500	0.0°	6	●
491	12.00	12.00	11.00	83	13.00	36.13	37.00	0.500	0.0°	4	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	0.500	0.0°	6	●
606	16.00	16.00	15.00	92	17.00	42.13	43.00	0.500	0.0°	6	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 48 - 52 HRC	4.00	4	150	0.045	0.340	1.400	3.50	13640	2455	1.00
	5.00	4	150	0.050	0.380	1.750	4.57	10450	2090	1.00
	6.00	6	150	0.055	0.400	2.100	5.60	8525	2815	1.00
	8.00	6	150	0.070	0.440	2.800	7.66	6235	2620	1.00
	10.00	6	150	0.085	0.480	3.500	9.71	4915	2510	1.00
	12.00	6	150	0.105	0.500	4.200	11.73	4070	2565	1.00
	16.00	6	150	0.130	0.560	5.600	15.80	3020	2355	1.00
Hardened tool steel 52 - 56 HRC	4.00	4	120	0.040	0.340	1.400	3.50	10915	1745	1.00
	5.00	4	120	0.045	0.380	1.750	4.57	8360	1505	1.00
	6.00	6	120	0.050	0.400	2.100	5.60	6820	2045	1.00
	8.00	6	120	0.065	0.440	2.800	7.66	4985	1945	1.00
	10.00	6	120	0.075	0.480	3.500	9.71	3935	1770	1.00
	12.00	6	120	0.095	0.500	4.200	11.73	3255	1855	1.00
	16.00	6	120	0.115	0.560	5.600	15.80	2420	1670	1.00
Hardened tool steel 56 - 60 HRC	4.00	4	80	0.035	0.340	1.400	3.50	7275	1020	1.00
	5.00	4	80	0.040	0.380	1.750	4.57	5570	890	1.00
	6.00	6	80	0.045	0.400	2.100	5.60	4545	1230	1.00
	8.00	6	80	0.055	0.440	2.800	7.66	3325	1095	1.00
	10.00	6	80	0.070	0.480	3.500	9.71	2625	1100	1.00
	12.00	6	80	0.085	0.500	4.200	11.73	2170	1105	1.00
	16.00	6	80	0.105	0.560	5.600	15.80	1610	1015	1.00
Hardened tool steel > 60 HRC	4.00	4	40	0.025	0.340	1.400	3.50	3640	365	1.00
	5.00	4	40	0.030	0.380	1.750	4.57	2785	335	1.00
	6.00	6	40	0.030	0.400	2.100	5.60	2275	410	1.00
	8.00	6	40	0.040	0.440	2.800	7.66	1660	400	1.00
	10.00	6	40	0.050	0.480	3.500	9.71	1310	395	1.00
	12.00	6	40	0.060	0.500	4.200	11.73	1085	390	1.00
	16.00	6	40	0.075	0.560	5.600	15.80	805	365	1.00

Application

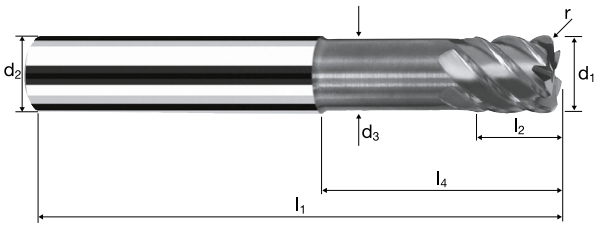


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 48 - 52 HRC	4.00	4	300	0.030	0.080	0.080	3.86	24740	2970	45°
	5.00	4	300	0.035	0.080	0.080	4.86	19650	2750	45°
	6.00	6	300	0.040	0.110	0.110	5.90	16185	3885	45°
	8.00	6	300	0.045	0.110	0.110	7.90	12090	3265	45°
	10.00	6	300	0.050	0.140	0.140	9.94	9605	2880	45°
	12.00	6	300	0.055	0.140	0.140	11.94	8000	2640	45°
	16.00	6	300	0.065	0.160	0.160	15.96	5985	2335	45°
Hardened tool steel 52 - 56 HRC	4.00	4	250	0.030	0.080	0.080	3.86	20615	2475	45°
	5.00	4	250	0.035	0.080	0.080	4.86	16375	2290	45°
	6.00	6	250	0.040	0.110	0.110	5.90	13490	3235	45°
	8.00	6	250	0.045	0.110	0.110	7.90	10075	2720	45°
	10.00	6	250	0.050	0.140	0.140	9.94	8005	2400	45°
	12.00	6	250	0.050	0.140	0.140	11.94	6665	2000	45°
	16.00	6	250	0.060	0.160	0.160	15.96	4985	1795	45°
Hardened tool steel 56 - 60 HRC	4.00	4	180	0.025	0.080	0.080	3.86	14845	1485	45°
	5.00	4	180	0.030	0.080	0.080	4.86	11790	1415	45°
	6.00	6	180	0.035	0.110	0.110	5.90	9710	2040	45°
	8.00	6	180	0.040	0.110	0.110	7.90	7255	1740	45°
	10.00	6	180	0.045	0.140	0.140	9.94	5765	1555	45°
	12.00	6	180	0.045	0.140	0.140	11.94	4800	1295	45°
	16.00	6	180	0.055	0.160	0.160	15.96	3590	1185	45°
Hardened tool steel > 60 HRC	4.00	4	100	0.015	0.080	0.080	3.86	8245	495	45°
	5.00	4	100	0.020	0.080	0.080	4.86	6550	525	45°
	6.00	6	100	0.020	0.110	0.110	5.90	5395	645	45°
	8.00	6	100	0.025	0.110	0.110	7.90	4030	605	45°
	10.00	6	100	0.025	0.140	0.140	9.94	3200	480	45°
	12.00	6	100	0.030	0.140	0.140	11.94	2665	480	45°
	16.00	6	100	0.035	0.160	0.160	15.96	1995	420	45°

Corner radius end mills XSpeed

Tolerance r 0/+0.015, 3xd

HM XT	λ 55° γ -10°

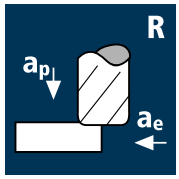


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS

Example: **Order-N°.** Coating **X** Article-N°. **7200** ø-Code **218**

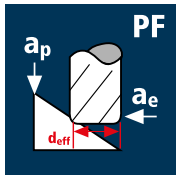
Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	X-AL X7200
218	4.00	6.00	3.70	57	5.00	12.00	16.95	1.000	3.8°	4	●
258	5.00	6.00	4.60	57	6.00	15.00	18.27	1.000	1.8°	4	●
293	6.00	6.00	5.50	57	7.00	19.34	20.00	1.000	0.0°	4	●
297	6.00	6.00	5.50	57	7.00	19.34	20.00	1.000	0.0°	6	●
384	8.00	8.00	7.40	63	9.00	25.29	26.00	1.000	0.0°	4	●
388	8.00	8.00	7.40	63	9.00	25.29	26.00	1.000	0.0°	6	●
435	10.00	10.00	9.20	72	11.00	30.20	31.00	1.000	0.0°	4	●
445	10.00	10.00	9.20	72	11.00	30.20	31.00	1.000	0.0°	6	●
486	12.00	12.00	11.00	83	13.00	36.13	37.00	1.000	0.0°	4	●
496	12.00	12.00	11.00	83	13.00	36.13	37.00	1.000	0.0°	6	●
608	16.00	16.00	15.00	92	17.00	42.13	43.00	1.000	0.0°	6	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	2.00	4	180	0.030	0.600	1.200	28650	3440	0.50
	3.00	4	180	0.045	0.600	1.800	19100	3440	0.50
	4.00	4	180	0.050	0.600	2.400	14325	2865	0.50
	5.00	4	180	0.055	0.600	3.000	11460	2520	0.50
	6.00	4	180	0.060	0.600	3.600	9550	2290	0.50
	8.00	4	180	0.075	0.600	4.800	7160	2150	0.50
	10.00	4	180	0.095	0.600	6.000	5730	2175	0.50
	12.00	4	180	0.115	0.600	7.200	4775	2195	0.50
Hardened tool steel 48 - 52 HRC	2.00	4	140	0.025	0.600	1.200	22280	2230	0.50
	3.00	4	140	0.040	0.600	1.800	14855	2375	0.50
	4.00	4	140	0.045	0.600	2.400	11140	2005	0.50
	5.00	4	140	0.050	0.600	3.000	8915	1785	0.50
	6.00	4	140	0.055	0.600	3.600	7425	1635	0.50
	8.00	4	140	0.070	0.600	4.800	5570	1560	0.50
	10.00	4	140	0.085	0.600	6.000	4455	1515	0.50
	12.00	4	140	0.105	0.600	7.200	3715	1560	0.50
Hardened tool steel 52 - 56 HRC	2.00	4	100	0.025	0.600	1.200	15915	1590	0.50
	3.00	4	100	0.035	0.600	1.800	10610	1485	0.50
	4.00	4	100	0.040	0.600	2.400	7960	1275	0.50
	5.00	4	100	0.045	0.600	3.000	6365	1145	0.50
	6.00	4	100	0.050	0.600	3.600	5305	1060	0.50
	8.00	4	100	0.060	0.600	4.800	3980	955	0.50
	10.00	4	100	0.080	0.600	6.000	3185	1020	0.50
	12.00	4	100	0.095	0.600	7.200	2655	1010	0.50
Hardened tool steel 56 - 60 HRC	2.00	4	70	0.015	0.600	0.800	11140	670	0.50
	3.00	4	70	0.025	0.600	1.200	7425	745	0.50
	4.00	4	70	0.030	0.600	1.600	5570	670	0.50
	5.00	4	70	0.030	0.600	2.000	4455	535	0.50
	6.00	4	70	0.035	0.600	2.400	3715	520	0.50
	8.00	4	70	0.045	0.600	3.200	2785	500	0.50
	10.00	4	70	0.055	0.600	4.000	2230	490	0.50
	12.00	4	70	0.065	0.600	4.800	1855	485	0.50

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	2.00	4	263	0.045	0.100	0.100	1.99	42070	7570	45°
	3.00	4	360	0.065	0.120	0.120	3.00	38195	9930	45°
	4.00	4	360	0.085	0.120	0.120	4.00	28650	9740	45°
	5.00	4	360	0.100	0.160	0.160	5.00	22920	9165	45°
	6.00	4	360	0.135	0.180	0.180	6.00	19100	10315	45°
	8.00	4	360	0.150	0.200	0.200	7.99	14340	8605	45°
	10.00	4	360	0.200	0.240	0.240	9.97	11495	9195	45°
	12.00	4	360	0.170	0.260	0.260	11.96	9580	6515	45°
Hardened tool steel 48 - 52 HRC	2.00	4	250	0.045	0.100	0.100	1.99	39990	7200	45°
	3.00	4	250	0.060	0.120	0.120	3.00	26525	6365	45°
	4.00	4	250	0.080	0.120	0.120	4.00	19895	6365	45°
	5.00	4	250	0.095	0.160	0.160	5.00	15915	6050	45°
	6.00	4	250	0.130	0.180	0.180	6.00	13265	6895	45°
	8.00	4	250	0.145	0.200	0.200	7.99	9960	5775	45°
	10.00	4	250	0.190	0.240	0.240	9.97	7980	6065	45°
	12.00	4	250	0.160	0.260	0.260	11.96	6655	4260	45°
Hardened tool steel 52 - 56 HRC	2.00	4	180	0.040	0.100	0.100	1.99	28790	4605	45°
	3.00	4	180	0.055	0.120	0.120	3.00	19100	4200	45°
	4.00	4	180	0.075	0.120	0.120	4.00	14325	4295	45°
	5.00	4	180	0.085	0.160	0.160	5.00	11460	3895	45°
	6.00	4	180	0.115	0.180	0.180	6.00	9550	4395	45°
	8.00	4	180	0.130	0.200	0.200	7.99	7170	3730	45°
	10.00	4	180	0.170	0.240	0.240	9.97	5745	3910	45°
	12.00	4	180	0.145	0.260	0.260	11.96	4790	2780	45°
Hardened tool steel 56 - 60 HRC	2.00	4	100	0.025	0.100	0.100	1.99	15995	1600	45°
	3.00	4	100	0.035	0.120	0.120	3.00	10610	1485	45°
	4.00	4	100	0.045	0.120	0.120	4.00	7960	1430	45°
	5.00	4	100	0.050	0.160	0.160	5.00	6365	1275	45°
	6.00	4	100	0.070	0.180	0.180	6.00	5305	1485	45°
	8.00	4	100	0.075	0.200	0.200	7.99	3985	1195	45°
	10.00	4	100	0.100	0.240	0.240	9.97	3195	1275	45°
	12.00	4	100	0.085	0.260	0.260	11.96	2660	905	45°

Corner radius end mills Toro-X

Tolerance r 0/+0.015, 3xd

HM
XT

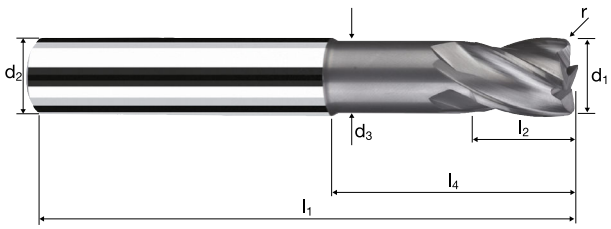
λ 30°
γ -5°

h5

d1

r

R

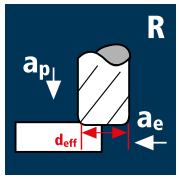


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7100** ø-Code **138**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	X-AL X7100
138	2.00	6.00	1.90	57	3.00	6.00	14.31	0.200	8.5°	4	●
178	3.00	6.00	2.80	57	4.00	9.00	15.63	0.200	5.8°	4	●
218	4.00	6.00	3.70	57	5.00	12.00	16.95	0.200	3.6°	4	●
258	5.00	6.00	4.60	57	6.00	15.00	18.27	0.200	1.7°	4	●
297	6.00	6.00	5.50	57	7.00	19.34	20.00	0.200	0.0°	4	●
385	8.00	8.00	7.40	63	9.00	25.29	26.00	0.200	0.0°	4	●
445	10.00	10.00	9.20	72	11.00	30.20	31.00	0.200	0.0°	4	●
496	12.00	12.00	11.00	83	13.00	36.13	37.00	0.200	0.0°	4	●
140	2.00	6.00	1.90	57	3.00	6.00	14.31	0.500	8.7°	4	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	0.500	6.0°	4	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	0.500	3.7°	4	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	0.500	1.7°	4	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	0.500	0.0°	4	●
388	8.00	8.00	7.40	63	9.00	25.29	26.00	0.500	0.0°	4	●
448	10.00	10.00	9.20	72	11.00	30.20	31.00	0.500	0.0°	4	●
498	12.00	12.00	11.00	83	13.00	36.13	37.00	0.500	0.0°	4	●

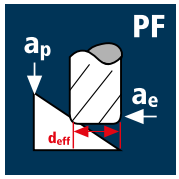
Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
4.00	4	200	0.055	0.600	2.400	3.83	16620	3655	1.00
5.00	4	200	0.060	0.600	3.000	4.83	13180	3165	1.00
6.00	4	200	0.065	0.600	3.600	5.83	10920	2840	1.00
8.00	4	200	0.080	0.600	4.800	7.83	8130	2600	1.00
10.00	4	200	0.105	0.600	6.000	9.83	6475	2720	1.00
12.00	4	200	0.125	0.600	7.200	11.83	5380	2690	1.00
Hardened tool steel 48 - 52 HRC									
4.00	4	160	0.050	0.600	2.400	3.83	13300	2660	1.00
5.00	4	160	0.055	0.600	3.000	4.83	10545	2320	1.00
6.00	4	160	0.060	0.600	3.600	5.83	8735	2095	1.00
8.00	4	160	0.070	0.600	4.800	7.83	6505	1820	1.00
10.00	4	160	0.095	0.600	6.000	9.83	5180	1970	1.00
12.00	4	160	0.115	0.600	7.200	11.83	4305	1980	1.00
Hardened tool steel 52 - 56 HRC									
4.00	4	150	0.045	0.600	2.400	3.83	12465	2245	1.00
5.00	4	150	0.050	0.600	3.000	4.83	9885	1975	1.00
6.00	4	150	0.055	0.600	3.600	5.83	8190	1800	1.00
8.00	4	150	0.065	0.600	4.800	7.83	6100	1585	1.00
10.00	4	150	0.085	0.600	6.000	9.83	4855	1650	1.00
12.00	4	150	0.105	0.600	7.200	11.83	4035	1695	1.00
Hardened tool steel 56 - 60 HRC									
4.00	4	70	0.030	0.600	1.600	3.83	5820	700	1.00
5.00	4	70	0.035	0.600	2.000	4.83	4615	645	1.00
6.00	4	70	0.040	0.600	2.400	5.83	3820	610	1.00
8.00	4	70	0.045	0.600	3.200	7.83	2845	510	1.00
10.00	4	70	0.060	0.600	4.000	9.83	2265	545	1.00
12.00	4	70	0.075	0.600	4.800	11.83	1885	565	1.00

Application



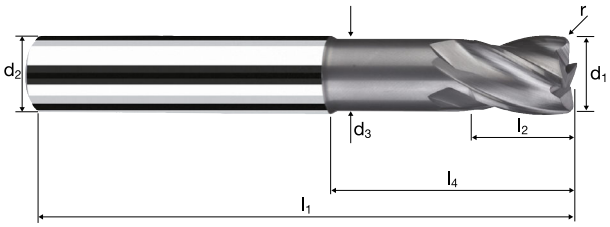
Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
4.00	4	300	0.065	0.180	0.180	3.97	24055	6255	45°
5.00	4	300	0.075	0.240	0.240	4.99	19135	5740	45°
6.00	4	300	0.090	0.270	0.270	6.00	15915	5730	45°
8.00	4	300	0.125	0.300	0.300	8.00	11935	5970	45°
10.00	4	300	0.145	0.360	0.360	9.99	9560	5545	45°
12.00	4	300	0.170	0.390	0.390	11.98	7970	5420	45°
Hardened tool steel 48 - 52 HRC									
4.00	4	220	0.060	0.180	0.180	3.97	17640	4235	45°
5.00	4	220	0.070	0.240	0.240	4.99	14035	3930	45°
6.00	4	220	0.085	0.270	0.270	6.00	11670	3970	45°
8.00	4	220	0.120	0.300	0.300	8.00	8755	4200	45°
10.00	4	220	0.140	0.360	0.360	9.99	7010	3925	45°
12.00	4	220	0.160	0.390	0.390	11.98	5845	3740	45°
Hardened tool steel 52 - 56 HRC									
4.00	4	160	0.055	0.180	0.180	3.97	12830	2820	45°
5.00	4	160	0.065	0.240	0.240	4.99	10205	2655	45°
6.00	4	160	0.075	0.270	0.270	6.00	8490	2545	45°
8.00	4	160	0.110	0.300	0.300	8.00	6365	2800	45°
10.00	4	160	0.125	0.360	0.360	9.99	5100	2550	45°
12.00	4	160	0.145	0.390	0.390	11.98	4250	2465	45°
Hardened tool steel 56 - 60 HRC									
4.00	4	80	0.035	0.180	0.180	3.97	6415	900	45°
5.00	4	80	0.040	0.240	0.240	4.99	5105	815	45°
6.00	4	80	0.045	0.270	0.270	6.00	4245	765	45°
8.00	4	80	0.065	0.300	0.300	8.00	3185	830	45°
10.00	4	80	0.075	0.360	0.360	9.99	2550	765	45°
12.00	4	80	0.085	0.390	0.390	11.98	2125	725	45°

Corner radius end mills Toro-X

Tolerance r 0/+0.015, 3xd

HM XT	λ 30° γ -5°

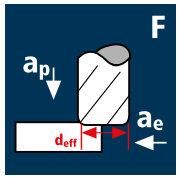


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7100** ø-Code **222**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	X-AL X7100
222	4.00	6.00	3.70	57	5.00	12.00	16.95	1.000	3.8°	4	●
262	5.00	6.00	4.60	57	6.00	15.00	18.27	1.000	1.8°	4	●
302	6.00	6.00	5.50	57	7.00	19.34	20.00	1.000	0.0°	4	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	1.000	0.0°	4	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	1.000	0.0°	4	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	1.000	0.0°	4	●
395	8.00	8.00	7.40	63	9.00	25.29	26.00	2.000	0.0°	4	●
455	10.00	10.00	9.20	72	11.00	30.20	31.00	2.000	0.0°	4	●
505	12.00	12.00	11.00	83	13.00	36.13	37.00	2.000	0.0°	4	●

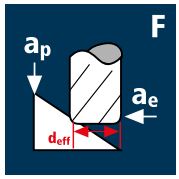
Application



Material

Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	r [mm]
Hardened tool steel 48 - 52 HRC	2.00	4	150	0.020	0.050	0.440	1.44	33155	2655	0.50
	3.00	4	150	0.025	0.050	0.660	2.44	19570	1955	0.50
	4.00	4	150	0.030	0.060	0.880	3.47	13760	1650	0.50
	5.00	4	150	0.030	0.060	1.100	4.47	10680	1280	0.50
	6.00	6	150	0.035	0.080	1.320	5.54	8620	1810	0.50
	8.00	6	150	0.040	0.080	1.760	7.54	6330	1520	0.50
	10.00	6	150	0.045	0.100	2.200	9.60	4975	1345	0.50
	12.00	6	150	0.050	0.100	2.640	11.60	4115	1235	0.50
	16.00	6	150	0.060	0.120	3.520	15.65	3050	1100	0.50
Hardened tool steel 52 - 56 HRC	2.00	4	120	0.020	0.050	0.440	1.44	26525	2120	0.50
	3.00	4	120	0.025	0.050	0.660	2.44	15655	1565	0.50
	4.00	4	120	0.030	0.060	0.880	3.47	11010	1320	0.50
	5.00	4	120	0.030	0.060	1.100	4.47	8545	1025	0.50
	6.00	6	120	0.035	0.080	1.320	5.54	6895	1450	0.50
	8.00	6	120	0.040	0.080	1.760	7.54	5065	1215	0.50
	10.00	6	120	0.045	0.100	2.200	9.60	3980	1075	0.50
	12.00	6	120	0.050	0.100	2.640	11.60	3295	990	0.50
	16.00	6	120	0.060	0.120	3.520	15.65	2440	880	0.50
Hardened tool steel 56 - 60 HRC	2.00	4	80	0.015	0.050	0.440	1.44	17685	1060	0.50
	3.00	4	80	0.020	0.050	0.660	2.44	10435	835	0.50
	4.00	4	80	0.025	0.060	0.880	3.47	7340	735	0.50
	5.00	4	80	0.025	0.060	1.100	4.47	5695	570	0.50
	6.00	6	80	0.030	0.080	1.320	5.54	4595	825	0.50
	8.00	6	80	0.030	0.080	1.760	7.54	3375	610	0.50
	10.00	6	80	0.035	0.100	2.200	9.60	2655	555	0.50
	12.00	6	80	0.040	0.100	2.640	11.60	2195	525	0.50
	16.00	6	80	0.050	0.120	3.520	15.65	1625	490	0.50
Hardened tool steel > 60 HRC	2.00	4	40	0.015	0.050	0.440	1.44	8840	530	0.50
	3.00	4	40	0.020	0.050	0.660	2.44	5220	415	0.50
	4.00	4	40	0.025	0.060	0.880	3.47	3670	365	0.50
	5.00	4	40	0.025	0.060	1.100	4.47	2850	285	0.50
	6.00	6	40	0.030	0.080	1.320	5.54	2300	415	0.50
	8.00	6	40	0.030	0.080	1.760	7.54	1690	305	0.50
	10.00	6	40	0.035	0.100	2.200	9.60	1325	280	0.50
	12.00	6	40	0.040	0.100	2.640	11.60	1100	265	0.50
	16.00	6	40	0.050	0.120	3.520	15.65	815	245	0.50

Application



Material

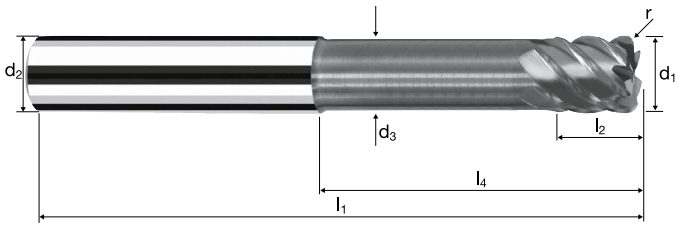
Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 48 - 52 HRC	2.00	4	256	0.020	0.050	0.050	1.94	42005	3360	45°
	3.00	4	300	0.025	0.050	0.050	2.94	32480	3250	45°
	4.00	4	300	0.030	0.060	0.060	3.96	24115	2895	45°
	5.00	4	300	0.035	0.060	0.060	4.96	19255	2695	45°
	6.00	6	300	0.040	0.080	0.080	5.98	15970	3830	45°
	8.00	6	300	0.045	0.080	0.080	7.98	11965	3230	45°
	10.00	6	300	0.050	0.100	0.100	9.99	9560	2870	45°
	12.00	6	300	0.055	0.100	0.100	11.99	7965	2630	45°
	16.00	6	300	0.065	0.120	0.120	16.00	5970	2330	45°
Hardened tool steel 52 - 56 HRC	2.00	4	250	0.020	0.050	0.050	1.94	41020	3280	45°
	3.00	4	250	0.025	0.050	0.050	2.94	27065	2705	45°
	4.00	4	250	0.030	0.060	0.060	3.96	20095	2410	45°
	5.00	4	250	0.035	0.060	0.060	4.96	16045	2245	45°
	6.00	6	250	0.040	0.080	0.080	5.98	13305	3195	45°
	8.00	6	250	0.045	0.080	0.080	7.98	9970	2690	45°
	10.00	6	250	0.050	0.100	0.100	9.99	7965	2390	45°
	12.00	6	250	0.050	0.100	0.100	11.99	6635	1990	45°
	16.00	6	250	0.060	0.120	0.120	16.00	4975	1790	45°
Hardened tool steel 56 - 60 HRC	2.00	4	180	0.015	0.050	0.050	1.94	29535	1770	45°
	3.00	4	180	0.020	0.050	0.050	2.94	19490	1560	45°
	4.00	4	180	0.025	0.060	0.060	3.96	14470	1445	45°
	5.00	4	180	0.030	0.060	0.060	4.96	11550	1385	45°
	6.00	6	180	0.035	0.080	0.080	5.98	9580	2010	45°
	8.00	6	180	0.040	0.080	0.080	7.98	7180	1725	45°
	10.00	6	180	0.045	0.100	0.100	9.99	5735	1550	45°
	12.00	6	180	0.045	0.100	0.100	11.99	4780	1290	45°
	16.00	6	180	0.055	0.120	0.120	16.00	3580	1180	45°
Hardened tool steel > 60 HRC	2.00	4	100	0.010	0.050	0.050	1.94	16410	655	45°
	3.00	4	100	0.015	0.050	0.050	2.94	10825	650	45°
	4.00	4	100	0.015	0.060	0.060	3.96	8040	480	45°
	5.00	4	100	0.020	0.060	0.060	4.96	6420	515	45°
	6.00	6	100	0.020	0.080	0.080	5.98	5325	640	45°
	8.00	6	100	0.025	0.080	0.080	7.98	3990	600	45°
	10.00	6	100	0.025	0.100	0.100	9.99	3185	480	45°
	12.00	6	100	0.030	0.100	0.100	11.99	2655	480	45°
	16.00	6	100	0.035	0.120	0.120	16.00	1990	420	45°

Corner radius end mills XSpeed

Tolerance r 0/+0.015, 6xd

HM
XT

λ 55°
γ -10°

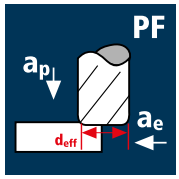


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS

Example: **Order-N°.** Coating **X** Article-N°. **7204** ø-Code **140**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	X-AL X7204
140	2.00	6.00	1.90	66	3.00	12.00	20.31	0.500	6.0°	4	●
180	3.00	6.00	2.80	66	4.00	18.00	24.63	0.500	3.7°	4	●
220	4.00	6.00	3.70	69	5.00	24.00	28.95	0.500	2.1°	4	●
260	5.00	6.00	4.60	75	6.00	30.00	33.27	0.500	0.9°	4	●
295	6.00	6.00	5.50	80	7.00	42.34	43.00	0.500	0.0°	4	●
300	6.00	6.00	5.50	80	7.00	42.34	43.00	0.500	0.0°	6	●
386	8.00	8.00	7.40	90	9.00	52.29	53.00	0.500	0.0°	4	●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	0.500	0.0°	6	●
440	10.00	10.00	9.20	105	11.00	63.20	64.00	0.500	0.0°	4	●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	0.500	0.0°	6	●
491	12.00	12.00	11.00	120	13.00	73.13	74.00	0.500	0.0°	4	●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	0.500	0.0°	6	●
606	16.00	16.00	15.00	135	17.00	85.13	86.00	0.500	0.0°	6	●

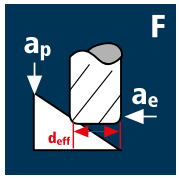
Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	r [mm]
Hardened tool steel 48 - 52 HRC									
4.00	4	150	0.040	0.180	0.880	3.14	15205	2435	1.00
5.00	4	150	0.045	0.220	1.100	4.25	11235	2020	1.00
6.00	6	150	0.050	0.260	1.320	5.35	8925	2675	1.00
8.00	6	150	0.060	0.320	1.760	7.47	6390	2300	1.00
10.00	6	150	0.080	0.380	2.200	9.57	4990	2395	1.00
12.00	6	150	0.095	0.450	2.640	11.67	4090	2330	1.00
16.00	6	150	0.105	0.500	3.520	15.73	3035	1910	1.00
Hardened tool steel 52 - 56 HRC									
4.00	4	120	0.035	0.180	0.880	3.14	12165	1705	1.00
5.00	4	120	0.040	0.220	1.100	4.25	8990	1440	1.00
6.00	6	120	0.045	0.260	1.320	5.35	7140	1930	1.00
8.00	6	120	0.055	0.320	1.760	7.47	5115	1685	1.00
10.00	6	120	0.070	0.380	2.200	9.57	3990	1675	1.00
12.00	6	120	0.085	0.450	2.640	11.67	3275	1670	1.00
16.00	6	120	0.095	0.500	3.520	15.73	2430	1385	1.00
Hardened tool steel 56 - 60 HRC									
4.00	4	80	0.035	0.180	0.880	3.14	8110	1135	1.00
5.00	4	80	0.035	0.220	1.100	4.25	5990	840	1.00
6.00	6	80	0.040	0.260	1.320	5.35	4760	1140	1.00
8.00	6	80	0.050	0.320	1.760	7.47	3410	1025	1.00
10.00	6	80	0.065	0.380	2.200	9.57	2660	1040	1.00
12.00	6	80	0.080	0.450	2.640	11.67	2180	1045	1.00
16.00	6	80	0.085	0.500	3.520	15.73	1620	825	1.00
Hardened tool steel > 60 HRC									
4.00	4	40	0.025	0.180	0.880	3.14	4055	405	1.00
5.00	4	40	0.025	0.220	1.100	4.25	2995	300	1.00
6.00	6	40	0.030	0.260	1.320	5.35	2380	430	1.00
8.00	6	40	0.035	0.320	1.760	7.47	1705	360	1.00
10.00	6	40	0.045	0.380	2.200	9.57	1330	360	1.00
12.00	6	40	0.055	0.450	2.640	11.67	1090	360	1.00
16.00	6	40	0.060	0.500	3.520	15.73	810	290	1.00

Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 48 - 52 HRC									
4.00	4	300	0.030	0.080	0.080	3.86	24740	2970	45°
5.00	4	300	0.035	0.080	0.080	4.86	19650	2750	45°
6.00	6	300	0.040	0.110	0.110	5.90	16185	3885	45°
8.00	6	300	0.045	0.110	0.110	7.90	12090	3265	45°
10.00	6	300	0.050	0.140	0.140	9.94	9605	2880	45°
12.00	6	300	0.055	0.140	0.140	11.94	8000	2640	45°
16.00	6	300	0.065	0.160	0.160	15.96	5985	2335	45°
Hardened tool steel 52 - 56 HRC									
4.00	4	250	0.030	0.080	0.080	3.86	20615	2475	45°
5.00	4	250	0.035	0.080	0.080	4.86	16375	2290	45°
6.00	6	250	0.040	0.110	0.110	5.90	13490	3235	45°
8.00	6	250	0.045	0.110	0.110	7.90	10075	2720	45°
10.00	6	250	0.050	0.140	0.140	9.94	8005	2400	45°
12.00	6	250	0.050	0.140	0.140	11.94	6665	2000	45°
16.00	6	250	0.060	0.160	0.160	15.96	4985	1795	45°
Hardened tool steel 56 - 60 HRC									
4.00	4	180	0.025	0.080	0.080	3.86	14845	1485	45°
5.00	4	180	0.030	0.080	0.080	4.86	11790	1415	45°
6.00	6	180	0.035	0.110	0.110	5.90	9710	2040	45°
8.00	6	180	0.040	0.110	0.110	7.90	7255	1740	45°
10.00	6	180	0.045	0.140	0.140	9.94	5765	1555	45°
12.00	6	180	0.045	0.140	0.140	11.94	4800	1295	45°
16.00	6	180	0.055	0.160	0.160	15.96	3590	1185	45°
Hardened tool steel > 60 HRC									
4.00	4	100	0.015	0.080	0.080	3.86	8245	495	45°
5.00	4	100	0.020	0.080	0.080	4.86	6550	525	45°
6.00	6	100	0.020	0.110	0.110	5.90	5395	645	45°
8.00	6	100	0.025	0.110	0.110	7.90	4030	605	45°
10.00	6	100	0.025	0.140	0.140	9.94	3200	480	45°
12.00	6	100	0.030	0.140	0.140	11.94	2665	480	45°
16.00	6	100	0.035	0.160	0.160	15.96	1995	420	45°

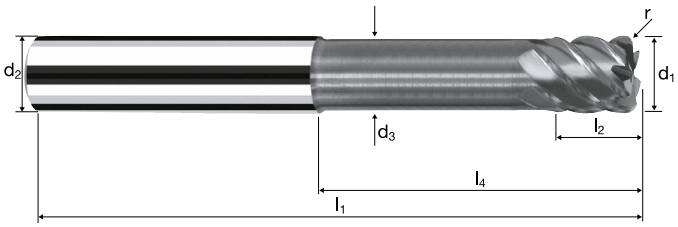
Corner radius end mills XSpeed

Tolerance r 0/+0.015, 6xd

HM
XT

λ 55°
γ -10°

h5

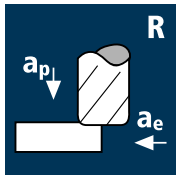


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS

Example: **Order-N°.** Coating **X** Article-N°. **7204** ø-Code **218**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	X-AL **X7204**
218	4.00	6.00	3.70	69	5.00	24.00	28.95	1.000	2.1°	4	●
258	5.00	6.00	4.60	75	6.00	30.00	33.27	1.000	1.0°	4	●
293	6.00	6.00	5.50	80	7.00	42.34	43.00	1.000	0.0°	4	●
297	6.00	6.00	5.50	80	7.00	42.34	43.00	1.000	0.0°	6	●
384	8.00	8.00	7.40	90	9.00	52.29	53.00	1.000	0.0°	4	●
388	8.00	8.00	7.40	90	9.00	52.29	53.00	1.000	0.0°	6	●
435	10.00	10.00	9.20	105	11.00	63.20	64.00	1.000	0.0°	4	●
445	10.00	10.00	9.20	105	11.00	63.20	64.00	1.000	0.0°	6	●
486	12.00	12.00	11.00	120	13.00	73.13	74.00	1.000	0.0°	4	●
496	12.00	12.00	11.00	120	13.00	73.13	74.00	1.000	0.0°	6	●
608	16.00	16.00	15.00	135	17.00	85.13	86.00	1.000	0.0°	6	●

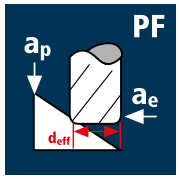
Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC								
2.00	4	180	0.025	0.600	0.800	28650	2865	0.50
3.00	4	180	0.035	0.600	1.200	19100	2675	0.50
4.00	4	180	0.045	0.600	1.600	14325	2580	0.50
5.00	4	180	0.045	0.600	2.000	11460	2065	0.50
6.00	4	180	0.050	0.600	2.400	9550	1910	0.50
8.00	4	180	0.060	0.600	3.200	7160	1720	0.50
10.00	4	180	0.080	0.600	4.000	5730	1835	0.50
12.00	4	180	0.095	0.600	4.800	4775	1815	0.50
Hardened tool steel 48 - 52 HRC								
2.00	4	140	0.025	0.600	0.800	22280	2230	0.50
3.00	4	140	0.030	0.600	1.200	14855	1785	0.50
4.00	4	140	0.040	0.600	1.600	11140	1785	0.50
5.00	4	140	0.040	0.600	2.000	8915	1425	0.50
6.00	4	140	0.045	0.600	2.400	7425	1335	0.50
8.00	4	140	0.055	0.600	3.200	5570	1225	0.50
10.00	4	140	0.070	0.600	4.000	4455	1250	0.50
12.00	4	140	0.085	0.600	4.800	3715	1265	0.50
Hardened tool steel 52 - 56 HRC								
2.00	4	100	0.020	0.600	0.800	15915	1275	0.50
3.00	4	100	0.030	0.600	1.200	10610	1275	0.50
4.00	4	100	0.035	0.600	1.600	7960	1115	0.50
5.00	4	100	0.035	0.600	2.000	6365	890	0.50
6.00	4	100	0.040	0.600	2.400	5305	850	0.50
8.00	4	100	0.050	0.600	3.200	3980	795	0.50
10.00	4	100	0.065	0.600	4.000	3185	830	0.50
12.00	4	100	0.080	0.600	4.800	2655	850	0.50
Hardened tool steel 56 - 60 HRC								
2.00	4	70	0.015	0.600	0.800	11140	670	0.50
3.00	4	70	0.020	0.600	1.200	7425	595	0.50
4.00	4	70	0.025	0.600	1.600	5570	555	0.50
5.00	4	70	0.025	0.600	2.000	4455	445	0.50
6.00	4	70	0.030	0.600	2.400	3715	445	0.50
8.00	4	70	0.035	0.600	3.200	2785	390	0.50
10.00	4	70	0.045	0.600	4.000	2230	400	0.50
12.00	4	70	0.055	0.600	4.800	1855	410	0.50

Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
2.00	4	263	0.045	0.100	0.100	1.99	42070	7570	45°
3.00	4	360	0.065	0.120	0.120	3.00	38195	9930	45°
4.00	4	360	0.085	0.120	0.120	4.00	28650	9740	45°
5.00	4	360	0.100	0.160	0.160	5.00	22920	9165	45°
6.00	4	360	0.135	0.180	0.180	6.00	19100	10315	45°
8.00	4	360	0.150	0.200	0.200	7.99	14340	8605	45°
10.00	4	360	0.200	0.240	0.240	9.97	11495	9195	45°
12.00	4	360	0.170	0.260	0.260	11.96	9580	6515	45°
Hardened tool steel 48 - 52 HRC									
2.00	4	250	0.045	0.100	0.100	1.99	39990	7200	45°
3.00	4	250	0.060	0.120	0.120	3.00	26525	6365	45°
4.00	4	250	0.080	0.120	0.120	4.00	19895	6365	45°
5.00	4	250	0.095	0.160	0.160	5.00	15915	6050	45°
6.00	4	250	0.130	0.180	0.180	6.00	13265	6895	45°
8.00	4	250	0.145	0.200	0.200	7.99	9960	5775	45°
10.00	4	250	0.190	0.240	0.240	9.97	7980	6065	45°
12.00	4	250	0.160	0.260	0.260	11.96	6655	4260	45°
Hardened tool steel 52 - 56 HRC									
2.00	4	180	0.040	0.100	0.100	1.99	28790	4605	45°
3.00	4	180	0.055	0.120	0.120	3.00	19100	4200	45°
4.00	4	180	0.075	0.120	0.120	4.00	14325	4295	45°
5.00	4	180	0.085	0.160	0.160	5.00	11460	3895	45°
6.00	4	180	0.115	0.180	0.180	6.00	9550	4395	45°
8.00	4	180	0.130	0.200	0.200	7.99	7170	3730	45°
10.00	4	180	0.170	0.240	0.240	9.97	5745	3910	45°
12.00	4	180	0.145	0.260	0.260	11.96	4790	2780	45°
Hardened tool steel 56 - 60 HRC									
2.00	4	100	0.025	0.100	0.100	1.99	15995	1600	45°
3.00	4	100	0.035	0.120	0.120	3.00	10610	1485	45°
4.00	4	100	0.045	0.120	0.120	4.00	7960	1430	45°
5.00	4	100	0.050	0.160	0.160	5.00	6365	1275	45°
6.00	4	100	0.070	0.180	0.180	6.00	5305	1485	45°
8.00	4	100	0.075	0.200	0.200	7.99	3985	1195	45°
10.00	4	100	0.100	0.240	0.240	9.97	3195	1275	45°
12.00	4	100	0.085	0.260	0.260	11.96	2660	905	45°

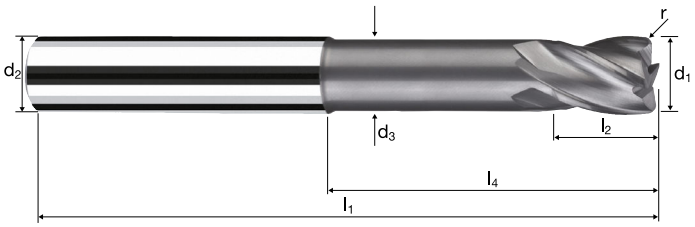
Corner radius end mills Toro-X

Tolerance r 0/+0.015, 6xd

X-Generation X

II

HM XT	λ 30° γ -5°

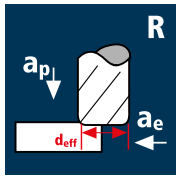


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7104** ø-Code **138**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	X-AL X7104
138	2.00	6.00	1.90	66	3.00	12.00	20.31	0.200	5.9°	4	●
178	3.00	6.00	2.80	66	4.00	18.00	24.63	0.200	3.7°	4	●
218	4.00	6.00	3.70	69	5.00	24.00	28.95	0.200	2.1°	4	●
258	5.00	6.00	4.60	75	6.00	30.00	33.27	0.200	0.9°	4	●
297	6.00	6.00	5.50	80	7.00	42.34	43.00	0.200	0.0°	4	●
385	8.00	8.00	7.40	90	9.00	52.29	53.00	0.200	0.0°	4	●
445	10.00	10.00	9.20	105	11.00	63.20	64.00	0.200	0.0°	4	●
496	12.00	12.00	11.00	120	13.00	73.13	74.00	0.200	0.0°	4	●
140	2.00	6.00	1.90	66	3.00	12.00	20.31	0.500	6.0°	4	●
180	3.00	6.00	2.80	66	4.00	18.00	24.63	0.500	3.7°	4	●
220	4.00	6.00	3.70	69	5.00	24.00	28.95	0.500	2.1°	4	●
260	5.00	6.00	4.60	75	6.00	30.00	33.27	0.500	0.9°	4	●
300	6.00	6.00	5.50	80	7.00	42.34	43.00	0.500	0.0°	4	●
388	8.00	8.00	7.40	90	9.00	52.29	53.00	0.500	0.0°	4	●
448	10.00	10.00	9.20	105	11.00	63.20	64.00	0.500	0.0°	4	●
498	12.00	12.00	11.00	120	13.00	73.13	74.00	0.500	0.0°	4	●

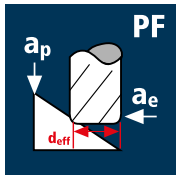
Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
4.00	4	200	0.045	0.600	2.400	3.83	16620	2990	1.00
5.00	4	200	0.050	0.600	3.000	4.83	13180	2635	1.00
6.00	4	200	0.055	0.600	3.600	5.83	10920	2400	1.00
8.00	4	200	0.070	0.600	4.800	7.83	8130	2275	1.00
10.00	4	200	0.090	0.600	6.000	9.83	6475	2330	1.00
12.00	4	200	0.105	0.600	7.200	11.83	5380	2260	1.00
Hardened tool steel 48 - 52 HRC									
4.00	4	160	0.040	0.600	2.400	3.83	13300	2130	1.00
5.00	4	160	0.045	0.600	3.000	4.83	10545	1900	1.00
6.00	4	160	0.050	0.600	3.600	5.83	8735	1745	1.00
8.00	4	160	0.065	0.600	4.800	7.83	6505	1690	1.00
10.00	4	160	0.080	0.600	6.000	9.83	5180	1660	1.00
12.00	4	160	0.095	0.600	7.200	11.83	4305	1635	1.00
Hardened tool steel 52 - 56 HRC									
4.00	4	150	0.035	0.600	2.400	3.83	12465	1745	1.00
5.00	4	150	0.040	0.600	3.000	4.83	9885	1580	1.00
6.00	4	150	0.045	0.600	3.600	5.83	8190	1475	1.00
8.00	4	150	0.055	0.600	4.800	7.83	6100	1340	1.00
10.00	4	150	0.075	0.600	6.000	9.83	4855	1455	1.00
12.00	4	150	0.085	0.600	7.200	11.83	4035	1370	1.00
Hardened tool steel 56 - 60 HRC									
4.00	4	70	0.025	0.600	1.600	3.83	5820	580	1.00
5.00	4	70	0.030	0.600	2.000	4.83	4615	555	1.00
6.00	4	70	0.030	0.600	2.400	5.83	3820	460	1.00
8.00	4	70	0.040	0.600	3.200	7.83	2845	455	1.00
10.00	4	70	0.050	0.600	4.000	9.83	2265	455	1.00
12.00	4	70	0.060	0.600	4.800	11.83	1885	450	1.00

Application



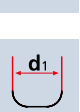
Material

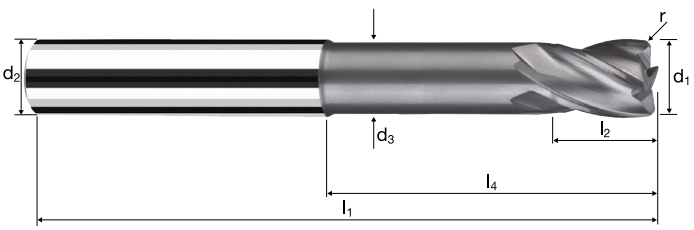
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
4.00	4	300	0.065	0.180	0.180	3.97	24055	6255	45°
5.00	4	300	0.075	0.240	0.240	4.99	19135	5740	45°
6.00	4	300	0.090	0.270	0.270	6.00	15915	5730	45°
8.00	4	300	0.125	0.300	0.300	8.00	11935	5970	45°
10.00	4	300	0.145	0.360	0.360	9.99	9560	5545	45°
12.00	4	300	0.170	0.390	0.390	11.98	7970	5420	45°
Hardened tool steel 48 - 52 HRC									
4.00	4	220	0.060	0.180	0.180	3.97	17640	4235	45°
5.00	4	220	0.070	0.240	0.240	4.99	14035	3930	45°
6.00	4	220	0.085	0.270	0.270	6.00	11670	3970	45°
8.00	4	220	0.120	0.300	0.300	8.00	8755	4200	45°
10.00	4	220	0.140	0.360	0.360	9.99	7010	3925	45°
12.00	4	220	0.160	0.390	0.390	11.98	5845	3740	45°
Hardened tool steel 52 - 56 HRC									
4.00	4	160	0.055	0.180	0.180	3.97	12830	2820	45°
5.00	4	160	0.065	0.240	0.240	4.99	10205	2655	45°
6.00	4	160	0.075	0.270	0.270	6.00	8490	2545	45°
8.00	4	160	0.110	0.300	0.300	8.00	6365	2800	45°
10.00	4	160	0.125	0.360	0.360	9.99	5100	2550	45°
12.00	4	160	0.145	0.390	0.390	11.98	4250	2465	45°
Hardened tool steel 56 - 60 HRC									
4.00	4	80	0.035	0.180	0.180	3.97	6415	900	45°
5.00	4	80	0.040	0.240	0.240	4.99	5105	815	45°
6.00	4	80	0.045	0.270	0.270	6.00	4245	765	45°
8.00	4	80	0.065	0.300	0.300	8.00	3185	830	45°
10.00	4	80	0.075	0.360	0.360	9.99	2550	765	45°
12.00	4	80	0.085	0.390	0.390	11.98	2125	725	45°

Corner radius end mills Toro-X

Tolerance r 0/+0.015, 6xd

HM XT	λ 30° γ -5°



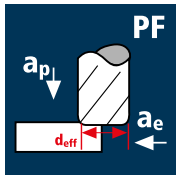


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7104** ø-Code **222**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	X-AL **X7104**
222	4.00	6.00	3.70	69	5.00	24.00	28.95	1.000	2.1°	4	●
262	5.00	6.00	4.60	75	6.00	30.00	33.27	1.000	1.0°	4	●
302	6.00	6.00	5.50	80	7.00	42.34	43.00	1.000	0.0°	4	●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	1.000	0.0°	4	●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	1.000	0.0°	4	●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	1.000	0.0°	4	●
395	8.00	8.00	7.40	90	9.00	52.29	53.00	2.000	0.0°	4	●
455	10.00	10.00	9.20	105	11.00	63.20	64.00	2.000	0.0°	4	●
505	12.00	12.00	11.00	120	13.00	73.13	74.00	2.000	0.0°	4	●

Application



Material

Steel
< 850 N/mm²

P
P

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
3.00	4	200	0.040	0.150	0.900	2.71	23490	3760	0.50
4.00	4	200	0.050	0.180	1.200	3.77	16885	3375	0.50
5.00	4	200	0.055	0.200	1.500	4.80	13265	2920	0.50
6.00	6	200	0.060	0.220	1.800	5.83	10920	3930	0.50
8.00	6	200	0.075	0.250	2.400	7.87	8090	3640	0.50
10.00	6	200	0.090	0.280	3.000	9.90	6430	3470	0.50
12.00	6	200	0.110	0.300	3.600	11.92	5340	3525	0.50
16.00	6	200	0.120	0.650	4.800	15.47	4115	2965	1.50

Steel
850 - 1100 N/mm²

P
P

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
3.00	4	180	0.040	0.150	0.900	2.71	21140	3385	0.50
4.00	4	180	0.050	0.180	1.200	3.77	15200	3040	0.50
5.00	4	180	0.050	0.200	1.500	4.80	11935	2385	0.50
6.00	6	180	0.055	0.220	1.800	5.83	9830	3245	0.50
8.00	6	180	0.070	0.250	2.400	7.87	7280	3060	0.50
10.00	6	180	0.085	0.280	3.000	9.90	5785	2950	0.50
12.00	6	180	0.105	0.300	3.600	11.92	4805	3030	0.50
16.00	6	180	0.115	0.650	4.800	15.47	3705	2555	1.50

Steel
1100 - 1300 N/mm²

P
P

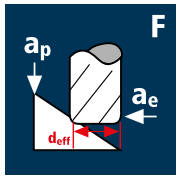
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
3.00	4	150	0.035	0.150	0.900	2.71	17620	2465	0.50
4.00	4	150	0.045	0.180	1.200	3.77	12665	2280	0.50
5.00	4	150	0.050	0.200	1.500	4.80	9945	1990	0.50
6.00	6	150	0.055	0.220	1.800	5.83	8190	2705	0.50
8.00	6	150	0.065	0.250	2.400	7.87	6065	2365	0.50
10.00	6	150	0.080	0.280	3.000	9.90	4825	2315	0.50
12.00	6	150	0.095	0.300	3.600	11.92	4005	2285	0.50
16.00	6	150	0.105	0.650	4.800	15.47	3085	1945	1.50

Stainless steel
[Cr-Ni/1.4301]

P

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
3.00	4	60	0.025	0.150	0.700	2.71	7045	705	0.50
4.00	4	60	0.030	0.180	1.000	3.77	5065	610	0.50
5.00	4	60	0.035	0.200	1.200	4.80	3980	555	0.50
6.00	6	60	0.040	0.220	1.400	5.83	3275	785	0.50
8.00	6	60	0.050	0.250	1.900	7.87	2425	730	0.50
10.00	6	60	0.055	0.280	2.400	9.90	1930	635	0.50
12.00	6	60	0.070	0.300	2.900	11.92	1600	675	0.50
16.00	6	60	0.075	0.650	3.800	15.47	1235	555	1.50

Application



Material

Steel
< 850 N/mm²

P
P

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
3.00	4	388	0.025	0.050	0.050	2.94	42010	4200	45°
4.00	4	420	0.030	0.060	0.060	3.96	33760	4050	45°
5.00	4	420	0.035	0.060	0.060	4.96	26955	3775	45°
6.00	6	420	0.040	0.080	0.080	5.98	22355	5365	45°
8.00	6	420	0.045	0.080	0.080	7.98	16755	4525	45°
10.00	6	420	0.050	0.100	0.100	9.99	13380	4015	45°
12.00	6	420	0.055	0.100	0.100	11.99	11150	3680	45°
16.00	6	420	0.065	0.180	0.180	15.87	8425	3285	45°

Steel
850 - 1100 N/mm²

P
P

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
3.00	4	360	0.025	0.050	0.050	2.94	38975	3900	45°
4.00	4	360	0.030	0.060	0.060	3.96	28935	3470	45°
5.00	4	360	0.035	0.060	0.060	4.96	23105	3235	45°
6.00	6	360	0.040	0.080	0.080	5.98	19160	4600	45°
8.00	6	360	0.045	0.080	0.080	7.98	14360	3875	45°
10.00	6	360	0.050	0.100	0.100	9.99	11470	3440	45°
12.00	6	360	0.050	0.100	0.100	11.99	9555	2865	45°
16.00	6	360	0.060	0.180	0.180	15.87	7220	2600	45°

Steel
1100 - 1300 N/mm²

P
P

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
3.00	4	320	0.020	0.050	0.050	2.94	34645	2770	45°
4.00	4	320	0.025	0.060	0.060	3.96	25720	2570	45°
5.00	4	320	0.030	0.060	0.060	4.96	20535	2465	45°
6.00	6	320	0.035	0.080	0.080	5.98	17035	3575	45°
8.00	6	320	0.040	0.080	0.080	7.98	12765	3065	45°
10.00	6	320	0.045	0.100	0.100	9.99	10195	2755	45°
12.00	6	320	0.050	0.100	0.100	11.99	8495	2550	45°
16.00	6	320	0.055	0.180	0.180	15.87	6420	2120	45°

Stainless steel
[Cr-Ni/1.4301]

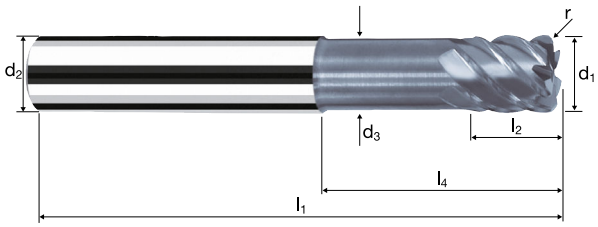
P

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
3.00	4	145	0.020	0.050	0.050	2.94	15700	1255	45°
4.00	4	145	0.025	0.060	0.060	3.96	11655	1165	45°
5.00	4	145	0.030	0.060	0.060	4.96	9305	1115	45°
6.00	6	145	0.030	0.080	0.080	5.98	7720	1390	45°
8.00	6	145	0.035	0.080	0.080	7.98	5785	1215	45°
10.00	6	145	0.040	0.100	0.100	9.99	4620	1110	45°
12.00	6	145	0.045	0.100	0.100	11.99	3850	1040	45°
16.00	6	145	0.050	0.180	0.180	15.87	2910	870	45°

Corner radius end mills Multispeed

Tolerance r 0/+0.03, 3xd

HM MG10	λ 45° γ 5°

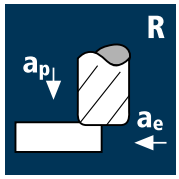


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Coating **P** Article-N°. **5250** ø-Code **180**

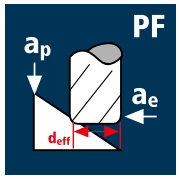
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P5250
180	3.00	6.00	2.80	57	4.00	14.00	20.63	0.500	4.4°	4	●
220	4.00	6.00	3.70	57	5.00	16.00	20.95	0.500	2.9°	4	●
260	5.00	6.00	4.60	57	6.00	18.00	21.27	0.500	1.5°	4	●
297	6.00	6.00	5.50	57	7.00	19.34	20.00	0.500	0.0°	6	●
388	8.00	8.00	7.40	63	9.00	25.29	26.00	0.500	0.0°	6	●
445	10.00	10.00	9.20	72	11.00	30.20	31.00	0.500	0.0°	6	●
496	12.00	12.00	11.00	83	13.00	36.13	37.00	0.500	0.0°	6	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	0.800	0.0°	6	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	1.000	0.0°	6	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	1.000	0.0°	6	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	1.500	0.0°	6	●
610	16.00	16.00	15.00	92	17.00	42.13	43.00	1.500	0.0°	6	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Stainless steel [Cr-Ni/1.4301]	2.00	4	80	0.015	0.600	1.200	12730	765	0.50
	3.00	4	80	0.025	0.600	1.800	8490	850	0.50
	4.00	4	80	0.035	0.600	2.400	6365	890	0.50
	5.00	4	80	0.040	0.600	3.000	5095	815	0.50
	6.00	4	80	0.050	0.600	3.600	4245	850	0.50
	8.00	4	80	0.065	0.600	4.800	3185	830	0.50
	10.00	4	80	0.085	0.600	6.000	2545	865	0.50
	12.00	4	80	0.100	0.600	7.200	2120	850	0.50
Stainless steel [Cr-Ni-Mo-.../1.4429]	2.00	4	70	0.015	0.600	1.200	11140	670	0.50
	3.00	4	70	0.025	0.600	1.800	7425	745	0.50
	4.00	4	70	0.030	0.600	2.400	5570	670	0.50
	5.00	4	70	0.035	0.600	3.000	4455	625	0.50
	6.00	4	70	0.045	0.600	3.600	3715	670	0.50
	8.00	4	70	0.060	0.600	4.800	2785	670	0.50
	10.00	4	70	0.075	0.600	6.000	2230	670	0.50
	12.00	4	70	0.090	0.600	7.200	1855	670	0.50
Heat resistant steel Duplex steel [1.4462] [17-4 PH]	2.00	4	50	0.010	0.600	1.200	7960	320	0.50
	3.00	4	50	0.020	0.600	1.800	5305	425	0.50
	4.00	4	50	0.025	0.600	2.400	3980	400	0.50
	5.00	4	50	0.030	0.600	3.000	3185	380	0.50
	6.00	4	50	0.035	0.600	3.600	2655	370	0.50
	8.00	4	50	0.045	0.600	4.800	1990	360	0.50
	10.00	4	50	0.060	0.600	6.000	1590	380	0.50
	12.00	4	50	0.070	0.600	7.200	1325	370	0.50
Steel < 850 N/mm²	2.00	4	180	0.020	0.600	1.200	28650	2290	0.50
	3.00	4	180	0.035	0.600	1.800	19100	2675	0.50
	4.00	4	180	0.045	0.600	2.400	14325	2580	0.50
	5.00	4	180	0.050	0.600	3.000	11460	2290	0.50
	6.00	4	180	0.065	0.600	3.600	9550	2485	0.50
	8.00	4	180	0.085	0.600	4.800	7160	2435	0.50
	10.00	4	180	0.110	0.600	6.000	5730	2520	0.50
	12.00	4	180	0.130	0.600	7.200	4775	2485	0.50

Application

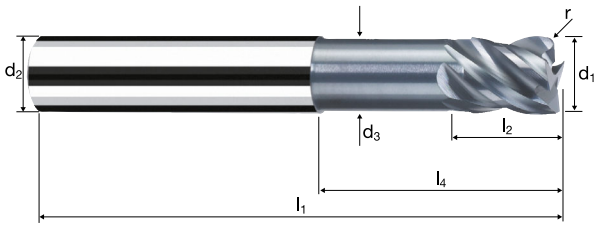


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Stainless steel [Cr-Ni/1.4301]	2.00	4	160	0.030	0.100	0.100	1.99	25595	3070	45°
	3.00	4	160	0.050	0.120	0.120	3.00	16975	3395	45°
	4.00	4	160	0.070	0.120	0.120	4.00	12730	3565	45°
	5.00	4	160	0.080	0.160	0.160	5.00	10185	3260	45°
	6.00	4	160	0.100	0.180	0.180	6.00	8490	3395	45°
	8.00	4	160	0.130	0.200	0.200	7.99	6375	3315	45°
	10.00	4	160	0.170	0.240	0.240	9.97	5110	3475	45°
	12.00	4	160	0.200	0.260	0.260	11.96	4260	3405	45°
Stainless steel [Cr-Ni-Mo-.../1.4429]	2.00	4	140	0.030	0.100	0.100	1.99	22395	2685	45°
	3.00	4	140	0.050	0.120	0.120	3.00	14855	2970	45°
	4.00	4	140	0.060	0.120	0.120	4.00	11140	2675	45°
	5.00	4	140	0.070	0.160	0.160	5.00	8915	2495	45°
	6.00	4	140	0.090	0.180	0.180	6.00	7425	2675	45°
	8.00	4	140	0.120	0.200	0.200	7.99	5575	2675	45°
	10.00	4	140	0.150	0.240	0.240	9.97	4470	2680	45°
	12.00	4	140	0.180	0.260	0.260	11.96	3725	2685	45°
Heat resistant steel Duplex steel [1.4462] [17-4 PH]	2.00	4	110	0.020	0.100	0.100	1.99	17595	1410	45°
	3.00	4	110	0.040	0.120	0.120	3.00	11670	1865	45°
	4.00	4	110	0.050	0.120	0.120	4.00	8755	1750	45°
	5.00	4	110	0.060	0.160	0.160	5.00	7005	1680	45°
	6.00	4	110	0.070	0.180	0.180	6.00	5835	1635	45°
	8.00	4	110	0.090	0.200	0.200	7.99	4380	1580	45°
	10.00	4	110	0.120	0.240	0.240	9.97	3510	1685	45°
	12.00	4	110	0.140	0.260	0.260	11.96	2930	1640	45°
Steel < 850 N/mm²	2.00	4	263	0.040	0.100	0.100	1.99	42070	6730	45°
	3.00	4	396	0.070	0.120	0.120	3.00	42015	11765	45°
	4.00	4	400	0.090	0.120	0.120	4.00	31830	11460	45°
	5.00	4	400	0.100	0.160	0.160	5.00	25465	10185	45°
	6.00	4	400	0.130	0.180	0.180	6.00	21220	11035	45°
	8.00	4	400	0.170	0.200	0.200	7.99	15935	10835	45°
	10.00	4	400	0.220	0.240	0.240	9.97	12770	11240	45°
	12.00	4	400	0.260	0.260	0.260	11.96	10645	11070	45°

Corner radius end mills Toro-SB

Tolerance r 0/+0.03, 3xd

HM MG10	λ 40° γ 5°
Vario	

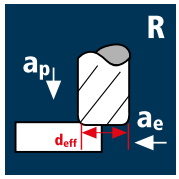


Rm < 850	Rm 850-1100						Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **7340** ø-Code **138**

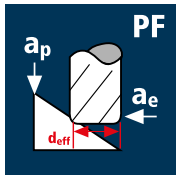
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P7340
138	2.00	6.00	1.90	57	3.00	6.00	14.31	0.200	8.5°	4	●
178	3.00	6.00	2.80	57	4.00	9.00	15.63	0.200	5.8°	4	●
218	4.00	6.00	3.70	57	5.00	12.00	16.95	0.200	3.6°	4	●
258	5.00	6.00	4.60	57	6.00	15.00	18.27	0.200	1.7°	4	●
297	6.00	6.00	5.50	57	7.00	19.34	20.00	0.200	0.0°	4	●
385	8.00	8.00	7.40	63	9.00	25.29	26.00	0.200	0.0°	4	●
445	10.00	10.00	9.20	72	11.00	30.20	31.00	0.200	0.0°	4	●
496	12.00	12.00	11.00	83	13.00	36.13	37.00	0.200	0.0°	4	●
140	2.00	6.00	1.90	57	3.00	6.00	14.31	0.500	8.7°	4	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	0.500	6.0°	4	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	0.500	3.7°	4	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	0.500	1.7°	4	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	0.500	0.0°	4	●
388	8.00	8.00	7.40	63	9.00	25.29	26.00	0.500	0.0°	4	●
448	10.00	10.00	9.20	72	11.00	30.20	31.00	0.500	0.0°	4	●
498	12.00	12.00	11.00	83	13.00	36.13	37.00	0.500	0.0°	4	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Stainless steel [Cr-Ni/1.4301]	4.00	4	100	0.035	0.600	2.400	3.83	8310	1165	1.00
	5.00	4	100	0.045	0.600	3.000	4.83	6590	1185	1.00
	6.00	4	100	0.055	0.600	3.600	5.83	5460	1200	1.00
	8.00	4	100	0.075	0.600	4.800	7.83	4065	1220	1.00
	10.00	4	100	0.090	0.600	6.000	9.83	3240	1165	1.00
	12.00	4	100	0.110	0.600	7.200	11.83	2690	1185	1.00
	16.00	4	100	0.090	1.200	9.600	15.67	2030	730	2.00
Stainless steel [Cr-Ni-Mo-.../1.4429]	4.00	4	80	0.030	0.600	2.400	3.83	6650	800	1.00
	5.00	4	80	0.040	0.600	3.000	4.83	5270	845	1.00
	6.00	4	80	0.050	0.600	3.600	5.83	4370	875	1.00
	8.00	4	80	0.070	0.600	4.800	7.83	3250	910	1.00
	10.00	4	80	0.080	0.600	6.000	9.83	2590	830	1.00
	12.00	4	80	0.100	0.600	7.200	11.83	2155	860	1.00
	16.00	4	80	0.080	1.200	9.600	15.67	1625	520	2.00
Heat resistant steel Duplex steel [1.4462] [17-4 PH]	4.00	4	55	0.025	0.600	2.400	3.83	4570	455	1.00
	5.00	4	55	0.030	0.600	3.000	4.83	3625	435	1.00
	6.00	4	55	0.040	0.600	3.600	5.83	3005	480	1.00
	8.00	4	55	0.055	0.600	4.800	7.83	2235	490	1.00
	10.00	4	55	0.065	0.600	6.000	9.83	1780	465	1.00
	12.00	4	55	0.075	0.600	7.200	11.83	1480	445	1.00
	16.00	4	55	0.060	1.200	9.600	15.67	1115	270	2.00
Steel < 850 N/mm²	4.00	4	200	0.045	0.600	2.400	3.83	16620	2990	1.00
	5.00	4	200	0.060	0.600	3.000	4.83	13180	3165	1.00
	6.00	4	200	0.070	0.600	3.600	5.83	10920	3060	1.00
	8.00	4	200	0.100	0.600	4.800	7.83	8130	3250	1.00
	10.00	4	200	0.115	0.600	6.000	9.83	6475	2980	1.00
	12.00	4	200	0.145	0.600	7.200	11.83	5380	3120	1.00
	16.00	4	200	0.115	1.200	9.600	15.67	4065	1870	2.00

Application

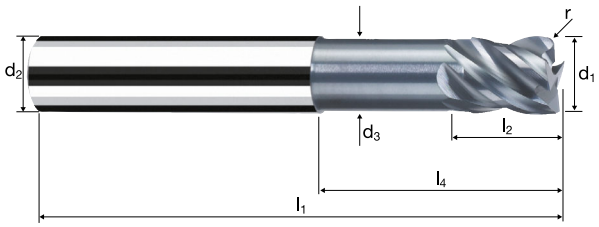


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Stainless steel [Cr-Ni/1.4301]	4.00	4	160	0.070	0.180	0.180	3.97	12830	3590	45°
	5.00	4	160	0.090	0.240	0.240	4.99	10205	3675	45°
	6.00	4	160	0.110	0.270	0.270	6.00	8490	3735	45°
	8.00	4	160	0.150	0.300	0.300	8.00	6365	3820	45°
	10.00	4	160	0.180	0.360	0.360	9.99	5100	3670	45°
	12.00	4	160	0.220	0.390	0.390	11.98	4250	3740	45°
	16.00	4	160	0.250	0.450	0.450	15.98	3185	3185	45°
Stainless steel [Cr-Ni-Mo-.../1.4429]	4.00	4	140	0.060	0.180	0.180	3.97	11225	2695	45°
	5.00	4	140	0.080	0.240	0.240	4.99	8930	2860	45°
	6.00	4	140	0.100	0.270	0.270	6.00	7425	2970	45°
	8.00	4	140	0.140	0.300	0.300	8.00	5570	3120	45°
	10.00	4	140	0.160	0.360	0.360	9.99	4460	2855	45°
	12.00	4	140	0.200	0.390	0.390	11.98	3720	2975	45°
	16.00	4	140	0.220	0.450	0.450	15.98	2790	2455	45°
Heat resistant steel Duplex steel [1.4462] [17-4 PH]	4.00	4	110	0.050	0.180	0.180	3.97	8820	1765	45°
	5.00	4	110	0.060	0.240	0.240	4.99	7015	1685	45°
	6.00	4	110	0.080	0.270	0.270	6.00	5835	1865	45°
	8.00	4	110	0.110	0.300	0.300	8.00	4375	1925	45°
	10.00	4	110	0.130	0.360	0.360	9.99	3505	1825	45°
	12.00	4	110	0.150	0.390	0.390	11.98	2925	1755	45°
	16.00	4	110	0.170	0.450	0.450	15.98	2190	1490	45°
Steel < 850 N/mm²	4.00	4	400	0.090	0.180	0.180	3.97	32070	11545	45°
	5.00	4	400	0.120	0.240	0.240	4.99	25515	12250	45°
	6.00	4	400	0.140	0.270	0.270	6.00	21220	11885	45°
	8.00	4	400	0.200	0.300	0.300	8.00	15915	12730	45°
	10.00	4	400	0.230	0.360	0.360	9.99	12745	11725	45°
	12.00	4	400	0.290	0.390	0.390	11.98	10630	12330	45°
	16.00	4	400	0.320	0.450	0.450	15.98	7970	10200	45°

Corner radius end mills Toro-SB

Tolerance r 0/+0.03, 3xd

HM MG10	λ 40° γ 5°
Vario	

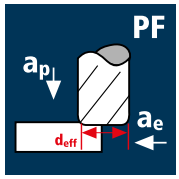


Rm < 850	Rm 850-1100						Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **7340** ø-Code **222**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P7340
222	4.00	6.00	3.70	57	5.00	12.00	16.95	1.000	3.8°	4	●
262	5.00	6.00	4.60	57	6.00	15.00	18.27	1.000	1.8°	4	●
302	6.00	6.00	5.50	57	7.00	19.34	20.00	1.000	0.0°	4	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	1.000	0.0°	4	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	1.000	0.0°	4	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	1.000	0.0°	4	●
453	10.00	10.00	9.20	72	11.00	30.20	31.00	1.500	0.0°	4	●
503	12.00	12.00	11.00	83	13.00	36.13	37.00	1.500	0.0°	4	●
611	16.00	16.00	15.00	92	17.00	42.13	43.00	2.000	0.0°	4	●

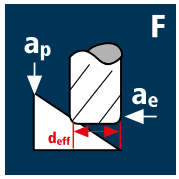
Application



Material

Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Steel < 850 N/mm²	6.00	6	200	0.050	0.150	1.320	5.33	11945	3585	0.80
	8.00	6	200	0.065	0.180	1.760	7.14	8915	3475	1.00
	10.00	6	200	0.080	0.200	2.200	9.20	6920	3320	1.00
	12.00	6	200	0.090	0.220	2.640	10.56	6030	3255	1.50
	16.00	6	200	0.115	0.250	3.520	14.66	4345	2995	1.50
Steel 850 - 1100 N/mm²	6.00	6	180	0.050	0.150	1.320	5.33	10750	3225	0.80
	8.00	6	180	0.060	0.180	1.760	7.14	8025	2890	1.00
	10.00	6	180	0.075	0.200	2.200	9.20	6230	2805	1.00
	12.00	6	180	0.085	0.220	2.640	10.56	5425	2765	1.50
	16.00	6	180	0.110	0.250	3.520	14.66	3910	2580	1.50
Steel 1100 - 1300 N/mm²	6.00	6	150	0.045	0.150	1.320	5.33	8960	2420	0.80
	8.00	6	150	0.055	0.180	1.760	7.14	6685	2205	1.00
	10.00	6	150	0.070	0.200	2.200	9.20	5190	2180	1.00
	12.00	6	150	0.080	0.220	2.640	10.56	4520	2170	1.50
	16.00	6	150	0.100	0.250	3.520	14.66	3255	1955	1.50
Stainless steel [Cr-Ni/1.4301]	6.00	6	60	0.040	0.120	1.060	5.24	3645	875	0.80
	8.00	6	60	0.050	0.144	1.400	7.03	2715	815	1.00
	10.00	6	60	0.065	0.160	1.760	9.09	2100	820	1.00
	12.00	6	60	0.070	0.176	2.120	10.41	1835	770	1.50
	16.00	6	60	0.090	0.200	2.820	14.50	1315	710	1.50

Application



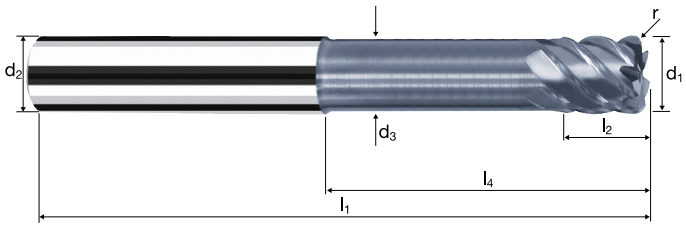
Material

Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Steel < 850 N/mm²	6.00	6	420	0.040	0.100	0.100	5.94	22505	5400	45°
	8.00	6	420	0.045	0.110	0.110	7.90	16925	4570	45°
	10.00	6	420	0.050	0.140	0.140	9.94	13450	4035	45°
	12.00	6	420	0.055	0.170	0.170	11.86	11270	3720	45°
	16.00	6	420	0.065	0.180	0.180	15.87	8425	3285	45°
Steel 850 - 1100 N/mm²	6.00	6	360	0.040	0.100	0.100	5.94	19290	4630	45°
	8.00	6	360	0.045	0.110	0.110	7.90	14505	3915	45°
	10.00	6	360	0.050	0.140	0.140	9.94	11530	3460	45°
	12.00	6	360	0.050	0.170	0.170	11.86	9660	2900	45°
	16.00	6	360	0.060	0.180	0.180	15.87	7220	2600	45°
Steel 1100 - 1300 N/mm²	6.00	6	320	0.035	0.100	0.100	5.94	17150	3600	45°
	8.00	6	320	0.040	0.110	0.110	7.90	12895	3095	45°
	10.00	6	320	0.045	0.140	0.140	9.94	10245	2765	45°
	12.00	6	320	0.050	0.170	0.170	11.86	8590	2575	45°
	16.00	6	320	0.055	0.180	0.180	15.87	6420	2120	45°
Stainless steel [Cr-Ni/1.4301]	6.00	6	145	0.030	0.100	0.100	5.94	7770	1400	45°
	8.00	6	145	0.035	0.110	0.110	7.90	5840	1225	45°
	10.00	6	145	0.040	0.140	0.140	9.94	4645	1115	45°
	12.00	6	145	0.045	0.170	0.170	11.86	3890	1050	45°
	16.00	6	145	0.050	0.180	0.180	15.87	2910	870	45°

Corner radius end mills Multispeed

Tolerance r 0/+0.03, 5xd

HM MG10	λ 45° γ 5°

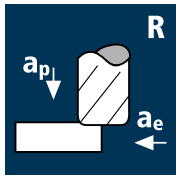


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Coating **P** Article-N°. **5252** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	z	POLYCHROM P5252
300	6.00	6.00	5.50	70	7.00	32.34	33.00	0.800	6	●
391	8.00	8.00	7.40	80	9.00	42.29	43.00	1.000	6	●
450	10.00	10.00	9.20	84	11.00	42.20	43.00	1.000	6	●
501	12.00	12.00	11.00	97	13.00	50.13	51.00	1.500	6	●
610	16.00	16.00	15.00	115	17.00	65.13	66.00	1.500	6	●

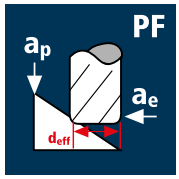
Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Stainless steel [Cr-Ni/1.4301]								
2.00	4	80	0.015	0.600	0.800	12730	765	0.50
3.00	4	80	0.020	0.600	1.200	8490	680	0.50
4.00	4	80	0.030	0.600	1.600	6365	765	0.50
5.00	4	80	0.035	0.600	2.000	5095	715	0.50
6.00	4	80	0.045	0.600	2.400	4245	765	0.50
8.00	4	80	0.055	0.600	3.200	3185	700	0.50
10.00	4	80	0.070	0.600	4.000	2545	715	0.50
12.00	4	80	0.085	0.600	4.800	2120	720	0.50
Stainless steel [Cr-Ni-Mo-.../1.4429]								
2.00	4	70	0.015	0.600	0.800	11140	670	0.50
3.00	4	70	0.020	0.600	1.200	7425	595	0.50
4.00	4	70	0.025	0.600	1.600	5570	555	0.50
5.00	4	70	0.030	0.600	2.000	4455	535	0.50
6.00	4	70	0.040	0.600	2.400	3715	595	0.50
8.00	4	70	0.050	0.600	3.200	2785	555	0.50
10.00	4	70	0.065	0.600	4.000	2230	580	0.50
12.00	4	70	0.075	0.600	4.800	1855	555	0.50
Heat resistant steel Duplex steel [1.4462] [17-4 PH]								
2.00	4	50	0.010	0.600	0.800	7960	320	0.50
3.00	4	50	0.015	0.600	1.200	5305	320	0.50
4.00	4	50	0.020	0.600	1.600	3980	320	0.50
5.00	4	50	0.025	0.600	2.000	3185	320	0.50
6.00	4	50	0.030	0.600	2.400	2655	320	0.50
8.00	4	50	0.040	0.600	3.200	1990	320	0.50
10.00	4	50	0.050	0.600	4.000	1590	320	0.50
12.00	4	50	0.060	0.600	4.800	1325	320	0.50
Steel < 850 N/mm²								
2.00	4	180	0.020	0.600	0.800	28650	2290	0.50
3.00	4	180	0.025	0.600	1.200	19100	1910	0.50
4.00	4	180	0.040	0.600	1.600	14325	2290	0.50
5.00	4	180	0.045	0.600	2.000	11460	2065	0.50
6.00	4	180	0.060	0.600	2.400	9550	2290	0.50
8.00	4	180	0.070	0.600	3.200	7160	2005	0.50
10.00	4	180	0.090	0.600	4.000	5730	2065	0.50
12.00	4	180	0.110	0.600	4.800	4775	2100	0.50

Application



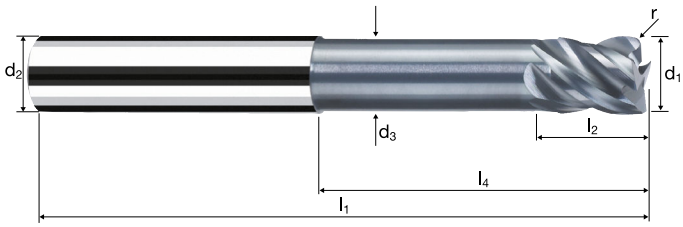
Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Stainless steel [Cr-Ni/1.4301]									
2.00	4	160	0.030	0.100	0.100	1.99	25595	3070	45°
3.00	4	160	0.040	0.120	0.120	3.00	16975	2715	45°
4.00	4	160	0.060	0.120	0.120	4.00	12730	3055	45°
5.00	4	160	0.070	0.160	0.160	5.00	10185	2850	45°
6.00	4	160	0.090	0.180	0.180	6.00	8490	3055	45°
8.00	4	160	0.110	0.200	0.200	7.99	6375	2805	45°
10.00	4	160	0.140	0.240	0.240	9.97	5110	2860	45°
12.00	4	160	0.170	0.260	0.260	11.96	4260	2895	45°
Stainless steel [Cr-Ni-Mo-.../1.4429]									
2.00	4	140	0.030	0.100	0.100	1.99	22395	2685	45°
3.00	4	140	0.040	0.120	0.120	3.00	14855	2375	45°
4.00	4	140	0.050	0.120	0.120	4.00	11140	2230	45°
5.00	4	140	0.060	0.160	0.160	5.00	8915	2140	45°
6.00	4	140	0.080	0.180	0.180	6.00	7425	2375	45°
8.00	4	140	0.100	0.200	0.200	7.99	5575	2230	45°
10.00	4	140	0.130	0.240	0.240	9.97	4470	2325	45°
12.00	4	140	0.150	0.260	0.260	11.96	3725	2235	45°
Heat resistant steel Duplex steel [1.4462] [17-4 PH]									
2.00	4	110	0.020	0.100	0.100	1.99	17595	1410	45°
3.00	4	110	0.030	0.120	0.120	3.00	11670	1400	45°
4.00	4	110	0.040	0.120	0.120	4.00	8755	1400	45°
5.00	4	110	0.050	0.160	0.160	5.00	7005	1400	45°
6.00	4	110	0.060	0.180	0.180	6.00	5835	1400	45°
8.00	4	110	0.080	0.200	0.200	7.99	4380	1400	45°
10.00	4	110	0.100	0.240	0.240	9.97	3510	1405	45°
12.00	4	110	0.120	0.260	0.260	11.96	2930	1405	45°
Steel < 850 N/mm²									
2.00	4	263	0.040	0.100	0.100	1.99	42070	6730	45°
3.00	4	396	0.050	0.120	0.120	3.00	42015	8405	45°
4.00	4	400	0.080	0.120	0.120	4.00	31830	10185	45°
5.00	4	400	0.090	0.160	0.160	5.00	25465	9165	45°
6.00	4	400	0.120	0.180	0.180	6.00	21220	10185	45°
8.00	4	400	0.140	0.200	0.200	7.99	15935	8925	45°
10.00	4	400	0.180	0.240	0.240	9.97	12770	9195	45°
12.00	4	400	0.220	0.260	0.260	11.96	10645	9370	45°

Corner radius end mills Toro-SB

Tolerance r 0/+0.03, 6xd

HM MG10	λ 40° γ 5°
Vario	

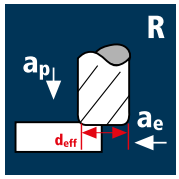


Rm < 850	Rm 850-1100						Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **7344** ø-Code **138**

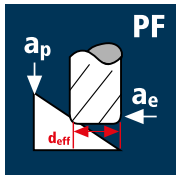
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P7344
138	2.00	6.00	1.90	66	3.00	12.00	20.31	0.200	5.9°	4	●
178	3.00	6.00	2.80	66	4.00	18.00	24.63	0.200	3.7°	4	●
218	4.00	6.00	3.70	69	5.00	24.00	28.95	0.200	2.1°	4	●
258	5.00	6.00	4.60	75	6.00	30.00	33.27	0.200	0.9°	4	●
297	6.00	6.00	5.50	80	7.00	42.34	43.00	0.200	0.0°	4	●
385	8.00	8.00	7.40	90	9.00	52.29	53.00	0.200	0.0°	4	●
445	10.00	10.00	9.20	105	11.00	63.20	64.00	0.200	0.0°	4	●
496	12.00	12.00	11.00	120	13.00	73.13	74.00	0.200	0.0°	4	●
140	2.00	6.00	1.90	66	3.00	12.00	20.31	0.500	6.0°	4	●
180	3.00	6.00	2.80	66	4.00	18.00	24.63	0.500	3.7°	4	●
220	4.00	6.00	3.70	69	5.00	24.00	28.95	0.500	2.1°	4	●
260	5.00	6.00	4.60	75	6.00	30.00	33.27	0.500	0.9°	4	●
300	6.00	6.00	5.50	80	7.00	42.34	43.00	0.500	0.0°	4	●
388	8.00	8.00	7.40	90	9.00	52.29	53.00	0.500	0.0°	4	●
448	10.00	10.00	9.20	105	11.00	63.20	64.00	0.500	0.0°	4	●
498	12.00	12.00	11.00	120	13.00	73.13	74.00	0.500	0.0°	4	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Stainless steel [Cr-Ni/1.4301]	4.00	4	100	0.030	0.600	1.600	3.83	8310	995	1.00
	5.00	4	100	0.040	0.600	2.000	4.83	6590	1055	1.00
	6.00	4	100	0.045	0.600	2.400	5.83	5460	985	1.00
	8.00	4	100	0.060	0.600	3.200	7.83	4065	975	1.00
	10.00	4	100	0.080	0.600	4.000	9.83	3240	1035	1.00
	12.00	4	100	0.095	0.600	4.800	11.83	2690	1020	1.00
Stainless steel [Cr-Ni-Mo-.../1.4429]	4.00	4	80	0.025	0.600	1.600	3.83	6650	665	1.00
	5.00	4	80	0.035	0.600	2.000	4.83	5270	740	1.00
	6.00	4	80	0.040	0.600	2.400	5.83	4370	700	1.00
	8.00	4	80	0.055	0.600	3.200	7.83	3250	715	1.00
	10.00	4	80	0.070	0.600	4.000	9.83	2590	725	1.00
	12.00	4	80	0.085	0.600	4.800	11.83	2155	730	1.00
Heat resistant steel Duplex steel [1.4462] [17-4 PH]	4.00	4	55	0.020	0.600	1.600	3.83	4570	365	1.00
	5.00	4	55	0.030	0.600	2.000	4.83	3625	435	1.00
	6.00	4	55	0.030	0.600	2.400	5.83	3005	360	1.00
	8.00	4	55	0.040	0.600	3.200	7.83	2235	360	1.00
	10.00	4	55	0.055	0.600	4.000	9.83	1780	390	1.00
	12.00	4	55	0.065	0.600	4.800	11.83	1480	385	1.00
Steel < 850 N/mm²	4.00	4	200	0.040	0.600	1.600	3.83	16620	2660	1.00
	5.00	4	200	0.050	0.600	2.000	4.83	13180	2635	1.00
	6.00	4	200	0.060	0.600	2.400	5.83	10920	2620	1.00
	8.00	4	200	0.080	0.600	3.200	7.83	8130	2600	1.00
	10.00	4	200	0.105	0.600	4.000	9.83	6475	2720	1.00
	12.00	4	200	0.125	0.600	4.800	11.83	5380	2690	1.00

Application

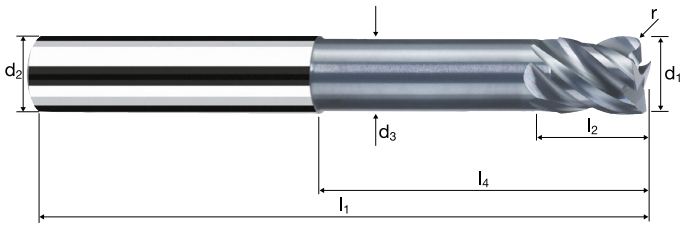


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Stainless steel [Cr-Ni/1.4301]	4.00	4	160	0.060	0.180	0.180	3.97	12830	3080	45°
	5.00	4	160	0.080	0.240	0.240	4.99	10205	3265	45°
	6.00	4	160	0.090	0.270	0.270	6.00	8490	3055	45°
	8.00	4	160	0.120	0.300	0.300	8.00	6365	3055	45°
	10.00	4	160	0.160	0.360	0.360	9.99	5100	3265	45°
	12.00	4	160	0.190	0.390	0.390	11.98	4250	3230	45°
Stainless steel [Cr-Ni-Mo-.../1.4429]	4.00	4	140	0.050	0.180	0.180	3.97	11225	2245	45°
	5.00	4	140	0.070	0.240	0.240	4.99	8930	2500	45°
	6.00	4	140	0.080	0.270	0.270	6.00	7425	2375	45°
	8.00	4	140	0.110	0.300	0.300	8.00	5570	2450	45°
	10.00	4	140	0.140	0.360	0.360	9.99	4460	2500	45°
	12.00	4	140	0.170	0.390	0.390	11.98	3720	2530	45°
Heat resistant steel Duplex steel [1.4462] [17-4 PH]	4.00	4	110	0.040	0.180	0.180	3.97	8820	1410	45°
	5.00	4	110	0.060	0.240	0.240	4.99	7015	1685	45°
	6.00	4	110	0.060	0.270	0.270	6.00	5835	1400	45°
	8.00	4	110	0.080	0.300	0.300	8.00	4375	1400	45°
	10.00	4	110	0.110	0.360	0.360	9.99	3505	1540	45°
	12.00	4	110	0.130	0.390	0.390	11.98	2925	1520	45°
Steel < 850 N/mm²	4.00	4	400	0.080	0.180	0.180	3.97	32070	10265	45°
	5.00	4	400	0.100	0.240	0.240	4.99	25515	10205	45°
	6.00	4	400	0.120	0.270	0.270	6.00	21220	10185	45°
	8.00	4	400	0.160	0.300	0.300	8.00	15915	10185	45°
	10.00	4	400	0.210	0.360	0.360	9.99	12745	10705	45°
	12.00	4	400	0.250	0.390	0.390	11.98	10630	10630	45°

Corner radius end mills Toro-SB

Tolerance r 0/+0.03, 6xd

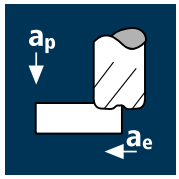
HM MG10	λ 40° γ 5°
Vario	



Rm < 850	Rm 850-1100						Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **7344** ø-Code **222**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P7344
222	4.00	6.00	3.70	69	5.00	24.00	28.95	1.000	2.1°	4	●
262	5.00	6.00	4.60	75	6.00	30.00	33.27	1.000	1.0°	4	●
302	6.00	6.00	5.50	80	7.00	42.34	43.00	1.000	0.0°	4	●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	1.000	0.0°	4	●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	1.000	0.0°	4	●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	1.000	0.0°	4	●

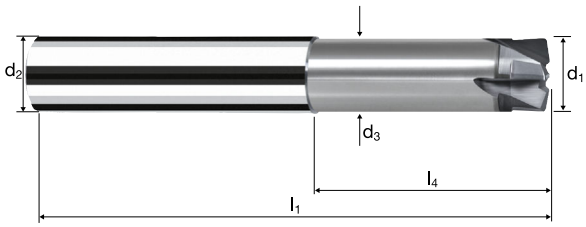
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel 850 - 1100 N/mm²	2.00	4	250	0.135	0.050	1.200	39790	21485	1.3
		3.00	4	250	0.200	0.080	1.800	26525	21220	3.1
		4.00	4	250	0.265	0.120	2.400	19895	21090	6.1
		5.00	4	250	0.335	0.160	3.000	15915	21325	10.2
		6.00	4	250	0.400	0.200	3.600	13265	21220	15.3
		8.00	4	250	0.535	0.250	4.800	9945	21285	25.5
		10.00	4	250	0.665	0.320	6.000	7960	21170	40.6
		12.00	4	250	0.800	0.400	7.200	6630	21220	61.1
		16.00	4	250	1.065	0.480	9.600	4975	21190	97.6
	Steel 1100 - 1300 N/mm²	2.00	4	220	0.115	0.050	1.200	35015	16105	1.0
		3.00	4	220	0.170	0.080	1.800	23345	15875	2.3
		4.00	4	220	0.225	0.120	2.400	17505	15755	4.5
		5.00	4	220	0.285	0.160	3.000	14005	15965	7.7
		6.00	4	220	0.340	0.200	3.600	11670	15875	11.4
		8.00	4	220	0.455	0.250	4.800	8755	15930	19.1
		10.00	4	220	0.565	0.320	6.000	7005	15825	30.4
		12.00	4	220	0.680	0.400	7.200	5835	15875	45.7
		16.00	4	220	0.905	0.480	9.600	4375	15845	73.0
	Steel 1300 - 1500 N/mm²	2.00	4	200	0.105	0.050	1.200	31830	13370	0.8
		3.00	4	200	0.155	0.070	1.800	21220	13155	1.7
		4.00	4	200	0.205	0.110	2.400	15915	13050	3.4
		5.00	4	200	0.260	0.140	3.000	12730	13240	5.6
		6.00	4	200	0.310	0.180	3.600	10610	13155	8.5
		8.00	4	200	0.415	0.230	4.800	7960	13210	14.6
		10.00	4	200	0.520	0.290	6.000	6365	13240	23.0
		12.00	4	200	0.625	0.360	7.200	5305	13265	34.4
		16.00	4	200	0.830	0.430	9.600	3980	13210	54.5
	Hardened tool steel 48 - 52 HRC	2.00	4	160	0.060	0.070	1.200	25465	6110	0.5
		3.00	4	160	0.090	0.110	1.800	16975	6110	1.2
		4.00	4	160	0.120	0.140	2.400	12730	6110	2.1
		5.00	4	160	0.150	0.180	3.000	10185	6110	3.3
		6.00	4	160	0.180	0.210	3.600	8490	6110	4.6
		8.00	4	160	0.240	0.280	4.800	6365	6110	8.2
		10.00	4	160	0.300	0.350	6.000	5095	6110	12.8
		12.00	4	160	0.360	0.420	7.200	4245	6110	18.5
		16.00	4	160	0.480	0.560	9.600	3185	6110	32.9
	Hardened tool steel 52 - 56 HRC	2.00	4	140	0.050	0.070	1.200	22280	4455	0.4
		3.00	4	140	0.075	0.110	1.800	14855	4455	0.9
		4.00	4	140	0.100	0.140	2.400	11140	4455	1.5
		5.00	4	140	0.125	0.180	3.000	8915	4455	2.4
		6.00	4	140	0.150	0.210	3.600	7425	4455	3.4
		8.00	4	140	0.200	0.280	4.800	5570	4455	6.0
		10.00	4	140	0.250	0.350	6.000	4455	4455	9.4
		12.00	4	140	0.300	0.420	7.200	3715	4455	13.5
		16.00	4	140	0.400	0.560	9.600	2785	4455	24.0
	Hardened tool steel 56 - 60 HRC	2.00	4	100	0.030	0.060	1.200	15915	1910	0.1
		3.00	4	100	0.045	0.090	1.800	10610	1910	0.3
		4.00	4	100	0.060	0.120	2.400	7960	1910	0.6
		5.00	4	100	0.075	0.150	3.000	6365	1910	0.9
		6.00	4	100	0.090	0.180	3.600	5305	1910	1.2
		8.00	4	100	0.120	0.240	4.800	3980	1910	2.2
		10.00	4	100	0.150	0.300	6.000	3185	1910	3.4
		12.00	4	100	0.180	0.360	7.200	2655	1910	5.0
		16.00	4	100	0.240	0.480	9.600	1990	1910	8.8
	Hardened tool steel > 60 HRC	2.00	4	60	0.020	0.050	1.200	9550	765	0.0
		3.00	4	60	0.030	0.075	1.800	6365	765	0.1
		4.00	4	60	0.040	0.100	2.400	4775	765	0.2
		5.00	4	60	0.050	0.125	3.000	3820	765	0.3
		6.00	4	60	0.060	0.150	3.600	3185	765	0.4
		8.00	4	60	0.080	0.200	4.800	2385	765	0.7
		10.00	4	60	0.100	0.250	6.000	1910	765	1.1
		12.00	4	60	0.120	0.300	7.200	1590	765	1.7
		16.00	4	60	0.160	0.400	9.600	1195	765	2.9
	Cast iron (lamellar / spheroidal)	2.00	4	250	0.135	0.050	1.200	39790	21485	1.3
		3.00	4	250	0.200	0.080	1.800	26525	21220	3.1
		4.00	4	250	0.265	0.120	2.400	19895	21090	6.1
		5.00	4	250	0.335	0.160	3.000	15915	21325	10.2
		6.00	4	250	0.400	0.200	3.600	13265	21220	15.3
		8.00	4	250	0.535	0.250	4.800	9945	21285	25.5
		10.00	4	250	0.665	0.320	6.000	7960	21170	40.6
		12.00	4	250	0.800	0.400	7.200	6630	21220	61.1
		16.00	4	250	1.065	0.480	9.600	4975	21190	97.6

High feed end mills XFeed

Cylindrical neck, 3xd

HM XT	λ 0° γ 0°

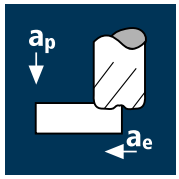
HFC



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7600** ø-Code **100**

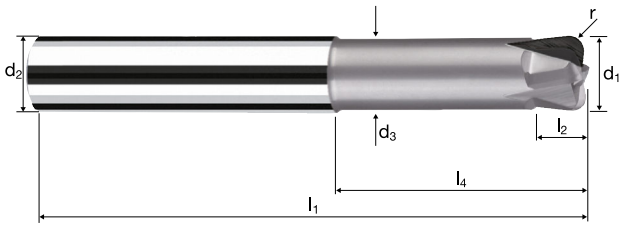
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_3	l_4	ap_{max}	$R_{theo.}$	α	z	X-AL	X7600
100	1.00	6.00	0.95	57	3.00	13.08	0.04	0.09	11.5°	4		●
140	2.00	6.00	1.90	57	6.00	14.31	0.08	0.18	8.5°	4		●
180	3.00	6.00	2.80	57	9.00	15.63	0.12	0.27	6.0°	4		●
220	4.00	6.00	3.70	57	12.00	16.95	0.16	0.36	3.8°	4		●
260	5.00	6.00	4.60	57	15.00	18.27	0.20	0.45	1.8°	4		●
300	6.00	6.00	5.50	57	19.34	20.00	0.25	0.54	0.0°	4		●
391	8.00	8.00	7.40	63	25.29	26.00	0.33	0.72	0.0°	4		●
450	10.00	10.00	9.20	72	30.20	31.00	0.41	0.90	0.0°	4		●
501	12.00	12.00	11.00	83	36.13	37.00	0.50	1.08	0.0°	4		●
610	16.00	16.00	15.00	92	42.13	43.00	0.69	1.44	0.0°	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm²	6.00	4	250	0.315	0.240	3.600	13265	16710	14.4
		8.00	4	250	0.420	0.320	4.800	9945	16710	25.7
		10.00	4	250	0.525	0.400	6.000	7960	16710	40.1
		12.00	4	250	0.630	0.480	7.200	6630	16710	57.8
		16.00	4	250	0.695	0.560	9.600	4975	13825	74.3
	Steel 1100 - 1300 N/mm²	6.00	4	220	0.270	0.240	3.600	11670	12605	10.9
		8.00	4	220	0.355	0.320	4.800	8755	12430	19.1
		10.00	4	220	0.445	0.400	6.000	7005	12465	29.9
		12.00	4	220	0.535	0.480	7.200	5835	12490	43.2
		16.00	4	220	0.590	0.560	9.600	4375	10330	55.5
	Steel 1300 - 1500 N/mm²	6.00	4	200	0.245	0.220	3.600	10610	10400	8.2
		8.00	4	200	0.330	0.290	4.800	7960	10505	14.6
		10.00	4	200	0.410	0.360	6.000	6365	10440	22.6
		12.00	4	200	0.490	0.430	7.200	5305	10400	32.2
		16.00	4	200	0.540	0.500	9.600	3980	8595	41.3
	Hardened tool steel 48 - 52 HRC	6.00	4	160	0.180	0.210	3.600	8490	6110	4.6
		8.00	4	160	0.240	0.280	4.800	6365	6110	8.2
		10.00	4	160	0.300	0.350	6.000	5095	6110	12.8
		12.00	4	160	0.360	0.420	7.200	4245	6110	18.5
		16.00	4	160	0.480	0.560	9.600	3185	6110	32.9
	Hardened tool steel 52 - 56 HRC	6.00	4	140	0.150	0.210	3.600	7425	4455	3.4
		8.00	4	140	0.200	0.280	4.800	5570	4455	6.0
		10.00	4	140	0.250	0.350	6.000	4455	4455	9.4
		12.00	4	140	0.300	0.420	7.200	3715	4455	13.5
		16.00	4	140	0.400	0.560	9.600	2785	4455	24.0
	Hardened tool steel 56 - 60 HRC	6.00	4	100	0.090	0.180	3.600	5305	1910	1.2
		8.00	4	100	0.120	0.240	4.800	3980	1910	2.2
		10.00	4	100	0.150	0.300	6.000	3185	1910	3.4
		12.00	4	100	0.180	0.360	7.200	2655	1910	5.0
		16.00	4	100	0.240	0.480	9.600	1990	1910	8.8

High feed end mills XFeed-R

Cylindrical neck, 3xd

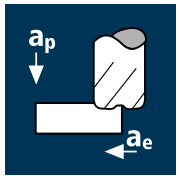
HM XT	λ 0° γ -10°
	HFC



	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			HSS GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7620** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	z		X-AL
											X7620
300	6.00	6.00	5.50	57	3.00	19.34	20.00	1.000	4		●
304	6.00	6.00	5.50	57	3.00	19.34	20.00	1.500	4		●
391	8.00	8.00	7.40	63	4.00	25.29	26.00	1.500	4		●
395	8.00	8.00	7.40	63	4.00	25.29	26.00	2.000	4		●
450	10.00	10.00	9.20	72	5.00	30.20	31.00	2.000	4		●
457	10.00	10.00	9.20	72	5.00	30.20	31.00	2.500	4		●
501	12.00	12.00	11.00	83	6.00	36.13	37.00	2.500	4		●
507	12.00	12.00	11.00	83	6.00	36.13	37.00	3.000	4		●
610	16.00	16.00	15.00	92	8.00	42.13	43.00	3.000	4		●

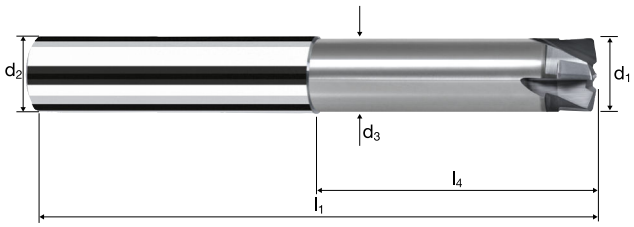
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel 850 - 1100 N/mm²	3.00	4	100	0.200	0.080	1.800	10610	8490	1.2
		4.00	4	100	0.265	0.120	2.400	7960	8435	2.4
		5.00	4	100	0.335	0.160	3.000	6365	8530	4.1
		6.00	4	100	0.400	0.200	3.600	5305	8490	6.1
		8.00	4	100	0.535	0.250	4.800	3980	8515	10.2
		10.00	4	100	0.665	0.320	6.000	3185	8465	16.3
		12.00	4	100	0.800	0.400	7.200	2655	8490	24.4
		16.00	4	100	1.065	0.480	9.600	1990	8475	39.1
	Steel 1100 - 1300 N/mm²	3.00	4	95	0.170	0.080	1.800	10080	6855	1.0
		4.00	4	95	0.225	0.120	2.400	7560	6805	2.0
		5.00	4	95	0.285	0.160	3.000	6050	6895	3.3
		6.00	4	95	0.340	0.200	3.600	5040	6855	4.9
		8.00	4	95	0.455	0.250	4.800	3780	6880	8.3
		10.00	4	95	0.565	0.320	6.000	3025	6835	13.1
		12.00	4	95	0.680	0.400	7.200	2520	6855	19.7
		16.00	4	95	0.905	0.480	9.600	1890	6840	31.5
	Steel 1300 - 1500 N/mm²	3.00	4	90	0.155	0.070	1.800	9550	5920	0.7
		4.00	4	90	0.205	0.110	2.400	7160	5875	1.6
		5.00	4	90	0.260	0.140	3.000	5730	5960	2.5
		6.00	4	90	0.310	0.180	3.600	4775	5920	3.8
		8.00	4	90	0.415	0.230	4.800	3580	5945	6.6
		10.00	4	90	0.520	0.290	6.000	2865	5960	10.4
		12.00	4	90	0.625	0.360	7.200	2385	5970	15.5
		16.00	4	90	0.830	0.430	9.600	1790	5945	24.5
	Hardened tool steel 48 - 52 HRC	3.00	4	85	0.120	0.060	1.800	9020	4330	0.5
		4.00	4	85	0.160	0.100	2.400	6765	4330	1.0
		5.00	4	85	0.200	0.130	3.000	5410	4330	1.7
		6.00	4	85	0.240	0.160	3.600	4510	4330	2.5
		8.00	4	85	0.320	0.200	4.800	3380	4330	4.2
		10.00	4	85	0.400	0.260	6.000	2705	4330	6.8
		12.00	4	85	0.480	0.320	7.200	2255	4330	10.0
		16.00	4	85	0.640	0.380	9.600	1690	4330	15.8
	Hardened tool steel 52 - 56 HRC	3.00	4	80	0.090	0.060	1.800	8490	3055	0.3
		4.00	4	80	0.120	0.080	2.400	6365	3055	0.6
		5.00	4	80	0.150	0.110	3.000	5095	3055	1.0
		6.00	4	80	0.180	0.140	3.600	4245	3055	1.5
		8.00	4	80	0.240	0.180	4.800	3185	3055	2.6
		10.00	4	80	0.300	0.220	6.000	2545	3055	4.0
		12.00	4	80	0.360	0.280	7.200	2120	3055	6.2
		16.00	4	80	0.480	0.340	9.600	1590	3055	10.0
	Hardened tool steel 56 - 60 HRC	3.00	4	65	0.055	0.050	1.800	6895	1515	0.1
		4.00	4	65	0.075	0.080	2.400	5175	1550	0.3
		5.00	4	65	0.095	0.100	3.000	4140	1570	0.5
		6.00	4	65	0.110	0.130	3.600	3450	1515	0.7
		8.00	4	65	0.150	0.160	4.800	2585	1550	1.2
		10.00	4	65	0.185	0.210	6.000	2070	1530	1.9
		12.00	4	65	0.225	0.260	7.200	1725	1550	2.9
		16.00	4	65	0.300	0.310	9.600	1295	1550	4.6
	Hardened tool steel > 60 HRC	3.00	4	40	0.045	0.050	1.800	4245	765	0.1
		4.00	4	40	0.060	0.070	2.400	3185	765	0.1
		5.00	4	40	0.075	0.100	3.000	2545	765	0.2
		6.00	4	40	0.090	0.120	3.600	2120	765	0.3
		8.00	4	40	0.120	0.150	4.800	1590	765	0.6
		10.00	4	40	0.145	0.190	6.000	1275	740	0.8
		12.00	4	40	0.175	0.240	7.200	1060	745	1.3
		16.00	4	40	0.235	0.290	9.600	795	750	2.1
	Cast iron (lamellar / spheroidal)	3.00	4	120	0.200	0.080	1.800	12730	10185	1.5
		4.00	4	120	0.265	0.120	2.400	9550	10120	2.9
		5.00	4	120	0.335	0.160	3.000	7640	10235	4.9
		6.00	4	120	0.400	0.200	3.600	6365	10185	7.3
		8.00	4	120	0.535	0.250	4.800	4775	10220	12.3
		10.00	4	120	0.665	0.320	6.000	3820	10160	19.5
		12.00	4	120	0.800	0.400	7.200	3185	10185	29.3
		16.00	4	120	1.065	0.480	9.600	2385	10170	46.9

High feed end mills XFeed

Cylindrical neck, 6xd

HM XT	λ 0° γ 0°

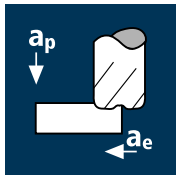
HFC



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7604** ø-Code **180**

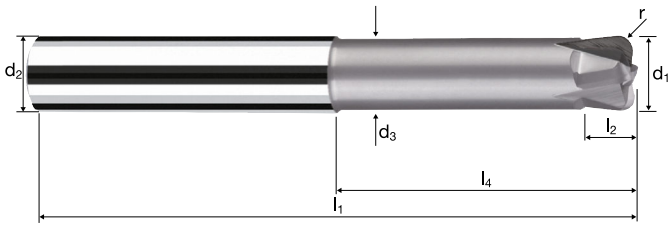
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_3	l_4	ap_{max}	$R_{theo.}$	α	z	X-AL X7604
180	3.00	6.00	2.80	66	18.00	24.63	0.12	0.27	3.7°	4	●
220	4.00	6.00	3.70	69	24.00	28.95	0.16	0.36	2.1°	4	●
260	5.00	6.00	4.60	75	30.00	33.27	0.20	0.45	1.0°	4	●
300	6.00	6.00	5.50	80	42.34	43.00	0.25	0.54	0.0°	4	●
391	8.00	8.00	7.40	90	52.29	53.00	0.33	0.72	0.0°	4	●
450	10.00	10.00	9.20	105	63.20	64.00	0.41	0.90	0.0°	4	●
501	12.00	12.00	11.00	120	73.13	74.00	0.50	1.08	0.0°	4	●
610	16.00	16.00	15.00	135	85.13	86.00	0.69	1.44	0.0°	4	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm²	6.00	4	85	0.315	0.240	3.600	4510	5680	4.9
		8.00	4	85	0.420	0.320	4.800	3380	5680	8.7
		10.00	4	85	0.525	0.400	6.000	2705	5680	13.6
		12.00	4	85	0.630	0.480	7.200	2255	5680	19.6
		16.00	4	85	0.695	0.560	9.600	1690	4700	25.3
	Steel 1100 - 1300 N/mm²	6.00	4	80	0.270	0.240	3.600	4245	4585	4.0
		8.00	4	80	0.355	0.320	4.800	3185	4520	6.9
		10.00	4	80	0.445	0.400	6.000	2545	4535	10.9
		12.00	4	80	0.535	0.480	7.200	2120	4540	15.7
		16.00	4	80	0.590	0.560	9.600	1590	3755	20.2
	Steel 1300 - 1500 N/mm²	6.00	4	75	0.245	0.220	3.600	3980	3900	3.1
		8.00	4	75	0.330	0.290	4.800	2985	3940	5.5
		10.00	4	75	0.410	0.360	6.000	2385	3915	8.5
		12.00	4	75	0.490	0.430	7.200	1990	3900	12.1
		16.00	4	75	0.540	0.500	9.600	1490	3225	15.5
	Hardened tool steel 48 - 52 HRC	6.00	4	70	0.190	0.190	3.600	3715	2820	1.9
		8.00	4	70	0.250	0.260	4.800	2785	2785	3.5
		10.00	4	70	0.315	0.320	6.000	2230	2805	5.4
		12.00	4	70	0.380	0.380	7.200	1855	2820	7.7
		16.00	4	70	0.415	0.450	9.600	1395	2310	10.0
	Hardened tool steel 52 - 56 HRC	6.00	4	65	0.140	0.170	3.600	3450	1930	1.2
		8.00	4	65	0.190	0.220	4.800	2585	1965	2.1
		10.00	4	65	0.235	0.280	6.000	2070	1945	3.3
		12.00	4	65	0.285	0.340	7.200	1725	1965	4.8
		16.00	4	65	0.315	0.390	9.600	1295	1630	6.1
	Hardened tool steel 56 - 60 HRC	6.00	4	55	0.090	0.160	3.600	2920	1050	0.6
		8.00	4	55	0.120	0.210	4.800	2190	1050	1.1
		10.00	4	55	0.145	0.260	6.000	1750	1015	1.6
		12.00	4	55	0.175	0.310	7.200	1460	1020	2.3
		16.00	4	55	0.195	0.360	9.600	1095	855	2.9

High feed end mills XFeed-R

Cylindrical neck, 6xd

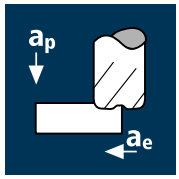
HM XT	λ 0° γ -10°
	HFC



	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			HSS GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7624** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	X-AL **X7624**
300	6.00	6.00	5.50	80	3.00	42.34	43.00	1.000	0.0°	4	●
391	8.00	8.00	7.40	90	4.00	52.29	53.00	1.500	0.0°	4	●
450	10.00	10.00	9.20	105	5.00	63.20	64.00	2.000	0.0°	4	●
501	12.00	12.00	11.00	120	6.00	73.13	74.00	2.500	0.0°	4	●
610	16.00	16.00	15.00	135	8.00	85.13	86.00	3.000	0.0°	4	●

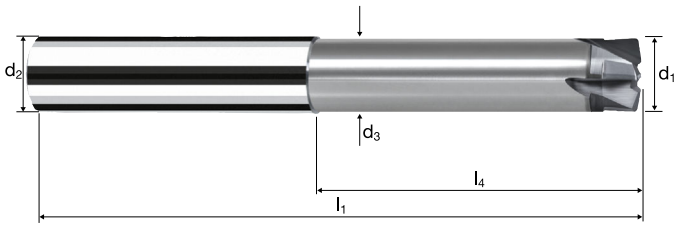
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm²	3.00	4	80	0.200	0.040	1.800	8490	6790	0.5
		4.00	4	80	0.265	0.060	2.400	6365	6750	1.0
		5.00	4	80	0.335	0.080	3.000	5095	6825	1.6
		6.00	4	80	0.400	0.100	3.600	4245	6790	2.4
		8.00	4	80	0.535	0.130	4.800	3185	6810	4.3
		10.00	4	80	0.665	0.160	6.000	2545	6775	6.5
		12.00	4	80	0.800	0.200	7.200	2120	6790	9.8
		16.00	4	80	1.065	0.240	9.600	1590	6780	15.6
	Steel 1100 - 1300 N/mm²	3.00	4	75	0.170	0.040	1.800	7960	5410	0.4
		4.00	4	75	0.225	0.060	2.400	5970	5370	0.8
		5.00	4	75	0.285	0.080	3.000	4775	5445	1.3
		6.00	4	75	0.340	0.100	3.600	3980	5410	1.9
		8.00	4	75	0.455	0.130	4.800	2985	5430	3.4
		10.00	4	75	0.565	0.160	6.000	2385	5395	5.2
		12.00	4	75	0.680	0.200	7.200	1990	5410	7.8
		16.00	4	75	0.905	0.240	9.600	1490	5400	12.4
	Steel 1300 - 1500 N/mm²	3.00	4	70	0.155	0.040	1.800	7425	4605	0.3
		4.00	4	70	0.205	0.060	2.400	5570	4570	0.7
		5.00	4	70	0.260	0.070	3.000	4455	4635	1.0
		6.00	4	70	0.310	0.090	3.600	3715	4605	1.5
		8.00	4	70	0.415	0.120	4.800	2785	4625	2.7
		10.00	4	70	0.520	0.150	6.000	2230	4635	4.2
		12.00	4	70	0.625	0.180	7.200	1855	4640	6.0
		16.00	4	70	0.830	0.220	9.600	1395	4625	9.8
	Hardened tool steel 48 - 52 HRC	3.00	4	65	0.120	0.030	1.800	6895	3310	0.2
		4.00	4	65	0.160	0.050	2.400	5175	3310	0.4
		5.00	4	65	0.200	0.070	3.000	4140	3310	0.7
		6.00	4	65	0.240	0.080	3.600	3450	3310	1.0
		8.00	4	65	0.320	0.100	4.800	2585	3310	1.6
		10.00	4	65	0.400	0.130	6.000	2070	3310	2.6
		12.00	4	65	0.480	0.160	7.200	1725	3310	3.8
		16.00	4	65	0.640	0.190	9.600	1295	3310	6.0
	Hardened tool steel 52 - 56 HRC	3.00	4	60	0.090	0.030	1.800	6365	2290	0.1
		4.00	4	60	0.120	0.040	2.400	4775	2290	0.2
		5.00	4	60	0.150	0.060	3.000	3820	2290	0.4
		6.00	4	60	0.180	0.070	3.600	3185	2290	0.6
		8.00	4	60	0.240	0.090	4.800	2385	2290	1.0
		10.00	4	60	0.300	0.110	6.000	1910	2290	1.5
		12.00	4	60	0.360	0.140	7.200	1590	2290	2.3
		16.00	4	60	0.480	0.170	9.600	1195	2290	3.7
	Hardened tool steel 56 - 60 HRC	3.00	4	55	0.055	0.030	1.800	5835	1285	0.1
		4.00	4	55	0.075	0.040	2.400	4375	1315	0.1
		5.00	4	55	0.095	0.050	3.000	3500	1330	0.2
		6.00	4	55	0.110	0.070	3.600	2920	1285	0.3
		8.00	4	55	0.150	0.080	4.800	2190	1315	0.5
		10.00	4	55	0.185	0.110	6.000	1750	1295	0.9
		12.00	4	55	0.225	0.130	7.200	1460	1315	1.2
		16.00	4	55	0.300	0.160	9.600	1095	1315	2.0
	Hardened tool steel > 60 HRC	3.00	4	30	0.045	0.030	1.800	3185	575	0.0
		4.00	4	30	0.060	0.040	2.400	2385	575	0.1
		5.00	4	30	0.075	0.050	3.000	1910	575	0.1
		6.00	4	30	0.090	0.060	3.600	1590	575	0.1
		8.00	4	30	0.120	0.080	4.800	1195	575	0.2
		10.00	4	30	0.145	0.100	6.000	955	555	0.3
		12.00	4	30	0.175	0.120	7.200	795	555	0.5
		16.00	4	30	0.235	0.150	9.600	595	560	0.8
	Cast iron (lamellar / spheroidal)	3.00	4	95	0.200	0.040	1.800	10080	8065	0.6
		4.00	4	95	0.265	0.060	2.400	7560	8015	1.2
		5.00	4	95	0.335	0.080	3.000	6050	8105	1.9
		6.00	4	95	0.400	0.100	3.600	5040	8065	2.9
		8.00	4	95	0.535	0.130	4.800	3780	8090	5.0
		10.00	4	95	0.665	0.160	6.000	3025	8045	7.7
		12.00	4	95	0.800	0.200	7.200	2520	8065	11.6
		16.00	4	95	1.065	0.240	9.600	1890	8050	18.6

High feed end mills XFeed

Cylindrical neck, 9xd

HM XT	λ 0° γ 0°

HFC



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS GG(G)

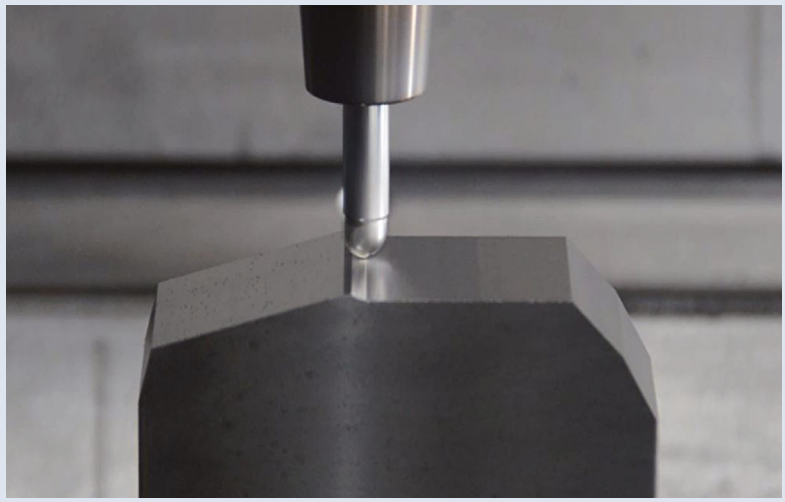
Example: **Order-N°.** Coating **X** Article-N°. **7608** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_3	l_4	ap_{max}	$R_{theo.}$	α	z	X-AL	X7608
180	3.00	6.00	2.80	75	27.00	33.63	0.12	0.27	2.7°	4		●
220	4.00	6.00	3.70	80	36.00	40.95	0.16	0.36	1.5°	4		●
260	5.00	6.00	4.60	87	45.00	48.27	0.20	0.45	0.7°	4		●
300	6.00	6.00	5.50	100	62.34	63.00	0.25	0.54	0.0°	4		●
391	8.00	8.00	7.40	120	82.29	83.00	0.33	0.72	0.0°	4		●
450	10.00	10.00	9.20	135	93.20	94.00	0.41	0.90	0.0°	4		●
501	12.00	12.00	11.00	160	113.13	114.00	0.50	1.08	0.0°	4		●
610	16.00	16.00	15.00	180	130.13	131.00	0.69	1.44	0.0°	4		●

Application data for high-performance milling of carbides

Always up to date

Please contact us for the latest application know-how in the field of high-performance milling of carbide and the current cutting data for SpheroCarb, Sphero-CVD and Toro-CVD. The FRAISA application engineers will be happy to advise you.

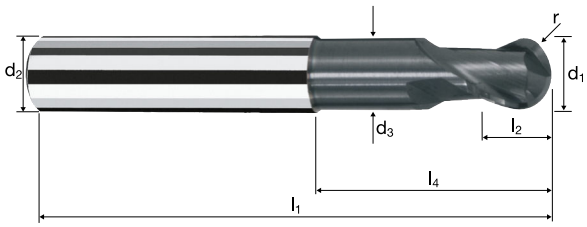


This way to the online product catalogue: High-performance milling of carbides with Sphero-CVD, SpheroCarb and Toro-CVD or on the FRAISA website at
www.fraisa.com/en/products/end-milling-tools

Ball nose end mills SpheroCarb

Tolerance r js8 (±), 3xd

HM XA	λ 30° γ -10°



Al Aluminium Cast	Cu Copper	CuZn Brass		C Graphite		HM < 1200 HV	HM < 1600 HV		Ceramics

Example: **Order-N°.** Coating **B** Article-N°. **5580** ø-Code **100**

Ø Code	d_1 ±	d_2 h6	d_3	l_1	l_2	l_3	l_4	r js8	α	z	DIA-C B5580
100	1.00	6.00	0.95	57	1.50	3.00	13.08	0.500	11.8°	2	●
120	1.50	6.00	1.40	57	2.00	4.50	13.74	0.750	10.4°	2	●
140	2.00	6.00	1.90	57	3.00	6.00	14.31	1.000	9.0°	2	●
160	2.50	6.00	2.30	57	3.50	7.50	15.06	1.250	7.6°	2	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	1.500	6.4°	2	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	2.000	4.0°	2	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	2.500	2.0°	2	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	6.000	0.0°	2	●

Application data for high-performance milling of carbides

Always up to date

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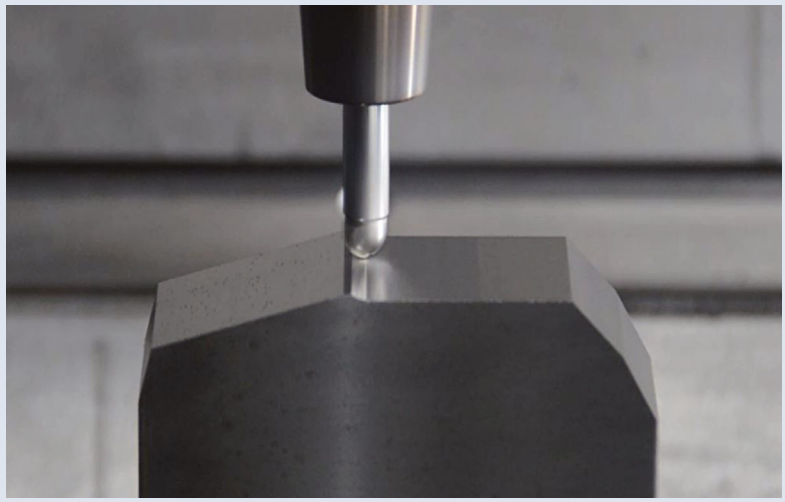


This way to the online product catalogue: High-performance milling of carbides with Sphero-CVD, SpheroCarb and Toro-CVD or on the FRAISA website at
www.fraisa.com/en/products/end-milling-tools

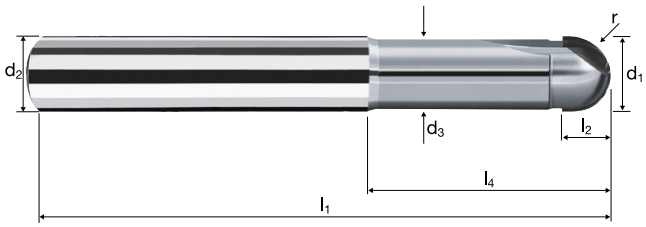
Ball nose end mills Sphero-CVD

Tolerance r ±0.01, 3xd

X-Generation

II

CVD	λ 0° γ 0°
	r
R	F



Al Aluminium Cast	Cu Copper	CuZn Brass		C Graphite		HM < 1200 HV	HM < 1600 HV		Ceramics

Example: **Order-N°.** Coating Article-N°. ø-Code **35700** **300**

Ø Code	d_1 ±	d_2 h6	d_3	l_1	l_2	l_3	r ±0.01	z	35700	
300	6.00	6.00	5.50	57	4.50	19.34	3.000	2	●	
391	8.00	8.00	7.40	63	5.50	25.29	4.000	2	●	
450	10.00	10.00	9.20	72	6.50	30.20	5.000	2	●	
501	12.00	12.00	11.00	83	7.50	36.13	6.000	2	●	

Application data for high-performance milling of carbides

Always up to date

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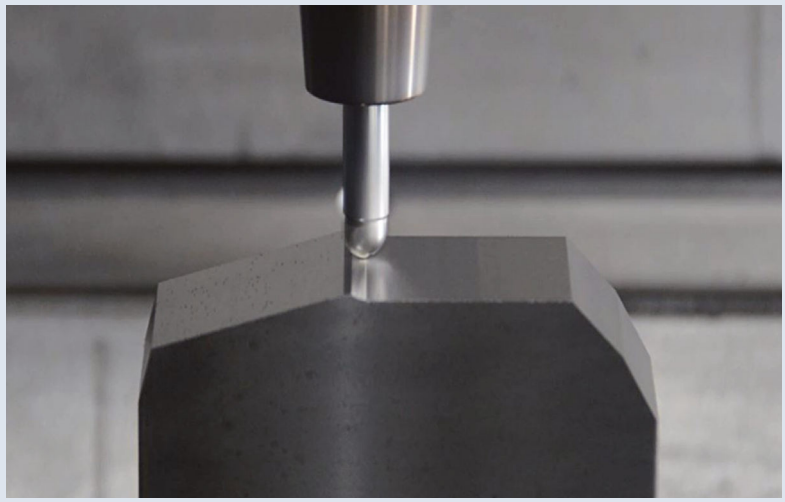
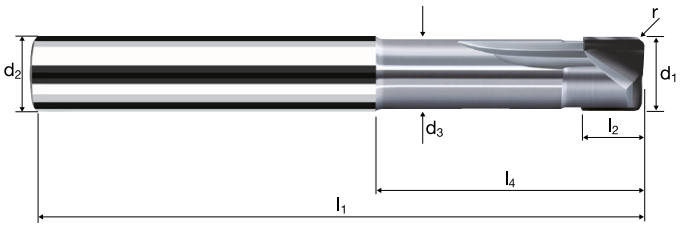


This way to the online product catalogue: High-performance milling of carbides with Sphero-CVD, SpheroCarb and Toro-CVD or on the FRAISA website at
www.fraisa.com/en/products/end-milling-tools

Corner radius end mills Toro-CVD

Tolerance r 0/+0.015, 3xd

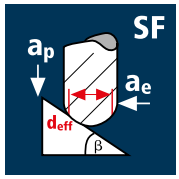
CVD	λ 0° γ 0°



Al Aluminium Cast	Cu Copper	CuZn Brass		C Graphite		HM < 1200 HV	HM < 1600 HV		Ceramics

Example: **Order-N°.** Coating | Article-N°. **35400** | ø-Code **300**

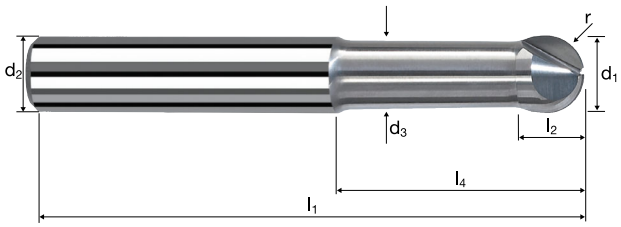
Ø Code	d_1 0/-0.01	d_2 h6	d_3	l_1	l_2	l_3	r 0/+0.015	z	**35400**	
300	6.00	6.00	5.50	57	4.50	19.34	0.500	2	●	
388	8.00	8.00	7.40	63	5.50	25.29	0.500	2	●	
448	10.00	10.00	9.20	72	6.50	30.20	0.500	2	●	
498	12.00	12.00	11.00	83	7.50	36.13	0.500	2	●	

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC	4.00	2	488	0.020	0.018	0.018	3.70	41980	1680	60°
		5.00	2	608	0.025	0.020	0.020	4.61	41980	2100	60°
		6.00	2	700	0.030	0.022	0.022	5.52	40365	2420	60°
		8.00	2	700	0.040	0.026	0.026	7.34	30355	2430	60°
		10.00	2	700	0.040	0.028	0.028	9.14	24380	1950	60°
		12.00	2	700	0.050	0.032	0.032	10.96	20330	2035	60°
	Hardened tool steel 56 - 60 HRC	4.00	2	488	0.020	0.018	0.018	3.70	41980	1680	60°
		5.00	2	608	0.025	0.020	0.020	4.61	41980	2100	60°
		6.00	2	650	0.025	0.022	0.022	5.52	37480	1875	60°
		8.00	2	650	0.035	0.026	0.026	7.34	28190	1975	60°
		10.00	2	650	0.035	0.028	0.028	9.14	22635	1585	60°
		12.00	2	650	0.045	0.032	0.032	10.96	18880	1700	60°
	Hardened tool steel > 60 HRC	4.00	2	488	0.015	0.018	0.018	3.70	41980	1260	60°
		5.00	2	600	0.020	0.020	0.020	4.61	41430	1655	60°
		6.00	2	600	0.025	0.022	0.022	5.52	34600	1730	60°
		8.00	2	600	0.030	0.026	0.026	7.34	26020	1560	60°
		10.00	2	600	0.030	0.028	0.028	9.14	20895	1255	60°
		12.00	2	600	0.040	0.032	0.032	10.96	17425	1395	60°

Ball nose end mills Sphero-CBN

Cylindrical neck, 3xd

CBN	λ 0° γ 0°
h5	
	r
	F

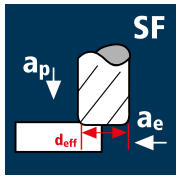


			HRC 48-56	HRC 56-60	HRC > 60			HSS

Example: **Order-N°.** Coating | Article-N°. **31700** | ø-Code **220**

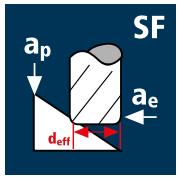
Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	β	z	31700
220	4.00	6.00	3.70	80	3.20	12.00	16.95	2.000	4°	2	●
260	5.00	6.00	4.60	80	4.00	15.00	18.27	2.500	2°	2	●
300	6.00	6.00	5.50	80	4.80	20.00	-	3.000	0°	2	●
391	8.00	8.00	7.40	100	6.40	26.00	-	4.000	0°	2	●
450	10.00	10.00	9.20	100	8.00	31.00	-	5.000	0°	2	●
501	12.00	12.00	11.00	120	9.60	37.00	-	6.000	0°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	r [mm]
Hardened tool steel 52 - 56 HRC	4.00	2	433	0.020	0.020	0.040	3.28	42020	1680	0.50
	5.00	2	570	0.025	0.026	0.050	4.32	42000	2100	0.50
	6.00	2	650	0.030	0.030	0.060	5.34	38745	2325	0.50
	8.00	2	650	0.040	0.040	0.080	7.39	27995	2240	0.50
	10.00	2	650	0.050	0.030	0.100	9.34	22150	2215	0.50
	12.00	2	650	0.060	0.036	0.120	11.37	18195	2185	0.50
Hardened tool steel 56 - 60 HRC	4.00	2	433	0.020	0.020	0.040	3.28	42020	1680	0.50
	5.00	2	570	0.025	0.026	0.050	4.32	42000	2100	0.50
	6.00	2	620	0.030	0.030	0.060	5.34	36955	2215	0.50
	8.00	2	620	0.040	0.040	0.080	7.39	26705	2135	0.50
	10.00	2	620	0.050	0.030	0.100	9.34	21130	2115	0.50
	12.00	2	620	0.060	0.036	0.120	11.37	17355	2085	0.50
Hardened tool steel > 60 HRC	4.00	2	433	0.020	0.020	0.040	3.28	42020	1680	0.50
	5.00	2	570	0.025	0.026	0.050	4.32	42000	2100	0.50
	6.00	2	580	0.030	0.030	0.060	5.34	34575	2075	0.50
	8.00	2	580	0.040	0.040	0.080	7.39	24980	2000	0.50
	10.00	2	580	0.050	0.030	0.100	9.34	19765	1975	0.50
	12.00	2	580	0.060	0.036	0.120	11.37	16235	1950	0.50

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 52 - 56 HRC	4.00	2	509	0.020	0.016	0.016	3.86	41975	1680	45°
	5.00	2	644	0.025	0.020	0.020	4.88	42005	2100	45°
	6.00	2	700	0.030	0.022	0.022	5.88	37895	2275	45°
	8.00	2	700	0.040	0.024	0.024	7.89	28240	2260	45°
	10.00	2	700	0.050	0.026	0.026	9.90	22505	2250	45°
	12.00	2	700	0.060	0.032	0.032	11.91	18710	2245	45°
Hardened tool steel 56 - 60 HRC	4.00	2	509	0.020	0.016	0.016	3.86	41975	1680	45°
	5.00	2	644	0.025	0.020	0.020	4.88	42005	2100	45°
	6.00	2	650	0.030	0.022	0.022	5.88	35185	2110	45°
	8.00	2	650	0.040	0.024	0.024	7.89	26225	2100	45°
	10.00	2	650	0.050	0.026	0.026	9.90	20900	2090	45°
	12.00	2	650	0.060	0.032	0.032	11.91	17370	2085	45°
Hardened tool steel > 60 HRC	4.00	2	509	0.020	0.016	0.016	3.86	41975	1680	45°
	5.00	2	600	0.025	0.020	0.020	4.88	39135	1955	45°
	6.00	2	600	0.030	0.022	0.022	5.88	32480	1950	45°
	8.00	2	600	0.040	0.024	0.024	7.89	24205	1935	45°
	10.00	2	600	0.050	0.026	0.026	9.90	19290	1930	45°
	12.00	2	600	0.060	0.032	0.032	11.91	16035	1925	45°

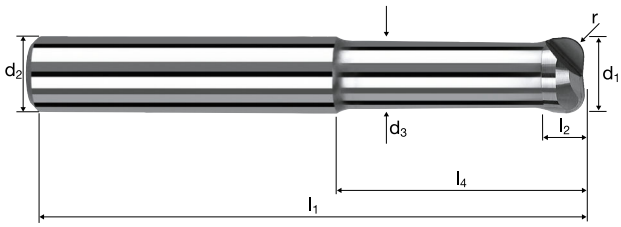
Corner radius end mills XSpeed-CBN

Cylindrical neck, 3xd

CBN

λ 0°
γ 0°

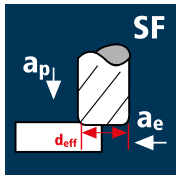
h5

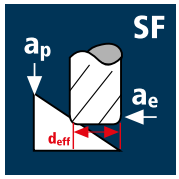


HRC 48-56 | HRC 56-60 | HRC > 60 | HSS

Example: **Order-N°.** Coating: **31420** ø-Code: **220**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	31420
220	4.00	6.00	3.70	80	1.90	12.00	16.95	0.500	3.7°	2	●
260	5.00	6.00	4.60	80	2.50	15.00	18.27	0.500	1.7°	2	●
300	6.00	6.00	5.50	80	3.00	20.00	-	0.500	0.0°	2	●
391	8.00	8.00	7.40	100	4.00	26.00	-	0.500	0.0°	2	●
450	10.00	10.00	9.20	100	5.00	31.00	-	0.500	0.0°	2	●
501	12.00	12.00	11.00	120	6.00	37.00	-	0.500	0.0°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	r [mm]
	Hardened tool steel 52 - 56 HRC	4.00	2	317	0.020	0.020	0.040	2.40	42045	1680	1.00
		5.00	2	397	0.025	0.026	0.050	3.01	41985	2100	1.25
		6.00	2	475	0.030	0.030	0.060	3.60	42000	2520	1.50
		8.00	2	633	0.040	0.040	0.080	4.80	41975	3360	2.00
		10.00	2	650	0.050	0.030	0.100	5.77	35860	3585	2.50
		12.00	2	650	0.060	0.036	0.120	6.93	29855	3585	3.00
	Hardened tool steel 56 - 60 HRC	4.00	2	317	0.020	0.020	0.040	2.40	42045	1680	1.00
		5.00	2	397	0.025	0.026	0.050	3.01	41985	2100	1.25
		6.00	2	475	0.030	0.030	0.060	3.60	42000	2520	1.50
		8.00	2	620	0.040	0.040	0.080	4.80	41115	3290	2.00
		10.00	2	620	0.050	0.030	0.100	5.77	34205	3420	2.50
		12.00	2	620	0.060	0.036	0.120	6.93	28480	3415	3.00
	Hardened tool steel > 60 HRC	4.00	2	317	0.020	0.020	0.040	2.40	42045	1680	1.00
		5.00	2	397	0.025	0.026	0.050	3.01	41985	2100	1.25
		6.00	2	475	0.030	0.030	0.060	3.60	42000	2520	1.50
		8.00	2	580	0.040	0.040	0.080	4.80	38460	3075	2.00
		10.00	2	580	0.050	0.030	0.100	5.77	31995	3200	2.50
		12.00	2	580	0.060	0.036	0.120	6.93	26640	3195	3.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC	4.00	2	480	0.020	0.016	0.016	3.64	41975	1680	45°
		5.00	2	600	0.025	0.020	0.020	4.55	41975	2100	45°
		6.00	2	700	0.030	0.022	0.022	5.45	40885	2455	45°
		8.00	2	700	0.040	0.024	0.024	7.23	30820	2465	45°
		10.00	2	700	0.050	0.026	0.026	9.01	24730	2475	45°
		12.00	2	700	0.060	0.032	0.032	10.82	20595	2470	45°
	Hardened tool steel 56 - 60 HRC	4.00	2	480	0.020	0.016	0.016	3.64	41975	1680	45°
		5.00	2	600	0.025	0.020	0.020	4.55	41975	2100	45°
		6.00	2	650	0.030	0.022	0.022	5.45	37965	2280	45°
		8.00	2	650	0.040	0.024	0.024	7.23	28615	2290	45°
		10.00	2	650	0.050	0.026	0.026	9.01	22965	2295	45°
		12.00	2	650	0.060	0.032	0.032	10.82	19120	2295	45°
	Hardened tool steel > 60 HRC	4.00	2	480	0.020	0.016	0.016	3.64	41975	1680	45°
		5.00	2	600	0.025	0.020	0.020	4.55	41975	2100	45°
		6.00	2	600	0.030	0.022	0.022	5.45	35045	2105	45°
		8.00	2	600	0.040	0.024	0.024	7.23	26415	2115	45°
		10.00	2	600	0.050	0.026	0.026	9.01	21195	2120	45°
		12.00	2	600	0.060	0.032	0.032	10.82	17650	2120	45°

Corner radius end mills XSpeed-CBN

Cylindrical neck, 3xd

CBN

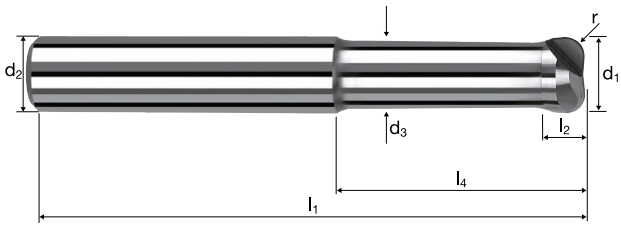
λ 0°
γ 0°

h5

d1

r

F

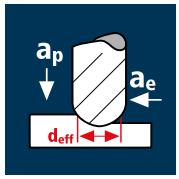


HRC 48-56 | HRC 56-60 | HRC > 60 | HSS

Example: **Order-N°.** Coating: **31410** ø-Code: **220**

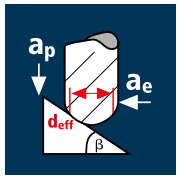
Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	31410
220	4.00	6.00	3.70	80	1.90	12.00	16.95	1.000	3.8°	2	●
260	5.00	6.00	4.60	80	2.50	15.00	18.27	1.250	1.8°	2	●
300	6.00	6.00	5.50	80	3.00	20.00	-	1.500	0.0°	2	●
391	8.00	8.00	7.40	100	4.00	26.00	-	2.000	0.0°	2	●
450	10.00	10.00	9.20	100	5.00	31.00	-	2.500	0.0°	2	●
501	12.00	12.00	11.00	120	6.00	37.00	-	3.000	0.0°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 52 - 56 HRC	0.40	2	40	0.013	0.067	0.080	0.30	42440	1105	5.9
	0.50	2	49	0.016	0.083	0.100	0.37	42155	1350	11.2
	0.60	2	59	0.019	0.100	0.120	0.45	41735	1585	19.0
	0.80	2	79	0.026	0.134	0.160	0.60	41910	2180	46.7
	1.00	2	99	0.032	0.167	0.200	0.75	42015	2690	89.8
	1.50	2	100	0.048	0.250	0.300	1.12	28420	2730	204.6
	2.00	2	100	0.064	0.334	0.400	1.49	21365	2735	365.3
Hardened tool steel 56 - 60 HRC	0.40	2	40	0.012	0.067	0.080	0.30	42440	995	5.3
	0.50	2	49	0.014	0.083	0.100	0.37	42155	1215	10.1
	0.60	2	59	0.017	0.100	0.120	0.45	41735	1425	17.1
	0.80	2	60	0.023	0.134	0.160	0.60	31830	1490	31.9
	1.00	2	60	0.029	0.167	0.200	0.75	25465	1465	49.0
	1.50	2	60	0.043	0.250	0.300	1.12	17050	1475	110.5
	2.00	2	60	0.058	0.334	0.400	1.49	12820	1475	197.3
Hardened tool steel 60 - 64 HRC	0.40	2	36	0.009	0.054	0.080	0.27	42440	795	3.4
	0.50	2	45	0.012	0.066	0.100	0.34	42130	970	6.4
	0.60	2	50	0.014	0.080	0.120	0.41	38820	1060	10.2
	0.80	2	50	0.019	0.107	0.160	0.55	28935	1085	18.6
	1.00	2	50	0.023	0.134	0.200	0.68	23405	1080	28.8
	1.50	2	50	0.035	0.200	0.300	1.02	15605	1080	64.7
	2.00	2	50	0.046	0.267	0.400	1.36	11705	1080	115.3
Hardened tool steel 64 - 70 HRC	0.40	2	33	0.007	0.043	0.080	0.25	42015	630	2.2
	0.50	2	40	0.009	0.053	0.100	0.31	41070	755	4.0
	0.60	2	40	0.011	0.064	0.120	0.37	34410	755	5.8
	0.80	2	40	0.015	0.086	0.160	0.49	25985	780	10.7
	1.00	2	40	0.018	0.107	0.200	0.62	20535	755	16.2
	1.50	2	40	0.028	0.160	0.300	0.93	13690	755	36.3
	2.00	2	40	0.037	0.214	0.400	1.24	10270	755	64.7

Application

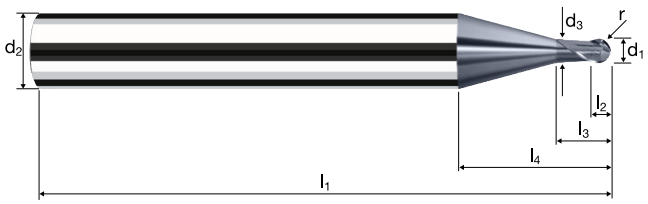


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 52 - 56 HRC	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	62	0.018	0.022	0.022	0.47	41990	1510	45°
	0.60	2	74	0.018	0.026	0.026	0.56	42060	1515	45°
	0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
	1.50	2	185	0.030	0.064	0.064	1.40	42060	2525	45°
	2.00	2	200	0.034	0.084	0.084	1.86	34225	2325	45°
Hardened tool steel 56 - 60 HRC	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	62	0.016	0.022	0.022	0.47	41990	1345	45°
	0.60	2	74	0.016	0.026	0.026	0.56	42060	1345	45°
	0.80	2	99	0.018	0.034	0.034	0.75	42015	1515	45°
	1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°
	1.50	2	150	0.028	0.064	0.064	1.40	34105	1910	45°
	2.00	2	150	0.030	0.084	0.084	1.86	25670	1540	45°
Hardened tool steel 60 - 64 HRC	0.40	2	48	0.010	0.010	0.010	0.36	42440	850	45°
	0.50	2	61	0.015	0.020	0.020	0.46	42210	1265	45°
	0.60	2	73	0.015	0.020	0.020	0.55	42250	1265	45°
	0.80	2	98	0.015	0.030	0.030	0.74	42155	1265	45°
	1.00	2	120	0.020	0.040	0.040	0.93	41070	1645	45°
	1.50	2	120	0.020	0.060	0.060	1.39	27480	1100	45°
	2.00	2	120	0.025	0.080	0.080	1.86	20535	1025	45°
Hardened tool steel 64 - 70 HRC	0.40	2	48	0.010	0.010	0.010	0.36	42440	850	45°
	0.50	2	61	0.010	0.020	0.020	0.46	42210	845	45°
	0.60	2	73	0.010	0.020	0.020	0.55	42250	845	45°
	0.80	2	85	0.010	0.020	0.030	0.71	38110	760	45°
	1.00	2	85	0.015	0.030	0.040	0.91	29730	890	45°
	1.50	2	85	0.015	0.040	0.050	1.35	20040	600	45°
	2.00	2	85	0.015	0.050	0.060	1.79	15115	455	45°

Ball nose end mills MicroHX

Shank ø 6mm, cylindrical neck, 1xd

HM XA	λ 30° γ -10°

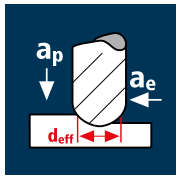


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	HSS

Example: **Order-N°.** Coating **Y** Article-N°. **6460** ø-Code **040**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-Al Y6460
040	0.40	6.00	0.35	57	0.40	0.40	16.78	0.200	14.6°	2	●
050	0.50	6.00	0.45	57	0.50	0.50	11.50	0.250	14.5°	2	●
060	0.60	6.00	0.55	57	0.60	0.60	11.43	0.300	14.5°	2	●
080	0.80	6.00	0.75	57	0.80	0.80	11.30	0.400	14.3°	2	●
100	1.00	6.00	0.95	57	1.00	1.00	11.19	0.500	14.1°	2	●
120	1.50	6.00	1.40	57	1.50	1.50	10.86	0.750	13.5°	2	●
140	2.00	6.00	1.90	57	2.00	2.00	10.52	1.000	12.9°	2	●

Application



Material

Hardened tool steel 52 - 56 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.40	2	29	0.010	0.032	0.080	0.22	41960	840	2.1
0.50	2	36	0.013	0.040	0.100	0.27	42440	1105	4.4
0.60	2	44	0.016	0.048	0.120	0.33	42440	1360	7.8
0.80	2	58	0.021	0.065	0.160	0.44	41960	1760	18.3
1.00	2	73	0.026	0.081	0.200	0.55	42250	2195	35.6
1.50	2	100	0.039	0.121	0.300	0.82	38820	3030	109.9
2.00	2	100	0.052	0.162	0.400	1.09	29205	3035	196.8

Hardened tool steel 56 - 60 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.40	2	29	0.009	0.032	0.080	0.22	41960	755	1.9
0.50	2	36	0.012	0.040	0.100	0.27	42440	995	4.0
0.60	2	44	0.014	0.048	0.120	0.33	42440	1220	7.0
0.80	2	58	0.019	0.065	0.160	0.44	41960	1585	16.5
1.00	2	60	0.023	0.081	0.200	0.55	34725	1625	26.3
1.50	2	60	0.035	0.121	0.300	0.82	23290	1635	59.4
2.00	2	60	0.047	0.162	0.400	1.09	17520	1640	106.3

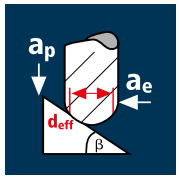
Hardened tool steel 60 - 64 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.40	2	26	0.007	0.026	0.080	0.20	41380	595	1.2
0.50	2	32	0.009	0.032	0.100	0.24	42440	795	2.5
0.60	2	38	0.012	0.038	0.120	0.29	41710	960	4.4
0.80	2	50	0.015	0.052	0.160	0.39	40810	1235	10.3
1.00	2	50	0.019	0.065	0.200	0.49	32480	1215	15.8
1.50	2	50	0.028	0.097	0.300	0.74	21505	1210	35.1
2.00	2	50	0.037	0.130	0.400	0.98	16240	1215	63.0

Hardened tool steel 64 - 70 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.40	2	24	0.006	0.020	0.080	0.18	42440	490	0.8
0.50	2	29	0.007	0.026	0.100	0.22	41960	630	1.6
0.60	2	34	0.009	0.031	0.120	0.26	41625	770	2.8
0.80	2	40	0.012	0.042	0.160	0.36	35370	855	5.7
1.00	2	40	0.015	0.052	0.200	0.44	28935	865	9.0
1.50	2	40	0.022	0.077	0.300	0.66	19290	865	20.1
2.00	2	40	0.030	0.104	0.400	0.89	14305	855	35.5

Application



Material

Hardened tool steel 52 - 56 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
0.50	2	62	0.018	0.022	0.022	0.47	41990	1510	45°
0.60	2	74	0.018	0.026	0.026	0.56	42060	1515	45°
0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
1.50	2	185	0.030	0.064	0.064	1.40	42060	2525	45°
2.00	2	200	0.034	0.084	0.084	1.86	34225	2325	45°

Hardened tool steel 56 - 60 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
0.50	2	62	0.016	0.022	0.022	0.47	41990	1345	45°
0.60	2	74	0.016	0.026	0.026	0.56	42060	1345	45°
0.80	2	99	0.018	0.034	0.034	0.75	42015	1515	45°
1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°
1.50	2	150	0.028	0.064	0.064	1.40	34105	1910	45°
2.00	2	150	0.030	0.084	0.084	1.86	25670	1540	45°

Hardened tool steel 60 - 64 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.40	2	48	0.010	0.010	0.010	0.36	42440	850	45°
0.50	2	61	0.015	0.020	0.020	0.46	42210	1265	45°
0.60	2	73	0.015	0.020	0.020	0.55	42250	1265	45°
0.80	2	98	0.015	0.030	0.030	0.74	42155	1265	45°
1.00	2	120	0.020	0.040	0.040	0.93	41070	1645	45°
1.50	2	120	0.020	0.060	0.060	1.39	27480	1100	45°
2.00	2	120	0.025	0.080	0.080	1.86	20535	1025	45°

Hardened tool steel 64 - 70 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.40	2	48	0.010	0.010	0.010	0.36	42440	850	45°
0.50	2	61	0.010	0.020	0.020	0.46	42210	845	45°
0.60	2	73	0.010	0.020	0.020	0.55	42250	845	45°
0.80	2	85	0.010	0.020	0.030	0.71	38110	760	45°
1.00	2	85	0.015	0.030	0.040	0.91	29730	890	45°
1.50	2	85	0.015	0.040	0.050	1.35	20040	600	45°
2.00	2	85	0.015	0.050	0.060	1.79	15115	455	45°

Ball nose end mills MicroHX

Shank ø 6mm, cylindrical neck, 2xd

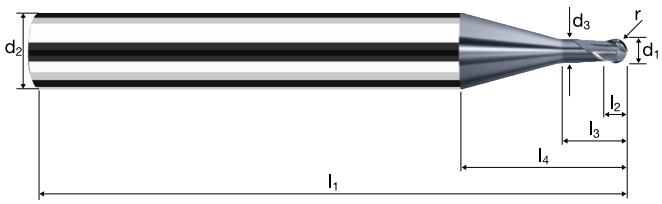
HM
XA

λ 30°
γ -10°

h5

d1

r

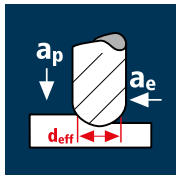


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	HSS

Example: **Order-N°.** Coating **Y** Article-N°. **6461** ø-Code **040**

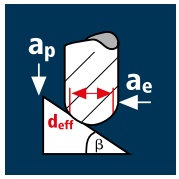
Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-Al Y6461
040	0.40	6.00	0.35	57	0.24	0.80	16.76	0.200	14.1°	2	●
050	0.50	6.00	0.45	57	0.30	1.00	11.51	0.250	13.9°	2	●
060	0.60	6.00	0.55	57	0.36	1.20	11.53	0.300	13.7°	2	●
080	0.80	6.00	0.75	57	0.48	1.60	11.55	0.400	13.3°	2	●
100	1.00	6.00	0.95	57	0.60	2.00	11.58	0.500	12.9°	2	●
120	1.50	6.00	1.40	57	0.90	3.00	11.53	0.750	11.7°	2	●
140	2.00	6.00	1.90	57	1.20	4.00	11.60	1.000	10.6°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 52 - 56 HRC	0.40	2	26	0.010	0.026	0.080	0.20	41380	830	1.7
	0.50	2	32	0.013	0.032	0.100	0.24	42440	1105	3.5
	0.60	2	40	0.015	0.039	0.120	0.30	42440	1275	6.0
	0.80	2	51	0.020	0.052	0.160	0.39	41625	1665	13.9
	1.00	2	65	0.025	0.064	0.200	0.49	42225	2110	27.0
Hardened tool steel 56 - 60 HRC	0.40	2	26	0.009	0.026	0.080	0.20	41380	745	1.5
	0.50	2	32	0.012	0.032	0.100	0.24	42440	995	3.2
	0.60	2	40	0.014	0.039	0.120	0.30	42440	1145	5.4
	0.80	2	51	0.018	0.052	0.160	0.39	41625	1500	12.5
	1.00	2	60	0.023	0.064	0.200	0.49	38975	1755	22.5
Hardened tool steel 60 - 64 HRC	0.40	2	24	0.007	0.021	0.080	0.18	42440	610	1.0
	0.50	2	29	0.009	0.026	0.100	0.22	41960	785	2.0
	0.60	2	36	0.011	0.031	0.120	0.27	42440	915	3.4
	0.80	2	48	0.014	0.042	0.160	0.36	42440	1220	8.1
	1.00	2	50	0.018	0.051	0.200	0.44	36170	1300	13.3
Hardened tool steel 64 - 70 HRC	0.40	2	21	0.006	0.017	0.080	0.16	41780	480	0.6
	0.50	2	26	0.007	0.020	0.100	0.20	41380	620	1.3
	0.60	2	32	0.009	0.025	0.120	0.24	42440	735	2.2
	0.80	2	40	0.012	0.033	0.160	0.32	39790	915	4.9
	1.00	2	40	0.014	0.041	0.200	0.40	31830	915	7.5

Application

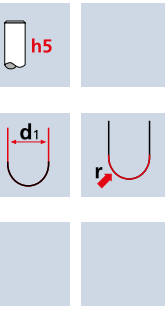


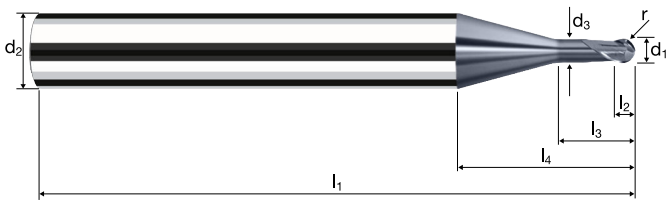
Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 52 - 56 HRC	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	62	0.018	0.022	0.022	0.47	41990	1510	45°
	0.60	2	74	0.018	0.026	0.026	0.56	42060	1515	45°
	0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
Hardened tool steel 56 - 60 HRC	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	62	0.016	0.022	0.022	0.47	41990	1345	45°
	0.60	2	74	0.016	0.026	0.026	0.56	42060	1345	45°
	0.80	2	99	0.018	0.034	0.034	0.75	42015	1515	45°
	1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°
Hardened tool steel 60 - 64 HRC	0.40	2	48	0.010	0.010	0.010	0.36	42440	850	45°
	0.50	2	61	0.015	0.020	0.020	0.46	42210	1265	45°
	0.60	2	73	0.015	0.020	0.020	0.55	42250	1265	45°
	0.80	2	98	0.015	0.030	0.030	0.74	42155	1265	45°
	1.00	2	120	0.020	0.040	0.040	0.93	41070	1645	45°
Hardened tool steel 64 - 70 HRC	0.40	2	48	0.010	0.010	0.010	0.36	42440	850	45°
	0.50	2	61	0.010	0.020	0.020	0.46	42210	845	45°
	0.60	2	73	0.010	0.020	0.020	0.55	42250	845	45°
	0.80	2	85	0.010	0.020	0.030	0.71	38110	760	45°
	1.00	2	85	0.015	0.030	0.040	0.91	29730	890	45°

Ball nose end mills MicroHX

Shank ø 6mm, cylindrical neck, 2.5xd

HM XA	λ 30° γ -10°



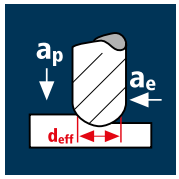


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	HSS

Example: **Order-N°.** Coating **Y** Article-N°. **6481** ø-Code **040**

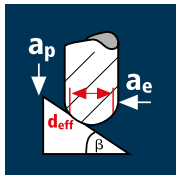
Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-Al Y6481
040	0.40	6.00	0.35	57	0.24	1.00	16.96	0.200	13.9°	2	●
050	0.50	6.00	0.45	57	0.30	1.25	11.76	0.250	13.6°	2	●
060	0.60	6.00	0.55	57	0.36	1.50	11.83	0.300	13.4°	2	●
080	0.80	6.00	0.75	57	0.48	2.00	11.95	0.400	12.8°	2	●
100	1.00	6.00	0.95	57	0.60	2.50	12.08	0.500	12.3°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Hardened tool steel 52 - 56 HRC	0.40	2	24	0.010	0.021	0.080	0.18	42440	850	1.4
	0.50	2	30	0.013	0.027	0.100	0.23	41520	1080	2.9
	0.60	2	36	0.015	0.032	0.120	0.27	42440	1275	4.9
	0.80	2	48	0.020	0.043	0.160	0.36	42440	1700	11.7
	1.00	2	59	0.025	0.054	0.200	0.45	41735	2085	22.5
	1.50	2	88	0.038	0.080	0.300	0.67	41810	3175	76.3
	2.00	2	100	0.051	0.107	0.400	0.90	35370	3610	154.4
	2.50	2	100	0.063	0.134	0.500	1.13	28170	3550	237.8
	3.00	2	100	0.076	0.161	0.600	1.35	23580	3585	346.2
Hardened tool steel 56 - 60 HRC	0.40	2	24	0.009	0.021	0.080	0.18	42440	765	1.3
	0.50	2	30	0.012	0.027	0.100	0.23	41520	970	2.6
	0.60	2	36	0.014	0.032	0.120	0.27	42440	1145	4.4
	0.80	2	48	0.018	0.043	0.160	0.36	42440	1530	10.5
	1.00	2	59	0.023	0.054	0.200	0.45	41735	1880	20.3
	1.50	2	60	0.034	0.080	0.300	0.67	28505	1950	46.8
	2.00	2	60	0.046	0.107	0.400	0.90	21220	1950	83.4
	2.50	2	60	0.057	0.134	0.500	1.13	16900	1915	128.4
	3.00	2	60	0.068	0.161	0.600	1.35	14145	1935	187.0
Hardened tool steel 60 - 64 HRC	0.40	2	21	0.007	0.017	0.080	0.16	41780	600	0.8
	0.50	2	26	0.009	0.022	0.100	0.20	41380	775	1.7
	0.60	2	32	0.011	0.026	0.120	0.24	42440	915	2.8
	0.80	2	42	0.014	0.034	0.160	0.32	41780	1205	6.6
	1.00	2	50	0.018	0.043	0.200	0.41	38820	1395	12.1
	1.50	2	50	0.027	0.064	0.300	0.61	26090	1430	27.4
	2.00	2	50	0.037	0.086	0.400	0.81	19650	1445	49.4
	2.50	2	50	0.045	0.107	0.500	1.01	15760	1430	76.6
	3.00	2	50	0.055	0.129	0.600	1.22	13045	1430	110.3
Hardened tool steel 64 - 70 HRC	0.40	2	18	0.006	0.013	0.080	0.14	40925	470	0.5
	0.50	2	24	0.007	0.017	0.100	0.18	42440	635	1.1
	0.60	2	29	0.009	0.020	0.120	0.22	41960	725	1.8
	0.80	2	38	0.012	0.028	0.160	0.29	41710	960	4.2
	1.00	2	40	0.014	0.035	0.200	0.37	34410	990	6.9
	1.50	2	40	0.022	0.051	0.300	0.54	23580	1030	15.9
	2.00	2	40	0.029	0.068	0.400	0.73	17440	1025	28.1
	2.50	2	40	0.036	0.086	0.500	0.91	13990	1015	43.5
	3.00	2	40	0.044	0.103	0.600	1.09	11680	1025	63.2

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 52 - 56 HRC	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	62	0.018	0.022	0.022	0.47	41990	1510	45°
	0.60	2	74	0.018	0.026	0.026	0.56	42060	1515	45°
	0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
	1.50	2	185	0.030	0.064	0.064	1.40	42060	2525	45°
	2.00	2	200	0.034	0.084	0.084	1.86	34225	2325	45°
	2.50	2	200	0.036	0.106	0.106	2.33	27325	1965	45°
	3.00	2	200	0.042	0.126	0.126	2.79	22820	1915	45°
Hardened tool steel 56 - 60 HRC	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	62	0.016	0.022	0.022	0.47	41990	1345	45°
	0.60	2	74	0.016	0.026	0.026	0.56	42060	1345	45°
	0.80	2	99	0.018	0.034	0.034	0.75	42015	1515	45°
	1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°
	1.50	2	150	0.028	0.064	0.064	1.40	34105	1910	45°
	2.00	2	150	0.030	0.084	0.084	1.86	25670	1540	45°
	2.50	2	150	0.032	0.106	0.106	2.33	20490	1310	45°
	3.00	2	150	0.036	0.126	0.126	2.79	17115	1230	45°
Hardened tool steel 60 - 64 HRC	0.40	2	48	0.010	0.010	0.010	0.36	42440	850	45°
	0.50	2	61	0.015	0.020	0.020	0.46	42210	1265	45°
	0.60	2	73	0.015	0.020	0.020	0.55	42250	1265	45°
	0.80	2	98	0.015	0.030	0.030	0.74	42155	1265	45°
	1.00	2	120	0.020	0.040	0.040	0.93	41070	1645	45°
	1.50	2	120	0.020	0.060	0.060	1.39	27480	1100	45°
	2.00	2	120	0.025	0.080	0.080	1.86	20535	1025	45°
	2.50	2	120	0.025	0.100	0.100	2.32	16465	825	45°
	3.00	2	120	0.030	0.110	0.110	2.76	13840	830	45°
Hardened tool steel 64 - 70 HRC	0.40	2	48	0.010	0.010	0.010	0.36	42440	850	45°
	0.50	2	61	0.010	0.020	0.020	0.46	42210	845	45°
	0.60	2	73	0.010	0.020	0.020	0.55	42250	845	45°
	0.80	2	85	0.010	0.020	0.030	0.71	38110	760	45°
	1.00	2	85	0.015	0.030	0.040	0.91	29730	890	45°
	1.50	2	85	0.015	0.050	0.060	1.37	19750	590	45°
	2.00	2	85	0.020	0.060	0.080	1.81	14950	600	45°
	2.50	2	85	0.020	0.080	0.100	2.28	11865	475	45°
	3.00	2	85	0.025	0.090	0.110	2.72	9945	495	45°

Ball nose end mills MicroHX

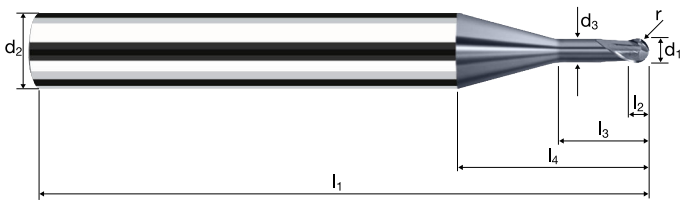
Shank ø 6mm, cylindrical neck, 3xd

HM XA	λ 30° γ -10°

h5

d1

r

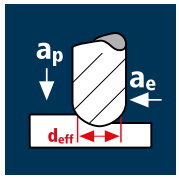


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	HSS

Example: **Order-N°.** Coating **Y** Article-N°. **6462** ø-Code **040**

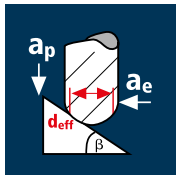
Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-Al Y6462
040	0.40	6.00	0.35	57	0.24	1.20	17.16	0.200	13.7°	2	●
050	0.50	6.00	0.45	57	0.30	1.50	12.01	0.250	13.3°	2	●
060	0.60	6.00	0.55	57	0.36	1.80	12.13	0.300	13.0°	2	●
080	0.80	6.00	0.75	57	0.48	2.40	12.35	0.400	12.4°	2	●
100	1.00	6.00	0.95	57	0.60	3.00	12.58	0.500	11.8°	2	●
108	1.20	6.00	1.10	57	0.72	3.60	12.69	0.600	11.2°	2	●
120	1.50	6.00	1.40	57	0.90	4.50	13.03	0.750	10.3°	2	●
140	2.00	6.00	1.90	57	1.20	6.00	13.60	1.000	9.0°	2	●
160	2.50	6.00	2.40	57	1.50	7.50	14.07	1.250	7.6°	2	●
180	3.00	6.00	2.90	57	1.80	9.00	14.64	1.500	6.4°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 52 - 56 HRC	0.40	2	22	0.010	0.018	0.080	0.17	41195	825	1.2
	0.50	2	28	0.013	0.023	0.100	0.21	42440	1105	2.5
	0.60	2	33	0.015	0.028	0.120	0.25	42015	1260	4.2
	0.80	2	45	0.020	0.037	0.160	0.34	42130	1685	10.0
	1.00	2	55	0.025	0.046	0.200	0.42	41685	2085	19.2
Hardened tool steel 56 - 60 HRC	0.40	2	22	0.009	0.018	0.080	0.17	41195	740	1.1
	0.50	2	28	0.012	0.023	0.100	0.21	42440	995	2.3
	0.60	2	33	0.014	0.028	0.120	0.25	42015	1135	3.8
	0.80	2	45	0.018	0.037	0.160	0.34	42130	1515	9.0
	1.00	2	55	0.023	0.046	0.200	0.42	41685	1875	17.3
Hardened tool steel 60 - 64 HRC	0.40	2	20	0.007	0.014	0.080	0.15	42440	610	0.7
	0.50	2	25	0.009	0.018	0.100	0.19	41885	785	1.4
	0.60	2	30	0.011	0.022	0.120	0.23	41520	895	2.4
	0.80	2	40	0.014	0.030	0.160	0.30	42440	1220	5.8
	1.00	2	50	0.018	0.037	0.200	0.38	41885	1510	11.1
Hardened tool steel 64 - 70 HRC	0.40	2	17	0.006	0.012	0.080	0.13	41625	480	0.4
	0.50	2	22	0.007	0.015	0.100	0.17	41195	615	0.9
	0.60	2	26	0.009	0.018	0.120	0.20	41380	715	1.5
	0.80	2	36	0.012	0.024	0.160	0.27	42440	980	3.7
	1.00	2	40	0.014	0.029	0.200	0.34	37450	1080	6.4

Application

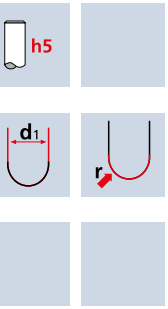


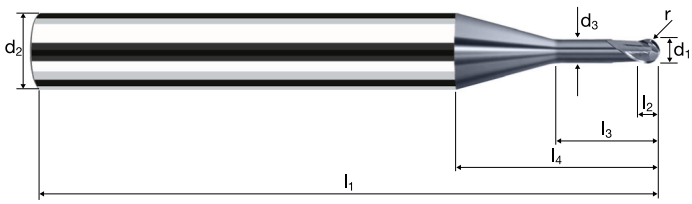
Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 52 - 56 HRC	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	62	0.018	0.022	0.022	0.47	41990	1510	45°
	0.60	2	74	0.018	0.026	0.026	0.56	42060	1515	45°
	0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
Hardened tool steel 56 - 60 HRC	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	62	0.016	0.022	0.022	0.47	41990	1345	45°
	0.60	2	74	0.016	0.026	0.026	0.56	42060	1345	45°
	0.80	2	99	0.018	0.034	0.034	0.75	42015	1515	45°
	1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°
Hardened tool steel 60 - 64 HRC	0.40	2	48	0.010	0.010	0.010	0.36	42440	850	45°
	0.50	2	61	0.015	0.020	0.020	0.46	42210	1265	45°
	0.60	2	73	0.015	0.020	0.020	0.55	42250	1265	45°
	0.80	2	98	0.015	0.030	0.030	0.74	42155	1265	45°
	1.00	2	120	0.020	0.040	0.040	0.93	41070	1645	45°
Hardened tool steel 64 - 70 HRC	0.40	2	48	0.010	0.010	0.010	0.36	42440	850	45°
	0.50	2	61	0.010	0.020	0.020	0.46	42210	845	45°
	0.60	2	73	0.010	0.020	0.020	0.55	42250	845	45°
	0.80	2	85	0.010	0.020	0.030	0.71	38110	760	45°
	1.00	2	85	0.015	0.030	0.040	0.91	29730	890	45°

Ball nose end mills MicroHX

Shank ø 6mm, cylindrical neck, 3.5xd

HM XA	λ 30° γ -10°



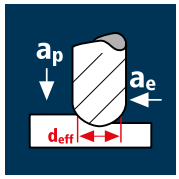


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	HSS

Example: **Order-N°.** Coating **Y** Article-N°. **6482** ø-Code **040**

Ø Code	d1	d2 h5	d3	l1	l2	l3	l4	r ±0.005	α	z	DURO-Al Y6482
040	0.40	6.00	0.35	57	0.24	1.40	17.36	0.200	13.4°	2	●
050	0.50	6.00	0.45	57	0.30	1.75	12.26	0.250	13.1°	2	●
060	0.60	6.00	0.55	57	0.36	2.10	12.43	0.300	12.7°	2	●
080	0.80	6.00	0.75	57	0.48	2.80	12.75	0.400	12.0°	2	●
100	1.00	6.00	0.95	57	0.60	3.50	13.08	0.500	11.4°	2	●

Application



Material

Hardened tool steel 52 - 56 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.40	2	21	0.010	0.016	0.080	0.16	41780	835	1.1
0.50	2	26	0.013	0.020	0.100	0.20	41380	1075	2.2
0.60	2	32	0.015	0.024	0.120	0.24	42440	1275	3.7
0.80	2	41	0.020	0.032	0.160	0.31	42100	1685	8.6
1.00	2	51	0.025	0.040	0.200	0.39	41625	2080	16.7
1.50	2	78	0.038	0.060	0.300	0.59	42080	3200	57.6
2.00	2	100	0.050	0.080	0.400	0.78	40810	4080	130.6

Hardened tool steel 56 - 60 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.40	2	21	0.009	0.016	0.080	0.16	41780	750	1.0
0.50	2	26	0.012	0.020	0.100	0.20	41380	970	1.9
0.60	2	32	0.014	0.024	0.120	0.24	42440	1145	3.3
0.80	2	41	0.018	0.032	0.160	0.31	42100	1515	7.8
1.00	2	51	0.023	0.040	0.200	0.39	41625	1875	15.0
1.50	2	60	0.034	0.060	0.300	0.59	32370	2215	39.9
2.00	2	60	0.045	0.080	0.400	0.78	24485	2205	70.5

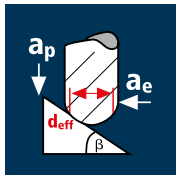
Hardened tool steel 60 - 64 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.40	2	18	0.007	0.013	0.080	0.14	40925	590	0.6
0.50	2	24	0.009	0.016	0.100	0.18	42440	795	1.3
0.60	2	28	0.011	0.019	0.120	0.21	42440	915	2.1
0.80	2	37	0.014	0.026	0.160	0.28	42060	1210	5.0
1.00	2	46	0.018	0.032	0.200	0.35	41835	1505	9.6
1.50	2	50	0.027	0.048	0.300	0.53	30030	1645	23.7
2.00	2	50	0.036	0.064	0.400	0.70	22735	1635	41.9

Hardened tool steel 64 - 70 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.40	2	17	0.006	0.010	0.080	0.13	41625	480	0.4
0.50	2	21	0.007	0.013	0.100	0.16	41780	625	0.8
0.60	2	25	0.009	0.015	0.120	0.19	41885	725	1.3
0.80	2	33	0.012	0.020	0.160	0.25	42015	970	3.2
1.00	2	40	0.014	0.026	0.200	0.32	39790	1145	5.9
1.50	2	40	0.022	0.038	0.300	0.47	27090	1185	13.7
2.00	2	40	0.029	0.051	0.400	0.63	20210	1165	23.8

Application



Material

Hardened tool steel 52 - 56 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
0.50	2	62	0.018	0.022	0.022	0.47	41990	1510	45°
0.60	2	74	0.018	0.026	0.026	0.56	42060	1515	45°
0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
1.50	2	185	0.030	0.064	0.064	1.40	42060	2525	45°
2.00	2	200	0.034	0.084	0.084	1.86	34225	2325	45°

Hardened tool steel 56 - 60 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
0.50	2	62	0.016	0.022	0.022	0.47	41990	1345	45°
0.60	2	74	0.016	0.026	0.026	0.56	42060	1345	45°
0.80	2	99	0.018	0.034	0.034	0.75	42015	1515	45°
1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°
1.50	2	150	0.028	0.064	0.064	1.40	34105	1910	45°
2.00	2	150	0.030	0.084	0.084	1.86	25670	1540	45°

Hardened tool steel 60 - 64 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.40	2	48	0.010	0.010	0.010	0.36	42440	850	45°
0.50	2	61	0.015	0.020	0.020	0.46	42210	1265	45°
0.60	2	73	0.015	0.020	0.020	0.55	42250	1265	45°
0.80	2	98	0.015	0.030	0.030	0.74	42155	1265	45°
1.00	2	120	0.020	0.040	0.040	0.93	41070	1645	45°
1.50	2	120	0.020	0.060	0.060	1.39	27480	1100	45°
2.00	2	120	0.025	0.080	0.080	1.86	20535	1025	45°

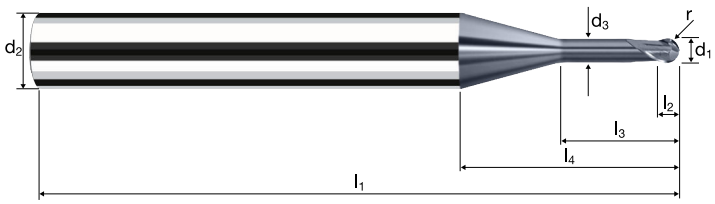
Hardened tool steel 64 - 70 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.40	2	48	0.010	0.010	0.010	0.36	42440	850	45°
0.50	2	61	0.010	0.020	0.020	0.46	42210	845	45°
0.60	2	73	0.010	0.020	0.020	0.55	42250	845	45°
0.80	2	85	0.010	0.020	0.030	0.71	38110	760	45°
1.00	2	85	0.015	0.030	0.040	0.91	29730	890	45°
1.50	2	85	0.015	0.050	0.060	1.37	19750	590	45°
2.00	2	85	0.020	0.060	0.080	1.81	14950	600	45°

Ball nose end mills MicroHX

Shank ø 6mm, cylindrical neck, 4xd

HM XA	λ 30° γ -10°

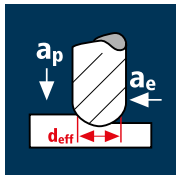


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	HSS

Example: **Order-N°.** Coating **Y** Article-N°. **6463** ø-Code **040**

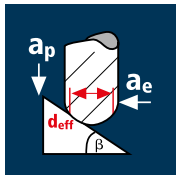
Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-Al Y6463
040	0.40	6.00	0.35	57	0.24	1.60	17.56	0.200	13.2°	2	●
050	0.50	6.00	0.45	57	0.30	2.00	12.51	0.250	12.8°	2	●
060	0.60	6.00	0.55	57	0.36	2.40	12.73	0.300	12.4°	2	●
080	0.80	6.00	0.75	57	0.48	3.20	13.15	0.400	11.7°	2	●
100	1.00	6.00	0.95	57	0.60	4.00	13.58	0.500	11.0°	2	●
120	1.50	6.00	1.40	57	0.90	6.00	14.53	0.750	9.2°	2	●
140	2.00	6.00	1.90	57	1.20	8.00	15.60	1.000	7.8°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	Q [mm³/min]
Hardened tool steel 52 - 56 HRC	0.40	2	20	0.010	0.014	0.080	0.15	42440	850	1.0
	0.50	2	25	0.013	0.018	0.100	0.19	41885	1090	2.0
	0.60	2	29	0.015	0.021	0.120	0.22	41960	1260	3.2
	0.80	2	40	0.020	0.029	0.160	0.30	42440	1700	7.9
	1.00	2	49	0.025	0.036	0.200	0.37	42155	2110	15.2
Hardened tool steel 56 - 60 HRC	0.40	2	20	0.009	0.014	0.080	0.15	42440	765	0.9
	0.50	2	25	0.012	0.018	0.100	0.19	41885	980	1.8
	0.60	2	29	0.014	0.021	0.120	0.22	41960	1135	2.9
	0.80	2	40	0.018	0.029	0.160	0.30	42440	1530	7.1
	1.00	2	49	0.023	0.036	0.200	0.37	42155	1895	13.7
Hardened tool steel 60 - 64 HRC	0.40	2	17	0.007	0.011	0.080	0.13	41625	600	0.5
	0.50	2	22	0.009	0.014	0.100	0.17	41195	770	1.1
	0.60	2	26	0.011	0.017	0.120	0.20	41380	895	1.8
	0.80	2	36	0.014	0.023	0.160	0.27	42440	1220	4.5
	1.00	2	44	0.018	0.029	0.200	0.33	42440	1530	8.8
Hardened tool steel 64 - 70 HRC	0.40	2	12	0.001	0.005	0.080	0.09	42440	100	0.0
	0.50	2	15	0.002	0.006	0.100	0.11	43405	150	0.1
	0.60	2	17	0.002	0.008	0.120	0.13	41625	145	0.1
	0.80	2	24	0.002	0.010	0.160	0.18	42440	195	0.3
	1.00	2	29	0.003	0.013	0.200	0.22	41960	240	0.6

Application

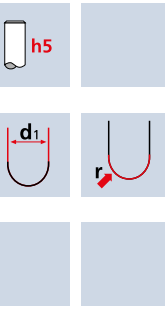


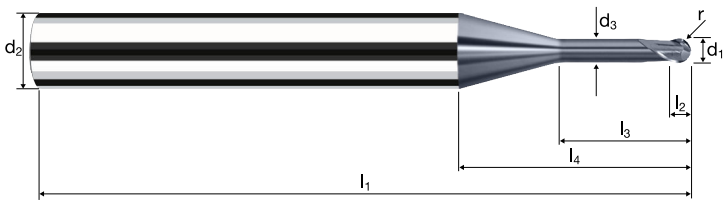
Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	β [°]
Hardened tool steel 52 - 56 HRC	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	61	0.018	0.020	0.020	0.46	42210	1520	45°
	0.60	2	74	0.018	0.024	0.024	0.56	42060	1515	45°
	0.80	2	98	0.020	0.032	0.032	0.74	42155	1685	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
Hardened tool steel 56 - 60 HRC	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	61	0.016	0.020	0.020	0.46	42210	1350	45°
	0.60	2	74	0.016	0.024	0.024	0.56	42060	1345	45°
	0.80	2	98	0.018	0.032	0.032	0.74	42155	1520	45°
	1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°
Hardened tool steel 60 - 64 HRC	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	61	0.016	0.020	0.020	0.46	42210	1350	45°
	0.60	2	74	0.016	0.024	0.024	0.56	42060	1345	45°
	0.80	2	98	0.018	0.032	0.032	0.74	42155	1520	45°
	1.00	2	120	0.022	0.042	0.042	0.93	41070	1805	45°
Hardened tool steel 64 - 70 HRC	0.40	2	49	0.010	0.016	0.016	0.37	42155	845	45°
	0.50	2	61	0.010	0.020	0.020	0.46	42210	845	45°
	0.60	2	74	0.010	0.024	0.024	0.56	42060	840	45°
	0.80	2	85	0.010	0.032	0.032	0.74	36565	730	45°
	1.00	2	85	0.015	0.042	0.042	0.93	29095	875	45°

Ball nose end mills MicroHX

Shank ø 6mm, cylindrical neck, 4.5xd

HM XA	λ 30° γ -10°



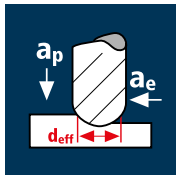


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	HSS

Example: **Order-N°.** Coating **Y** Article-N°. **6483** ø-Code **040**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-Al Y6483
040	0.40	6.00	0.35	57	0.24	1.80	17.76	0.200	13.0°	2	●
050	0.50	6.00	0.45	57	0.30	2.25	12.76	0.250	12.6°	2	●
060	0.60	6.00	0.55	57	0.36	2.70	13.03	0.300	12.1°	2	●
080	0.80	6.00	0.75	57	0.48	3.60	13.55	0.400	11.3°	2	●
100	1.00	6.00	0.95	57	0.60	4.50	14.08	0.500	10.6°	2	●

Application



Material

Hardened tool steel 52 - 56 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.40	2	18	0.010	0.013	0.080	0.14	40925	820	0.9
0.50	2	24	0.013	0.016	0.100	0.18	42440	1105	1.8
0.60	2	28	0.015	0.019	0.120	0.21	42440	1275	2.9
0.80	2	37	0.020	0.026	0.160	0.28	42060	1680	7.0
1.00	2	46	0.025	0.032	0.200	0.35	41835	2090	13.4
1.50	2	70	0.038	0.048	0.300	0.53	42040	3195	46.0
2.00	2	92	0.050	0.064	0.400	0.70	41835	4185	107.1
2.50	2	100	0.063	0.080	0.500	0.88	36170	4560	182.3
3.00	2	100	0.075	0.096	0.600	1.06	30030	4505	259.5

Hardened tool steel 56 - 60 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.40	2	18	0.009	0.013	0.080	0.14	40925	735	0.8
0.50	2	24	0.012	0.016	0.100	0.18	42440	995	1.6
0.60	2	28	0.014	0.019	0.120	0.21	42440	1145	2.6
0.80	2	37	0.018	0.026	0.160	0.28	42060	1515	6.3
1.00	2	46	0.023	0.032	0.200	0.35	41835	1885	12.0
1.50	2	60	0.034	0.048	0.300	0.53	36035	2465	35.5
2.00	2	60	0.045	0.064	0.400	0.70	27285	2455	62.9
2.50	2	60	0.057	0.080	0.500	0.88	21705	2460	98.4
3.00	2	60	0.068	0.096	0.600	1.06	18020	2430	140.1

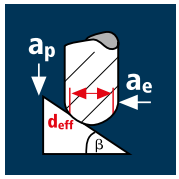
Hardened tool steel 60 - 64 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.40	2	17	0.007	0.010	0.080	0.13	41625	600	0.5
0.50	2	21	0.009	0.013	0.100	0.16	41780	780	1.0
0.60	2	25	0.011	0.015	0.120	0.19	41885	905	1.7
0.80	2	33	0.014	0.021	0.160	0.25	42015	1210	4.0
1.00	2	42	0.018	0.026	0.200	0.32	41780	1505	7.7
1.50	2	50	0.027	0.038	0.300	0.47	33865	1855	21.3
2.00	2	50	0.036	0.051	0.400	0.63	25265	1820	37.3
2.50	2	50	0.045	0.064	0.500	0.79	20145	1830	58.5
3.00	2	50	0.054	0.077	0.600	0.95	16755	1810	83.4

Hardened tool steel 64 - 70 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.40	2	15	0.006	0.008	0.080	0.11	43405	500	0.3
0.50	2	18	0.007	0.010	0.100	0.14	40925	615	0.6
0.60	2	22	0.009	0.012	0.120	0.17	41195	710	1.0
0.80	2	30	0.012	0.017	0.160	0.23	41520	955	2.5
1.00	2	37	0.014	0.020	0.200	0.28	42060	1210	5.0
1.50	2	40	0.022	0.031	0.300	0.42	30315	1325	12.2
2.00	2	40	0.029	0.041	0.400	0.57	22340	1285	21.1
2.50	2	40	0.036	0.051	0.500	0.71	17935	1300	33.3
3.00	2	40	0.043	0.061	0.600	0.85	14980	1295	47.7

Application



Material

Hardened tool steel 52 - 56 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
0.50	2	61	0.018	0.020	0.020	0.46	42210	1520	45°
0.60	2	74	0.018	0.024	0.024	0.56	42060	1515	45°
0.80	2	98	0.020	0.032	0.032	0.74	42155	1685	45°
1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
1.50	2	185	0.030	0.062	0.062	1.40	42060	2525	45°
2.00	2	200	0.034	0.082	0.082	1.86	34225	2325	45°
2.50	2	200	0.036	0.102	0.102	2.32	27440	1975	45°
3.00	2	200	0.042	0.122	0.122	2.79	22820	1915	45°

Hardened tool steel 56 - 60 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
0.50	2	61	0.016	0.020	0.020	0.46	42210	1350	45°
0.60	2	74	0.016	0.024	0.024	0.56	42060	1345	45°
0.80	2	98	0.018	0.032	0.032	0.74	42155	1520	45°
1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°
1.50	2	150	0.028	0.062	0.062	1.40	34105	1910	45°
2.00	2	150	0.030	0.082	0.082	1.86	25670	1540	45°
2.50	2	150	0.032	0.102	0.102	2.32	20580	1315	45°
3.00	2	150	0.036	0.122	0.122	2.79	17115	1230	45°

Hardened tool steel 60 - 64 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
0.50	2	61	0.016	0.020	0.020	0.46	42210	1350	45°
0.60	2	74	0.016	0.024	0.024	0.56	42060	1345	45°
0.80	2	98	0.018	0.032	0.032	0.74	42155	1520	45°
1.00	2	120	0.022	0.042	0.042	0.93	41070	1805	45°
1.50	2	120	0.028	0.062	0.062	1.40	27285	1530	45°
2.00	2	120	0.030	0.082	0.082	1.86	20535	1230	45°
2.50	2	120	0.032	0.102	0.102	2.32	16465	1055	45°
3.00	2	120	0.036	0.122	0.122	2.79	13690	985	45°

Hardened tool steel 64 - 70 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.40	2	49	0.010	0.016	0.016	0.37	42155	845	45°
0.50	2	61	0.010	0.020	0.020	0.46	42210	845	45°
0.60	2	74	0.010	0.024	0.024	0.56	42060	840	45°
0.80	2	85	0.010	0.032	0.032	0.74	36565	730	45°
1.00	2	85	0.015	0.042	0.042	0.93	29095	875	45°
1.50	2	85	0.015	0.062	0.062	1.40	19325	580	45°
2.00	2	85	0.020	0.082	0.082	1.86	14545	580	45°
2.50	2	85	0.020	0.102	0.102	2.32	11660	465	45°
3.00	2	85	0.025	0.122	0.122	2.79	9700	485	45°

Ball nose end mills MicroHX

Shank ø 6mm, cylindrical neck, 5xd

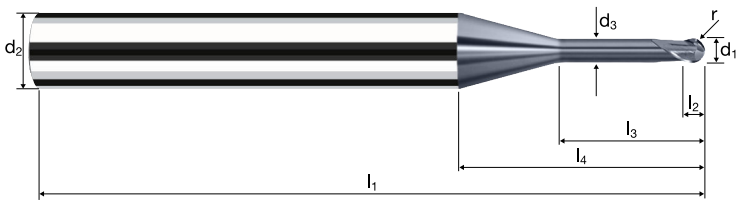
HM
XA

λ 30°
γ -10°

h5

d1

r

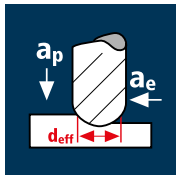


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	HSS

Example: **Order-N°.** Coating **Y** Article-N°. **6464** ø-Code **040**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-Al Y6464
040	0.40	6.00	0.35	57	0.24	2.00	17.96	0.200	12.8°	2	●
050	0.50	6.00	0.45	57	0.30	2.50	13.01	0.250	12.3°	2	●
060	0.60	6.00	0.55	57	0.36	3.00	13.33	0.300	11.9°	2	●
080	0.80	6.00	0.75	57	0.48	4.00	13.95	0.400	11.0°	2	●
100	1.00	6.00	0.95	57	0.60	5.00	14.58	0.500	10.2°	2	●
108	1.20	6.00	1.10	57	0.72	6.00	15.09	0.600	9.4°	2	●
120	1.50	6.00	1.40	61	0.90	7.50	16.03	0.750	8.4°	2	●
140	2.00	6.00	1.90	61	1.20	10.00	17.60	1.000	6.9°	2	●
160	2.50	6.00	2.40	61	1.50	12.50	19.07	1.250	5.5°	2	●
180	3.00	6.00	2.90	66	1.80	15.00	20.64	1.500	4.4°	2	●

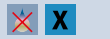
Application



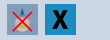
Material

Hardened tool steel 42 - 48 HRC

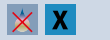
Hardened tool steel 48 - 52 HRC



Hardened tool steel 52 - 56 HRC

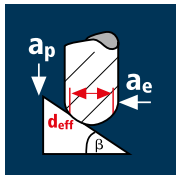


Hardened tool steel 56 - 60 HRC



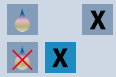
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.20	2	20	0.008	0.033	0.040	0.15	42440	640	0.8
0.30	2	29	0.013	0.050	0.060	0.22	41960	1055	3.2
0.40	2	40	0.016	0.067	0.080	0.30	42440	1390	7.5
0.50	2	49	0.020	0.083	0.100	0.37	42155	1700	14.1
0.60	2	59	0.024	0.100	0.120	0.45	41735	2000	24.0
0.80	2	79	0.033	0.134	0.160	0.60	41910	2745	58.9
1.00	2	99	0.040	0.167	0.200	0.75	42015	3390	113.2
1.50	2	140	0.060	0.250	0.300	1.12	39790	4815	361.0
2.00	2	140	0.081	0.334	0.400	1.49	29910	4825	644.4
0.20	2	20	0.007	0.033	0.040	0.15	42440	610	0.8
0.30	2	29	0.012	0.050	0.060	0.22	41960	1005	3.0
0.40	2	40	0.016	0.067	0.080	0.30	42440	1325	7.1
0.50	2	49	0.019	0.083	0.100	0.37	42155	1620	13.4
0.60	2	59	0.023	0.100	0.120	0.45	41735	1905	22.8
0.80	2	79	0.031	0.134	0.160	0.60	41910	2615	56.1
1.00	2	99	0.038	0.167	0.200	0.75	42015	3225	107.8
1.50	2	120	0.058	0.250	0.300	1.12	34105	3930	294.7
2.00	2	120	0.077	0.334	0.400	1.49	25635	3940	526.1
0.20	2	20	0.006	0.033	0.040	0.15	42440	510	0.7
0.30	2	29	0.010	0.050	0.060	0.22	41960	840	2.5
0.40	2	40	0.013	0.067	0.080	0.30	42440	1105	5.9
0.50	2	49	0.016	0.083	0.100	0.37	42155	1350	11.2
0.60	2	59	0.019	0.100	0.120	0.45	41735	1585	19.0
0.80	2	79	0.026	0.134	0.160	0.60	41910	2180	46.7
1.00	2	99	0.032	0.167	0.200	0.75	42015	2690	89.8
1.50	2	100	0.048	0.250	0.300	1.12	28420	2730	204.6
2.00	2	100	0.064	0.334	0.400	1.49	21365	2735	365.3
0.20	2	20	0.005	0.033	0.040	0.15	42440	460	0.6
0.30	2	29	0.009	0.050	0.060	0.22	41960	755	2.3
0.40	2	40	0.012	0.067	0.080	0.30	42440	995	5.3
0.50	2	49	0.014	0.083	0.100	0.37	42155	1215	10.1
0.60	2	59	0.017	0.100	0.120	0.45	41735	1425	17.1
0.80	2	60	0.023	0.134	0.160	0.60	31830	1490	31.9
1.00	2	60	0.029	0.167	0.200	0.75	25465	1465	49.0
1.50	2	60	0.043	0.250	0.300	1.12	17050	1475	110.5
2.00	2	60	0.058	0.334	0.400	1.49	12820	1475	197.3

Application



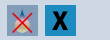
Material

Hardened tool steel 42 - 48 HRC



Hardened tool steel 48 - 52 HRC

Hardened tool steel 52 - 56 HRC



Hardened tool steel 56 - 60 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
0.50	2	62	0.020	0.022	0.022	0.47	41990	1680	45°
0.60	2	74	0.020	0.026	0.026	0.56	42060	1680	45°
0.80	2	99	0.022	0.034	0.034	0.75	42015	1850	45°
1.00	2	123	0.028	0.042	0.042	0.93	42100	2360	45°
1.50	2	185	0.034	0.064	0.064	1.40	42060	2860	45°
2.00	2	245	0.038	0.084	0.084	1.86	41930	3185	45°
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
0.50	2	62	0.020	0.022	0.022	0.47	41990	1680	45°
0.60	2	74	0.020	0.026	0.026	0.56	42060	1680	45°
0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
1.50	2	185	0.032	0.064	0.064	1.40	42060	2690	45°
2.00	2	245	0.036	0.084	0.084	1.86	41930	3020	45°
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
0.50	2	62	0.018	0.022	0.022	0.47	41990	1510	45°
0.60	2	74	0.018	0.026	0.026	0.56	42060	1515	45°
0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
1.50	2	185	0.030	0.064	0.064	1.40	42060	2525	45°
2.00	2	200	0.034	0.084	0.084	1.86	34225	2325	45°
0.20	2	25	0.006	0.008	0.008	0.19	41885	505	45°
0.30	2	37	0.008	0.012	0.012	0.28	42060	675	45°
0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
0.50	2	62	0.016	0.022	0.022	0.47	41990	1345	45°
0.60	2	74	0.016	0.026	0.026	0.56	42060	1345	45°
0.80	2	99	0.018	0.034	0.034	0.75	42015	1515	45°
1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°
1.50	2	150	0.028	0.064	0.064	1.40	34105	1910	45°
2.00	2	150	0.030	0.084	0.084	1.86	25670	1540	45°

Ball nose end mills MicroX

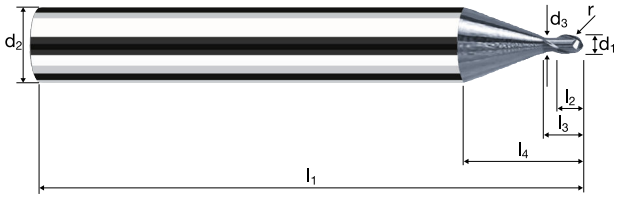
Shank ø 6mm, cylindrical neck, 1xd

HM XA	λ 30° γ -10°

h5

d_1

r

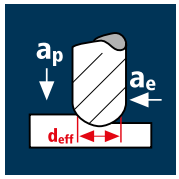


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6560** ø-Code **010**

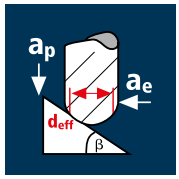
											X-AL
											X6560
Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	
010	0.10	6.00	0.09	57	0.10	0.10	17.27	0.050	14.9°	2	●
020	0.20	6.00	0.18	57	0.20	0.20	17.10	0.100	14.8°	2	●
030	0.30	6.00	0.25	57	0.30	0.30	16.94	0.150	14.7°	2	●
040	0.40	6.00	0.35	57	0.40	0.40	16.78	0.200	14.6°	2	●
050	0.50	6.00	0.45	57	0.50	0.50	11.50	0.250	14.5°	2	●
060	0.60	6.00	0.55	57	0.60	0.60	11.43	0.300	14.5°	2	●
080	0.80	6.00	0.75	57	0.80	0.80	11.30	0.400	14.3°	2	●
100	1.00	6.00	0.95	57	1.00	1.00	11.19	0.500	14.1°	2	●
120	1.50	6.00	1.40	57	1.50	1.50	10.86	0.750	13.5°	2	●
140	2.00	6.00	1.90	57	2.00	2.00	10.52	1.000	12.9°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Hardened tool steel 42 - 48 HRC	0.20	2	15	0.006	0.016	0.040	0.11	43405	545	0.4
	0.30	2	21	0.010	0.024	0.060	0.16	41780	840	1.2
	0.40	2	29	0.013	0.032	0.080	0.22	41960	1055	2.7
	0.50	2	36	0.016	0.040	0.100	0.27	42440	1390	5.6
	0.60	2	44	0.020	0.048	0.120	0.33	42440	1710	9.9
	0.80	2	58	0.026	0.065	0.160	0.44	41960	2220	23.1
	1.00	2	73	0.033	0.081	0.200	0.55	42250	2770	44.8
	1.50	2	108	0.049	0.121	0.300	0.82	41925	4120	149.6
	2.00	2	140	0.066	0.162	0.400	1.09	40885	5355	347.2
Hardened tool steel 48 - 52 HRC	0.20	2	15	0.006	0.016	0.040	0.11	43405	520	0.3
	0.30	2	21	0.010	0.024	0.060	0.16	41780	800	1.2
	0.40	2	29	0.012	0.032	0.080	0.22	41960	1005	2.6
	0.50	2	36	0.016	0.040	0.100	0.27	42440	1325	5.3
	0.60	2	44	0.019	0.048	0.120	0.33	42440	1630	9.4
	0.80	2	58	0.025	0.065	0.160	0.44	41960	2115	22.0
	1.00	2	73	0.031	0.081	0.200	0.55	42250	2635	42.7
	1.50	2	108	0.047	0.121	0.300	0.82	41925	3925	142.4
	2.00	2	120	0.062	0.162	0.400	1.09	35045	4375	283.4
Hardened tool steel 52 - 56 HRC	0.20	2	15	0.005	0.016	0.040	0.11	43405	435	0.3
	0.30	2	21	0.008	0.024	0.060	0.16	41780	670	1.0
	0.40	2	29	0.010	0.032	0.080	0.22	41960	840	2.1
	0.50	2	36	0.013	0.040	0.100	0.27	42440	1105	4.4
	0.60	2	44	0.016	0.048	0.120	0.33	42440	1360	7.8
	0.80	2	58	0.021	0.065	0.160	0.44	41960	1760	18.3
	1.00	2	73	0.026	0.081	0.200	0.55	42250	2195	35.6
	1.50	2	100	0.039	0.121	0.300	0.82	38820	3030	109.9
	2.00	2	100	0.052	0.162	0.400	1.09	29205	3035	196.8
Hardened tool steel 56 - 60 HRC	0.20	2	15	0.004	0.016	0.040	0.11	43405	390	0.3
	0.30	2	21	0.007	0.024	0.060	0.16	41780	600	0.9
	0.40	2	29	0.009	0.032	0.080	0.22	41960	755	1.9
	0.50	2	36	0.012	0.040	0.100	0.27	42440	995	4.0
	0.60	2	44	0.014	0.048	0.120	0.33	42440	1220	7.0
	0.80	2	58	0.019	0.065	0.160	0.44	41960	1585	16.5
	1.00	2	60	0.023	0.081	0.200	0.55	34725	1625	26.3
	1.50	2	60	0.035	0.121	0.300	0.82	23290	1635	59.4
	2.00	2	60	0.047	0.162	0.400	1.09	17520	1640	106.3

Application



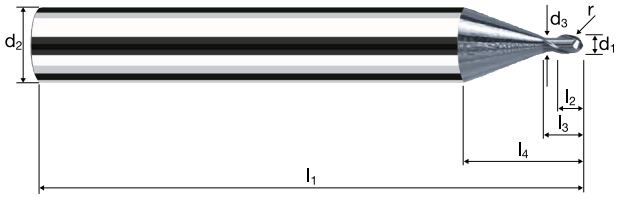
Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
	0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
	0.50	2	62	0.020	0.022	0.022	0.47	41990	1680	45°
	0.60	2	74	0.020	0.026	0.026	0.56	42060	1680	45°
	0.80	2	99	0.022	0.034	0.034	0.75	42015	1850	45°
	1.00	2	123	0.028	0.042	0.042	0.93	42100	2360	45°
	1.50	2	185	0.034	0.064	0.064	1.40	42060	2860	45°
	2.00	2	245	0.038	0.084	0.084	1.86	41930	3185	45°
Hardened tool steel 48 - 52 HRC	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
	0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
	0.50	2	62	0.020	0.022	0.022	0.47	41990	1680	45°
	0.60	2	74	0.020	0.026	0.026	0.56	42060	1680	45°
	0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
	1.50	2	185	0.032	0.064	0.064	1.40	42060	2690	45°
	2.00	2	245	0.036	0.084	0.084	1.86	41930	3020	45°
Hardened tool steel 52 - 56 HRC	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	62	0.018	0.022	0.022	0.47	41990	1510	45°
	0.60	2	74	0.018	0.026	0.026	0.56	42060	1515	45°
	0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
	1.50	2	185	0.030	0.064	0.064	1.40	42060	2525	45°
	2.00	2	200	0.034	0.084	0.084	1.86	34225	2325	45°
Hardened tool steel 56 - 60 HRC	0.20	2	25	0.006	0.008	0.008	0.19	41885	505	45°
	0.30	2	37	0.008	0.012	0.012	0.28	42060	675	45°
	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	62	0.016	0.022	0.022	0.47	41990	1345	45°
	0.60	2	74	0.016	0.026	0.026	0.56	42060	1345	45°
	0.80	2	99	0.018	0.034	0.034	0.75	42015	1515	45°
	1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°
	1.50	2	150	0.028	0.064	0.064	1.40	34105	1910	45°
	2.00	2	150	0.030	0.084	0.084	1.86	25670	1540	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 2xd

HM XA	λ 30° γ -10°

h5

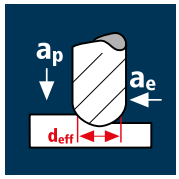


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6561** ø-Code **010**

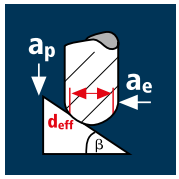
Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL **X6561**
010	0.10	6.00	0.09	57	0.10	0.20	17.45	0.050	14.8°	2	●
020	0.20	6.00	0.18	57	0.20	0.40	17.34	0.100	14.6°	2	●
030	0.30	6.00	0.25	57	0.30	0.60	17.34	0.150	14.3°	2	●
040	0.40	6.00	0.35	57	0.40	0.80	17.26	0.200	14.1°	2	●
050	0.50	6.00	0.45	57	0.50	1.00	12.01	0.250	13.9°	2	●
060	0.60	6.00	0.55	57	0.60	1.20	12.03	0.300	13.7°	2	●
080	0.80	6.00	0.75	57	0.80	1.60	12.05	0.400	13.3°	2	●
100	1.00	6.00	0.95	57	1.00	2.00	12.08	0.500	12.9°	2	●
120	1.50	6.00	1.40	57	1.50	3.00	12.24	0.750	11.7°	2	●
140	2.00	6.00	1.90	57	2.00	4.00	12.31	1.000	10.6°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Hardened tool steel 42 - 48 HRC	0.10	2	7	0.004	0.006	0.020	0.05	44565	335	0.0
	0.20	2	13	0.006	0.013	0.040	0.10	41380	520	0.3
	0.30	2	20	0.010	0.019	0.060	0.15	42440	855	1.0
	0.40	2	26	0.013	0.026	0.080	0.20	41380	1045	2.2
	0.50	2	32	0.016	0.032	0.100	0.24	42440	1390	4.4
	0.60	2	40	0.019	0.039	0.120	0.30	42440	1605	7.5
	0.80	2	51	0.025	0.052	0.160	0.39	41625	2100	17.5
	1.00	2	65	0.032	0.064	0.200	0.49	42225	2660	34.1
Hardened tool steel 48 - 52 HRC	0.10	2	7	0.004	0.006	0.020	0.05	44565	320	0.0
	0.20	2	13	0.006	0.013	0.040	0.10	41380	495	0.3
	0.30	2	20	0.010	0.019	0.060	0.15	42440	815	0.9
	0.40	2	26	0.012	0.026	0.080	0.20	41380	995	2.1
	0.50	2	32	0.016	0.032	0.100	0.24	42440	1325	4.2
	0.60	2	40	0.018	0.039	0.120	0.30	42440	1530	7.2
	0.80	2	51	0.024	0.052	0.160	0.39	41625	2000	16.6
	1.00	2	65	0.030	0.064	0.200	0.49	42225	2535	32.4
Hardened tool steel 52 - 56 HRC	0.10	2	7	0.003	0.006	0.020	0.05	44565	265	0.0
	0.20	2	13	0.005	0.013	0.040	0.10	41380	415	0.2
	0.30	2	20	0.008	0.019	0.060	0.15	42440	680	0.8
	0.40	2	26	0.010	0.026	0.080	0.20	41380	830	1.7
	0.50	2	32	0.013	0.032	0.100	0.24	42440	1105	3.5
	0.60	2	40	0.015	0.039	0.120	0.30	42440	1275	6.0
	0.80	2	51	0.020	0.052	0.160	0.39	41625	1665	13.9
	1.00	2	65	0.025	0.064	0.200	0.49	42225	2110	27.0
Hardened tool steel 56 - 60 HRC	0.10	2	7	0.003	0.006	0.020	0.05	44565	240	0.0
	0.20	2	13	0.004	0.013	0.040	0.10	41380	370	0.2
	0.30	2	20	0.007	0.019	0.060	0.15	42440	610	0.7
	0.40	2	26	0.009	0.026	0.080	0.20	41380	745	1.5
	0.50	2	32	0.012	0.032	0.100	0.24	42440	995	3.2
	0.60	2	40	0.014	0.039	0.120	0.30	42440	1145	5.4
	0.80	2	51	0.018	0.052	0.160	0.39	41625	1500	12.5
	1.00	2	60	0.023	0.064	0.200	0.49	38975	1755	22.5

Application

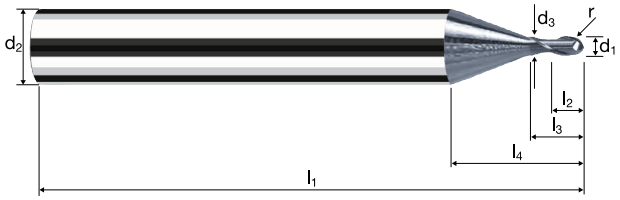


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.10	2	12	0.006	0.004	0.004	0.09	42440	510	45°
	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
	0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
	0.50	2	62	0.020	0.022	0.022	0.47	41990	1680	45°
	0.60	2	74	0.020	0.026	0.026	0.56	42060	1680	45°
	0.80	2	99	0.022	0.034	0.034	0.75	42015	1850	45°
	1.00	2	123	0.028	0.042	0.042	0.93	42100	2360	45°
Hardened tool steel 48 - 52 HRC	0.10	2	12	0.006	0.004	0.004	0.09	42440	510	45°
	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
	0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
	0.50	2	62	0.020	0.022	0.022	0.47	41990	1680	45°
	0.60	2	74	0.020	0.026	0.026	0.56	42060	1680	45°
	0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
Hardened tool steel 52 - 56 HRC	0.10	2	12	0.006	0.004	0.004	0.09	42440	510	45°
	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	62	0.018	0.022	0.022	0.47	41990	1510	45°
	0.60	2	74	0.018	0.026	0.026	0.56	42060	1515	45°
	0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
Hardened tool steel 56 - 60 HRC	0.10	2	12	0.004	0.004	0.004	0.09	42440	340	45°
	0.20	2	25	0.006	0.008	0.008	0.19	41885	505	45°
	0.30	2	37	0.008	0.012	0.012	0.28	42060	675	45°
	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	62	0.016	0.022	0.022	0.47	41990	1345	45°
	0.60	2	74	0.016	0.026	0.026	0.56	42060	1345	45°
	0.80	2	99	0.018	0.034	0.034	0.75	42015	1515	45°
	1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 2.5xd

HM XA	λ 30° γ -10°
h5	
d_1	r

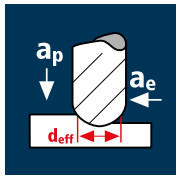


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6581** ø-Code **010**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL X6581
010	0.10	6.00	0.09	57	0.10	0.25	17.50	0.050	14.8°	2	●
020	0.20	6.00	0.18	57	0.20	0.50	17.44	0.100	14.5°	2	●
030	0.30	6.00	0.25	57	0.30	0.75	17.49	0.150	14.1°	2	●
040	0.40	6.00	0.35	57	0.40	1.00	17.46	0.200	13.9°	2	●
050	0.50	6.00	0.45	57	0.50	1.25	12.26	0.250	13.6°	2	●
060	0.60	6.00	0.55	57	0.60	1.50	12.33	0.300	13.4°	2	●
080	0.80	6.00	0.75	57	0.80	2.00	12.45	0.400	12.9°	2	●
100	1.00	6.00	0.95	57	1.00	2.50	12.58	0.500	12.3°	2	●

Application



Material

Hardened tool steel 42 - 48 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.20	2	12	0.006	0.011	0.040	0.09	42440	535	0.2
0.40	2	24	0.013	0.021	0.080	0.18	42440	1070	1.8
0.50	2	30	0.016	0.027	0.100	0.23	41520	1360	3.7
0.80	2	48	0.025	0.043	0.160	0.36	42440	2140	14.7
1.00	2	59	0.032	0.054	0.200	0.45	41735	2630	28.4
1.50	2	88	0.048	0.080	0.300	0.67	41810	4005	96.1
2.00	2	119	0.064	0.107	0.400	0.90	42090	5410	231.5
2.50	2	140	0.079	0.134	0.500	1.13	39435	6260	419.5
3.00	2	140	0.096	0.161	0.600	1.35	33010	6320	610.7

Hardened tool steel 48 - 52 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.20	2	12	0.006	0.011	0.040	0.09	42440	510	0.2
0.40	2	24	0.012	0.021	0.080	0.18	42440	1020	1.7
0.50	2	30	0.016	0.027	0.100	0.23	41520	1295	3.5
0.80	2	48	0.024	0.043	0.160	0.36	42440	2035	14.0
1.00	2	59	0.030	0.054	0.200	0.45	41735	2505	27.0
1.50	2	88	0.046	0.080	0.300	0.67	41810	3815	91.5
2.00	2	119	0.061	0.107	0.400	0.90	42090	5150	220.5
2.50	2	120	0.076	0.134	0.500	1.13	33805	5110	342.4
3.00	2	120	0.091	0.161	0.600	1.35	28295	5160	498.5

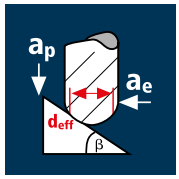
Hardened tool steel 52 - 56 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.20	2	12	0.005	0.011	0.040	0.09	42440	425	0.2
0.40	2	24	0.010	0.021	0.080	0.18	42440	850	1.4
0.50	2	30	0.013	0.027	0.100	0.23	41520	1080	2.9
0.80	2	48	0.020	0.043	0.160	0.36	42440	1700	11.7
1.00	2	59	0.025	0.054	0.200	0.45	41735	2085	22.5
1.50	2	88	0.038	0.080	0.300	0.67	41810	3175	76.3
2.00	2	100	0.051	0.107	0.400	0.90	35370	3610	154.4
2.50	2	100	0.063	0.134	0.500	1.13	28170	3550	237.8
3.00	2	100	0.076	0.161	0.600	1.35	23580	3585	346.2

Hardened tool steel 56 - 60 HRC

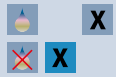
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.20	2	12	0.004	0.011	0.040	0.09	42440	380	0.2
0.40	2	24	0.009	0.021	0.080	0.18	42440	765	1.3
0.50	2	30	0.012	0.027	0.100	0.23	41520	970	2.6
0.80	2	48	0.018	0.043	0.160	0.36	42440	1530	10.5
1.00	2	59	0.023	0.054	0.200	0.45	41735	1880	20.3
1.50	2	60	0.034	0.080	0.300	0.67	28505	1950	46.8
2.00	2	60	0.046	0.107	0.400	0.90	21220	1950	83.4
2.50	2	60	0.057	0.134	0.500	1.13	16900	1915	128.4
3.00	2	60	0.068	0.161	0.600	1.35	14145	1935	187.0

Application



Material

Hardened tool steel 42 - 48 HRC

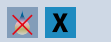


d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
0.50	2	62	0.020	0.022	0.022	0.47	41990	1680	45°
0.80	2	99	0.022	0.034	0.034	0.75	42015	1850	45°
1.00	2	123	0.028	0.042	0.042	0.93	42100	2360	45°
1.50	2	185	0.034	0.064	0.064	1.40	42060	2860	45°
2.00	2	245	0.038	0.084	0.084	1.86	41930	3185	45°
2.50	2	300	0.040	0.106	0.106	2.33	40985	3280	45°
3.00	2	300	0.046	0.126	0.126	2.79	34225	3150	45°

Hardened tool steel 48 - 52 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
0.50	2	62	0.020	0.022	0.022	0.47	41990	1680	45°
0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
1.50	2	185	0.032	0.064	0.064	1.40	42060	2690	45°
2.00	2	245	0.036	0.084	0.084	1.86	41930	3020	45°
2.50	2	250	0.038	0.106	0.106	2.33	34155	2595	45°
3.00	2	250	0.044	0.126	0.126	2.79	28520	2510	45°

Hardened tool steel 52 - 56 HRC



d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
0.50	2	62	0.018	0.022	0.022	0.47	41990	1510	45°
0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
1.50	2	185	0.030	0.064	0.064	1.40	42060	2525	45°
2.00	2	200	0.034	0.084	0.084	1.86	34225	2325	45°
2.50	2	200	0.036	0.106	0.106	2.33	27325	1965	45°
3.00	2	200	0.042	0.126	0.126	2.79	22820	1915	45°

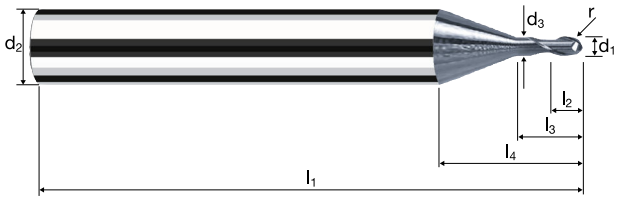
Hardened tool steel 56 - 60 HRC

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.20	2	25	0.006	0.008	0.008	0.19	41885	505	45°
0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
0.50	2	62	0.016	0.022	0.022	0.47	41990	1345	45°
0.80	2	99	0.018	0.034	0.034	0.75	42015	1515	45°
1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°
1.50	2	150	0.028	0.064	0.064	1.40	34105	1910	45°
2.00	2	150	0.030	0.084	0.084	1.86	25670	1540	45°
2.50	2	150	0.032	0.106	0.106	2.33	20490	1310	45°
3.00	2	150	0.036	0.126	0.126	2.79	17115	1230	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 3xd

HM XA	λ 30° γ -10°
h5	
d_1	r

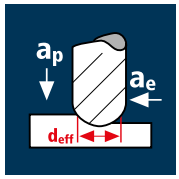


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6562** ø-Code **010**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL **X6562**
010	0.10	6.00	0.09	57	0.10	0.30	17.55	0.050	14.7°	2	●
020	0.20	6.00	0.18	57	0.20	0.60	17.54	0.100	14.4°	2	●
030	0.30	6.00	0.25	57	0.30	0.90	17.64	0.150	14.0°	2	●
040	0.40	6.00	0.35	57	0.40	1.20	17.66	0.200	13.7°	2	●
050	0.50	6.00	0.45	57	0.50	1.50	12.51	0.250	13.3°	2	●
060	0.60	6.00	0.55	57	0.60	1.80	12.63	0.300	13.0°	2	●
080	0.80	6.00	0.75	57	0.80	2.40	12.85	0.400	12.4°	2	●
100	1.00	6.00	0.95	57	1.00	3.00	13.08	0.500	11.8°	2	●
108	1.20	6.00	1.10	57	1.20	3.60	13.40	0.600	11.2°	2	●
120	1.50	6.00	1.40	57	1.50	4.50	13.74	0.750	10.3°	2	●
140	2.00	6.00	1.90	57	2.00	6.00	14.31	1.000	9.0°	2	●
152	2.30	6.00	2.10	57	2.30	6.90	14.84	1.150	8.1°	2	●
160	2.50	6.00	2.30	57	2.50	7.50	15.06	1.250	7.6°	2	●
172	2.80	6.00	2.60	57	2.80	8.40	15.40	1.400	6.8°	2	●
180	3.00	6.00	2.80	57	3.00	9.00	15.63	1.500	6.4°	2	●

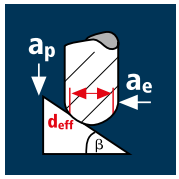
Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Hardened tool steel 42 - 48 HRC									
0.10	2	5	0.004	0.005	0.020	0.04	39790	300	0.0
0.20	2	11	0.006	0.009	0.040	0.08	43770	550	0.2
0.30	2	17	0.010	0.014	0.060	0.13	41625	840	0.7
0.40	2	22	0.013	0.018	0.080	0.17	41195	1040	1.5
0.50	2	28	0.016	0.023	0.100	0.21	42440	1390	3.2
0.60	2	33	0.019	0.028	0.120	0.25	42015	1590	5.3
0.80	2	45	0.025	0.037	0.160	0.34	42130	2125	12.6
1.00	2	55	0.032	0.046	0.200	0.42	41685	2625	24.2
Hardened tool steel 48 - 52 HRC									
0.10	2	5	0.004	0.005	0.020	0.04	39790	285	0.0
0.20	2	11	0.006	0.009	0.040	0.08	43770	525	0.2
0.30	2	17	0.010	0.014	0.060	0.13	41625	800	0.7
0.40	2	22	0.012	0.018	0.080	0.17	41195	990	1.4
0.50	2	28	0.016	0.023	0.100	0.21	42440	1325	3.0
0.60	2	33	0.018	0.028	0.120	0.25	42015	1515	5.1
0.80	2	45	0.024	0.037	0.160	0.34	42130	2020	12.0
1.00	2	55	0.030	0.046	0.200	0.42	41685	2500	23.0
Hardened tool steel 52 - 56 HRC									
0.10	2	5	0.003	0.005	0.020	0.04	39790	240	0.0
0.20	2	11	0.005	0.009	0.040	0.08	43770	440	0.2
0.30	2	17	0.008	0.014	0.060	0.13	41625	665	0.6
0.40	2	22	0.010	0.018	0.080	0.17	41195	825	1.2
0.50	2	28	0.013	0.023	0.100	0.21	42440	1105	2.5
0.60	2	33	0.015	0.028	0.120	0.25	42015	1260	4.2
0.80	2	45	0.020	0.037	0.160	0.34	42130	1685	10.0
1.00	2	55	0.025	0.046	0.200	0.42	41685	2085	19.2
Hardened tool steel 56 - 60 HRC									
0.10	2	5	0.003	0.005	0.020	0.04	39790	215	0.0
0.20	2	11	0.004	0.009	0.040	0.08	43770	395	0.1
0.30	2	17	0.007	0.014	0.060	0.13	41625	600	0.5
0.40	2	22	0.009	0.018	0.080	0.17	41195	740	1.1
0.50	2	28	0.012	0.023	0.100	0.21	42440	995	2.3
0.60	2	33	0.014	0.028	0.120	0.25	42015	1135	3.8
0.80	2	45	0.018	0.037	0.160	0.34	42130	1515	9.0
1.00	2	55	0.023	0.046	0.200	0.42	41685	1875	17.3

Application



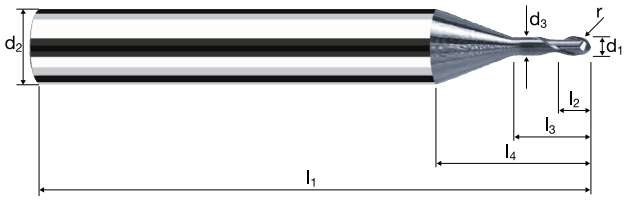
Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.10	2	12	0.006	0.004	0.004	0.09	42440	510	45°
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
0.50	2	62	0.020	0.022	0.022	0.47	41990	1680	45°
0.60	2	74	0.020	0.026	0.026	0.56	42060	1680	45°
0.80	2	99	0.022	0.034	0.034	0.75	42015	1850	45°
1.00	2	123	0.028	0.042	0.042	0.93	42100	2360	45°
Hardened tool steel 48 - 52 HRC									
0.10	2	12	0.006	0.004	0.004	0.09	42440	510	45°
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
0.50	2	62	0.020	0.022	0.022	0.47	41990	1680	45°
0.60	2	74	0.020	0.026	0.026	0.56	42060	1680	45°
0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
Hardened tool steel 52 - 56 HRC									
0.10	2	12	0.006	0.004	0.004	0.09	42440	510	45°
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
0.50	2	62	0.018	0.022	0.022	0.47	41990	1510	45°
0.60	2	74	0.018	0.026	0.026	0.56	42060	1515	45°
0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
Hardened tool steel 56 - 60 HRC									
0.10	2	12	0.004	0.004	0.004	0.09	42440	340	45°
0.20	2	25	0.006	0.008	0.008	0.19	41885	505	45°
0.30	2	37	0.008	0.012	0.012	0.28	42060	675	45°
0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
0.50	2	62	0.016	0.022	0.022	0.47	41990	1345	45°
0.60	2	74	0.016	0.026	0.026	0.56	42060	1345	45°
0.80	2	99	0.018	0.034	0.034	0.75	42015	1515	45°
1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 3.5xd

HM XA	λ 30° γ -10°
h5	
d_1	r

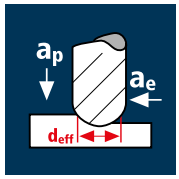


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6582** ø-Code **010**

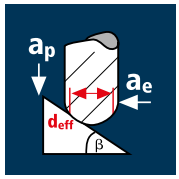
Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL X6582
010	0.10	6.00	0.09	57	0.10	0.35	17.60	0.050	14.6°	2	●
020	0.20	6.00	0.18	57	0.20	0.70	17.64	0.100	14.2°	2	●
030	0.30	6.00	0.25	57	0.30	1.05	17.79	0.150	13.8°	2	●
040	0.40	6.00	0.35	57	0.40	1.40	17.86	0.200	13.4°	2	●
050	0.50	6.00	0.45	57	0.50	1.75	12.76	0.250	13.1°	2	●
060	0.60	6.00	0.55	57	0.60	2.10	12.93	0.300	12.7°	2	●
080	0.80	6.00	0.75	57	0.80	2.80	13.25	0.400	12.0°	2	●
100	1.00	6.00	0.95	57	1.00	3.50	13.58	0.500	11.4°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Hardened tool steel 42 - 48 HRC	0.20	2	11	0.006	0.008	0.040	0.08	43770	550	0.2
	0.30	2	16	0.010	0.012	0.060	0.12	42440	855	0.6
	0.40	2	21	0.013	0.016	0.080	0.16	41780	1055	1.3
	0.50	2	26	0.016	0.020	0.100	0.20	41380	1355	2.7
	0.60	2	32	0.019	0.024	0.120	0.24	42440	1605	4.6
	0.80	2	41	0.025	0.032	0.160	0.31	42100	2120	10.9
	1.00	2	51	0.032	0.040	0.200	0.39	41625	2620	21.0
	1.50	2	78	0.048	0.060	0.300	0.59	42080	4030	72.5
	2.00	2	103	0.063	0.080	0.400	0.78	42035	5295	169.5
Hardened tool steel 48 - 52 HRC	0.20	2	11	0.006	0.008	0.040	0.08	43770	525	0.2
	0.30	2	16	0.010	0.012	0.060	0.12	42440	815	0.6
	0.40	2	21	0.012	0.016	0.080	0.16	41780	1005	1.3
	0.50	2	26	0.016	0.020	0.100	0.20	41380	1290	2.6
	0.60	2	32	0.018	0.024	0.120	0.24	42440	1530	4.4
	0.80	2	41	0.024	0.032	0.160	0.31	42100	2020	10.3
	1.00	2	51	0.030	0.040	0.200	0.39	41625	2500	20.0
	1.50	2	78	0.046	0.060	0.300	0.59	42080	3840	69.1
	2.00	2	103	0.060	0.080	0.400	0.78	42035	5045	161.4
Hardened tool steel 52 - 56 HRC	0.20	2	11	0.005	0.008	0.040	0.08	43770	440	0.1
	0.30	2	16	0.008	0.012	0.060	0.12	42440	680	0.5
	0.40	2	21	0.010	0.016	0.080	0.16	41780	835	1.1
	0.50	2	26	0.013	0.020	0.100	0.20	41380	1075	2.2
	0.60	2	32	0.015	0.024	0.120	0.24	42440	1275	3.7
	0.80	2	41	0.020	0.032	0.160	0.31	42100	1685	8.6
	1.00	2	51	0.025	0.040	0.200	0.39	41625	2080	16.7
	1.50	2	78	0.038	0.060	0.300	0.59	42080	3200	57.6
	2.00	2	100	0.050	0.080	0.400	0.78	40810	4080	130.6
Hardened tool steel 56 - 60 HRC	0.20	2	11	0.004	0.008	0.040	0.08	43770	395	0.1
	0.30	2	16	0.007	0.012	0.060	0.12	42440	610	0.4
	0.40	2	21	0.009	0.016	0.080	0.16	41780	750	1.0
	0.50	2	26	0.012	0.020	0.100	0.20	41380	970	1.9
	0.60	2	32	0.014	0.024	0.120	0.24	42440	1145	3.3
	0.80	2	41	0.018	0.032	0.160	0.31	42100	1515	7.8
	1.00	2	51	0.023	0.040	0.200	0.39	41625	1875	15.0
	1.50	2	60	0.034	0.060	0.300	0.59	32370	2215	39.9
	2.00	2	60	0.045	0.080	0.400	0.78	24485	2205	70.5

Application

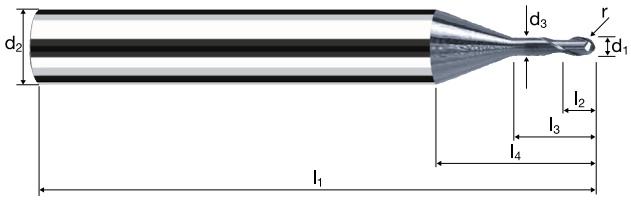


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
	0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
	0.50	2	62	0.020	0.022	0.022	0.47	41990	1680	45°
	0.60	2	74	0.020	0.026	0.026	0.56	42060	1680	45°
	0.80	2	99	0.022	0.034	0.034	0.75	42015	1850	45°
	1.00	2	123	0.028	0.042	0.042	0.93	42100	2360	45°
	1.50	2	185	0.034	0.064	0.064	1.40	42060	2860	45°
	2.00	2	245	0.038	0.084	0.084	1.86	41930	3185	45°
Hardened tool steel 48 - 52 HRC	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
	0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
	0.50	2	62	0.020	0.022	0.022	0.47	41990	1680	45°
	0.60	2	74	0.020	0.026	0.026	0.56	42060	1680	45°
	0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
	1.50	2	185	0.032	0.064	0.064	1.40	42060	2690	45°
	2.00	2	245	0.036	0.084	0.084	1.86	41930	3020	45°
Hardened tool steel 52 - 56 HRC	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	62	0.018	0.022	0.022	0.47	41990	1510	45°
	0.60	2	74	0.018	0.026	0.026	0.56	42060	1515	45°
	0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
	1.50	2	185	0.030	0.064	0.064	1.40	42060	2525	45°
	2.00	2	200	0.034	0.084	0.084	1.86	34225	2325	45°
Hardened tool steel 56 - 60 HRC	0.20	2	25	0.006	0.008	0.008	0.19	41885	505	45°
	0.30	2	37	0.008	0.012	0.012	0.28	42060	675	45°
	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	62	0.016	0.022	0.022	0.47	41990	1345	45°
	0.60	2	74	0.016	0.026	0.026	0.56	42060	1345	45°
	0.80	2	99	0.018	0.034	0.034	0.75	42015	1515	45°
	1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°
	1.50	2	150	0.028	0.064	0.064	1.40	34105	1910	45°
	2.00	2	150	0.030	0.084	0.084	1.86	25670	1540	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 4xd

HM XA	λ 30° γ -10°
h5	
d_1	r

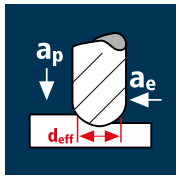


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6563** ø-Code **010**

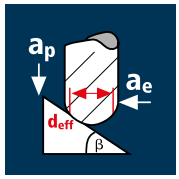
Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL X6563
010	0.10	6.00	0.09	57	0.10	0.40	17.65	0.050	14.6°	2	●
020	0.20	6.00	0.18	57	0.20	0.80	17.74	0.100	14.1°	2	●
030	0.30	6.00	0.25	57	0.30	1.20	17.94	0.150	13.6°	2	●
040	0.40	6.00	0.35	57	0.40	1.60	18.06	0.200	13.2°	2	●
050	0.50	6.00	0.45	57	0.50	2.00	13.01	0.250	12.8°	2	●
060	0.60	6.00	0.55	57	0.60	2.40	13.23	0.300	12.4°	2	●
080	0.80	6.00	0.75	57	0.80	3.20	13.65	0.400	11.7°	2	●
100	1.00	6.00	0.95	57	1.00	4.00	14.08	0.500	11.0°	2	●
120	1.50	6.00	1.40	57	1.50	6.00	15.24	0.750	9.3°	2	●
140	2.00	6.00	1.90	61	2.00	8.00	16.31	1.000	7.8°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Hardened tool steel 42 - 48 HRC	0.10	2	5	0.004	0.004	0.020	0.04	39790	300	0.0
	0.20	2	9	0.006	0.007	0.040	0.07	40925	515	0.1
	0.30	2	15	0.010	0.011	0.060	0.11	43405	875	0.6
	0.40	2	20	0.013	0.014	0.080	0.15	42440	1070	1.2
	0.50	2	25	0.016	0.018	0.100	0.19	41885	1370	2.5
	0.60	2	29	0.019	0.021	0.120	0.22	41960	1585	4.0
	0.80	2	40	0.025	0.029	0.160	0.30	42440	2140	9.9
	1.00	2	49	0.032	0.036	0.200	0.37	42155	2655	19.1
Hardened tool steel 48 - 52 HRC	0.10	2	5	0.004	0.004	0.020	0.04	39790	285	0.0
	0.20	2	9	0.006	0.007	0.040	0.07	40925	490	0.1
	0.30	2	15	0.010	0.011	0.060	0.11	43405	835	0.6
	0.40	2	20	0.012	0.014	0.080	0.15	42440	1020	1.1
	0.50	2	25	0.016	0.018	0.100	0.19	41885	1305	2.4
	0.60	2	29	0.018	0.021	0.120	0.22	41960	1510	3.8
	0.80	2	40	0.024	0.029	0.160	0.30	42440	2035	9.5
	1.00	2	49	0.030	0.036	0.200	0.37	42155	2530	18.2
Hardened tool steel 52 - 56 HRC	0.10	2	5	0.003	0.004	0.020	0.04	39790	240	0.0
	0.20	2	9	0.005	0.007	0.040	0.07	40925	410	0.1
	0.30	2	15	0.008	0.011	0.060	0.11	43405	695	0.5
	0.40	2	20	0.010	0.014	0.080	0.15	42440	850	1.0
	0.50	2	25	0.013	0.018	0.100	0.19	41885	1090	2.0
	0.60	2	29	0.015	0.021	0.120	0.22	41960	1260	3.2
	0.80	2	40	0.020	0.029	0.160	0.30	42440	1700	7.9
	1.00	2	49	0.025	0.036	0.200	0.37	42155	2110	15.2
Hardened tool steel 56 - 60 HRC	0.10	2	5	0.003	0.004	0.020	0.04	39790	215	0.0
	0.20	2	9	0.004	0.007	0.040	0.07	40925	370	0.1
	0.30	2	15	0.007	0.011	0.060	0.11	43405	625	0.4
	0.40	2	20	0.009	0.014	0.080	0.15	42440	765	0.9
	0.50	2	25	0.012	0.018	0.100	0.19	41885	980	1.8
	0.60	2	29	0.014	0.021	0.120	0.22	41960	1135	2.9
	0.80	2	40	0.018	0.029	0.160	0.30	42440	1530	7.1
	1.00	2	49	0.023	0.036	0.200	0.37	42155	1895	13.7

Application

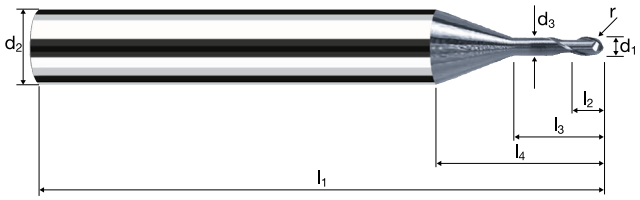


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.10	2	12	0.006	0.004	0.004	0.09	42440	510	45°
	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
	0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
	0.50	2	61	0.020	0.020	0.020	0.46	42210	1690	45°
	0.60	2	74	0.020	0.024	0.024	0.56	42060	1680	45°
	0.80	2	98	0.022	0.032	0.032	0.74	42155	1855	45°
	1.00	2	123	0.028	0.042	0.042	0.93	42100	2360	45°
Hardened tool steel 48 - 52 HRC	0.10	2	12	0.006	0.004	0.004	0.09	42440	510	45°
	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
	0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
	0.50	2	61	0.020	0.020	0.020	0.46	42210	1690	45°
	0.60	2	74	0.020	0.024	0.024	0.56	42060	1680	45°
	0.80	2	98	0.020	0.032	0.032	0.74	42155	1685	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
Hardened tool steel 52 - 56 HRC	0.10	2	12	0.006	0.004	0.004	0.09	42440	510	45°
	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	61	0.018	0.020	0.020	0.46	42210	1520	45°
	0.60	2	74	0.018	0.024	0.024	0.56	42060	1515	45°
	0.80	2	98	0.020	0.032	0.032	0.74	42155	1685	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
Hardened tool steel 56 - 60 HRC	0.10	2	12	0.004	0.004	0.004	0.09	42440	340	45°
	0.20	2	25	0.006	0.008	0.008	0.19	41885	505	45°
	0.30	2	37	0.008	0.012	0.012	0.28	42060	675	45°
	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	61	0.016	0.020	0.020	0.46	42210	1350	45°
	0.60	2	74	0.016	0.024	0.024	0.56	42060	1345	45°
	0.80	2	98	0.018	0.032	0.032	0.74	42155	1520	45°
	1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 4.5xd

HM XA	λ 30° γ -10°
h5	
d_1	r

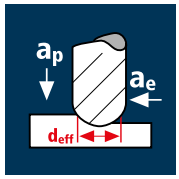


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6583** ø-Code **010**

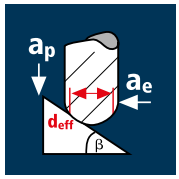
Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL X6583
010	0.10	6.00	0.09	57	0.10	0.45	17.65	0.050	14.5°	2	●
020	0.20	6.00	0.18	57	0.20	0.90	17.84	0.100	14.0°	2	●
030	0.30	6.00	0.25	57	0.30	1.35	18.09	0.150	13.5°	2	●
040	0.40	6.00	0.35	57	0.40	1.80	18.26	0.200	13.0°	2	●
050	0.50	6.00	0.45	57	0.50	2.25	13.26	0.250	12.6°	2	●
060	0.60	6.00	0.55	57	0.60	2.70	13.53	0.300	12.1°	2	●
080	0.80	6.00	0.75	57	0.80	3.60	14.05	0.400	11.8°	2	●
100	1.00	6.00	0.95	57	1.00	4.50	14.58	0.500	10.6°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Hardened tool steel 42 - 48 HRC	0.20	2	9	0.006	0.006	0.040	0.07	40925	515	0.1
	0.40	2	18	0.013	0.013	0.080	0.14	40925	1030	1.1
	0.50	2	24	0.016	0.016	0.100	0.18	42440	1390	2.2
	0.80	2	37	0.025	0.026	0.160	0.28	42060	2120	8.8
	1.00	2	46	0.032	0.032	0.200	0.35	41835	2635	16.9
	1.50	2	70	0.048	0.048	0.300	0.53	42040	4025	58.0
	2.00	2	92	0.063	0.064	0.400	0.70	41835	5270	134.9
	2.50	2	116	0.079	0.080	0.500	0.88	41960	6660	266.5
	3.00	2	140	0.094	0.096	0.600	1.06	42040	7945	457.7
Hardened tool steel 48 - 52 HRC	0.20	2	9	0.006	0.006	0.040	0.07	40925	490	0.1
	0.40	2	18	0.012	0.013	0.080	0.14	40925	980	1.0
	0.50	2	24	0.016	0.016	0.100	0.18	42440	1325	2.1
	0.80	2	37	0.024	0.026	0.160	0.28	42060	2020	8.4
	1.00	2	46	0.030	0.032	0.200	0.35	41835	2510	16.1
	1.50	2	70	0.046	0.048	0.300	0.53	42040	3835	55.2
	2.00	2	92	0.060	0.064	0.400	0.70	41835	5020	128.5
	2.50	2	116	0.076	0.080	0.500	0.88	41960	6345	253.8
	3.00	2	120	0.090	0.096	0.600	1.06	36035	6485	373.6
Hardened tool steel 52 - 56 HRC	0.20	2	9	0.005	0.006	0.040	0.07	40925	410	0.1
	0.40	2	18	0.010	0.013	0.080	0.14	40925	820	0.9
	0.50	2	24	0.013	0.016	0.100	0.18	42440	1105	1.8
	0.80	2	37	0.020	0.026	0.160	0.28	42060	1680	7.0
	1.00	2	46	0.025	0.032	0.200	0.35	41835	2090	13.4
	1.50	2	70	0.038	0.048	0.300	0.53	42040	3195	46.0
	2.00	2	92	0.050	0.064	0.400	0.70	41835	4185	107.1
	2.50	2	100	0.063	0.080	0.500	0.88	36170	4560	182.3
	3.00	2	100	0.075	0.096	0.600	1.06	30030	4505	259.5
Hardened tool steel 56 - 60 HRC	0.20	2	9	0.004	0.006	0.040	0.07	40925	370	0.1
	0.40	2	18	0.009	0.013	0.080	0.14	40925	735	0.8
	0.50	2	24	0.012	0.016	0.100	0.18	42440	995	1.6
	0.80	2	37	0.018	0.026	0.160	0.28	42060	1515	6.3
	1.00	2	46	0.023	0.032	0.200	0.35	41835	1885	12.0
	1.50	2	60	0.034	0.048	0.300	0.53	36035	2465	35.5
	2.00	2	60	0.045	0.064	0.400	0.70	27285	2455	62.9
	2.50	2	60	0.057	0.080	0.500	0.88	21705	2460	98.4
	3.00	2	60	0.068	0.096	0.600	1.06	18020	2430	140.1

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
	0.50	2	61	0.020	0.020	0.020	0.46	42210	1690	45°
	0.80	2	98	0.022	0.032	0.032	0.74	42155	1855	45°
	1.00	2	123	0.028	0.042	0.042	0.93	42100	2360	45°
	1.50	2	185	0.034	0.062	0.062	1.40	42060	2860	45°
	2.00	2	245	0.038	0.082	0.082	1.86	41930	3185	45°
	2.50	2	300	0.040	0.102	0.102	2.32	41160	3295	45°
	3.00	2	300	0.046	0.122	0.122	2.79	34225	3150	45°
Hardened tool steel 48 - 52 HRC	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
	0.50	2	61	0.020	0.020	0.020	0.46	42210	1690	45°
	0.80	2	98	0.020	0.032	0.032	0.74	42155	1685	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
	1.50	2	185	0.032	0.062	0.062	1.40	42060	2690	45°
	2.00	2	245	0.036	0.082	0.082	1.86	41930	3020	45°
	2.50	2	250	0.038	0.102	0.102	2.32	34300	2605	45°
	3.00	2	250	0.044	0.122	0.122	2.79	28520	2510	45°
Hardened tool steel 52 - 56 HRC	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	61	0.018	0.020	0.020	0.46	42210	1520	45°
	0.80	2	98	0.020	0.032	0.032	0.74	42155	1685	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
	1.50	2	185	0.030	0.062	0.062	1.40	42060	2525	45°
	2.00	2	200	0.034	0.082	0.082	1.86	34225	2325	45°
	2.50	2	200	0.036	0.102	0.102	2.32	27440	1975	45°
	3.00	2	200	0.042	0.122	0.122	2.79	22820	1915	45°
Hardened tool steel 56 - 60 HRC	0.20	2	25	0.006	0.008	0.008	0.19	41885	505	45°
	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	61	0.016	0.020	0.020	0.46	42210	1350	45°
	0.80	2	98	0.018	0.032	0.032	0.74	42155	1520	45°
	1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°
	1.50	2	150	0.028	0.062	0.062	1.40	34105	1910	45°
	2.00	2	150	0.030	0.082	0.082	1.86	25670	1540	45°
	2.50	2	150	0.032	0.102	0.102	2.32	20580	1315	45°
	3.00	2	150	0.036	0.122	0.122	2.79	17115	1230	45°

Ball nose end mills MicroX

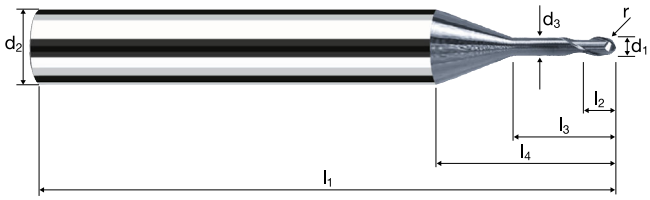
Shank ø 6mm, cylindrical neck, 5xd

HM XA	λ 30° γ -10°

h5

d1

r

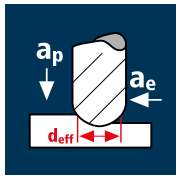


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6564** ø-Code **010**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL **X6564**
010	0.10	6.00	0.09	57	0.10	0.50	17.70	0.050	14.5°	2	●
020	0.20	6.00	0.18	57	0.20	1.00	17.94	0.100	13.9°	2	●
030	0.30	6.00	0.25	57	0.30	1.50	18.24	0.150	13.8°	2	●
040	0.40	6.00	0.35	57	0.40	2.00	18.46	0.200	12.8°	2	●
050	0.50	6.00	0.45	57	0.50	2.50	13.51	0.250	12.3°	2	●
060	0.60	6.00	0.55	57	0.60	3.00	13.83	0.300	11.9°	2	●
080	0.80	6.00	0.75	57	0.80	4.00	14.45	0.400	11.0°	2	●
100	1.00	6.00	0.95	57	1.00	5.00	15.08	0.500	10.2°	2	●
108	1.20	6.00	1.10	57	1.20	6.00	15.80	0.600	9.4°	2	●
120	1.50	6.00	1.40	61	1.50	7.50	16.74	0.750	8.4°	2	●
140	2.00	6.00	1.90	61	2.00	10.00	18.31	1.000	6.9°	2	●
152	2.30	6.00	2.10	61	2.30	11.50	19.44	1.150	6.0°	2	●
160	2.50	6.00	2.30	61	2.50	12.50	20.06	1.250	5.5°	2	●
172	2.80	6.00	2.60	61	2.80	14.00	21.00	1.400	4.9°	2	●
180	3.00	6.00	2.80	66	3.00	15.00	21.63	1.500	4.4°	2	●

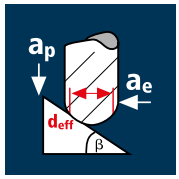
Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Hardened tool steel 42 - 48 HRC									
0.20	2	8	0.006	0.005	0.040	0.06	42440	535	0.1
0.30	2	13	0.010	0.008	0.060	0.10	41380	835	0.4
0.40	2	17	0.013	0.011	0.080	0.13	41625	1050	0.9
0.50	2	21	0.016	0.013	0.100	0.16	41780	1370	1.8
0.60	2	25	0.019	0.016	0.120	0.19	41885	1585	3.0
0.80	2	34	0.025	0.021	0.160	0.26	41625	2100	7.0
1.00	2	42	0.032	0.027	0.200	0.32	41780	2630	14.2
1.50	2	63	0.048	0.040	0.300	0.48	41780	4000	48.0
2.00	2	84	0.063	0.053	0.400	0.64	41780	5265	111.6
Hardened tool steel 48 - 52 HRC									
0.20	2	8	0.006	0.005	0.040	0.06	42440	510	0.1
0.30	2	13	0.010	0.008	0.060	0.10	41380	795	0.4
0.40	2	17	0.012	0.011	0.080	0.13	41625	1000	0.9
0.50	2	21	0.016	0.013	0.100	0.16	41780	1305	1.7
0.60	2	25	0.018	0.016	0.120	0.19	41885	1510	2.9
0.80	2	34	0.024	0.021	0.160	0.26	41625	2000	6.7
1.00	2	42	0.030	0.027	0.200	0.32	41780	2505	13.5
1.50	2	63	0.046	0.040	0.300	0.48	41780	3810	45.7
2.00	2	84	0.060	0.053	0.400	0.64	41780	5015	106.3
Hardened tool steel 52 - 56 HRC									
0.20	2	8	0.005	0.005	0.040	0.06	42440	425	0.1
0.30	2	13	0.008	0.008	0.060	0.10	41380	660	0.3
0.40	2	17	0.010	0.011	0.080	0.13	41625	835	0.7
0.50	2	21	0.013	0.013	0.100	0.16	41780	1085	1.4
0.60	2	25	0.015	0.016	0.120	0.19	41885	1255	2.4
0.80	2	34	0.020	0.021	0.160	0.26	41625	1665	5.6
1.00	2	42	0.025	0.027	0.200	0.32	41780	2090	11.3
1.50	2	63	0.038	0.040	0.300	0.48	41780	3175	38.1
2.00	2	84	0.050	0.053	0.400	0.64	41780	4180	88.6
Hardened tool steel 56 - 60 HRC									
0.20	2	8	0.004	0.005	0.040	0.06	42440	380	0.1
0.30	2	13	0.007	0.008	0.060	0.10	41380	595	0.3
0.40	2	17	0.009	0.011	0.080	0.13	41625	750	0.7
0.50	2	21	0.012	0.013	0.100	0.16	41780	980	1.3
0.60	2	25	0.014	0.016	0.120	0.19	41885	1130	2.2
0.80	2	34	0.018	0.021	0.160	0.26	41625	1500	5.0
1.00	2	42	0.023	0.027	0.200	0.32	41780	1880	10.2
1.50	2	60	0.034	0.040	0.300	0.48	39790	2720	32.7
2.00	2	60	0.045	0.053	0.400	0.64	29840	2685	56.9

Application



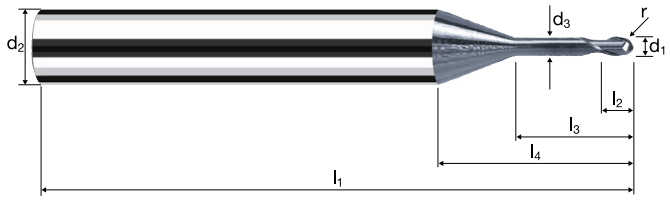
Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
0.50	2	61	0.020	0.020	0.020	0.46	42210	1690	45°
0.60	2	74	0.020	0.024	0.024	0.56	42060	1680	45°
0.80	2	98	0.022	0.032	0.032	0.74	42155	1855	45°
1.00	2	123	0.028	0.042	0.042	0.93	42100	2360	45°
1.50	2	185	0.034	0.062	0.062	1.40	42060	2860	45°
2.00	2	245	0.038	0.082	0.082	1.86	41930	3185	45°
Hardened tool steel 48 - 52 HRC									
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
0.50	2	61	0.020	0.020	0.020	0.46	42210	1690	45°
0.60	2	74	0.020	0.024	0.024	0.56	42060	1680	45°
0.80	2	98	0.020	0.032	0.032	0.74	42155	1685	45°
1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
1.50	2	185	0.032	0.062	0.062	1.40	42060	2690	45°
2.00	2	245	0.036	0.082	0.082	1.86	41930	3020	45°
Hardened tool steel 52 - 56 HRC									
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
0.50	2	61	0.018	0.020	0.020	0.46	42210	1520	45°
0.60	2	74	0.018	0.024	0.024	0.56	42060	1515	45°
0.80	2	98	0.020	0.032	0.032	0.74	42155	1685	45°
1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
1.50	2	185	0.030	0.062	0.062	1.40	42060	2525	45°
2.00	2	200	0.034	0.082	0.082	1.86	34225	2325	45°
Hardened tool steel 56 - 60 HRC									
0.20	2	25	0.006	0.008	0.008	0.19	41885	505	45°
0.30	2	37	0.008	0.012	0.012	0.28	42060	675	45°
0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
0.50	2	61	0.016	0.020	0.020	0.46	42210	1350	45°
0.60	2	74	0.016	0.024	0.024	0.56	42060	1345	45°
0.80	2	98	0.018	0.032	0.032	0.74	42155	1520	45°
1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°
1.50	2	150	0.028	0.062	0.062	1.40	34105	1910	45°
2.00	2	150	0.030	0.082	0.082	1.86	25670	1540	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 6xd

HM XA	λ 30° γ -10°

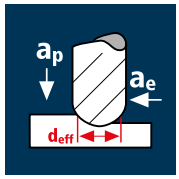


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6565** ø-Code **020**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL X6565
020	0.20	6.00	0.18	57	0.20	1.20	18.14	0.100	13.7°	2	●
030	0.30	6.00	0.25	57	0.30	1.80	18.54	0.150	13.0°	2	●
040	0.40	6.00	0.35	57	0.40	2.40	18.86	0.200	12.4°	2	●
050	0.50	6.00	0.45	57	0.50	3.00	14.01	0.250	11.9°	2	●
060	0.60	6.00	0.55	57	0.60	3.60	14.43	0.300	11.4°	2	●
080	0.80	6.00	0.75	57	0.80	4.80	15.25	0.400	10.4°	2	●
100	1.00	6.00	0.95	57	1.00	6.00	16.08	0.500	9.5°	2	●
120	1.50	6.00	1.40	61	1.50	9.00	18.24	0.750	7.6°	2	●
140	2.00	6.00	1.90	66	2.00	12.00	20.31	1.000	6.1°	2	●

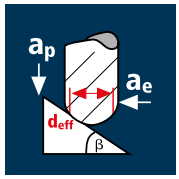
Application



Material

Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC	0.20	2	8	0.006	0.005	0.040	0.06	42440	535	0.1
	0.30	2	12	0.010	0.007	0.060	0.09	42440	855	0.4
	0.40	2	16	0.013	0.009	0.080	0.12	42440	1070	0.8
	0.50	2	20	0.016	0.011	0.100	0.15	42440	1390	1.5
	0.60	2	24	0.019	0.014	0.120	0.18	42440	1605	2.7
	0.80	2	32	0.025	0.018	0.160	0.24	42440	2140	6.2
	1.00	2	40	0.032	0.023	0.200	0.30	42440	2675	12.3
	1.50	2	59	0.048	0.034	0.300	0.45	41735	3995	40.8
	2.00	2	79	0.063	0.046	0.400	0.60	41910	5280	97.2
Hardened tool steel 48 - 52 HRC	0.20	2	8	0.006	0.005	0.040	0.06	42440	510	0.1
	0.30	2	12	0.010	0.007	0.060	0.09	42440	815	0.3
	0.40	2	16	0.012	0.009	0.080	0.12	42440	1020	0.7
	0.50	2	20	0.016	0.011	0.100	0.15	42440	1325	1.5
	0.60	2	24	0.018	0.014	0.120	0.18	42440	1530	2.6
	0.80	2	32	0.024	0.018	0.160	0.24	42440	2035	5.9
	1.00	2	40	0.030	0.023	0.200	0.30	42440	2545	11.7
	1.50	2	59	0.046	0.034	0.300	0.45	41735	3805	38.8
	2.00	2	79	0.060	0.046	0.400	0.60	41910	5030	92.5
Hardened tool steel 52 - 56 HRC	0.20	2	8	0.005	0.005	0.040	0.06	42440	425	0.1
	0.30	2	12	0.008	0.007	0.060	0.09	42440	680	0.3
	0.40	2	16	0.010	0.009	0.080	0.12	42440	850	0.6
	0.50	2	20	0.013	0.011	0.100	0.15	42440	1105	1.2
	0.60	2	24	0.015	0.014	0.120	0.18	42440	1275	2.1
	0.80	2	32	0.020	0.018	0.160	0.24	42440	1700	4.9
	1.00	2	40	0.025	0.023	0.200	0.30	42440	2120	9.8
	1.50	2	59	0.038	0.034	0.300	0.45	41735	3170	32.4
	2.00	2	79	0.050	0.046	0.400	0.60	41910	4190	77.1
Hardened tool steel 56 - 60 HRC	0.20	2	8	0.004	0.005	0.040	0.06	42440	380	0.1
	0.30	2	12	0.007	0.007	0.060	0.09	42440	610	0.3
	0.40	2	16	0.009	0.009	0.080	0.12	42440	765	0.6
	0.50	2	20	0.012	0.011	0.100	0.15	42440	995	1.1
	0.60	2	24	0.014	0.014	0.120	0.18	42440	1145	1.9
	0.80	2	32	0.018	0.018	0.160	0.24	42440	1530	4.4
	1.00	2	40	0.023	0.023	0.200	0.30	42440	1910	8.8
	1.50	2	59	0.034	0.034	0.300	0.45	41735	2855	29.1
	2.00	2	60	0.045	0.046	0.400	0.60	31830	2865	52.7

Application



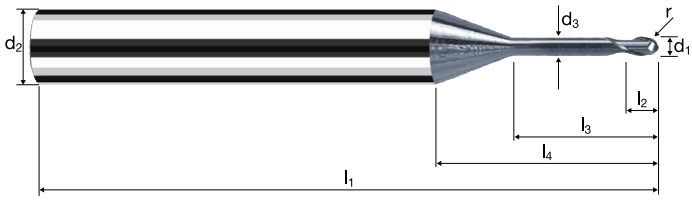
Material

Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
	0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
	0.50	2	61	0.020	0.020	0.020	0.46	42210	1690	45°
	0.60	2	74	0.020	0.024	0.024	0.56	42060	1680	45°
	0.80	2	98	0.022	0.032	0.032	0.74	42155	1855	45°
	1.00	2	123	0.028	0.042	0.042	0.93	42100	2360	45°
	1.50	2	185	0.034	0.062	0.062	1.40	42060	2860	45°
	2.00	2	245	0.038	0.082	0.082	1.86	41930	3185	45°
Hardened tool steel 48 - 52 HRC	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
	0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
	0.50	2	61	0.020	0.020	0.020	0.46	42210	1690	45°
	0.60	2	74	0.020	0.024	0.024	0.56	42060	1680	45°
	0.80	2	98	0.020	0.032	0.032	0.74	42155	1685	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
	1.50	2	185	0.032	0.062	0.062	1.40	42060	2690	45°
	2.00	2	245	0.036	0.082	0.082	1.86	41930	3020	45°
Hardened tool steel 52 - 56 HRC	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
	0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	61	0.018	0.020	0.020	0.46	42210	1520	45°
	0.60	2	74	0.018	0.024	0.024	0.56	42060	1515	45°
	0.80	2	98	0.020	0.032	0.032	0.74	42155	1685	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
	1.50	2	185	0.030	0.062	0.062	1.40	42060	2525	45°
	2.00	2	200	0.034	0.082	0.082	1.86	34225	2325	45°
Hardened tool steel 56 - 60 HRC	0.20	2	25	0.006	0.008	0.008	0.19	41885	505	45°
	0.30	2	37	0.008	0.012	0.012	0.28	42060	675	45°
	0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
	0.50	2	61	0.016	0.020	0.020	0.46	42210	1350	45°
	0.60	2	74	0.016	0.024	0.024	0.56	42060	1345	45°
	0.80	2	98	0.018	0.032	0.032	0.74	42155	1520	45°
	1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°
	1.50	2	150	0.028	0.062	0.062	1.40	34105	1910	45°
	2.00	2	150	0.030	0.082	0.082	1.86	25670	1540	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 7xd

HM XA	λ 30° γ -10°
h5	
d_1	r

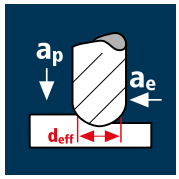


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6579** ø-Code **020**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL X6579
020	0.20	6.00	0.18	57	0.20	1.40	18.02	0.100	13.4°	2	●
030	0.30	6.00	0.25	57	0.30	2.10	18.34	0.150	12.7°	2	●
040	0.40	6.00	0.35	57	0.40	2.80	18.76	0.200	12.1°	2	●
050	0.50	6.00	0.45	57	0.50	3.50	14.51	0.250	11.5°	2	●
060	0.60	6.00	0.55	57	0.60	4.20	15.03	0.300	10.9°	2	●
080	0.80	6.00	0.75	57	0.80	5.60	16.05	0.400	9.9°	2	●
100	1.00	6.00	0.95	61	1.00	7.00	17.08	0.500	9.0°	2	●
120	1.50	6.00	1.40	61	1.50	10.50	19.74	0.750	7.0°	2	●
140	2.00	6.00	1.90	66	2.00	14.00	22.31	1.000	5.6°	2	●

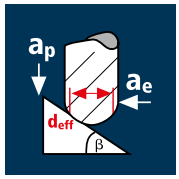
Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Hardened tool steel 42 - 48 HRC									
0.20	2	8	0.006	0.004	0.040	0.06	42440	535	0.1
0.40	2	15	0.013	0.008	0.080	0.11	43405	1095	0.7
0.50	2	18	0.016	0.010	0.100	0.14	40925	1340	1.3
0.80	2	29	0.025	0.016	0.160	0.22	41960	2115	5.4
1.00	2	37	0.032	0.020	0.200	0.28	42060	2650	10.6
1.20	2	45	0.038	0.024	0.240	0.34	42130	3185	18.3
1.50	2	55	0.048	0.030	0.300	0.42	41685	3990	35.9
2.00	2	74	0.063	0.040	0.400	0.56	42060	5300	84.8
2.50	2	92	0.079	0.050	0.500	0.70	41835	6640	166.0
Hardened tool steel 48 - 52 HRC									
0.20	2	8	0.006	0.004	0.040	0.06	42440	510	0.1
0.40	2	15	0.012	0.008	0.080	0.11	43405	1040	0.7
0.50	2	18	0.016	0.010	0.100	0.14	40925	1275	1.3
0.80	2	29	0.024	0.016	0.160	0.22	41960	2015	5.2
1.00	2	37	0.030	0.020	0.200	0.28	42060	2525	10.1
1.20	2	45	0.036	0.024	0.240	0.34	42130	3035	17.5
1.50	2	55	0.046	0.030	0.300	0.42	41685	3800	34.2
2.00	2	74	0.060	0.040	0.400	0.56	42060	5045	80.8
2.50	2	92	0.076	0.050	0.500	0.70	41835	6325	158.1
Hardened tool steel 52 - 56 HRC									
0.20	2	8	0.005	0.004	0.040	0.06	42440	425	0.1
0.40	2	15	0.010	0.008	0.080	0.11	43405	870	0.6
0.50	2	18	0.013	0.010	0.100	0.14	40925	1065	1.1
0.80	2	29	0.020	0.016	0.160	0.22	41960	1680	4.3
1.00	2	37	0.025	0.020	0.200	0.28	42060	2105	8.4
1.20	2	45	0.030	0.024	0.240	0.34	42130	2530	14.6
1.50	2	55	0.038	0.030	0.300	0.42	41685	3170	28.5
2.00	2	74	0.050	0.040	0.400	0.56	42060	4205	67.3
2.50	2	92	0.063	0.050	0.500	0.70	41835	5270	131.8
Hardened tool steel 56 - 60 HRC									
0.20	2	8	0.004	0.004	0.040	0.06	42440	380	0.1
0.40	2	15	0.009	0.008	0.080	0.11	43405	780	0.5
0.50	2	18	0.012	0.010	0.100	0.14	40925	960	1.0
0.80	2	29	0.018	0.016	0.160	0.22	41960	1510	3.9
1.00	2	37	0.023	0.020	0.200	0.28	42060	1895	7.6
1.20	2	45	0.027	0.024	0.240	0.34	42130	2275	13.1
1.50	2	55	0.034	0.030	0.300	0.42	41685	2850	25.7
2.00	2	60	0.045	0.040	0.400	0.56	34105	3070	49.1
2.50	2	60	0.057	0.050	0.500	0.70	27285	3095	77.3

Application



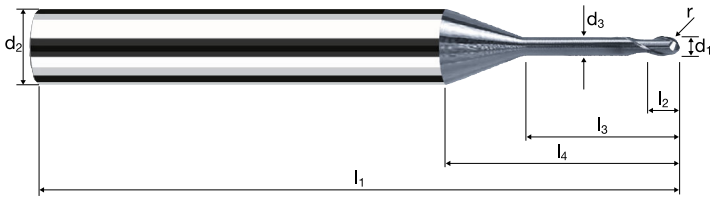
Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
0.50	2	61	0.020	0.020	0.020	0.46	42210	1690	45°
0.80	2	98	0.024	0.032	0.032	0.74	42155	2025	45°
1.00	2	123	0.028	0.040	0.040	0.93	42100	2360	45°
1.20	2	146	0.030	0.048	0.048	1.11	41870	2510	45°
1.50	2	183	0.034	0.060	0.060	1.39	41905	2850	45°
2.00	2	245	0.038	0.080	0.080	1.86	41930	3185	45°
2.50	2	300	0.040	0.100	0.100	2.32	41160	3295	45°
Hardened tool steel 48 - 52 HRC									
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.40	2	49	0.014	0.016	0.016	0.37	42155	1180	45°
0.50	2	61	0.020	0.020	0.020	0.46	42210	1690	45°
0.80	2	98	0.022	0.032	0.032	0.74	42155	1855	45°
1.00	2	123	0.026	0.040	0.040	0.93	42100	2190	45°
1.20	2	146	0.028	0.048	0.048	1.11	41870	2345	45°
1.50	2	183	0.032	0.060	0.060	1.39	41905	2680	45°
2.00	2	245	0.036	0.080	0.080	1.86	41930	3020	45°
2.50	2	250	0.038	0.100	0.100	2.32	34300	2605	45°
Hardened tool steel 52 - 56 HRC									
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
0.50	2	61	0.018	0.020	0.020	0.46	42210	1520	45°
0.80	2	98	0.022	0.032	0.032	0.74	42155	1855	45°
1.00	2	123	0.026	0.040	0.040	0.93	42100	2190	45°
1.20	2	146	0.028	0.048	0.048	1.11	41870	2345	45°
1.50	2	183	0.030	0.060	0.060	1.39	41905	2515	45°
2.00	2	200	0.034	0.080	0.080	1.86	34225	2325	45°
2.50	2	200	0.036	0.100	0.100	2.32	27440	1975	45°
Hardened tool steel 56 - 60 HRC									
0.20	2	25	0.006	0.008	0.008	0.19	41885	505	45°
0.40	2	49	0.012	0.016	0.016	0.37	42155	1010	45°
0.50	2	61	0.016	0.020	0.020	0.46	42210	1350	45°
0.80	2	98	0.020	0.032	0.032	0.74	42155	1685	45°
1.00	2	123	0.022	0.040	0.040	0.93	42100	1850	45°
1.20	2	146	0.024	0.048	0.048	1.11	41870	2010	45°
1.50	2	150	0.028	0.060	0.060	1.39	34350	1925	45°
2.00	2	150	0.030	0.080	0.080	1.86	25670	1540	45°
2.50	2	150	0.032	0.100	0.100	2.32	20580	1315	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 8xd

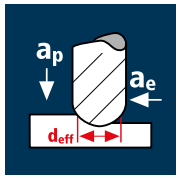
HM XA	λ 30° γ -10°

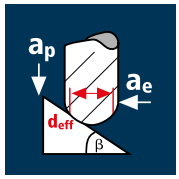


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6566** ø-Code **020**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL X6566
020	0.20	6.00	0.18	57	0.20	1.60	18.22	0.100	13.2°	2	●
030	0.30	6.00	0.25	57	0.30	2.40	18.64	0.150	12.4°	2	●
040	0.40	6.00	0.35	57	0.40	3.20	19.16	0.200	11.7°	2	●
050	0.50	6.00	0.45	57	0.50	4.00	15.01	0.250	11.1°	2	●
060	0.60	6.00	0.55	57	0.60	4.80	15.63	0.300	10.5°	2	●
080	0.80	6.00	0.75	57	0.80	6.40	16.85	0.400	9.4°	2	●
100	1.00	6.00	0.95	61	1.00	8.00	18.08	0.500	8.4°	2	●
108	1.20	6.00	1.10	61	1.20	9.60	19.40	0.600	7.6°	2	●
120	1.50	6.00	1.40	61	1.50	12.00	21.24	0.750	6.5°	2	●
140	2.00	6.00	1.90	66	2.00	16.00	24.31	1.000	5.1°	2	●
160	2.50	6.00	2.30	69	2.50	20.00	27.56	1.250	3.9°	2	●
180	3.00	6.00	2.80	75	3.00	24.00	30.63	1.500	3.1°	2	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	8	0.006	0.004	0.040	0.06	42440	535	0.1
		0.30	2	11	0.010	0.005	0.060	0.08	43770	880	0.3
		0.40	2	13	0.013	0.007	0.080	0.10	41380	1045	0.6
		0.50	2	17	0.016	0.009	0.100	0.13	41625	1365	1.2
		0.60	2	21	0.019	0.011	0.120	0.16	41780	1580	2.1
		0.80	2	28	0.025	0.014	0.160	0.21	42440	2140	4.8
		1.00	2	36	0.032	0.018	0.200	0.27	42440	2675	9.6
		1.50	2	53	0.048	0.027	0.300	0.40	42175	4040	32.7
		2.00	2	70	0.063	0.036	0.400	0.53	42040	5295	76.3
	Hardened tool steel 48 - 52 HRC	0.20	2	8	0.006	0.004	0.040	0.06	42440	510	0.1
		0.30	2	11	0.010	0.005	0.060	0.08	43770	840	0.3
		0.40	2	13	0.012	0.007	0.080	0.10	41380	995	0.6
		0.50	2	17	0.016	0.009	0.100	0.13	41625	1300	1.2
		0.60	2	21	0.018	0.011	0.120	0.16	41780	1505	2.0
		0.80	2	28	0.024	0.014	0.160	0.21	42440	2035	4.6
		1.00	2	36	0.030	0.018	0.200	0.27	42440	2545	9.2
		1.50	2	53	0.046	0.027	0.300	0.40	42175	3845	31.2
		2.00	2	70	0.060	0.036	0.400	0.53	42040	5045	72.6
	Hardened tool steel 52 - 56 HRC	0.20	2	8	0.005	0.004	0.040	0.06	42440	425	0.1
		0.30	2	11	0.008	0.005	0.060	0.08	43770	700	0.2
		0.40	2	13	0.010	0.007	0.080	0.10	41380	830	0.5
		0.50	2	17	0.013	0.009	0.100	0.13	41625	1080	1.0
		0.60	2	21	0.015	0.011	0.120	0.16	41780	1255	1.7
		0.80	2	28	0.020	0.014	0.160	0.21	42440	1700	3.8
		1.00	2	36	0.025	0.018	0.200	0.27	42440	2120	7.6
		1.50	2	53	0.038	0.027	0.300	0.40	42175	3205	26.0
		2.00	2	70	0.050	0.036	0.400	0.53	42040	4205	60.5
	Hardened tool steel 56 - 60 HRC	0.20	2	8	0.004	0.004	0.040	0.06	42440	380	0.1
		0.30	2	11	0.007	0.005	0.060	0.08	43770	630	0.2
		0.40	2	13	0.009	0.007	0.080	0.10	41380	745	0.4
		0.50	2	17	0.012	0.009	0.100	0.13	41625	975	0.9
		0.60	2	21	0.014	0.011	0.120	0.16	41780	1130	1.5
		0.80	2	28	0.018	0.014	0.160	0.21	42440	1530	3.4
		1.00	2	36	0.023	0.018	0.200	0.27	42440	1910	6.9
		1.50	2	53	0.034	0.027	0.300	0.40	42175	2885	23.4
		2.00	2	60	0.045	0.036	0.400	0.53	36035	3245	46.7

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
		0.30	2	36	0.010	0.010	0.010	0.27	42440	850	45°
		0.40	2	49	0.012	0.014	0.014	0.37	42155	1010	45°
		0.50	2	61	0.016	0.018	0.018	0.46	42210	1350	45°
		0.60	2	73	0.018	0.022	0.022	0.55	42250	1520	45°
		0.80	2	96	0.020	0.028	0.028	0.73	41860	1675	45°
		1.00	2	121	0.026	0.036	0.036	0.92	41865	2175	45°
		1.50	2	182	0.030	0.052	0.052	1.38	41980	2520	45°
		2.00	2	243	0.034	0.070	0.070	1.84	42040	2860	45°
	Hardened tool steel 48 - 52 HRC	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
		0.30	2	36	0.010	0.010	0.010	0.27	42440	850	45°
		0.40	2	49	0.012	0.014	0.014	0.37	42155	1010	45°
		0.50	2	61	0.016	0.018	0.018	0.46	42210	1350	45°
		0.60	2	73	0.018	0.022	0.022	0.55	42250	1520	45°
		0.80	2	96	0.020	0.028	0.028	0.73	41860	1675	45°
		1.00	2	121	0.024	0.036	0.036	0.92	41865	2010	45°
		1.50	2	182	0.028	0.052	0.052	1.38	41980	2350	45°
		2.00	2	243	0.032	0.070	0.070	1.84	42040	2690	45°
	Hardened tool steel 52 - 56 HRC	0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
		0.30	2	36	0.010	0.010	0.010	0.27	42440	850	45°
		0.40	2	49	0.010	0.014	0.014	0.37	42155	845	45°
		0.50	2	61	0.014	0.018	0.018	0.46	42210	1180	45°
		0.60	2	73	0.016	0.022	0.022	0.55	42250	1350	45°
		0.80	2	96	0.018	0.028	0.028	0.73	41860	1505	45°
		1.00	2	121	0.024	0.036	0.036	0.92	41865	2010	45°
		1.50	2	182	0.028	0.052	0.052	1.38	41980	2350	45°
		2.00	2	200	0.030	0.070	0.070	1.84	34600	2075	45°
	Hardened tool steel 56 - 60 HRC	0.20	2	25	0.006	0.008	0.008	0.19	41885	505	45°
		0.30	2	36	0.008	0.010	0.010	0.27	42440	680	45°
		0.40	2	49	0.010	0.014	0.014	0.37	42155	845	45°
		0.50	2	61	0.012	0.018	0.018	0.46	42210	1015	45°
		0.60	2	73	0.014	0.022	0.022	0.55	42250	1185	45°
		0.80	2	96	0.016	0.028	0.028	0.73	41860	1340	45°
		1.00	2	121	0.020	0.036	0.036	0.92	41865	1675	45°
		1.50	2	150	0.024	0.052	0.052	1.38	34600	1660	45°
		2.00	2	150	0.028	0.070	0.070	1.84	25950	1455	45°

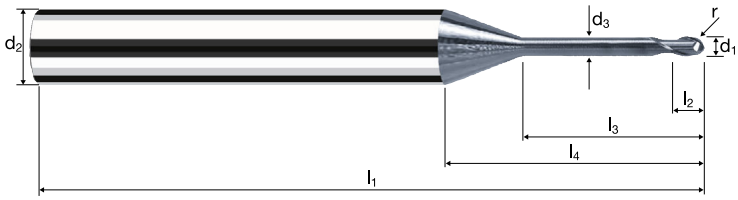
Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 9xd

X-Generation X

II

HM XA	λ 30° γ -10°

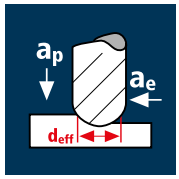


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6567** ø-Code **020**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL **X6567**
020	0.20	6.00	0.18	57	0.20	1.80	18.42	0.100	13.0°	2	●
030	0.30	6.00	0.25	57	0.30	2.70	18.94	0.150	12.1°	2	●
040	0.40	6.00	0.35	57	0.40	3.60	19.56	0.200	11.4°	2	●
050	0.50	6.00	0.45	57	0.50	4.50	15.51	0.250	10.7°	2	●
060	0.60	6.00	0.55	57	0.60	5.40	16.23	0.300	10.1°	2	●
080	0.80	6.00	0.75	61	0.80	7.20	17.65	0.400	8.9°	2	●
100	1.00	6.00	0.95	61	1.00	9.00	19.08	0.500	8.0°	2	●
120	1.50	6.00	1.40	66	1.50	13.50	22.74	0.750	6.1°	2	●
140	2.00	6.00	1.90	69	2.00	18.00	26.31	1.000	4.7°	2	●

Application



Material

Hardened tool steel 42 - 48 HRC

X

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.20	2	7	0.006	0.003	0.004	0.05	44565	560	0.0
0.40	2	13	0.013	0.006	0.080	0.10	41380	1045	0.5
0.50	2	17	0.016	0.008	0.100	0.13	41625	1365	1.1
0.80	2	26	0.025	0.013	0.160	0.20	41380	2085	4.3
1.00	2	33	0.032	0.016	0.200	0.25	42015	2645	8.5
1.20	2	40	0.038	0.019	0.240	0.30	42440	3210	14.6
1.50	2	50	0.048	0.024	0.300	0.38	41885	4010	28.9
2.00	2	66	0.063	0.032	0.400	0.50	42015	5295	67.8
2.50	2	83	0.079	0.040	0.500	0.63	41935	6660	133.2

Hardened tool steel 48 - 52 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.20	2	7	0.006	0.003	0.004	0.05	44565	535	0.0
0.40	2	13	0.012	0.006	0.080	0.10	41380	995	0.5
0.50	2	17	0.016	0.008	0.100	0.13	41625	1300	1.0
0.80	2	26	0.024	0.013	0.160	0.20	41380	1985	4.1
1.00	2	33	0.030	0.016	0.200	0.25	42015	2520	8.1
1.20	2	40	0.036	0.019	0.240	0.30	42440	3055	13.9
1.50	2	50	0.046	0.024	0.300	0.38	41885	3820	27.5
2.00	2	66	0.060	0.032	0.400	0.50	42015	5040	64.5
2.50	2	83	0.076	0.040	0.500	0.63	41935	6340	126.8

Hardened tool steel 52 - 56 HRC

X

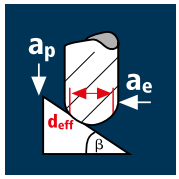
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.20	2	7	0.005	0.003	0.004	0.05	44565	445	0.0
0.40	2	13	0.010	0.006	0.080	0.10	41380	830	0.4
0.50	2	17	0.013	0.008	0.100	0.13	41625	1080	0.9
0.80	2	26	0.020	0.013	0.160	0.20	41380	1655	3.4
1.00	2	33	0.025	0.016	0.200	0.25	42015	2100	6.7
1.20	2	40	0.030	0.019	0.240	0.30	42440	2545	11.6
1.50	2	50	0.038	0.024	0.300	0.38	41885	3185	22.9
2.00	2	66	0.050	0.032	0.400	0.50	42015	4200	53.8
2.50	2	83	0.063	0.040	0.500	0.63	41935	5285	105.7

Hardened tool steel 56 - 60 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.20	2	7	0.004	0.003	0.004	0.05	44565	400	0.0
0.40	2	13	0.009	0.006	0.080	0.10	41380	745	0.4
0.50	2	17	0.012	0.008	0.100	0.13	41625	975	0.8
0.80	2	26	0.018	0.013	0.160	0.20	41380	1490	3.1
1.00	2	33	0.023	0.016	0.200	0.25	42015	1890	6.1
1.20	2	40	0.027	0.019	0.240	0.30	42440	2290	10.5
1.50	2	50	0.034	0.024	0.300	0.38	41885	2865	20.6
2.00	2	60	0.045	0.032	0.400	0.50	38195	3440	44.0
2.50	2	60	0.057	0.040	0.500	0.63	30315	3440	68.8

Application



Material

Hardened tool steel 42 - 48 HRC

X

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.40	2	49	0.012	0.014	0.014	0.37	42155	1010	45°
0.50	2	61	0.016	0.018	0.018	0.46	42210	1350	45°
0.80	2	96	0.020	0.028	0.028	0.73	41860	1675	45°
1.00	2	121	0.026	0.036	0.036	0.92	41865	2175	45°
1.20	2	145	0.028	0.042	0.042	1.10	41960	2350	45°
1.50	2	182	0.030	0.052	0.052	1.38	41980	2520	45°
2.00	2	243	0.034	0.070	0.070	1.84	42040	2860	45°
2.50	2	300	0.036	0.088	0.088	2.29	41700	3000	45°

Hardened tool steel 48 - 52 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.40	2	49	0.012	0.014	0.014	0.37	42155	1010	45°
0.50	2	61	0.016	0.018	0.018	0.46	42210	1350	45°
0.80	2	96	0.020	0.028	0.028	0.73	41860	1675	45°
1.00	2	121	0.024	0.036	0.036	0.92	41865	2010	45°
1.20	2	145	0.026	0.042	0.042	1.10	41960	2180	45°
1.50	2	182	0.028	0.052	0.052	1.38	41980	2350	45°
2.00	2	243	0.032	0.070	0.070	1.84	42040	2690	45°
2.50	2	250	0.034	0.088	0.088	2.29	34750	2365	45°

Hardened tool steel 52 - 56 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.40	2	49	0.010	0.014	0.014	0.37	42155	845	45°
0.50	2	61	0.014	0.018	0.018	0.46	42210	1180	45°
0.80	2	96	0.018	0.028	0.028	0.73	41860	1505	45°
1.00	2	121	0.024	0.036	0.036	0.92	41865	2010	45°
1.20	2	145	0.026	0.042	0.042	1.10	41960	2180	45°
1.50	2	182	0.028	0.052	0.052	1.38	41980	2350	45°
2.00	2	200	0.030	0.070	0.070	1.84	34600	2075	45°
2.50	2	200	0.032	0.088	0.088	2.29	27800	1780	45°

Hardened tool steel 56 - 60 HRC

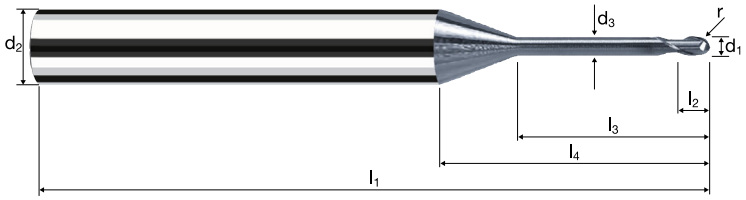
X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.20	2	25	0.006	0.008	0.008	0.19	41885	505	45°
0.40	2	49	0.010	0.014	0.014	0.37	42155	845	45°
0.50	2	61	0.012	0.018	0.018	0.46	42210	1015	45°
0.80	2	96	0.016	0.028	0.028	0.73	41860	1340	45°
1.00	2	121	0.020	0.036	0.036	0.92	41865	1675	45°
1.20	2	145	0.022	0.042	0.042	1.10	41960	1845	45°
1.50	2	150	0.024	0.052	0.052	1.38	34600	1660	45°
2.00	2	150	0.028	0.070	0.070	1.84	25950	1455	45°
2.50	2	150	0.028	0.088	0.088	2.29	20850	1170	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 10xd

HM XA	λ 30° γ -10°
h5	
d_1	r

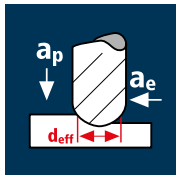


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6568** ø-Code **020**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL **X6568**
020	0.20	6.00	0.18	57	0.20	2.00	18.62	0.100	12.8°	2	●
030	0.30	6.00	0.25	57	0.30	3.00	19.24	0.150	11.9°	2	●
040	0.40	6.00	0.35	57	0.40	4.00	19.96	0.200	11.1°	2	●
050	0.50	6.00	0.45	57	0.50	5.00	16.01	0.250	10.3°	2	●
060	0.60	6.00	0.55	57	0.60	6.00	16.83	0.300	9.7°	2	●
080	0.80	6.00	0.75	61	0.80	8.00	18.45	0.400	8.5°	2	●
100	1.00	6.00	0.95	61	1.00	10.00	20.08	0.500	7.6°	2	●
108	1.20	6.00	1.10	66	1.20	12.00	21.80	0.600	6.7°	2	●
120	1.50	6.00	1.40	66	1.50	15.00	24.24	0.750	5.7°	2	●
140	2.00	6.00	1.90	69	2.00	20.00	28.31	1.000	4.3°	2	●
160	2.50	6.00	2.30	75	2.50	25.00	32.56	1.250	3.3°	2	●
180	3.00	6.00	2.80	80	3.00	30.00	36.63	1.500	2.5°	2	●

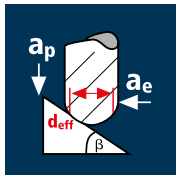
Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Hardened tool steel 42 - 48 HRC									
0.50	2	21	0.019	0.013	0.100	0.16	41780	1580	2.1
0.60	2	25	0.023	0.016	0.120	0.19	41885	1900	3.6
0.80	2	34	0.030	0.021	0.160	0.26	41625	2515	8.5
1.00	2	42	0.038	0.027	0.200	0.32	41780	3160	17.1
1.50	2	63	0.057	0.040	0.300	0.48	41780	4740	56.9
2.00	2	84	0.076	0.053	0.400	0.64	41780	6315	133.9
Hardened tool steel 48 - 52 HRC									
0.50	2	21	0.018	0.013	0.100	0.16	41780	1505	2.0
0.60	2	25	0.022	0.016	0.120	0.19	41885	1810	3.5
0.80	2	34	0.029	0.021	0.160	0.26	41625	2400	8.1
1.00	2	42	0.036	0.027	0.200	0.32	41780	3010	16.2
1.50	2	63	0.054	0.040	0.300	0.48	41780	4510	54.1
2.00	2	84	0.072	0.053	0.400	0.64	41780	6015	127.5
Hardened tool steel 52 - 56 HRC									
0.50	2	21	0.015	0.013	0.100	0.16	41780	1255	1.6
0.60	2	25	0.018	0.016	0.120	0.19	41885	1510	2.9
0.80	2	34	0.024	0.021	0.160	0.26	41625	2000	6.7
1.00	2	42	0.030	0.027	0.200	0.32	41780	2505	13.5
1.50	2	63	0.045	0.040	0.300	0.48	41780	3760	45.1
2.00	2	84	0.060	0.053	0.400	0.64	41780	5015	106.3
Hardened tool steel 56 - 60 HRC									
0.50	2	21	0.014	0.013	0.100	0.16	41780	1130	1.5
0.60	2	25	0.016	0.016	0.120	0.19	41885	1355	2.6
0.80	2	34	0.022	0.021	0.160	0.26	41625	1800	6.0
1.00	2	42	0.027	0.027	0.200	0.32	41780	2255	12.2
1.50	2	60	0.041	0.040	0.300	0.48	39790	3225	38.7
2.00	2	60	0.054	0.053	0.400	0.64	29840	3225	68.3

Application



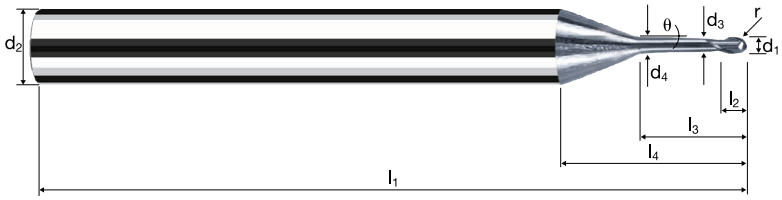
Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.50	2	61	0.024	0.020	0.020	0.46	42210	2025	45°
0.60	2	74	0.026	0.024	0.024	0.56	42060	2185	45°
0.80	2	98	0.030	0.032	0.032	0.74	42155	2530	45°
1.00	2	123	0.034	0.040	0.040	0.93	42100	2865	45°
1.50	2	183	0.040	0.060	0.060	1.39	41905	3355	45°
2.00	2	245	0.046	0.080	0.080	1.86	41930	3855	45°
Hardened tool steel 48 - 52 HRC									
0.50	2	61	0.022	0.020	0.020	0.46	42210	1855	45°
0.60	2	74	0.024	0.024	0.024	0.56	42060	2020	45°
0.80	2	98	0.028	0.032	0.032	0.74	42155	2360	45°
1.00	2	123	0.032	0.040	0.040	0.93	42100	2695	45°
1.50	2	183	0.038	0.060	0.060	1.39	41905	3185	45°
2.00	2	245	0.044	0.080	0.080	1.86	41930	3690	45°
Hardened tool steel 52 - 56 HRC									
0.50	2	61	0.022	0.020	0.020	0.46	42210	1855	45°
0.60	2	74	0.024	0.024	0.024	0.56	42060	2020	45°
0.80	2	98	0.028	0.032	0.032	0.74	42155	2360	45°
1.00	2	123	0.030	0.040	0.040	0.93	42100	2525	45°
1.50	2	183	0.036	0.060	0.060	1.39	41905	3015	45°
2.00	2	200	0.042	0.080	0.080	1.86	34225	2875	45°
Hardened tool steel 56 - 60 HRC									
0.50	2	61	0.020	0.020	0.020	0.46	42210	1690	45°
0.60	2	74	0.020	0.024	0.024	0.56	42060	1680	45°
0.80	2	98	0.024	0.032	0.032	0.74	42155	2025	45°
1.00	2	123	0.028	0.040	0.040	0.93	42100	2360	45°
1.50	2	150	0.032	0.060	0.060	1.39	34350	2200	45°
2.00	2	150	0.036	0.080	0.080	1.86	25670	1850	45°

Ball nose end mills MicroX

Shank ø 6mm, conical neck 0.9°, 6xd

HM XA	λ 30° γ -10°
h5	
d_1	r

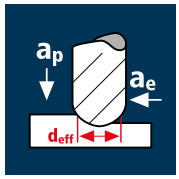


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6765** ø-Code **050**

Ø Code	d_1	d_2 h5	d_3	d_4	l_1	l_2	l_3	l_4	θ	r ±0.005	α	z	X-AL X6765
050	0.50	6.00	0.45	0.53	57	0.40	3.00	13.87	0.9°	0.250	11.9°	2	●
060	0.60	6.00	0.55	0.65	57	0.50	3.60	14.24	0.9°	0.300	11.4°	2	●
080	0.80	6.00	0.75	0.88	57	0.65	4.80	15.01	0.9°	0.400	10.4°	2	●
100	1.00	6.00	0.95	1.11	57	0.80	6.00	15.78	0.9°	0.500	9.5°	2	●
120	1.50	6.00	1.40	1.65	61	1.20	9.00	17.78	0.9°	0.750	7.6°	2	●
140	2.00	6.00	1.90	2.23	66	1.60	12.00	19.69	0.9°	1.000	6.1°	2	●

Application



Material

Hardened tool steel 42 - 48 HRC

X

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.50	2	18	0.019	0.010	0.100	0.14	40925	1545	1.5
0.60	2	22	0.023	0.012	0.120	0.17	41195	1870	2.7
0.80	2	29	0.030	0.016	0.160	0.22	41960	2540	6.5
1.00	2	37	0.038	0.020	0.200	0.28	42060	3180	12.7
1.20	2	45	0.045	0.024	0.240	0.34	42130	3820	22.0
1.50	2	55	0.057	0.030	0.300	0.42	41685	4725	42.5
2.00	2	74	0.076	0.040	0.400	0.56	42060	6360	101.8
2.50	2	92	0.094	0.050	0.500	0.70	41835	7905	197.7
3.00	2	111	0.113	0.060	0.600	0.84	42060	9540	343.4

Hardened tool steel 48 - 52 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.50	2	18	0.018	0.010	0.100	0.14	40925	1475	1.5
0.60	2	22	0.022	0.012	0.120	0.17	41195	1780	2.6
0.80	2	29	0.029	0.016	0.160	0.22	41960	2415	6.2
1.00	2	37	0.036	0.020	0.200	0.28	42060	3030	12.1
1.20	2	45	0.043	0.024	0.240	0.34	42130	3640	21.0
1.50	2	55	0.054	0.030	0.300	0.42	41685	4500	40.5
2.00	2	74	0.072	0.040	0.400	0.56	42060	6055	96.9
2.50	2	92	0.090	0.050	0.500	0.70	41835	7530	188.3
3.00	2	111	0.108	0.060	0.600	0.84	42060	9085	327.1

Hardened tool steel 52 - 56 HRC

X

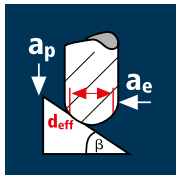
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.50	2	18	0.015	0.010	0.100	0.14	40925	1230	1.2
0.60	2	22	0.018	0.012	0.120	0.17	41195	1485	2.1
0.80	2	29	0.024	0.016	0.160	0.22	41960	2015	5.2
1.00	2	37	0.030	0.020	0.200	0.28	42060	2525	10.1
1.20	2	45	0.036	0.024	0.240	0.34	42130	3035	17.5
1.50	2	55	0.045	0.030	0.300	0.42	41685	3750	33.8
2.00	2	74	0.060	0.040	0.400	0.56	42060	5045	80.8
2.50	2	92	0.075	0.050	0.500	0.70	41835	6275	156.9
3.00	2	100	0.090	0.060	0.600	0.84	37895	6820	245.6

Hardened tool steel 56 - 60 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.50	2	18	0.014	0.010	0.100	0.14	40925	1105	1.1
0.60	2	22	0.016	0.012	0.120	0.17	41195	1335	1.9
0.80	2	29	0.022	0.016	0.160	0.22	41960	1815	4.6
1.00	2	37	0.027	0.020	0.200	0.28	42060	2270	9.1
1.20	2	45	0.032	0.024	0.240	0.34	42130	2730	15.7
1.50	2	55	0.041	0.030	0.300	0.42	41685	3375	30.4
2.00	2	60	0.054	0.040	0.400	0.56	34105	3685	58.9
2.50	2	60	0.068	0.050	0.500	0.70	27285	3685	92.1
3.00	2	60	0.081	0.060	0.600	0.84	22735	3685	132.6

Application



Material

Hardened tool steel 42 - 48 HRC

X

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.50	2	61	0.024	0.020	0.020	0.46	42210	2025	45°
0.60	2	74	0.026	0.024	0.024	0.56	42060	2185	45°
0.80	2	98	0.030	0.032	0.032	0.74	42155	2530	45°
1.00	2	123	0.034	0.040	0.040	0.93	42100	2865	45°
1.20	2	146	0.036	0.048	0.048	1.11	41870	3015	45°
1.50	2	183	0.040	0.060	0.060	1.39	41905	3355	45°
2.00	2	245	0.046	0.080	0.080	1.86	41930	3855	45°
2.50	2	300	0.048	0.100	0.100	2.32	41160	3950	45°
3.00	2	300	0.056	0.120	0.120	2.78	34350	3845	45°

Hardened tool steel 48 - 52 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.50	2	61	0.022	0.020	0.020	0.46	42210	1855	45°
0.60	2	74	0.024	0.024	0.024	0.56	42060	2020	45°
0.80	2	98	0.028	0.032	0.032	0.74	42155	2360	45°
1.00	2	123	0.032	0.040	0.040	0.93	42100	2695	45°
1.20	2	146	0.034	0.048	0.048	1.11	41870	2845	45°
1.50	2	183	0.038	0.060	0.060	1.39	41905	3185	45°
2.00	2	245	0.044	0.080	0.080	1.86	41930	3690	45°
2.50	2	250	0.046	0.100	0.100	2.32	34300	3155	45°
3.00	2	250	0.054	0.120	0.120	2.78	28625	3090	45°

Hardened tool steel 52 - 56 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.50	2	61	0.022	0.020	0.020	0.46	42210	1855	45°
0.60	2	74	0.024	0.024	0.024	0.56	42060	2020	45°
0.80	2	98	0.028	0.032	0.032	0.74	42155	2360	45°
1.00	2	123	0.030	0.040	0.040	0.93	42100	2525	45°
1.20	2	146	0.032	0.048	0.048	1.11	41870	2680	45°
1.50	2	183	0.036	0.060	0.060	1.39	41905	3015	45°
2.00	2	200	0.042	0.080	0.080	1.86	34225	2875	45°
2.50	2	200	0.044	0.100	0.100	2.32	27440	2415	45°
3.00	2	200	0.050	0.120	0.120	2.78	22900	2290	45°

Hardened tool steel 56 - 60 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.50	2	61	0.020	0.020	0.020	0.46	42210	1690	45°
0.60	2	74	0.020	0.024	0.024	0.56	42060	1680	45°
0.80	2	98	0.024	0.032	0.032	0.74	42155	2025	45°
1.00	2	123	0.028	0.040	0.040	0.93	42100	2360	45°
1.20	2	146	0.028	0.048	0.048	1.11	41870	2345	45°
1.50	2	150	0.032	0.060	0.060	1.39	34350	2200	45°
2.00	2	150	0.036	0.080	0.080	1.86	25670	1850	45°
2.50	2	150	0.038	0.100	0.100	2.32	20580	1565	45°
3.00	2	150	0.044	0.120	0.120	2.78	17175	1510	45°

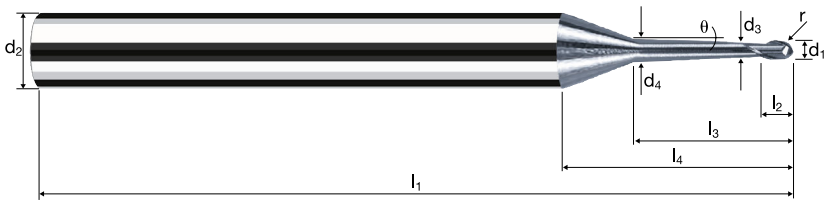
Ball nose end mills MicroX

Shank ø 6mm, conical neck 0.9°, 8xd

X-Generation X

II

HM XA	λ 30° γ -10°

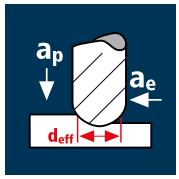


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6766** ø-Code **050**

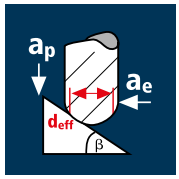
Ø Code	d_1	d_2 h5	d_3	d_4	l_1	l_2	l_3	l_4	θ	r ±0.005	α	z	X-AL X6766
050	0.50	6.00	0.45	0.56	57	0.40	4.00	14.81	0.9°	0.250	11.1°	2	●
060	0.60	6.00	0.55	0.69	57	0.50	4.80	15.37	0.9°	0.300	10.5°	2	●
080	0.80	6.00	0.75	0.93	57	0.65	6.40	16.52	0.9°	0.400	9.4°	2	●
100	1.00	6.00	0.95	1.18	61	0.80	8.00	17.65	0.9°	0.500	8.4°	2	●
108	1.20	6.00	1.10	1.37	61	1.00	9.60	18.90	0.9°	0.600	7.6°	2	●
120	1.50	6.00	1.40	1.74	61	1.20	12.00	20.61	0.9°	0.750	6.5°	2	●
140	2.00	6.00	1.90	2.35	66	1.60	16.00	23.47	0.9°	1.000	5.1°	2	●
160	2.50	6.00	2.30	2.87	69	2.00	20.00	26.50	0.9°	1.250	3.9°	2	●
180	3.00	6.00	2.80	3.48	75	2.40	24.00	29.36	0.9°	1.500	3.1°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Hardened tool steel 42 - 48 HRC	0.50	2	17	0.019	0.008	0.100	0.13	41625	1575	1.3
	0.60	2	20	0.023	0.010	0.120	0.15	42440	1925	2.3
	0.80	2	26	0.030	0.013	0.160	0.20	41380	2505	5.2
	1.00	2	33	0.038	0.016	0.200	0.25	42015	3175	10.2
	1.20	2	40	0.045	0.019	0.240	0.30	42440	3850	17.6
	1.50	2	50	0.057	0.024	0.300	0.38	41885	4750	34.2
	2.00	2	66	0.076	0.032	0.400	0.50	42015	6355	81.3
	2.50	2	83	0.094	0.040	0.500	0.63	41935	7925	158.5
	3.00	2	99	0.113	0.048	0.600	0.75	42015	9530	274.4
Hardened tool steel 48 - 52 HRC	0.50	2	17	0.018	0.008	0.100	0.13	41625	1500	1.2
	0.60	2	20	0.022	0.010	0.120	0.15	42440	1835	2.2
	0.80	2	26	0.029	0.013	0.160	0.20	41380	2385	5.0
	1.00	2	33	0.036	0.016	0.200	0.25	42015	3025	9.7
	1.20	2	40	0.043	0.019	0.240	0.30	42440	3665	16.7
	1.50	2	50	0.054	0.024	0.300	0.38	41885	4525	32.6
	2.00	2	66	0.072	0.032	0.400	0.50	42015	6050	77.4
	2.50	2	83	0.090	0.040	0.500	0.63	41935	7550	151.0
	3.00	2	99	0.108	0.048	0.600	0.75	42015	9075	261.4
Hardened tool steel 52 - 56 HRC	0.50	2	17	0.015	0.008	0.100	0.13	41625	1250	1.0
	0.60	2	20	0.018	0.010	0.120	0.15	42440	1530	1.8
	0.80	2	26	0.024	0.013	0.160	0.20	41380	1985	4.1
	1.00	2	33	0.030	0.016	0.200	0.25	42015	2520	8.1
	1.20	2	40	0.036	0.019	0.240	0.30	42440	3055	13.9
	1.50	2	50	0.045	0.024	0.300	0.38	41885	3770	27.1
	2.00	2	66	0.060	0.032	0.400	0.50	42015	5040	64.5
	2.50	2	83	0.075	0.040	0.500	0.63	41935	6290	125.8
	3.00	2	99	0.090	0.048	0.600	0.75	42015	7565	217.8
Hardened tool steel 56 - 60 HRC	0.50	2	17	0.014	0.008	0.100	0.13	41625	1125	0.9
	0.60	2	20	0.016	0.010	0.120	0.15	42440	1375	1.7
	0.80	2	26	0.022	0.013	0.160	0.20	41380	1790	3.7
	1.00	2	33	0.027	0.016	0.200	0.25	42015	2270	7.3
	1.20	2	40	0.032	0.019	0.240	0.30	42440	2750	12.5
	1.50	2	50	0.041	0.024	0.300	0.38	41885	3395	24.4
	2.00	2	60	0.054	0.032	0.400	0.50	38195	4125	52.8
	2.50	2	60	0.068	0.040	0.500	0.63	30315	4095	81.9
	3.00	2	60	0.081	0.048	0.600	0.75	25465	4125	118.8

Application

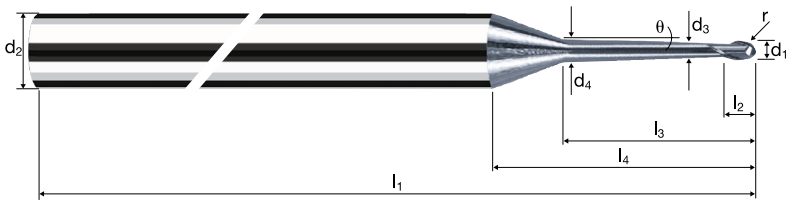


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.50	2	61	0.022	0.018	0.018	0.46	42210	1855	45°
	0.60	2	73	0.024	0.022	0.022	0.55	42250	2030	45°
	0.80	2	96	0.026	0.028	0.028	0.73	41860	2175	45°
	1.00	2	121	0.032	0.036	0.036	0.92	41865	2680	45°
	1.20	2	145	0.034	0.042	0.042	1.10	41960	2855	45°
	1.50	2	182	0.038	0.052	0.052	1.38	41980	3190	45°
	2.00	2	243	0.042	0.070	0.070	1.84	42040	3530	45°
	2.50	2	300	0.044	0.088	0.088	2.29	41700	3670	45°
	3.00	2	300	0.050	0.106	0.106	2.75	34725	3470	45°
Hardened tool steel 48 - 52 HRC	0.50	2	61	0.020	0.018	0.018	0.46	42210	1690	45°
	0.60	2	73	0.022	0.022	0.022	0.55	42250	1860	45°
	0.80	2	96	0.024	0.028	0.028	0.73	41860	2010	45°
	1.00	2	121	0.030	0.036	0.036	0.92	41865	2510	45°
	1.20	2	145	0.032	0.042	0.042	1.10	41960	2685	45°
	1.50	2	182	0.036	0.052	0.052	1.38	41980	3025	45°
	2.00	2	243	0.040	0.070	0.070	1.84	42040	3365	45°
	2.50	2	250	0.042	0.088	0.088	2.29	34750	2920	45°
	3.00	2	250	0.048	0.106	0.106	2.75	28935	2780	45°
Hardened tool steel 52 - 56 HRC	0.50	2	61	0.020	0.018	0.018	0.46	42210	1690	45°
	0.60	2	73	0.022	0.022	0.022	0.55	42250	1860	45°
	0.80	2	96	0.024	0.028	0.028	0.73	41860	2010	45°
	1.00	2	121	0.028	0.036	0.036	0.92	41865	2345	45°
	1.20	2	145	0.030	0.042	0.042	1.10	41960	2520	45°
	1.50	2	182	0.034	0.052	0.052	1.38	41980	2855	45°
	2.00	2	200	0.038	0.070	0.070	1.84	34600	2630	45°
	2.50	2	200	0.040	0.088	0.088	2.29	27800	2225	45°
	3.00	2	200	0.046	0.106	0.106	2.75	23150	2130	45°
Hardened tool steel 56 - 60 HRC	0.50	2	61	0.018	0.018	0.018	0.46	42210	1520	45°
	0.60	2	73	0.020	0.022	0.022	0.55	42250	1690	45°
	0.80	2	96	0.020	0.028	0.028	0.73	41860	1675	45°
	1.00	2	121	0.026	0.036	0.036	0.92	41865	2175	45°
	1.20	2	145	0.028	0.042	0.042	1.10	41960	2350	45°
	1.50	2	150	0.030	0.052	0.052	1.38	34600	2075	45°
	2.00	2	150	0.034	0.070	0.070	1.84	25950	1765	45°
	2.50	2	150	0.036	0.088	0.088	2.29	20850	1500	45°
	3.00	2	150	0.040	0.106	0.106	2.75	17360	1390	45°

Ball nose end mills MicroX

Shank ø 6mm, conical neck 0.9°, 10xd

HM XA	λ 30° γ -10°
h5	
d_1	r

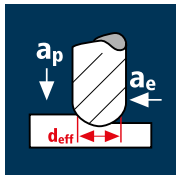


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6768** ø-Code **050**

Ø Code	d_1	d_2 h5	d_3	d_4	l_1	l_2	l_3	l_4	θ	r ±0.005	α	z	X-AL **X6768**
050	0.50	6.00	0.45	0.59	57	0.40	5.00	15.75	0.9°	0.250	10.3°	2	●
060	0.60	6.00	0.55	0.72	57	0.50	6.00	16.51	0.9°	0.300	9.7°	2	●
080	0.80	6.00	0.75	0.98	61	0.65	8.00	18.03	0.9°	0.400	8.5°	2	●
100	1.00	6.00	0.95	1.24	61	0.80	10.00	19.54	0.9°	0.500	7.6°	2	●
108	1.20	6.00	1.10	1.45	66	1.00	12.00	21.15	0.9°	0.600	6.7°	2	●
120	1.50	6.00	1.40	1.83	66	1.20	15.00	23.44	0.9°	0.750	5.7°	2	●
140	2.00	6.00	1.90	2.48	69	1.60	20.00	27.23	0.9°	1.000	4.3°	2	●
160	2.50	6.00	2.30	3.02	75	2.00	25.00	31.22	0.9°	1.250	3.3°	2	●
180	3.00	6.00	2.80	3.67	75	2.40	30.00	35.01	0.9°	1.500	2.5°	2	●

Application



Material

Hardened tool steel 42 - 48 HRC

X

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.50	2	16	0.019	0.007	0.100	0.12	42440	1605	1.1
0.60	2	18	0.023	0.008	0.120	0.14	40925	1855	1.8
0.80	2	25	0.030	0.011	0.160	0.19	41885	2535	4.5
1.00	2	30	0.038	0.013	0.200	0.23	41520	3140	8.2
1.20	2	37	0.045	0.016	0.240	0.28	42060	3815	14.7
1.50	2	45	0.057	0.020	0.300	0.34	42130	4775	28.7
2.00	2	61	0.076	0.027	0.400	0.46	42210	6380	68.9
2.50	2	75	0.094	0.033	0.500	0.57	41885	7915	130.6
3.00	2	91	0.113	0.040	0.600	0.69	41980	9520	228.5

Hardened tool steel 48 - 52 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.50	2	16	0.018	0.007	0.100	0.12	42440	1530	1.1
0.60	2	18	0.022	0.008	0.120	0.14	40925	1770	1.7
0.80	2	25	0.029	0.011	0.160	0.19	41885	2410	4.2
1.00	2	30	0.036	0.013	0.200	0.23	41520	2990	7.8
1.20	2	37	0.043	0.016	0.240	0.28	42060	3635	14.0
1.50	2	45	0.054	0.020	0.300	0.34	42130	4550	27.3
2.00	2	61	0.072	0.027	0.400	0.46	42210	6080	65.6
2.50	2	75	0.090	0.033	0.500	0.57	41885	7540	124.4
3.00	2	91	0.108	0.040	0.600	0.69	41980	9070	217.6

Hardened tool steel 52 - 56 HRC

X

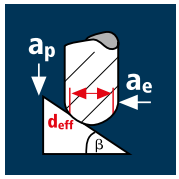
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.50	2	16	0.015	0.007	0.100	0.12	42440	1275	0.9
0.60	2	18	0.018	0.008	0.120	0.14	40925	1475	1.4
0.80	2	25	0.024	0.011	0.160	0.19	41885	2010	3.5
1.00	2	30	0.030	0.013	0.200	0.23	41520	2490	6.5
1.20	2	37	0.036	0.016	0.240	0.28	42060	3030	11.6
1.50	2	45	0.045	0.020	0.300	0.34	42130	3790	22.7
2.00	2	61	0.060	0.027	0.400	0.46	42210	5065	54.7
2.50	2	75	0.075	0.033	0.500	0.57	41885	6280	103.7
3.00	2	91	0.090	0.040	0.600	0.69	41980	7555	181.4

Hardened tool steel 56 - 60 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.50	2	16	0.014	0.007	0.100	0.12	42440	1145	0.8
0.60	2	18	0.016	0.008	0.120	0.14	40925	1325	1.3
0.80	2	25	0.022	0.011	0.160	0.19	41885	1810	3.2
1.00	2	30	0.027	0.013	0.200	0.23	41520	2240	5.8
1.20	2	37	0.032	0.016	0.240	0.28	42060	2725	10.5
1.50	2	45	0.041	0.020	0.300	0.34	42130	3410	20.5
2.00	2	60	0.054	0.027	0.400	0.46	41520	4485	48.4
2.50	2	60	0.068	0.033	0.500	0.57	33505	4525	74.6
3.00	2	60	0.081	0.040	0.600	0.69	27680	4485	107.6

Application



Material

Hardened tool steel 42 - 48 HRC

X

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.50	2	61	0.018	0.016	0.016	0.46	42210	1520	45°
0.60	2	71	0.018	0.016	0.016	0.54	41850	1505	45°
0.80	2	95	0.020	0.024	0.024	0.72	42000	1680	45°
1.00	2	120	0.026	0.030	0.030	0.91	41975	2185	45°
1.20	2	144	0.028	0.036	0.036	1.09	42050	2355	45°
1.50	2	179	0.030	0.046	0.046	1.36	41895	2515	45°
2.00	2	239	0.034	0.060	0.060	1.81	42030	2860	45°
2.50	2	300	0.036	0.076	0.076	2.27	42065	3030	45°
3.00	2	300	0.042	0.090	0.090	2.72	35110	2950	45°

Hardened tool steel 48 - 52 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.50	2	61	0.018	0.016	0.016	0.46	42210	1520	45°
0.60	2	71	0.018	0.016	0.016	0.54	41850	1505	45°
0.80	2	95	0.020	0.024	0.024	0.72	42000	1680	45°
1.00	2	120	0.024	0.030	0.030	0.91	41975	2015	45°
1.20	2	144	0.026	0.036	0.036	1.09	42050	2185	45°
1.50	2	179	0.028	0.046	0.046	1.36	41895	2345	45°
2.00	2	239	0.032	0.060	0.060	1.81	42030	2690	45°
2.50	2	250	0.034	0.076	0.076	2.27	35055	2385	45°
3.00	2	250	0.040	0.090	0.090	2.72	29255	2340	45°

Hardened tool steel 52 - 56 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.50	2	61	0.016	0.016	0.016	0.46	42210	1350	45°
0.60	2	71	0.016	0.016	0.016	0.54	41850	1340	45°
0.80	2	95	0.018	0.024	0.024	0.72	42000	1510	45°
1.00	2	120	0.024	0.030	0.030	0.91	41975	2015	45°
1.20	2	144	0.026	0.036	0.036	1.09	42050	2185	45°
1.50	2	179	0.028	0.046	0.046	1.36	41895	2345	45°
2.00	2	200	0.030	0.060	0.060	1.81	35170	2110	45°
2.50	2	200	0.032	0.076	0.076	2.27	28045	1795	45°
3.00	2	200	0.038	0.090	0.090	2.72	23405	1780	45°

Hardened tool steel 56 - 60 HRC

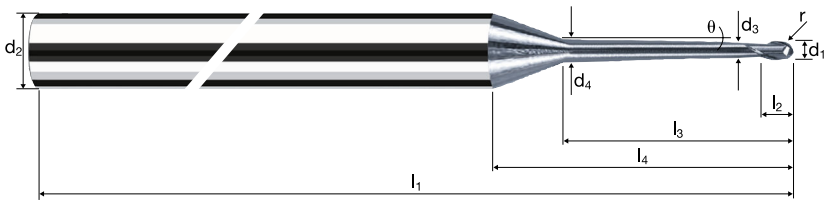
X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.50	2	61	0.014	0.016	0.016	0.46	42210	1180	45°
0.60	2	71	0.014	0.016	0.016	0.54	41850	1170	45°
0.80	2	95	0.016	0.024	0.024	0.72	42000	1345	45°
1.00	2	120	0.020	0.030	0.030	0.91	41975	1680	45°
1.20	2	144	0.022	0.036	0.036	1.09	42050	1850	45°
1.50	2	150	0.024	0.046	0.046	1.36	35110	1685	45°
2.00	2	150	0.028	0.060	0.060	1.81	26380	1475	45°
2.50	2	150	0.028	0.076	0.076	2.27	21035	1180	45°
3.00	2	150	0.034	0.090	0.090	2.72	17555	1195	45°

Ball nose end mills MicroX

Shank ø 6mm, conical neck 0.9°, 12xd

HM XA	λ 30° γ -10°
h5	
d_1	r

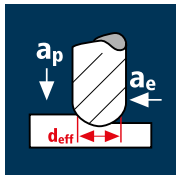


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6770** ø-Code **050**

Ø Code	d_1	d_2 h5	d_3	d_4	l_1	l_2	l_3	l_4	θ	r ±0.005	α	z	X-AL X6770
050	0.50	6.00	0.45	0.63	57	0.40	6.00	16.68	0.9°	0.250	9.9°	2	●
060	0.60	6.00	0.55	0.76	57	0.50	7.20	17.64	0.9°	0.300	9.0°	2	●
080	0.80	6.00	0.75	1.03	61	0.65	9.60	19.53	0.9°	0.400	8.0°	2	●
100	1.00	6.00	0.95	1.30	66	0.80	12.00	21.43	0.9°	0.500	7.0°	2	●
108	1.20	6.00	1.10	1.52	66	1.00	14.40	23.42	0.9°	0.600	6.1°	2	●
120	1.50	6.00	1.40	1.93	69	1.20	18.00	26.25	0.9°	0.750	5.1°	2	●
140	2.00	6.00	1.90	2.60	75	1.60	24.00	31.00	0.9°	1.000	3.9°	2	●
160	2.50	6.00	2.30	3.18	80	2.00	30.00	35.92	0.9°	1.250	2.9°	2	●
180	3.00	6.00	2.80	3.86	87	2.40	36.00	40.65	0.9°	1.500	2.2°	2	●

Application



Material

Hardened tool steel 42 - 48 HRC

X

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.50	2	13	0.019	0.005	0.100	0.10	41380	1565	0.8
0.60	2	16	0.023	0.006	0.120	0.12	42440	1925	1.4
0.80	2	22	0.030	0.009	0.160	0.17	41195	2490	3.6
1.00	2	28	0.038	0.011	0.200	0.21	42440	3210	7.1
1.20	2	33	0.045	0.013	0.240	0.25	42015	3810	11.9
1.50	2	41	0.057	0.016	0.300	0.31	42100	4775	22.9
2.00	2	54	0.076	0.021	0.400	0.41	41925	6340	53.2
2.50	2	69	0.094	0.027	0.500	0.52	42235	7985	107.8
3.00	2	82	0.113	0.032	0.600	0.62	42100	9550	183.3

Hardened tool steel 48 - 52 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.50	2	13	0.018	0.005	0.100	0.10	41380	1490	0.7
0.60	2	16	0.022	0.006	0.120	0.12	42440	1835	1.3
0.80	2	22	0.029	0.009	0.160	0.17	41195	2375	3.4
1.00	2	28	0.036	0.011	0.200	0.21	42440	3055	6.7
1.20	2	33	0.043	0.013	0.240	0.25	42015	3630	11.3
1.50	2	41	0.054	0.016	0.300	0.31	42100	4545	21.8
2.00	2	54	0.072	0.021	0.400	0.41	41925	6035	50.7
2.50	2	69	0.090	0.027	0.500	0.52	42235	7605	102.6
3.00	2	82	0.108	0.032	0.600	0.62	42100	9095	174.6

Hardened tool steel 52 - 56 HRC

X

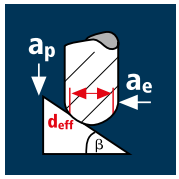
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.50	2	13	0.015	0.005	0.100	0.10	41380	1240	0.6
0.60	2	16	0.018	0.006	0.120	0.12	42440	1530	1.1
0.80	2	22	0.024	0.009	0.160	0.17	41195	1975	2.8
1.00	2	28	0.030	0.011	0.200	0.21	42440	2545	5.6
1.20	2	33	0.036	0.013	0.240	0.25	42015	3025	9.4
1.50	2	41	0.045	0.016	0.300	0.31	42100	3790	18.2
2.00	2	54	0.060	0.021	0.400	0.41	41925	5030	42.3
2.50	2	69	0.075	0.027	0.500	0.52	42235	6335	85.5
3.00	2	82	0.090	0.032	0.600	0.62	42100	7580	145.5

Hardened tool steel 56 - 60 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.50	2	13	0.014	0.005	0.100	0.10	41380	1115	0.6
0.60	2	16	0.016	0.006	0.120	0.12	42440	1375	1.0
0.80	2	22	0.022	0.009	0.160	0.17	41195	1780	2.6
1.00	2	28	0.027	0.011	0.200	0.21	42440	2290	5.0
1.20	2	33	0.032	0.013	0.240	0.25	42015	2725	8.5
1.50	2	41	0.041	0.016	0.300	0.31	42100	3410	16.4
2.00	2	54	0.054	0.021	0.400	0.41	41925	4530	38.0
2.50	2	60	0.068	0.027	0.500	0.52	36730	4960	66.9
3.00	2	60	0.081	0.032	0.600	0.62	30805	4990	95.8

Application



Material

Hardened tool steel 42 - 48 HRC

X

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.50	2	58	0.018	0.012	0.012	0.44	41960	1510	45°
0.60	2	70	0.018	0.012	0.012	0.53	42040	1515	45°
0.80	2	94	0.020	0.020	0.020	0.71	42140	1685	45°
1.00	2	119	0.026	0.026	0.026	0.90	42090	2190	45°
1.20	2	141	0.028	0.030	0.030	1.07	41945	2350	45°
1.50	2	177	0.030	0.038	0.038	1.34	42045	2525	45°
2.00	2	236	0.034	0.050	0.050	1.79	41965	2855	45°
2.50	2	294	0.036	0.062	0.062	2.23	41965	3020	45°
3.00	2	300	0.042	0.076	0.076	2.68	35630	2995	45°

Hardened tool steel 48 - 52 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.50	2	58	0.018	0.012	0.012	0.44	41960	1510	45°
0.60	2	70	0.018	0.012	0.012	0.53	42040	1515	45°
0.80	2	94	0.020	0.020	0.020	0.71	42140	1685	45°
1.00	2	119	0.024	0.026	0.026	0.90	42090	2020	45°
1.20	2	141	0.026	0.030	0.030	1.07	41945	2180	45°
1.50	2	177	0.028	0.038	0.038	1.34	42045	2355	45°
2.00	2	236	0.032	0.050	0.050	1.79	41965	2685	45°
2.50	2	250	0.034	0.062	0.062	2.23	35685	2425	45°
3.00	2	250	0.040	0.076	0.076	2.68	29695	2375	45°

Hardened tool steel 52 - 56 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.50	2	58	0.016	0.012	0.012	0.44	41960	1345	45°
0.60	2	70	0.016	0.012	0.012	0.53	42040	1345	45°
0.80	2	94	0.018	0.020	0.020	0.71	42140	1515	45°
1.00	2	119	0.024	0.026	0.026	0.90	42090	2020	45°
1.20	2	141	0.026	0.030	0.030	1.07	41945	2180	45°
1.50	2	177	0.028	0.038	0.038	1.34	42045	2355	45°
2.00	2	200	0.030	0.050	0.050	1.79	35565	2135	45°
2.50	2	200	0.032	0.062	0.062	2.23	28550	1825	45°
3.00	2	200	0.038	0.076	0.076	2.68	23755	1805	45°

Hardened tool steel 56 - 60 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.50	2	58	0.014	0.012	0.012	0.44	41960	1175	45°
0.60	2	70	0.014	0.012	0.012	0.53	42040	1175	45°
0.80	2	94	0.016	0.020	0.020	0.71	42140	1350	45°
1.00	2	119	0.020	0.026	0.026	0.90	42090	1685	45°
1.20	2	141	0.022	0.030	0.030	1.07	41945	1845	45°
1.50	2	150	0.024	0.038	0.038	1.34	35630	1710	45°
2.00	2	150	0.028	0.050	0.050	1.79	26675	1495	45°
2.50	2	150	0.028	0.062	0.062	2.23	21410	1200	45°
3.00	2	150	0.034	0.076	0.076	2.68	17815	1210	45°

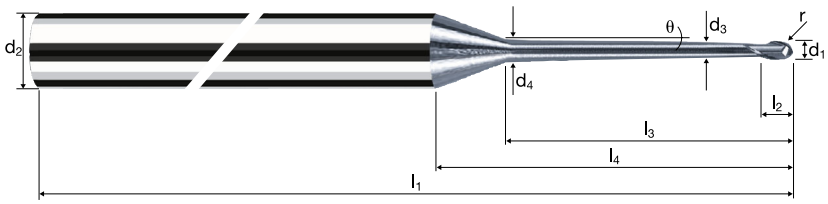
Ball nose end mills MicroX

Shank ø 6mm, conical neck 0.9°, 15xd

X-Generation

II

HM XA	λ 30° γ -10°
h5	
d1	r

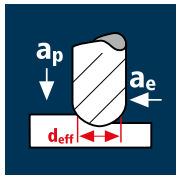


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6772** ø-Code **050**

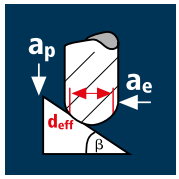
Ø Code	d_1	d_2 h5	d_3	d_4	l_1	l_2	l_3	l_4	θ	r ±0.005	α	z	X-AL X6772
050	0.50	6.00	0.45	0.67	61	0.40	7.50	18.10	0.9°	0.250	9.1°	2	●
060	0.60	6.00	0.55	0.82	61	0.50	9.00	19.32	0.9°	0.300	8.2°	2	●
080	0.80	6.00	0.75	1.11	66	0.65	12.00	21.78	0.9°	0.400	7.1°	2	●
100	1.00	6.00	0.95	1.40	66	0.80	15.00	24.24	0.9°	0.500	6.1°	2	●
108	1.20	6.00	1.10	1.63	69	1.00	18.00	26.81	0.9°	0.600	5.3°	2	●
120	1.50	6.00	1.40	2.07	75	1.20	22.50	30.49	0.9°	0.750	4.5°	2	●
140	2.00	6.00	1.90	2.79	80	1.60	30.00	36.65	0.9°	1.000	3.3°	2	●
160	2.50	6.00	2.30	3.42	87	2.00	37.50	42.97	0.9°	1.250	2.4°	2	●
180	3.00	6.00	2.80	4.14	100	2.40	45.00	49.13	0.9°	1.500	1.8°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Hardened tool steel 42 - 48 HRC	0.50	2	12	0.019	0.004	0.100	0.09	42440	1605	0.6
	0.60	2	15	0.023	0.005	0.120	0.11	43405	1970	1.2
	0.80	2	18	0.030	0.006	0.160	0.14	40925	2475	2.4
	1.00	2	24	0.038	0.008	0.200	0.18	42440	3210	5.1
	1.50	2	32	0.045	0.010	0.240	0.24	42440	3850	9.2
	2.00	2	41	0.057	0.012	0.300	0.31	42100	4775	17.2
	2.50	2	53	0.076	0.016	0.400	0.40	42175	6375	40.8
	3.00	2	65	0.094	0.020	0.500	0.49	42225	7980	79.8
Hardened tool steel 48 - 52 HRC	0.50	2	12	0.018	0.004	0.100	0.09	42440	1530	0.6
	0.60	2	15	0.022	0.005	0.120	0.11	43405	1875	1.1
	0.80	2	18	0.029	0.006	0.160	0.14	40925	2355	2.3
	1.00	2	24	0.036	0.008	0.200	0.18	42440	3055	4.9
	1.50	2	32	0.043	0.010	0.240	0.24	42440	3665	8.8
	2.00	2	41	0.054	0.012	0.300	0.31	42100	4545	16.4
	2.50	2	53	0.072	0.016	0.400	0.40	42175	6075	38.9
	3.00	2	65	0.090	0.020	0.500	0.49	42225	7600	76.0
Hardened tool steel 52 - 56 HRC	0.50	2	12	0.015	0.004	0.100	0.09	42440	1275	0.5
	0.60	2	15	0.018	0.005	0.120	0.11	43405	1565	0.9
	0.80	2	18	0.024	0.006	0.160	0.14	40925	1965	1.9
	1.00	2	24	0.030	0.008	0.200	0.18	42440	2545	4.1
	1.50	2	32	0.036	0.010	0.240	0.24	42440	3055	7.3
	2.00	2	41	0.045	0.012	0.300	0.31	42100	3790	13.6
	2.50	2	53	0.060	0.016	0.400	0.40	42175	5060	32.4
	3.00	2	65	0.075	0.020	0.500	0.49	42225	6335	63.3
Hardened tool steel 56 - 60 HRC	0.50	2	12	0.014	0.004	0.100	0.09	42440	1145	0.5
	0.60	2	15	0.016	0.005	0.120	0.11	43405	1405	0.8
	0.80	2	18	0.022	0.006	0.160	0.14	40925	1770	1.7
	1.00	2	24	0.027	0.008	0.200	0.18	42440	2290	3.7
	1.50	2	32	0.032	0.010	0.240	0.24	42440	2750	6.6
	2.00	2	41	0.041	0.012	0.300	0.31	42100	3410	12.3
	2.50	2	53	0.054	0.016	0.400	0.40	42175	4555	29.2
	3.00	2	60	0.068	0.020	0.500	0.49	38975	5260	52.6

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.50	2	58	0.018	0.012	0.012	0.44	41960	1510	45°
	0.60	2	70	0.018	0.012	0.012	0.53	42040	1515	45°
	0.80	2	94	0.020	0.020	0.020	0.71	42140	1685	45°
	1.00	2	119	0.026	0.026	0.026	0.90	42090	2190	45°
	1.50	2	177	0.030	0.038	0.038	1.34	42045	2525	45°
	2.00	2	236	0.034	0.050	0.050	1.79	41965	2855	45°
	2.50	2	294	0.036	0.062	0.062	2.23	41965	3020	45°
	3.00	2	300	0.042	0.076	0.076	2.68	35630	2995	45°
Hardened tool steel 48 - 52 HRC	0.50	2	58	0.018	0.012	0.012	0.44	41960	1510	45°
	0.60	2	70	0.018	0.012	0.012	0.53	42040	1515	45°
	0.80	2	94	0.020	0.020	0.020	0.71	42140	1685	45°
	1.00	2	119	0.024	0.026	0.026	0.90	42090	2020	45°
	1.50	2	177	0.028	0.038	0.038	1.34	42045	2355	45°
	2.00	2	236	0.032	0.050	0.050	1.79	41965	2685	45°
	2.50	2	250	0.034	0.062	0.062	2.23	35685	2425	45°
	3.00	2	250	0.040	0.076	0.076	2.68	29695	2375	45°
Hardened tool steel 52 - 56 HRC	0.50	2	58	0.016	0.012	0.012	0.44	41960	1345	45°
	0.60	2	70	0.016	0.012	0.012	0.53	42040	1345	45°
	0.80	2	94	0.018	0.020	0.020	0.71	42140	1515	45°
	1.00	2	119	0.024	0.026	0.026	0.90	42090	2020	45°
	1.50	2	177	0.028	0.038	0.038	1.34	42045	2355	45°
	2.00	2	200	0.030	0.050	0.050	1.79	35565	2135	45°
	2.50	2	200	0.032	0.062	0.062	2.23	28550	1825	45°
	3.00	2	200	0.038	0.076	0.076	2.68	23755	1805	45°
Hardened tool steel 56 - 60 HRC	0.50	2	58	0.014	0.012	0.012	0.44	41960	1175	45°
	0.60	2	70	0.014	0.012	0.012	0.53	42040	1175	45°
	0.80	2	94	0.016	0.020	0.020	0.71	42140	1350	45°
	1.00	2	119	0.020	0.026	0.026	0.90	42090	1685	45°
	1.50	2	150	0.024	0.038	0.038	1.34	35630	1710	45°
	2.00	2	150	0.028	0.050	0.050	1.79	26675	1495	45°
	2.50	2	150	0.028	0.062	0.062	2.23	21410	1200	45°
	3.00	2	150	0.034	0.076	0.076	2.68	17815	1210	45°

Ball nose end mills MicroX

Shank ø 6mm, conical neck 0.9°, 20xd

X-Generation X

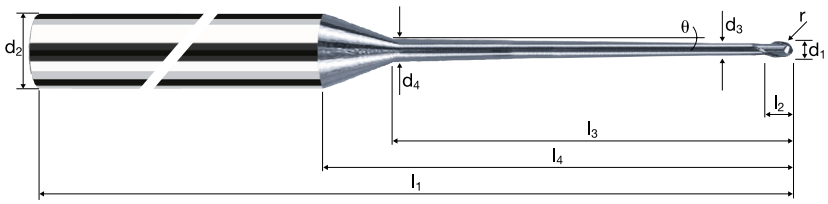
II

HM XA	λ 30° γ -10°

h5

d1

r

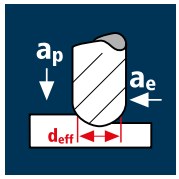


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6774** ø-Code **050**

Ø Code	d_1	d_2 h5	d_3	d_4	l_1	l_2	l_3	l_4	θ	r ±0.005	α	z	X-AL / X6774
050	0.50	6.00	0.45	0.75	61	0.40	10.00	20.45	0.9°	0.250	7.8°	2	●
060	0.60	6.00	0.55	0.91	66	0.50	12.00	22.16	0.9°	0.300	7.1°	2	●
080	0.80	6.00	0.75	1.23	69	0.65	16.00	25.56	0.9°	0.400	5.9°	2	●
100	1.00	6.00	0.95	1.55	69	0.80	20.00	28.96	0.9°	0.500	5.0°	2	●
120	1.50	6.00	1.40	2.30	80	1.20	30.00	37.56	0.9°	0.750	3.4°	2	●
140	2.00	6.00	1.90	3.11	87	1.60	40.00	46.05	0.9°	1.000	2.5°	2	●
160	2.50	6.00	2.30	3.81	100	2.00	50.00	54.74	0.9°	1.250	1.8°	2	●
180	3.00	6.00	2.80	4.61	100	2.40	60.00	63.25	0.9°	1.500	1.4°	2	●

Application



Material

Hardened tool steel 42 - 48 HRC

D

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.20	2	12	0.006	0.010	0.040	0.09	42440	510	0.2
0.50	2	36	0.012	0.040	0.100	0.27	42440	1020	4.1
0.80	2	55	0.020	0.060	0.160	0.42	41685	1665	16.0
1.00	2	67	0.026	0.070	0.200	0.51	41815	2175	30.4
1.20	2	79	0.030	0.080	0.240	0.60	41910	2515	48.3
1.50	2	103	0.038	0.110	0.300	0.78	42035	3195	105.4
2.00	2	135	0.050	0.140	0.400	1.02	42130	4215	235.9
2.50	2	140	0.062	0.180	0.500	1.29	34545	4285	385.5
3.00	2	140	0.076	0.210	0.600	1.53	29125	4425	557.8

Hardened tool steel 48 - 52 HRC

D

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.20	2	12	0.006	0.010	0.040	0.09	42440	510	0.2
0.50	2	36	0.012	0.040	0.100	0.27	42440	1020	4.1
0.80	2	55	0.020	0.060	0.160	0.42	41685	1665	16.0
1.00	2	67	0.024	0.070	0.200	0.51	41815	2005	28.1
1.20	2	79	0.028	0.080	0.240	0.60	41910	2345	45.1
1.50	2	103	0.036	0.110	0.300	0.78	42035	3025	99.9
2.00	2	120	0.048	0.140	0.400	1.02	37450	3595	201.3
2.50	2	120	0.058	0.180	0.500	1.29	29610	3435	309.1
3.00	2	120	0.072	0.210	0.600	1.53	24965	3595	453.0

Hardened tool steel 52 - 56 HRC

D

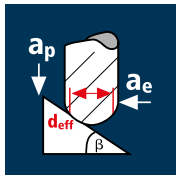
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.20	2	12	0.006	0.010	0.040	0.09	42440	510	0.2
0.50	2	36	0.010	0.040	0.100	0.27	42440	850	3.4
0.80	2	55	0.018	0.060	0.160	0.42	41685	1500	14.4
1.00	2	67	0.022	0.070	0.200	0.51	41815	1840	25.8
1.20	2	79	0.026	0.080	0.240	0.60	41910	2180	41.8
1.50	2	100	0.034	0.110	0.300	0.78	40810	2775	91.6
2.00	2	100	0.044	0.140	0.400	1.02	31205	2745	153.8
2.50	2	100	0.054	0.180	0.500	1.29	24675	2665	239.8
3.00	2	100	0.066	0.210	0.600	1.53	20805	2745	346.0

Hardened tool steel 56 - 60 HRC

D

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
0.20	2	12	0.004	0.010	0.040	0.09	42440	340	0.1
0.50	2	36	0.010	0.040	0.100	0.27	42440	850	3.4
0.80	2	55	0.016	0.060	0.160	0.42	41685	1335	12.8
1.00	2	60	0.020	0.070	0.200	0.51	37450	1500	21.0
1.20	2	60	0.024	0.080	0.240	0.60	31830	1530	29.3
1.50	2	60	0.030	0.110	0.300	0.78	24485	1470	48.5
2.00	2	60	0.040	0.140	0.400	1.02	18725	1500	83.9
2.50	2	60	0.050	0.180	0.500	1.29	14805	1480	133.2
3.00	2	60	0.060	0.210	0.600	1.53	12485	1500	188.7

Application



Material

Hardened tool steel 42 - 48 HRC

D

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.50	2	62	0.016	0.022	0.022	0.47	41990	1345	45°
0.80	2	99	0.018	0.034	0.034	0.75	42015	1515	45°
1.00	2	123	0.022	0.044	0.044	0.93	42100	1850	45°
1.20	2	148	0.024	0.052	0.052	1.12	42060	2020	45°
1.50	2	185	0.028	0.064	0.064	1.40	42060	2355	45°
2.00	2	247	0.030	0.086	0.086	1.87	42045	2525	45°
2.50	2	300	0.032	0.108	0.108	2.33	40985	2625	45°
3.00	2	300	0.036	0.128	0.128	2.80	34105	2455	45°

Hardened tool steel 48 - 52 HRC

D

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.50	2	62	0.016	0.022	0.022	0.47	41990	1345	45°
0.80	2	99	0.018	0.034	0.034	0.75	42015	1515	45°
1.00	2	123	0.020	0.044	0.044	0.93	42100	1685	45°
1.20	2	148	0.022	0.052	0.052	1.12	42060	1850	45°
1.50	2	185	0.026	0.064	0.064	1.40	42060	2185	45°
2.00	2	247	0.028	0.086	0.086	1.87	42045	2355	45°
2.50	2	250	0.030	0.108	0.108	2.33	34155	2050	45°
3.00	2	250	0.034	0.128	0.128	2.80	28420	1935	45°

Hardened tool steel 52 - 56 HRC

D

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.20	2	25	0.008	0.008	0.008	0.19	41885	670	45°
0.50	2	62	0.014	0.022	0.022	0.47	41990	1175	45°
0.80	2	99	0.016	0.034	0.034	0.75	42015	1345	45°
1.00	2	123	0.020	0.044	0.044	0.93	42100	1685	45°
1.20	2	148	0.022	0.052	0.052	1.12	42060	1850	45°
1.50	2	185	0.026	0.064	0.064	1.40	42060	2185	45°
2.00	2	200	0.028	0.086	0.086	1.87	34045	1905	45°
2.50	2	200	0.028	0.108	0.108	2.33	27325	1530	45°
3.00	2	200	0.032	0.128	0.128	2.80	22735	1455	45°

Hardened tool steel 56 - 60 HRC

D

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
0.20	2	25	0.006	0.008	0.008	0.19	41885	505	45°
0.50	2	62	0.012	0.022	0.022	0.47	41990	1010	45°
0.80	2	99	0.014	0.034	0.034	0.75	42015	1175	45°
1.00	2	123	0.018	0.044	0.044	0.93	42100	1515	45°
1.20	2	148	0.020	0.052	0.052	1.12	42060	1680	45°
1.50	2	150	0.022	0.064	0.064	1.40	34105	1500	45°
2.00	2	150	0.024	0.086	0.086	1.87	25535	1225	45°
2.50	2	150	0.026	0.108	0.108	2.33	20490	1065	45°
3.00	2	150	0.028	0.128	0.128	2.80	17050	955	45°

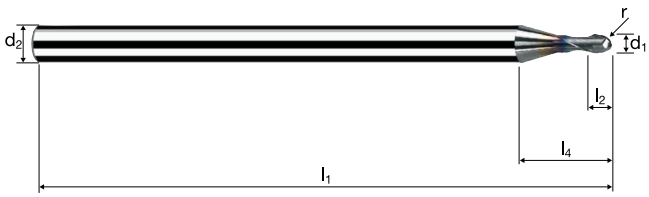
Ball nose end mills Microcut-B1H

Shank ø 3mm, 1xd

HM
XA

λ 30°
γ -10°

h5



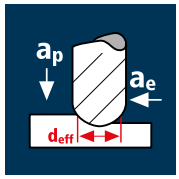
ToolSchool

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium

Example: **Order-N°.** Coating **D** Article-N°. **15781** ø-Code **020**

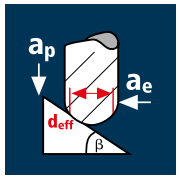
Ø Code	d_1	d_2 h5	l_1	l_2	l_4	r ±0.005	α	z	DURO-S D15781
020	0.20	3.00	40	0.24	5.91	0.100	14.7°	2	●
030	0.30	3.00	40	0.36	5.84	0.150	14.3°	2	●
040	0.40	3.00	40	0.48	5.78	0.200	14.1°	2	●
050	0.50	3.00	40	0.60	5.71	0.250	14.0°	2	●
060	0.60	3.00	40	0.72	5.64	0.300	13.8°	2	●
080	0.80	3.00	40	0.96	5.51	0.400	13.1°	2	●
100	1.00	3.00	50	1.20	5.38	0.500	12.6°	2	●
108	1.20	3.00	50	1.40	5.29	0.600	12.1°	2	●
120	1.50	3.00	50	1.80	5.09	0.750	10.9°	2	●
140	2.00	3.00	50	2.40	4.76	1.000	8.6°	2	●
160	2.50	3.00	50	3.00	4.43	1.250	5.3°	2	●
180	3.00	3.00	50	3.60	-	1.500	0.0°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC	0.50	2	32	0.012	0.030	0.100	0.24	42440	1020	3.1
	0.60	2	40	0.016	0.040	0.120	0.30	42440	1360	6.5
	0.80	2	51	0.020	0.050	0.160	0.39	41625	1665	13.3
	1.00	2	62	0.026	0.060	0.200	0.47	41990	2185	26.2
	1.20	2	74	0.030	0.070	0.240	0.56	42060	2525	42.4
	1.50	2	94	0.038	0.090	0.300	0.71	42140	3205	86.5
	2.00	2	125	0.050	0.120	0.400	0.95	41885	4190	201.0
	2.50	2	140	0.062	0.150	0.500	1.19	37450	4645	348.3
	3.00	2	140	0.076	0.180	0.600	1.42	31385	4770	515.2
Hardened tool steel 48 - 52 HRC	0.50	2	32	0.012	0.030	0.100	0.24	42440	1020	3.1
	0.60	2	40	0.016	0.040	0.120	0.30	42440	1360	6.5
	0.80	2	51	0.020	0.050	0.160	0.39	41625	1665	13.3
	1.00	2	62	0.024	0.060	0.200	0.47	41990	2015	24.2
	1.20	2	74	0.028	0.070	0.240	0.56	42060	2355	39.6
	1.50	2	94	0.036	0.090	0.300	0.71	42140	3035	81.9
	2.00	2	120	0.048	0.120	0.400	0.95	40210	3860	185.3
	2.50	2	120	0.058	0.150	0.500	1.19	32100	3725	279.3
	3.00	2	120	0.072	0.180	0.600	1.42	26900	3875	418.3
Hardened tool steel 52 - 56 HRC	0.50	2	32	0.010	0.030	0.100	0.24	42440	850	2.5
	0.60	2	40	0.014	0.040	0.120	0.30	42440	1190	5.7
	0.80	2	51	0.018	0.050	0.160	0.39	41625	1500	12.0
	1.00	2	62	0.022	0.060	0.200	0.47	41990	1850	22.2
	1.20	2	74	0.026	0.070	0.240	0.56	42060	2185	36.7
	1.50	2	94	0.034	0.090	0.300	0.71	42140	2865	77.4
	2.00	2	100	0.044	0.120	0.400	0.95	33505	2950	141.5
	2.50	2	100	0.054	0.150	0.500	1.19	26750	2890	216.7
	3.00	2	100	0.066	0.180	0.600	1.42	22415	2960	319.6
Hardened tool steel 56 - 60 HRC	0.50	2	32	0.010	0.030	0.100	0.24	42440	850	2.5
	0.60	2	40	0.012	0.040	0.120	0.30	42440	1020	4.9
	0.80	2	51	0.016	0.050	0.160	0.39	41625	1330	10.7
	1.00	2	60	0.020	0.060	0.200	0.47	40635	1625	19.5
	1.20	2	60	0.024	0.070	0.240	0.56	34105	1635	27.5
	1.50	2	60	0.030	0.090	0.300	0.71	26900	1615	43.6
	2.00	2	60	0.040	0.120	0.400	0.95	20105	1610	77.2
	2.50	2	60	0.050	0.150	0.500	1.19	16050	1605	120.4
	3.00	2	60	0.060	0.180	0.600	1.42	13450	1615	174.3

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.50	2	61	0.016	0.020	0.020	0.46	42210	1350	45°
	0.60	2	74	0.018	0.024	0.024	0.56	42060	1515	45°
	0.80	2	98	0.020	0.032	0.032	0.74	42155	1685	45°
	1.00	2	123	0.022	0.042	0.042	0.93	42100	1850	45°
	1.20	2	148	0.024	0.050	0.050	1.12	42060	2020	45°
	1.50	2	185	0.028	0.062	0.062	1.40	42060	2355	45°
	2.00	2	245	0.030	0.082	0.082	1.86	41930	2515	45°
	2.50	2	300	0.032	0.102	0.102	2.32	41160	2635	45°
	3.00	2	300	0.036	0.122	0.122	2.79	34225	2465	45°
Hardened tool steel 48 - 52 HRC	0.50	2	61	0.016	0.020	0.020	0.46	42210	1350	45°
	0.60	2	74	0.018	0.024	0.024	0.56	42060	1515	45°
	0.80	2	98	0.020	0.032	0.032	0.74	42155	1685	45°
	1.00	2	123	0.020	0.042	0.042	0.93	42100	1685	45°
	1.20	2	148	0.022	0.050	0.050	1.12	42060	1850	45°
	1.50	2	185	0.026	0.062	0.062	1.40	42060	2185	45°
	2.00	2	245	0.028	0.082	0.082	1.86	41930	2350	45°
	2.50	2	250	0.030	0.102	0.102	2.32	34300	2060	45°
	3.00	2	250	0.034	0.122	0.122	2.79	28520	1940	45°
Hardened tool steel 52 - 56 HRC	0.50	2	61	0.014	0.020	0.020	0.46	42210	1180	45°
	0.60	2	74	0.016	0.024	0.024	0.56	42060	1345	45°
	0.80	2	98	0.018	0.032	0.032	0.74	42155	1520	45°
	1.00	2	123	0.020	0.042	0.042	0.93	42100	1685	45°
	1.20	2	148	0.022	0.050	0.050	1.12	42060	1850	45°
	1.50	2	185	0.026	0.062	0.062	1.40	42060	2185	45°
	2.00	2	200	0.028	0.082	0.082	1.86	34225	1915	45°
	2.50	2	200	0.028	0.102	0.102	2.32	27440	1535	45°
	3.00	2	200	0.032	0.122	0.122	2.79	22820	1460	45°
Hardened tool steel 56 - 60 HRC	0.50	2	61	0.012	0.020	0.020	0.46	42210	1015	45°
	0.60	2	74	0.014	0.024	0.024	0.56	42060	1180	45°
	0.80	2	98	0.016	0.032	0.032	0.74	42155	1350	45°
	1.00	2	123	0.018	0.042	0.042	0.93	42100	1515	45°
	1.20	2	148	0.020	0.050	0.050	1.12	42060	1680	45°
	1.50	2	150	0.022	0.062	0.062	1.40	34105	1500	45°
	2.00	2	150	0.024	0.082	0.082	1.86	25670	1230	45°
	2.50	2	150	0.026	0.102	0.102	2.32	20580	1070	45°
	3.00	2	150	0.028	0.122	0.122	2.79	17115	960	45°

Ball nose end mills Microcut-B3H

Shank ø 3mm, cylindrical neck, 3xd

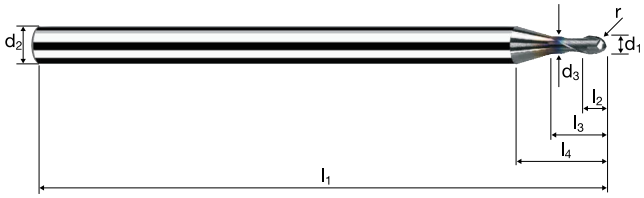
HM
XA

λ 30°
γ -10°

h5

d1

r



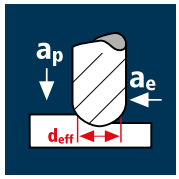
ToolSchool

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	

Example: **Order-N°.** Coating **D** Article-N°. **5792** ø-Code **050**

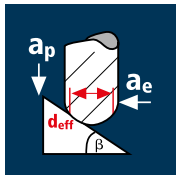
Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-S D5792
050	0.50	3.00	0.45	40	0.60	1.50	6.65	0.250	11.8°	2	●
060	0.60	3.00	0.55	40	0.72	1.80	6.77	0.300	11.2°	2	●
080	0.80	3.00	0.75	40	0.96	2.40	6.99	0.400	10.1°	2	●
100	1.00	3.00	0.95	50	1.20	3.00	7.22	0.500	9.0°	2	●
108	1.20	3.00	1.10	50	1.44	3.60	7.54	0.600	7.9°	2	●
120	1.50	3.00	1.40	50	1.80	4.50	7.88	0.750	6.5°	2	●
140	2.00	3.00	1.90	50	2.40	6.00	8.45	1.000	4.1°	2	●
160	2.50	3.00	2.30	50	3.00	7.50	9.20	1.250	2.0°	2	●
180	3.00	3.00	2.80	50	3.60	8.56	9.00	1.500	0.0°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Hardened tool steel 42 - 48 HRC	0.50	2	32	0.012	0.030	0.100	0.24	42440	1020	3.1
	0.60	2	34	0.016	0.030	0.120	0.26	41625	1330	4.8
	0.80	2	46	0.020	0.040	0.160	0.35	41835	1675	10.7
	1.00	2	58	0.026	0.050	0.200	0.44	41960	2180	21.8
	1.20	2	69	0.030	0.060	0.240	0.52	42235	2535	36.5
	1.50	2	88	0.038	0.080	0.300	0.67	41810	3175	76.3
	2.00	2	115	0.050	0.100	0.400	0.87	42075	4210	168.3
	2.50	2	140	0.062	0.130	0.500	1.11	40145	4980	323.6
	3.00	2	140	0.076	0.150	0.600	1.31	34020	5170	465.4
Hardened tool steel 48 - 52 HRC	0.50	2	32	0.012	0.030	0.100	0.24	42440	1020	3.1
	0.60	2	34	0.016	0.030	0.120	0.26	41625	1330	4.8
	0.80	2	46	0.020	0.040	0.160	0.35	41835	1675	10.7
	1.00	2	58	0.024	0.050	0.200	0.44	41960	2015	20.1
	1.20	2	69	0.028	0.060	0.240	0.52	42235	2365	34.1
	1.50	2	88	0.036	0.080	0.300	0.67	41810	3010	72.2
	2.00	2	115	0.048	0.100	0.400	0.87	42075	4040	161.6
	2.50	2	120	0.058	0.130	0.500	1.11	34410	3990	259.5
	3.00	2	120	0.072	0.150	0.600	1.31	29160	4200	377.9
Hardened tool steel 52 - 56 HRC	0.50	2	32	0.010	0.030	0.100	0.24	42440	850	2.5
	0.60	2	34	0.014	0.030	0.120	0.26	41625	1165	4.2
	0.80	2	46	0.018	0.040	0.160	0.35	41835	1505	9.6
	1.00	2	58	0.022	0.050	0.200	0.44	41960	1845	18.5
	1.20	2	69	0.026	0.060	0.240	0.52	42235	2195	31.6
	1.50	2	88	0.034	0.080	0.300	0.67	41810	2845	68.2
	2.00	2	100	0.044	0.100	0.400	0.87	36585	3220	128.8
	2.50	2	100	0.054	0.130	0.500	1.11	28675	3095	201.3
	3.00	2	100	0.066	0.150	0.600	1.31	24300	3205	288.7
Hardened tool steel 56 - 60 HRC	0.50	2	32	0.010	0.030	0.100	0.24	42440	850	2.5
	0.60	2	34	0.012	0.030	0.120	0.26	41625	1000	3.6
	0.80	2	46	0.016	0.040	0.160	0.35	41835	1340	8.6
	1.00	2	58	0.020	0.050	0.200	0.44	41960	1680	16.8
	1.20	2	60	0.024	0.060	0.240	0.52	36730	1765	25.4
	1.50	2	60	0.030	0.080	0.300	0.67	28505	1710	41.0
	2.00	2	60	0.040	0.100	0.400	0.87	21950	1755	70.2
	2.50	2	60	0.050	0.130	0.500	1.11	17205	1720	111.8
	3.00	2	60	0.060	0.150	0.600	1.31	14580	1750	157.5

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.50	2	61	0.016	0.020	0.020	0.46	42210	1350	45°
	0.60	2	74	0.018	0.024	0.024	0.56	42060	1515	45°
	0.80	2	98	0.020	0.032	0.032	0.74	42155	1685	45°
	1.00	2	123	0.022	0.040	0.040	0.93	42100	1850	45°
	1.20	2	146	0.024	0.048	0.048	1.11	41870	2010	45°
	1.50	2	183	0.028	0.060	0.060	1.39	41905	2345	45°
	2.00	2	245	0.030	0.080	0.080	1.86	41930	2515	45°
	2.50	2	300	0.032	0.100	0.100	2.32	41160	2635	45°
	3.00	2	300	0.036	0.120	0.120	2.78	34350	2475	45°
Hardened tool steel 48 - 52 HRC	0.50	2	61	0.016	0.020	0.020	0.46	42210	1350	45°
	0.60	2	74	0.018	0.024	0.024	0.56	42060	1515	45°
	0.80	2	98	0.020	0.032	0.032	0.74	42155	1685	45°
	1.00	2	123	0.020	0.040	0.040	0.93	42100	1685	45°
	1.20	2	146	0.022	0.048	0.048	1.11	41870	1840	45°
	1.50	2	183	0.026	0.060	0.060	1.39	41905	2180	45°
	2.00	2	245	0.028	0.080	0.080	1.86	41930	2350	45°
	2.50	2	250	0.030	0.100	0.100	2.32	34300	2060	45°
	3.00	2	250	0.034	0.120	0.120	2.78	28625	1945	45°
Hardened tool steel 52 - 56 HRC	0.50	2	61	0.014	0.020	0.020	0.46	42210	1180	45°
	0.60	2	74	0.016	0.024	0.024	0.56	42060	1345	45°
	0.80	2	98	0.018	0.032	0.032	0.74	42155	1520	45°
	1.00	2	123	0.020	0.040	0.040	0.93	42100	1685	45°
	1.20	2	146	0.022	0.048	0.048	1.11	41870	1840	45°
	1.50	2	183	0.026	0.060	0.060	1.39	41905	2180	45°
	2.00	2	200	0.028	0.080	0.080	1.86	34225	1915	45°
	2.50	2	200	0.028	0.100	0.100	2.32	27440	1535	45°
	3.00	2	200	0.032	0.120	0.120	2.78	22900	1465	45°
Hardened tool steel 56 - 60 HRC	0.50	2	61	0.012	0.020	0.020	0.46	42210	1015	45°
	0.60	2	74	0.014	0.024	0.024	0.56	42060	1180	45°
	0.80	2	98	0.016	0.032	0.032	0.74	42155	1350	45°
	1.00	2	123	0.018	0.040	0.040	0.93	42100	1515	45°
	1.20	2	146	0.020	0.048	0.048	1.11	41870	1675	45°
	1.50	2	150	0.022	0.060	0.060	1.39	34350	1510	45°
	2.00	2	150	0.024	0.080	0.080	1.86	25670	1230	45°
	2.50	2	150	0.026	0.100	0.100	2.32	20580	1070	45°
	3.00	2	150	0.028	0.120	0.120	2.78	17175	960	45°

Ball nose end mills Microcut-B5H

Shank ø 3mm, cylindrical neck, 5xd

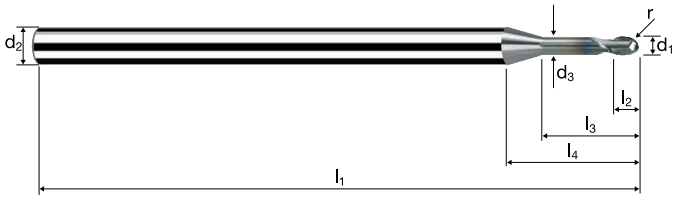
HM
XA

λ 30°
γ -10°

h5

d1

r



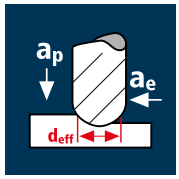
ToolSchool

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	

Example: **Order-N°.** Coating **D** Article-N°. **5794** ø-Code **050**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-S D5794
050	0.50	3.00	0.45	40	0.60	2.50	7.65	0.250	10.1°	2	●
060	0.60	3.00	0.55	40	0.72	3.00	7.97	0.300	9.4°	2	●
070	0.70	3.00	0.65	40	0.84	3.50	8.28	0.350	8.7°	2	●
080	0.80	3.00	0.75	40	0.96	4.00	8.59	0.400	8.0°	2	●
090	0.90	3.00	0.85	40	1.08	4.50	8.91	0.450	7.4°	2	●
100	1.00	3.00	0.95	50	1.20	5.00	9.22	0.500	6.9°	2	●
108	1.20	3.00	1.10	50	1.44	6.00	9.94	0.600	5.8°	2	●
120	1.50	3.00	1.40	50	1.80	7.50	10.88	0.750	4.4°	2	●
132	1.80	3.00	1.70	50	2.16	9.00	11.82	0.900	3.3°	2	●
140	2.00	3.00	1.90	50	2.40	10.00	12.45	1.000	2.6°	2	●
152	2.30	3.00	2.10	50	2.76	11.50	13.57	1.150	1.7°	2	●
160	2.50	3.00	2.30	50	3.00	12.50	14.20	1.250	1.2°	2	●
172	2.80	3.00	2.60	50	3.36	14.00	15.14	1.400	0.5°	2	●
180	3.00	3.00	2.80	50	3.60	14.56	15.00	1.500	0.0°	2	●

Application



Material

Hardened tool steel 42 - 48 HRC

D

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
0.50	2	26	0.012	0.020	0.090	0.20	41380	995	1.8
0.60	2	29	0.016	0.020	0.110	0.22	41960	1345	3.0
0.80	2	40	0.020	0.030	0.140	0.30	42440	1700	7.1
1.00	2	51	0.026	0.040	0.180	0.39	41625	2165	15.6
1.20	2	63	0.030	0.050	0.220	0.48	41780	2505	27.6
1.50	2	78	0.038	0.060	0.270	0.59	42080	3200	51.8
2.00	2	103	0.050	0.080	0.360	0.78	42035	4205	121.1
2.50	2	129	0.062	0.100	0.450	0.98	41900	5195	233.8
3.00	2	140	0.076	0.120	0.540	1.18	37765	5740	372.0

Hardened tool steel 48 - 52 HRC

D

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
0.50	2	26	0.012	0.020	0.090	0.20	41380	995	1.8
0.60	2	29	0.016	0.020	0.110	0.22	41960	1345	3.0
0.80	2	40	0.020	0.030	0.140	0.30	42440	1700	7.1
1.00	2	51	0.024	0.040	0.180	0.39	41625	2000	14.4
1.20	2	63	0.028	0.050	0.220	0.48	41780	2340	25.7
1.50	2	78	0.036	0.060	0.270	0.59	42080	3030	49.1
2.00	2	103	0.048	0.080	0.360	0.78	42035	4035	116.2
2.50	2	120	0.058	0.100	0.450	0.98	38975	4520	203.5
3.00	2	120	0.072	0.120	0.540	1.18	32370	4660	302.1

Hardened tool steel 52 - 56 HRC

D

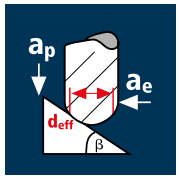
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
0.50	2	26	0.010	0.020	0.090	0.20	41380	830	1.5
0.60	2	29	0.014	0.020	0.110	0.22	41960	1175	2.6
0.80	2	40	0.018	0.030	0.140	0.30	42440	1530	6.4
1.00	2	51	0.022	0.040	0.180	0.39	41625	1830	13.2
1.20	2	63	0.026	0.050	0.220	0.48	41780	2170	23.9
1.50	2	78	0.034	0.060	0.270	0.59	42080	2860	46.4
2.00	2	100	0.044	0.080	0.360	0.78	40810	3590	103.4
2.50	2	100	0.054	0.100	0.450	0.98	32480	3510	157.9
3.00	2	100	0.066	0.120	0.540	1.18	26975	3560	230.7

Hardened tool steel 56 - 60 HRC

D

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
0.50	2	26	0.010	0.020	0.090	0.20	41380	830	1.5
0.60	2	29	0.012	0.020	0.110	0.22	41960	1005	2.2
0.80	2	40	0.016	0.030	0.140	0.30	42440	1360	5.7
1.00	2	51	0.020	0.040	0.180	0.39	41625	1665	12.0
1.20	2	60	0.024	0.050	0.220	0.48	39790	1910	21.0
1.50	2	60	0.030	0.060	0.270	0.59	32370	1940	31.5
2.00	2	60	0.040	0.080	0.360	0.78	24485	1960	56.4
2.50	2	60	0.050	0.100	0.450	0.98	19490	1950	87.7
3.00	2	60	0.060	0.120	0.540	1.18	16185	1940	125.9

Application



Material

Hardened tool steel 42 - 48 HRC

D

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.50	2	61	0.016	0.020	0.020	0.46	42210	1350	45°
0.60	2	73	0.018	0.022	0.022	0.55	42250	1520	45°
0.80	2	98	0.020	0.030	0.030	0.74	42155	1685	45°
1.00	2	121	0.022	0.038	0.038	0.92	41865	1840	45°
1.20	2	146	0.024	0.046	0.046	1.11	41870	2010	45°
1.50	2	183	0.028	0.058	0.058	1.39	41905	2345	45°
2.00	2	244	0.030	0.076	0.076	1.85	41980	2520	45°
2.50	2	300	0.032	0.096	0.096	2.31	41340	2645	45°
3.00	2	300	0.036	0.114	0.114	2.77	34475	2480	45°

Hardened tool steel 48 - 52 HRC

D

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.50	2	61	0.016	0.020	0.020	0.46	42210	1350	45°
0.60	2	73	0.018	0.022	0.022	0.55	42250	1520	45°
0.80	2	98	0.020	0.030	0.030	0.74	42155	1685	45°
1.00	2	121	0.020	0.038	0.038	0.92	41865	1675	45°
1.20	2	146	0.022	0.046	0.046	1.11	41870	1840	45°
1.50	2	183	0.026	0.058	0.058	1.39	41905	2180	45°
2.00	2	244	0.028	0.076	0.076	1.85	41980	2350	45°
2.50	2	250	0.030	0.096	0.096	2.31	34450	2065	45°
3.00	2	250	0.034	0.114	0.114	2.77	28730	1955	45°

Hardened tool steel 52 - 56 HRC

D

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.50	2	61	0.014	0.020	0.020	0.46	42210	1180	45°
0.60	2	73	0.016	0.022	0.022	0.55	42250	1350	45°
0.80	2	98	0.018	0.030	0.030	0.74	42155	1520	45°
1.00	2	121	0.020	0.038	0.038	0.92	41865	1675	45°
1.20	2	146	0.022	0.046	0.046	1.11	41870	1840	45°
1.50	2	183	0.026	0.058	0.058	1.39	41905	2180	45°
2.00	2	200	0.028	0.076	0.076	1.85	34410	1925	45°
2.50	2	200	0.028	0.096	0.096	2.31	27560	1545	45°
3.00	2	200	0.032	0.114	0.114	2.77	22985	1470	45°

Hardened tool steel 56 - 60 HRC

D

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.50	2	61	0.012	0.020	0.020	0.46	42210	1015	45°
0.60	2	73	0.014	0.022	0.022	0.55	42250	1185	45°
0.80	2	98	0.016	0.030	0.030	0.74	42155	1350	45°
1.00	2	121	0.018	0.038	0.038	0.92	41865	1505	45°
1.20	2	146	0.020	0.046	0.046	1.11	41870	1675	45°
1.50	2	150	0.022	0.058	0.058	1.39	34350	1510	45°
2.00	2	150	0.024	0.076	0.076	1.85	25810	1240	45°
2.50	2	150	0.026	0.096	0.096	2.31	20670	1075	45°
3.00	2	150	0.028	0.114	0.114	2.77	17235	965	45°

Ball nose end mills Microcut-B8H

Shank ø 3mm, cylindrical neck, 8xd

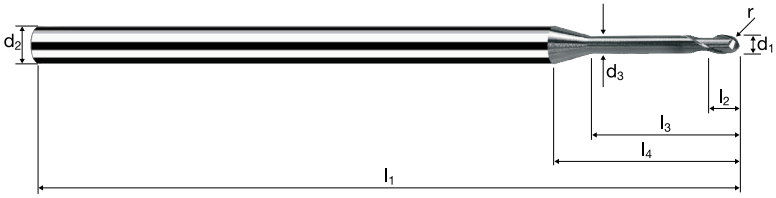
X-Generation

II

HM
XA

λ 30°
γ -10°

h5



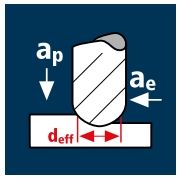
ToolSchool

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	

Example: **Order-N°.** Coating **D** Article-N°. **5796** ø-Code **050**

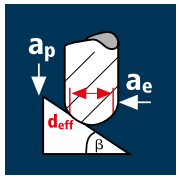
Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-S D5796
050	0.50	3.00	0.45	40	0.60	4.00	9.15	0.250	8.4°	2	●
060	0.60	3.00	0.55	40	0.72	4.80	9.77	0.300	7.6°	2	●
080	0.80	3.00	0.75	40	0.96	6.40	10.99	0.400	6.2°	2	●
100	1.00	3.00	0.95	50	1.20	8.00	12.22	0.500	5.1°	2	●
108	1.20	3.00	1.10	50	1.44	9.60	13.54	0.600	4.2°	2	●
120	1.50	3.00	1.40	60	1.80	12.00	15.38	0.750	3.1°	2	●
140	2.00	3.00	1.90	60	2.40	16.00	18.45	1.000	1.7°	2	●
160	2.50	3.00	2.30	60	3.00	20.00	21.70	1.250	0.8°	2	●
180	3.00	3.00	2.80	60	3.60	23.56	24.00	1.500	0.0°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Steel 850 - 1100 N/mm²	0.30	2	20	0.010	0.020	0.060	0.15	42440	850	1.0
	0.50	2	36	0.018	0.040	0.100	0.27	42440	1530	6.1
	0.80	2	55	0.028	0.060	0.160	0.42	41685	2335	22.4
	1.00	2	71	0.036	0.080	0.200	0.54	41850	3015	48.2
	1.20	2	87	0.042	0.100	0.240	0.66	41960	3525	84.6
	1.50	2	107	0.054	0.120	0.300	0.81	42050	4540	163.5
	2.00	2	144	0.072	0.160	0.400	1.09	42050	6055	387.6
	2.50	2	179	0.090	0.200	0.500	1.36	41895	7540	754.1
	3.00	2	180	0.108	0.240	0.600	1.63	35150	7595	1093.3
Steel 1100 - 1300 N/mm²	0.30	2	20	0.010	0.020	0.060	0.15	42440	850	1.0
	0.50	2	36	0.016	0.040	0.100	0.27	42440	1360	5.4
	0.80	2	55	0.026	0.060	0.160	0.42	41685	2170	20.8
	1.00	2	71	0.032	0.080	0.200	0.54	41850	2680	42.9
	1.20	2	87	0.038	0.100	0.240	0.66	41960	3190	76.5
	1.50	2	107	0.048	0.120	0.300	0.81	42050	4035	145.3
	2.00	2	144	0.064	0.160	0.400	1.09	42050	5385	344.5
	2.50	2	160	0.082	0.200	0.500	1.36	37450	6140	614.2
	3.00	2	160	0.098	0.240	0.600	1.63	31245	6125	881.9
Stainless steel [Cr-Ni/1.4301]	0.30	2	20	0.010	0.020	0.060	0.15	42440	850	1.0
	0.50	2	36	0.016	0.040	0.100	0.27	42440	1360	5.4
	0.80	2	55	0.026	0.060	0.160	0.42	41685	2170	20.8
	1.00	2	71	0.032	0.080	0.200	0.54	41850	2680	42.9
	1.20	2	80	0.038	0.100	0.240	0.66	38585	2930	70.4
	1.50	2	80	0.048	0.120	0.300	0.81	31440	3020	108.6
	2.00	2	80	0.064	0.160	0.400	1.09	23360	2990	191.4
	2.50	2	80	0.082	0.200	0.500	1.36	18725	3070	307.1
	3.00	2	80	0.098	0.240	0.600	1.63	15625	3060	440.9
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.30	2	20	0.008	0.020	0.060	0.15	42440	680	0.8
	0.50	2	36	0.012	0.040	0.100	0.27	42440	1020	4.1
	0.80	2	55	0.020	0.060	0.160	0.42	41685	1665	16.0
	1.00	2	60	0.026	0.080	0.200	0.54	35370	1840	29.4
	1.20	2	60	0.030	0.100	0.240	0.66	28935	1735	41.7
	1.50	2	60	0.038	0.120	0.300	0.81	23580	1790	64.5
	2.00	2	60	0.050	0.160	0.400	1.09	17520	1750	112.1
	2.50	2	60	0.064	0.200	0.500	1.36	14045	1800	179.8
	3.00	2	60	0.076	0.240	0.600	1.63	11715	1780	256.5

Application

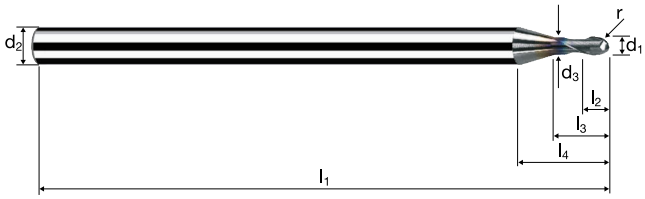


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²	0.30	2	37	0.012	0.012	0.012	0.28	42060	1010	45°
	0.50	2	62	0.020	0.022	0.022	0.47	41990	1680	45°
	0.80	2	99	0.022	0.034	0.034	0.75	42015	1850	45°
	1.00	2	123	0.028	0.042	0.042	0.93	42100	2360	45°
	1.20	2	148	0.030	0.050	0.050	1.12	42060	2525	45°
	1.50	2	185	0.034	0.064	0.064	1.40	42060	2860	45°
	2.00	2	245	0.038	0.084	0.084	1.86	41930	3185	45°
	2.50	2	300	0.040	0.106	0.106	2.33	40985	3280	45°
	3.00	2	300	0.046	0.126	0.126	2.79	34225	3150	45°
Steel 1100 - 1300 N/mm²	0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
	0.50	2	62	0.018	0.022	0.022	0.47	41990	1510	45°
	0.80	2	99	0.020	0.034	0.034	0.75	42015	1680	45°
	1.00	2	123	0.026	0.042	0.042	0.93	42100	2190	45°
	1.20	2	148	0.028	0.050	0.050	1.12	42060	2355	45°
	1.50	2	185	0.030	0.064	0.064	1.40	42060	2525	45°
	2.00	2	245	0.034	0.084	0.084	1.86	41930	2850	45°
	2.50	2	250	0.036	0.106	0.106	2.33	34155	2460	45°
	3.00	2	250	0.042	0.126	0.126	2.79	28520	2395	45°
Stainless steel [Cr-Ni/1.4301]	0.30	2	37	0.010	0.012	0.012	0.28	42060	840	45°
	0.50	2	62	0.016	0.022	0.022	0.47	41990	1345	45°
	0.80	2	99	0.018	0.034	0.034	0.75	42015	1515	45°
	1.00	2	120	0.022	0.042	0.042	0.93	41070	1805	45°
	1.20	2	120	0.024	0.050	0.050	1.12	34105	1635	45°
	1.50	2	120	0.028	0.064	0.064	1.40	27285	1530	45°
	2.00	2	120	0.030	0.084	0.084	1.86	20535	1230	45°
	2.50	2	120	0.032	0.106	0.106	2.33	16395	1050	45°
	3.00	2	120	0.036	0.126	0.126	2.79	13690	985	45°
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.30	2	37	0.008	0.012	0.012	0.28	42060	675	45°
	0.50	2	62	0.014	0.022	0.022	0.47	41990	1175	45°
	0.80	2	99	0.016	0.034	0.034	0.75	42015	1345	45°
	1.00	2	100	0.020	0.042	0.042	0.93	34225	1370	45°
	1.20	2	100	0.022	0.050	0.050	1.12	28420	1250	45°
	1.50	2	100	0.024	0.064	0.064	1.40	22735	1090	45°
	2.00	2	100	0.026	0.084	0.084	1.86	17115	890	45°
	2.50	2	100	0.028	0.106	0.106	2.33	13660	765	45°
	3.00	2	100	0.032	0.126	0.126	2.79	11410	730	45°

Ball nose end mills Microcut-B3

Shank ø 3mm, cylindrical neck, 3xd

HM MG10	λ 30° γ 5°

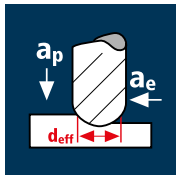


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5782** ø-Code **020**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	MICRO M5782
020	0.20	3.00	0.18	40	0.24	0.60	8.86	0.100	9.4°	2	●
030	0.30	3.00	0.25	40	0.36	0.90	8.96	0.150	9.0°	2	●
040	0.40	3.00	0.35	40	0.48	1.20	8.98	0.200	8.7°	2	●
050	0.50	3.00	0.45	40	0.60	1.50	6.65	0.250	11.8°	2	●
060	0.60	3.00	0.55	40	0.72	1.80	6.77	0.300	11.2°	2	●
080	0.80	3.00	0.75	40	0.96	2.40	6.99	0.400	10.1°	2	●
100	1.00	3.00	0.95	50	1.20	3.00	7.22	0.500	9.0°	2	●
108	1.20	3.00	1.10	50	1.44	3.60	7.54	0.600	7.9°	2	●
120	1.50	3.00	1.40	50	1.80	4.50	7.88	0.750	6.5°	2	●
140	2.00	3.00	1.90	50	2.40	6.00	8.45	1.000	4.1°	2	●
160	2.50	3.00	2.30	50	3.00	7.50	9.20	1.250	2.0°	2	●
180	3.00	3.00	2.80	50	3.60	8.56	9.00	1.500	0.0°	2	●

Application



Material

Steel
850 - 1100 N/mm²

M

M

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
0.50	2	36	0.018	0.040	0.100	0.27	42440	1530	6.1
0.60	2	40	0.022	0.040	0.120	0.30	42440	1865	9.0
0.80	2	55	0.028	0.060	0.160	0.42	41685	2335	22.4
1.00	2	67	0.036	0.070	0.200	0.51	41815	3010	42.2
1.20	2	79	0.042	0.080	0.240	0.60	41910	3520	67.6
1.50	2	103	0.054	0.110	0.300	0.78	42035	4540	149.8
2.00	2	135	0.072	0.140	0.400	1.02	42130	6065	339.7
2.50	2	170	0.090	0.180	0.500	1.29	41950	7550	679.6
3.00	2	180	0.108	0.210	0.600	1.53	37450	8090	1019.2

Steel
1100 - 1300 N/mm²

M

M

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
0.50	2	36	0.016	0.040	0.100	0.27	42440	1360	5.4
0.60	2	40	0.020	0.040	0.120	0.30	42440	1700	8.1
0.80	2	55	0.026	0.060	0.160	0.42	41685	2170	20.8
1.00	2	67	0.032	0.070	0.200	0.51	41815	2675	37.5
1.20	2	79	0.038	0.080	0.240	0.60	41910	3185	61.2
1.50	2	103	0.048	0.110	0.300	0.78	42035	4035	133.2
2.00	2	135	0.064	0.140	0.400	1.02	42130	5395	302.0
2.50	2	160	0.082	0.180	0.500	1.29	39480	6475	582.7
3.00	2	160	0.098	0.210	0.600	1.53	33285	6525	822.1

Stainless steel
[Cr-Ni/1.4301]

M

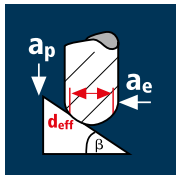
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
0.50	2	36	0.016	0.040	0.100	0.27	42440	1360	5.4
0.60	2	40	0.020	0.040	0.120	0.30	42440	1700	8.1
0.80	2	55	0.026	0.060	0.160	0.42	41685	2170	20.8
1.00	2	67	0.032	0.070	0.200	0.51	41815	2675	37.5
1.20	2	79	0.038	0.080	0.240	0.60	41910	3185	61.2
1.50	2	80	0.048	0.110	0.300	0.78	32645	3135	103.4
2.00	2	80	0.064	0.140	0.400	1.02	24965	3195	179.0
2.50	2	80	0.082	0.180	0.500	1.29	19740	3235	291.4
3.00	2	80	0.098	0.210	0.600	1.53	16645	3260	411.0

Titanium alloys
up to 300 HB
[Ti5Al2.5Sn]

M

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
0.50	2	36	0.012	0.040	0.100	0.27	42440	1020	4.1
0.60	2	40	0.016	0.040	0.120	0.30	42440	1360	6.5
0.80	2	55	0.020	0.060	0.160	0.42	41685	1665	16.0
1.00	2	60	0.026	0.070	0.200	0.51	37450	1945	27.3
1.20	2	60	0.030	0.080	0.240	0.60	31830	1910	36.7
1.50	2	60	0.038	0.110	0.300	0.78	24485	1860	61.4
2.00	2	60	0.050	0.140	0.400	1.02	18725	1870	104.9
2.50	2	60	0.064	0.180	0.500	1.29	14805	1895	170.6
3.00	2	60	0.076	0.210	0.600	1.53	12485	1895	239.1

Application



Material

Steel
850 - 1100 N/mm²

M

M

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.50	2	61	0.014	0.020	0.020	0.46	42210	1180	45°
0.60	2	74	0.016	0.024	0.024	0.56	42060	1345	45°
0.80	2	98	0.018	0.032	0.032	0.74	42155	1520	45°
1.00	2	123	0.022	0.040	0.040	0.93	42100	1850	45°
1.20	2	146	0.024	0.048	0.048	1.11	41870	2010	45°
1.50	2	183	0.028	0.060	0.060	1.39	41905	2345	45°
2.00	2	245	0.030	0.080	0.080	1.86	41930	2515	45°
2.50	2	300	0.032	0.100	0.100	2.32	41160	2635	45°
3.00	2	300	0.036	0.120	0.120	2.78	34350	2475	45°

Steel
1100 - 1300 N/mm²

M

M

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.50	2	57	0.012	0.008	0.008	0.43	42195	1015	45°
0.60	2	73	0.014	0.020	0.020	0.55	42250	1185	45°
0.80	2	98	0.016	0.032	0.032	0.74	42155	1350	45°
1.00	2	123	0.020	0.040	0.040	0.93	42100	1685	45°
1.20	2	146	0.022	0.048	0.048	1.11	41870	1840	45°
1.50	2	183	0.026	0.060	0.060	1.39	41905	2180	45°
2.00	2	245	0.028	0.080	0.080	1.86	41930	2350	45°
2.50	2	250	0.028	0.100	0.100	2.32	34300	1920	45°
3.00	2	250	0.032	0.120	0.120	2.78	28625	1830	45°

Stainless steel
[Cr-Ni/1.4301]

M

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.50	2	57	0.012	0.008	0.008	0.43	42195	1015	45°
0.60	2	73	0.012	0.020	0.020	0.55	42250	1015	45°
0.80	2	98	0.014	0.032	0.032	0.74	42155	1180	45°
1.00	2	120	0.018	0.040	0.040	0.93	41070	1480	45°
1.20	2	120	0.020	0.048	0.048	1.11	34410	1375	45°
1.50	2	120	0.022	0.060	0.060	1.39	27480	1210	45°
2.00	2	120	0.024	0.080	0.080	1.86	20535	985	45°
2.50	2	120	0.026	0.100	0.100	2.32	16465	855	45°
3.00	2	120	0.028	0.120	0.120	2.78	13740	770	45°

Titanium alloys
up to 300 HB
[Ti5Al2.5Sn]

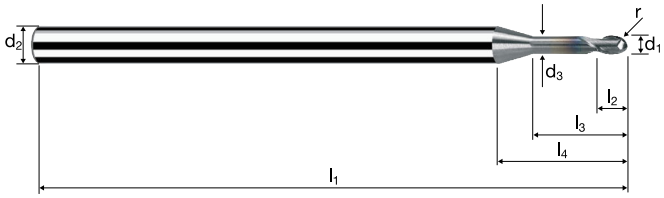
M

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.50	2	57	0.010	0.008	0.008	0.43	42195	845	45°
0.60	2	73	0.012	0.020	0.020	0.55	42250	1015	45°
0.80	2	98	0.012	0.032	0.032	0.74	42155	1010	45°
1.00	2	100	0.016	0.040	0.040	0.93	34225	1095	45°
1.20	2	100	0.016	0.048	0.048	1.11	28675	920	45°
1.50	2	100	0.020	0.060	0.060	1.39	22900	915	45°
2.00	2	100	0.022	0.080	0.080	1.86	17115	755	45°
2.50	2	100	0.022	0.100	0.100	2.32	13720	605	45°
3.00	2	100	0.026	0.120	0.120	2.78	11450	595	45°

Ball nose end mills Microcut-B5

Shank ø 3mm, cylindrical neck, 5xd

HM MG10	λ 30° γ 5°

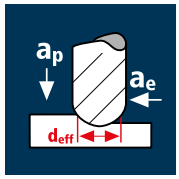


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5784** ø-Code **050**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	MICRO M5784
050	0.50	3.00	0.45	40	0.60	2.50	7.65	0.250	10.1°	2	●
060	0.60	3.00	0.55	40	0.72	3.00	7.97	0.300	9.4°	2	●
070	0.70	3.00	0.65	40	0.84	3.50	8.28	0.350	8.7°	2	●
080	0.80	3.00	0.75	40	0.96	4.00	8.59	0.400	8.0°	2	●
090	0.90	3.00	0.85	40	1.08	4.50	8.91	0.450	7.4°	2	●
100	1.00	3.00	0.95	50	1.20	5.00	9.22	0.500	6.9°	2	●
108	1.20	3.00	1.10	50	1.44	6.00	9.94	0.600	5.8°	2	●
120	1.50	3.00	1.40	50	1.80	7.50	10.88	0.750	4.4°	2	●
132	1.80	3.00	1.70	50	2.16	9.00	11.82	0.900	3.3°	2	●
140	2.00	3.00	1.90	50	2.40	10.00	12.45	1.000	2.6°	2	●
152	2.30	3.00	2.10	50	2.76	11.50	13.57	1.150	1.7°	2	●
160	2.50	3.00	2.30	50	3.00	12.50	14.20	1.250	1.2°	2	●
172	2.80	3.00	2.60	50	3.36	14.00	15.14	1.400	0.5°	2	●
180	3.00	3.00	2.80	50	3.60	14.56	15.00	1.500	0.0°	2	●

Application



Material

Steel
850 - 1100 N/mm²

M
M

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
0.50	2	32	0.018	0.030	0.100	0.24	42440	1530	4.6
0.60	2	34	0.022	0.030	0.120	0.26	41625	1830	6.6
0.80	2	46	0.028	0.040	0.160	0.35	41835	2345	15.0
1.00	2	58	0.036	0.050	0.200	0.44	41960	3020	30.2
1.20	2	69	0.042	0.060	0.240	0.52	42235	3550	51.1
1.50	2	88	0.054	0.080	0.300	0.67	41810	4515	108.4
2.00	2	115	0.072	0.100	0.400	0.87	42075	6060	242.4
2.50	2	146	0.090	0.130	0.500	1.11	41870	7535	489.9
3.00	2	173	0.108	0.150	0.600	1.31	42035	9080	817.2

Steel
1100 - 1300 N/mm²

M
M

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
0.50	2	32	0.016	0.030	0.100	0.24	42440	1360	4.1
0.60	2	34	0.020	0.030	0.120	0.26	41625	1665	6.0
0.80	2	46	0.026	0.040	0.160	0.35	41835	2175	13.9
1.00	2	58	0.032	0.050	0.200	0.44	41960	2685	26.9
1.20	2	69	0.038	0.060	0.240	0.52	42235	3210	46.2
1.50	2	88	0.048	0.080	0.300	0.67	41810	4015	96.3
2.00	2	115	0.064	0.100	0.400	0.87	42075	5385	215.4
2.50	2	146	0.082	0.130	0.500	1.11	41870	6865	446.3
3.00	2	160	0.098	0.150	0.600	1.31	38880	7620	685.8

Stainless steel
[Cr-Ni/1.4301]

M

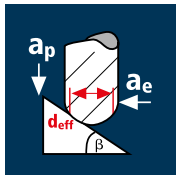
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
0.50	2	32	0.016	0.030	0.100	0.24	42440	1360	4.1
0.60	2	34	0.020	0.030	0.120	0.26	41625	1665	6.0
0.80	2	46	0.026	0.040	0.160	0.35	41835	2175	13.9
1.00	2	58	0.032	0.050	0.200	0.44	41960	2685	26.9
1.20	2	69	0.038	0.060	0.240	0.52	42235	3210	46.2
1.50	2	80	0.048	0.080	0.300	0.67	38005	3650	87.6
2.00	2	80	0.064	0.100	0.400	0.87	29270	3745	149.9
2.50	2	80	0.082	0.130	0.500	1.11	22940	3760	244.6
3.00	2	80	0.098	0.150	0.600	1.31	19440	3810	342.9

Titanium alloys
up to 300 HB
[Ti5Al2.5Sn]

M

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
0.50	2	32	0.012	0.030	0.100	0.24	42440	1020	3.1
0.60	2	34	0.016	0.030	0.120	0.26	41625	1330	4.8
0.80	2	46	0.020	0.040	0.160	0.35	41835	1675	10.7
1.00	2	58	0.026	0.050	0.200	0.44	41960	2180	21.8
1.20	2	60	0.030	0.060	0.240	0.52	36730	2205	31.7
1.50	2	60	0.038	0.080	0.300	0.67	28505	2165	52.0
2.00	2	60	0.050	0.100	0.400	0.87	21950	2195	87.8
2.50	2	60	0.064	0.130	0.500	1.11	17205	2200	143.2
3.00	2	60	0.076	0.150	0.600	1.31	14580	2215	199.4

Application



Material

Steel
850 - 1100 N/mm²

M
M

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.50	2	61	0.014	0.020	0.020	0.46	42210	1180	45°
0.60	2	73	0.016	0.022	0.022	0.55	42250	1350	45°
0.80	2	98	0.018	0.030	0.030	0.74	42155	1520	45°
1.00	2	121	0.022	0.038	0.038	0.92	41865	1840	45°
1.20	2	146	0.024	0.046	0.046	1.11	41870	2010	45°
1.50	2	183	0.028	0.058	0.058	1.39	41905	2345	45°
2.00	2	244	0.030	0.076	0.076	1.85	41980	2520	45°
2.50	2	300	0.032	0.096	0.096	2.31	41340	2645	45°
3.00	2	300	0.036	0.114	0.114	2.77	34475	2480	45°

Steel
1100 - 1300 N/mm²

M
M

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.50	2	61	0.012	0.020	0.020	0.46	42210	1015	45°
0.60	2	73	0.014	0.022	0.022	0.55	42250	1185	45°
0.80	2	98	0.016	0.030	0.030	0.74	42155	1350	45°
1.00	2	121	0.020	0.038	0.038	0.92	41865	1675	45°
1.20	2	146	0.022	0.046	0.046	1.11	41870	1840	45°
1.50	2	183	0.026	0.058	0.058	1.39	41905	2180	45°
2.00	2	244	0.028	0.076	0.076	1.85	41980	2350	45°
2.50	2	250	0.028	0.096	0.096	2.31	34450	1930	45°
3.00	2	250	0.032	0.114	0.114	2.77	28730	1840	45°

Stainless steel
[Cr-Ni/1.4301]

M

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.50	2	61	0.012	0.020	0.020	0.46	42210	1015	45°
0.60	2	73	0.012	0.022	0.022	0.55	42250	1015	45°
0.80	2	98	0.014	0.030	0.030	0.74	42155	1180	45°
1.00	2	120	0.018	0.038	0.038	0.92	41520	1495	45°
1.20	2	120	0.020	0.046	0.046	1.11	34410	1375	45°
1.50	2	120	0.022	0.058	0.058	1.39	27480	1210	45°
2.00	2	120	0.024	0.076	0.076	1.85	20645	990	45°
2.50	2	120	0.026	0.096	0.096	2.31	16535	860	45°
3.00	2	120	0.028	0.114	0.114	2.77	13790	770	45°

Titanium alloys
up to 300 HB
[Ti5Al2.5Sn]

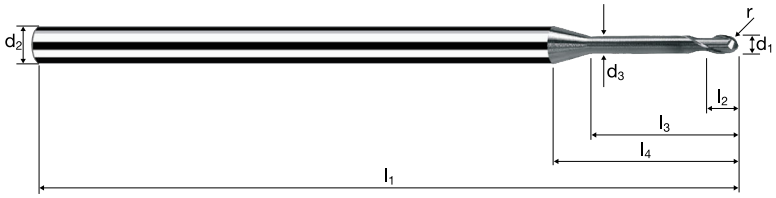
M

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.50	2	61	0.010	0.020	0.020	0.46	42210	845	45°
0.60	2	73	0.012	0.022	0.022	0.55	42250	1015	45°
0.80	2	98	0.012	0.030	0.030	0.74	42155	1010	45°
1.00	2	100	0.016	0.038	0.038	0.92	34600	1105	45°
1.20	2	100	0.016	0.046	0.046	1.11	28675	920	45°
1.50	2	100	0.020	0.058	0.058	1.39	22900	915	45°
2.00	2	100	0.022	0.076	0.076	1.85	17205	755	45°
2.50	2	100	0.022	0.096	0.096	2.31	13780	605	45°
3.00	2	100	0.026	0.114	0.114	2.77	11490	600	45°

Ball nose end mills Microcut-B8

Shank ø 3mm, cylindrical neck, 8xd

HM MG10	λ 30° γ 5°

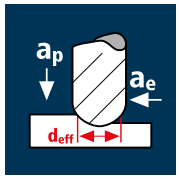


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5786** ø-Code **050**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	MICRO M5786
050	0.50	3.00	0.45	40	0.60	4.00	9.15	0.250	8.4°	2	●
060	0.60	3.00	0.55	40	0.72	4.80	9.77	0.300	7.6°	2	●
080	0.80	3.00	0.75	40	0.96	6.40	10.99	0.400	6.2°	2	●
100	1.00	3.00	0.95	50	1.20	8.00	12.22	0.500	5.1°	2	●
108	1.20	3.00	1.10	50	1.44	9.60	13.54	0.600	4.2°	2	●
120	1.50	3.00	1.40	60	1.80	12.00	15.38	0.750	3.1°	2	●
140	2.00	3.00	1.90	60	2.40	16.00	18.45	1.000	1.7°	2	●
160	2.50	3.00	2.30	60	3.00	20.00	21.70	1.250	0.8°	2	●
180	3.00	3.00	2.80	60	3.60	23.56	24.00	1.500	0.0°	2	●

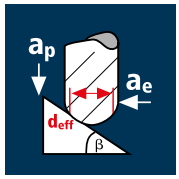
Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Steel 850 - 1100 N/mm²									
0.50	2	26	0.018	0.020	0.080	0.20	41380	1490	2.4
0.60	2	29	0.022	0.020	0.090	0.22	41960	1845	3.3
0.80	2	40	0.028	0.030	0.120	0.30	42440	2375	8.6
1.00	2	51	0.036	0.040	0.150	0.39	41625	2995	18.0
1.20	2	63	0.042	0.050	0.180	0.48	41780	3510	31.6
1.50	2	78	0.054	0.060	0.230	0.59	42080	4545	62.7
2.00	2	103	0.072	0.080	0.300	0.78	42035	6055	145.3
2.50	2	129	0.090	0.100	0.380	0.98	41900	7540	286.6
3.00	2	156	0.108	0.120	0.450	1.18	42080	9090	490.8
Steel 1100 - 1300 N/mm²									
0.50	2	26	0.016	0.020	0.080	0.20	41380	1325	2.1
0.60	2	29	0.020	0.020	0.090	0.22	41960	1680	3.0
0.80	2	40	0.026	0.030	0.120	0.30	42440	2205	7.9
1.00	2	51	0.032	0.040	0.150	0.39	41625	2665	16.0
1.20	2	63	0.038	0.050	0.180	0.48	41780	3175	28.6
1.50	2	78	0.048	0.060	0.230	0.59	42080	4040	55.7
2.00	2	103	0.064	0.080	0.300	0.78	42035	5380	129.1
2.50	2	129	0.082	0.100	0.380	0.98	41900	6870	261.1
3.00	2	156	0.098	0.120	0.450	1.18	42080	8250	445.4
Stainless steel [Cr-Ni/1.4301]									
0.50	2	26	0.016	0.020	0.080	0.20	41380	1325	2.1
0.60	2	29	0.020	0.020	0.090	0.22	41960	1680	3.0
0.80	2	40	0.026	0.030	0.120	0.30	42440	2205	7.9
1.00	2	51	0.032	0.040	0.150	0.39	41625	2665	16.0
1.20	2	63	0.038	0.050	0.180	0.48	41780	3175	28.6
1.50	2	78	0.048	0.060	0.230	0.59	42080	4040	55.7
2.00	2	80	0.064	0.080	0.300	0.78	32645	4180	100.3
2.50	2	80	0.082	0.100	0.380	0.98	25985	4260	161.9
3.00	2	80	0.098	0.120	0.450	1.18	21580	4230	228.4
Titanium alloys up to 300 HB [Ti5Al2.5Sn]									
0.50	2	26	0.012	0.020	0.080	0.20	41380	995	1.6
0.60	2	29	0.016	0.020	0.090	0.22	41960	1345	2.4
0.80	2	40	0.020	0.030	0.120	0.30	42440	1700	6.1
1.00	2	51	0.026	0.040	0.150	0.39	41625	2165	13.0
1.20	2	60	0.030	0.050	0.180	0.48	39790	2385	21.5
1.50	2	60	0.038	0.060	0.230	0.59	32370	2460	34.0
2.00	2	60	0.050	0.080	0.300	0.78	24485	2450	58.8
2.50	2	60	0.064	0.100	0.380	0.98	19490	2495	94.8
3.00	2	60	0.076	0.120	0.450	1.18	16185	2460	132.8

Application



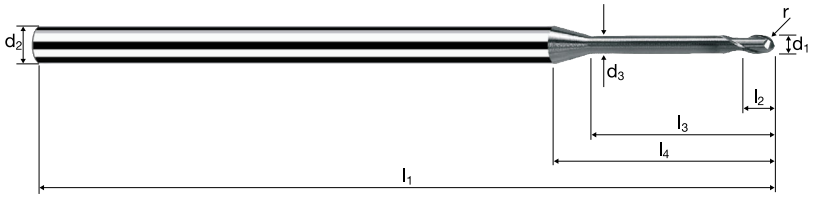
Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²									
0.50	2	61	0.012	0.018	0.018	0.46	42210	1015	45°
0.60	2	73	0.014	0.022	0.022	0.55	42250	1185	45°
0.80	2	96	0.016	0.028	0.028	0.73	41860	1340	45°
1.00	2	121	0.020	0.036	0.036	0.92	41865	1675	45°
1.20	2	145	0.022	0.042	0.042	1.10	41960	1845	45°
1.50	2	182	0.024	0.052	0.052	1.38	41980	2015	45°
2.00	2	243	0.026	0.070	0.070	1.84	42040	2185	45°
2.50	2	300	0.028	0.088	0.088	2.29	41700	2335	45°
3.00	2	300	0.032	0.106	0.106	2.75	34725	2220	45°
Steel 1100 - 1300 N/mm²									
0.50	2	57	0.010	0.008	0.008	0.43	42195	845	45°
0.60	2	71	0.012	0.018	0.018	0.54	41850	1005	45°
0.80	2	96	0.014	0.028	0.028	0.73	41860	1170	45°
1.00	2	121	0.018	0.036	0.036	0.92	41865	1505	45°
1.20	2	145	0.020	0.042	0.042	1.10	41960	1680	45°
1.50	2	182	0.022	0.052	0.052	1.38	41980	1845	45°
2.00	2	243	0.024	0.070	0.070	1.84	42040	2020	45°
2.50	2	250	0.026	0.088	0.088	2.29	34750	1805	45°
3.00	2	250	0.028	0.106	0.106	2.75	28935	1620	45°
Stainless steel [Cr-Ni/1.4301]									
0.50	2	57	0.010	0.008	0.008	0.43	42195	845	45°
0.60	2	71	0.012	0.018	0.018	0.54	41850	1005	45°
0.80	2	96	0.012	0.028	0.028	0.73	41860	1005	45°
1.00	2	120	0.016	0.036	0.036	0.92	41520	1330	45°
1.20	2	120	0.018	0.042	0.042	1.10	34725	1250	45°
1.50	2	120	0.020	0.052	0.052	1.38	27680	1105	45°
2.00	2	120	0.020	0.070	0.070	1.84	20760	830	45°
2.50	2	120	0.022	0.088	0.088	2.29	16680	735	45°
3.00	2	120	0.026	0.106	0.106	2.75	13890	720	45°
Titanium alloys up to 300 HB [Ti5Al2.5Sn]									
0.50	2	57	0.008	0.008	0.008	0.43	42195	675	45°
0.60	2	71	0.010	0.018	0.018	0.54	41850	835	45°
0.80	2	96	0.012	0.028	0.028	0.73	41860	1005	45°
1.00	2	100	0.014	0.036	0.036	0.92	34600	970	45°
1.20	2	100	0.016	0.042	0.042	1.10	28935	925	45°
1.50	2	100	0.016	0.052	0.052	1.38	23065	740	45°
2.00	2	100	0.018	0.070	0.070	1.84	17300	625	45°
2.50	2	100	0.020	0.088	0.088	2.29	13900	555	45°
3.00	2	100	0.022	0.106	0.106	2.75	11575	510	45°

Ball nose end mills Microcut-B10

Shank ø 3mm, cylindrical neck, 10xd

HM MG10	λ 30° γ 5°

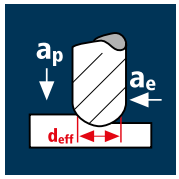


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5787** ø-Code **050**

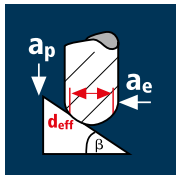
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	MICRO M5787
050	0.50	3.00	0.45	40	0.60	5.00	10.15	0.250	7.5°	2	●
060	0.60	3.00	0.55	40	0.72	6.00	10.97	0.300	6.7°	2	●
080	0.80	3.00	0.75	40	0.96	8.00	12.59	0.400	5.4°	2	●
100	1.00	3.00	0.95	50	1.20	10.00	14.22	0.500	4.3°	2	●
108	1.20	3.00	1.10	50	1.44	12.00	15.94	0.600	3.5°	2	●
120	1.50	3.00	1.40	60	1.80	15.00	18.38	0.750	2.6°	2	●
140	2.00	3.00	1.90	60	2.40	20.00	22.45	1.000	1.4°	2	●
160	2.50	3.00	2.30	60	3.00	25.00	26.70	1.250	0.6°	2	●
180	3.00	3.00	2.80	60	3.60	29.56	30.00	1.500	0.0°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Steel 850 - 1100 N/mm²	1.00	2	45	0.028	0.030	0.120	0.34	42130	2360	8.5
	1.20	2	57	0.034	0.040	0.140	0.43	42195	2870	16.1
	1.50	2	71	0.042	0.050	0.180	0.54	41850	3515	31.6
	2.00	2	90	0.058	0.060	0.240	0.68	42130	4885	70.4
	2.50	2	116	0.072	0.080	0.300	0.88	41960	6040	145.0
	3.00	2	135	0.086	0.090	0.360	1.02	42130	7245	234.8
Steel 1100 - 1300 N/mm²	1.00	2	45	0.026	0.030	0.120	0.34	42130	2190	7.9
	1.20	2	57	0.030	0.040	0.140	0.43	42195	2530	14.2
	1.50	2	71	0.038	0.050	0.180	0.54	41850	3180	28.6
	2.00	2	90	0.052	0.060	0.240	0.68	42130	4380	63.1
	2.50	2	116	0.064	0.080	0.300	0.88	41960	5370	128.9
	3.00	2	135	0.078	0.090	0.360	1.02	42130	6570	212.9
Stainless steel [Cr-Ni/1.4301]	1.00	2	45	0.022	0.030	0.120	0.34	42130	1855	6.7
	1.20	2	57	0.028	0.040	0.140	0.43	42195	2365	13.2
	1.50	2	71	0.034	0.050	0.180	0.54	41850	2845	25.6
	2.00	2	80	0.046	0.060	0.240	0.68	37450	3445	49.6
	2.50	2	80	0.058	0.080	0.300	0.88	28935	3355	80.6
	3.00	2	80	0.068	0.090	0.360	1.02	24965	3395	110.0
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	45	0.020	0.030	0.120	0.34	42130	1685	6.1
	1.20	2	57	0.024	0.040	0.140	0.43	42195	2025	11.3
	1.50	2	60	0.030	0.050	0.180	0.54	35370	2120	19.1
	2.00	2	60	0.040	0.060	0.240	0.68	28085	2245	32.4
	2.50	2	60	0.050	0.080	0.300	0.88	21705	2170	52.1
	3.00	2	60	0.060	0.090	0.360	1.02	18725	2245	72.8

Application

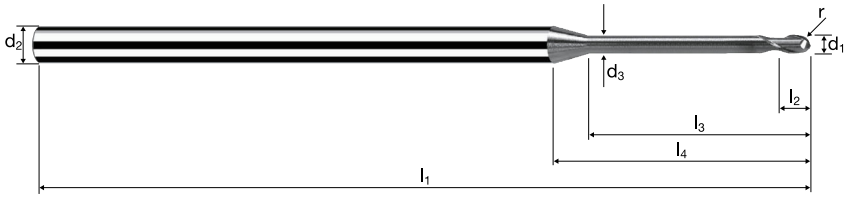


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²	1.00	2	119	0.020	0.028	0.028	0.90	42090	1685	45°
	1.20	2	143	0.022	0.034	0.034	1.08	42145	1855	45°
	1.50	2	178	0.024	0.042	0.042	1.35	41970	2015	45°
	2.00	2	238	0.026	0.056	0.056	1.80	42090	2190	45°
	2.50	2	297	0.028	0.070	0.070	2.25	42015	2355	45°
	3.00	2	300	0.032	0.084	0.084	2.70	35370	2265	45°
Steel 1100 - 1300 N/mm²	1.00	2	119	0.018	0.028	0.028	0.90	42090	1515	45°
	1.20	2	143	0.020	0.034	0.034	1.08	42145	1685	45°
	1.50	2	178	0.022	0.042	0.042	1.35	41970	1845	45°
	2.00	2	238	0.024	0.056	0.056	1.80	42090	2020	45°
	2.50	2	250	0.026	0.070	0.070	2.25	35370	1840	45°
	3.00	2	250	0.028	0.084	0.084	2.70	29475	1650	45°
Stainless steel [Cr-Ni/1.4301]	1.00	2	119	0.016	0.028	0.028	0.90	42090	1345	45°
	1.20	2	120	0.018	0.034	0.034	1.08	35370	1275	45°
	1.50	2	120	0.020	0.042	0.042	1.35	28295	1130	45°
	2.00	2	120	0.020	0.056	0.056	1.80	21220	850	45°
	2.50	2	120	0.022	0.070	0.070	2.25	16975	745	45°
	3.00	2	120	0.026	0.084	0.084	2.70	14145	735	45°
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	100	0.014	0.028	0.028	0.90	35370	990	45°
	1.20	2	100	0.016	0.034	0.034	1.08	29475	945	45°
	1.50	2	100	0.016	0.042	0.042	1.35	23580	755	45°
	2.00	2	100	0.018	0.056	0.056	1.80	17685	635	45°
	2.50	2	100	0.020	0.070	0.070	2.25	14145	565	45°
	3.00	2	100	0.022	0.084	0.084	2.70	11790	520	45°

Ball nose end mills Microcut-B12

Shank ø 3mm, cylindrical neck, 12xd

HM MG10	λ 30° γ 5°

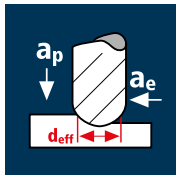


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5791** ø-Code **100**

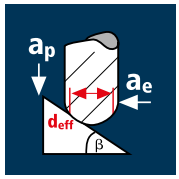
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	MICRO M5791
100	1.00	3.00	0.95	50	1.20	12.00	16.22	0.500	3.8°	2	●
108	1.20	3.00	1.10	60	1.44	14.40	18.34	0.600	3.0°	2	●
120	1.50	3.00	1.40	60	1.80	18.00	21.38	0.750	2.2°	2	●
140	2.00	3.00	1.90	60	2.40	24.00	26.45	1.000	1.2°	2	●
160	2.50	3.00	2.30	70	3.00	30.00	31.70	1.250	0.5°	2	●
180	3.00	3.00	2.80	70	3.60	35.56	36.00	1.500	0.0°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Steel 850 - 1100 N/mm²	1.00	2	45	0.028	0.030	0.100	0.34	42130	2360	7.1
	1.20	2	57	0.034	0.040	0.120	0.43	42195	2870	13.8
	1.50	2	71	0.042	0.050	0.150	0.54	41850	3515	26.4
	2.00	2	90	0.058	0.060	0.200	0.68	42130	4885	58.6
	2.50	2	116	0.072	0.080	0.250	0.88	41960	6040	120.8
	3.00	2	135	0.086	0.090	0.300	1.02	42130	7245	195.6
Steel 1100 - 1300 N/mm²	1.00	2	45	0.026	0.030	0.100	0.34	42130	2190	6.6
	1.20	2	57	0.030	0.040	0.120	0.43	42195	2530	12.2
	1.50	2	71	0.038	0.050	0.150	0.54	41850	3180	23.9
	2.00	2	90	0.052	0.060	0.200	0.68	42130	4380	52.6
	2.50	2	116	0.064	0.080	0.250	0.88	41960	5370	107.4
	3.00	2	120	0.078	0.090	0.300	1.02	37450	5840	157.7
Stainless steel [Cr-Ni/1.4301]	1.00	2	45	0.022	0.030	0.100	0.34	42130	1855	5.6
	1.20	2	57	0.028	0.040	0.120	0.43	42195	2365	11.3
	1.50	2	70	0.034	0.050	0.150	0.54	41260	2805	21.0
	2.00	2	70	0.046	0.060	0.200	0.68	32765	3015	36.2
	2.50	2	70	0.058	0.080	0.250	0.88	25320	2935	58.7
	3.00	2	70	0.068	0.090	0.300	1.02	21845	2970	80.2
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	45	0.020	0.030	0.100	0.34	42130	1685	5.1
	1.20	2	50	0.024	0.040	0.120	0.43	37015	1775	8.5
	1.50	2	50	0.030	0.050	0.150	0.54	29475	1770	13.3
	2.00	2	50	0.040	0.060	0.200	0.68	23405	1870	22.5
	2.50	2	50	0.050	0.080	0.250	0.88	18085	1810	36.2
	3.00	2	50	0.060	0.090	0.300	1.02	15605	1870	50.6

Application

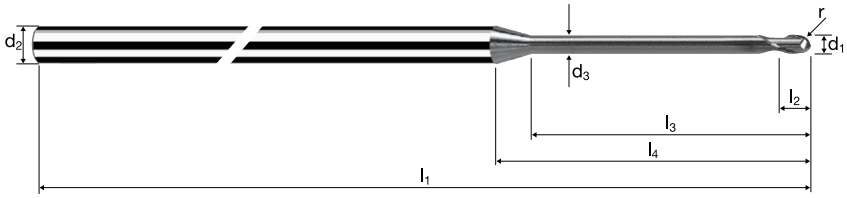


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²	1.00	2	119	0.020	0.026	0.026	0.90	42090	1685	45°
	1.20	2	143	0.022	0.032	0.032	1.08	42145	1855	45°
	1.50	2	178	0.024	0.040	0.040	1.35	41970	2015	45°
	2.00	2	236	0.026	0.052	0.052	1.79	41965	2180	45°
	2.50	2	250	0.028	0.066	0.066	2.24	35525	1990	45°
	3.00	2	250	0.032	0.078	0.078	2.69	29585	1895	45°
Steel 1100 - 1300 N/mm²	1.00	2	119	0.018	0.026	0.026	0.90	42090	1515	45°
	1.20	2	143	0.020	0.032	0.032	1.08	42145	1685	45°
	1.50	2	178	0.022	0.040	0.040	1.35	41970	1845	45°
	2.00	2	200	0.024	0.052	0.052	1.79	35565	1705	45°
	2.50	2	200	0.026	0.066	0.066	2.24	28420	1480	45°
	3.00	2	200	0.028	0.078	0.078	2.69	23665	1325	45°
Stainless steel [Cr-Ni/1.4301]	1.00	2	100	0.016	0.026	0.026	0.90	35370	1130	45°
	1.20	2	100	0.018	0.032	0.032	1.08	29475	1060	45°
	1.50	2	100	0.020	0.040	0.040	1.35	23580	945	45°
	2.00	2	100	0.020	0.052	0.052	1.79	17785	710	45°
	2.50	2	100	0.022	0.066	0.066	2.24	14210	625	45°
	3.00	2	100	0.026	0.078	0.078	2.69	11835	615	45°
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	80	0.014	0.026	0.026	0.90	28295	790	45°
	1.20	2	80	0.016	0.032	0.032	1.08	23580	755	45°
	1.50	2	80	0.016	0.040	0.040	1.35	18865	605	45°
	2.00	2	80	0.018	0.052	0.052	1.79	14225	510	45°
	2.50	2	80	0.020	0.066	0.066	2.24	11370	455	45°
	3.00	2	80	0.022	0.078	0.078	2.69	9465	415	45°

Ball nose end mills Microcut-B15

Shank ø 3mm, cylindrical neck, 15xd

HM MG10	λ 30° γ 5°

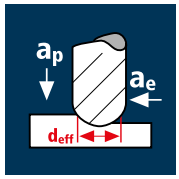


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5793** ø-Code **100**

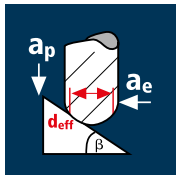
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	MICRO M5793
100	1.00	3.00	0.95	60	1.20	15.00	19.22	0.500	3.2°	2	●
108	1.20	3.00	1.10	60	1.44	18.00	21.94	0.600	2.5°	2	●
120	1.50	3.00	1.40	70	1.80	22.50	25.88	0.750	1.8°	2	●
140	2.00	3.00	1.90	70	2.40	30.00	32.45	1.000	1.0°	2	●
160	2.50	3.00	2.30	70	3.00	37.50	39.20	1.250	0.4°	2	●
180	3.00	3.00	2.80	80	3.60	44.56	45.00	1.500	0.0°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Steel 850 - 1100 N/mm²	1.00	2	45	0.028	0.030	0.080	0.34	42130	2360	5.7
	1.20	2	57	0.034	0.040	0.100	0.43	42195	2870	11.5
	1.50	2	71	0.042	0.050	0.120	0.54	41850	3515	21.1
	2.00	2	90	0.058	0.060	0.160	0.68	42130	4885	46.9
	2.50	2	116	0.072	0.080	0.200	0.88	41960	6040	96.7
	3.00	2	135	0.086	0.090	0.240	1.02	42130	7245	156.5
Steel 1100 - 1300 N/mm²	1.00	2	45	0.026	0.030	0.080	0.34	42130	2190	5.3
	1.20	2	57	0.030	0.040	0.100	0.43	42195	2530	10.1
	1.50	2	71	0.038	0.050	0.120	0.54	41850	3180	19.1
	2.00	2	90	0.052	0.060	0.160	0.68	42130	4380	42.1
	2.50	2	116	0.064	0.080	0.200	0.88	41960	5370	85.9
	3.00	2	120	0.078	0.090	0.240	1.02	37450	5840	126.2
Stainless steel [Cr-Ni/1.4301]	1.00	2	45	0.022	0.030	0.080	0.34	42130	1855	4.4
	1.20	2	57	0.028	0.040	0.100	0.43	42195	2365	9.5
	1.50	2	70	0.034	0.050	0.120	0.54	41260	2805	16.8
	2.00	2	70	0.046	0.060	0.160	0.68	32765	3015	28.9
	2.50	2	70	0.058	0.080	0.200	0.88	25320	2935	47.0
	3.00	2	70	0.068	0.090	0.240	1.02	21845	2970	64.2
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	45	0.020	0.030	0.080	0.34	42130	1685	4.0
	1.20	2	50	0.024	0.040	0.100	0.43	37015	1775	7.1
	1.50	2	50	0.030	0.050	0.120	0.54	29475	1770	10.6
	2.00	2	50	0.040	0.060	0.160	0.68	23405	1870	18.0
	2.50	2	50	0.050	0.080	0.200	0.88	18085	1810	28.9
	3.00	2	50	0.060	0.090	0.240	1.02	15605	1870	40.4

Application

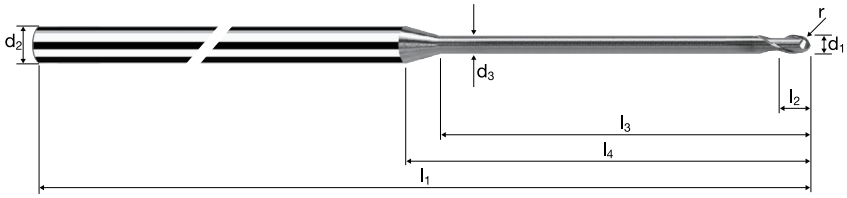


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²	1.00	2	116	0.020	0.022	0.022	0.88	41960	1680	45°
	1.20	2	140	0.022	0.026	0.026	1.06	42040	1850	45°
	1.50	2	175	0.024	0.034	0.034	1.33	41885	2010	45°
	2.00	2	234	0.026	0.044	0.044	1.77	42080	2190	45°
	2.50	2	250	0.028	0.056	0.056	2.21	36010	2015	45°
	3.00	2	250	0.032	0.066	0.066	2.65	30030	1920	45°
Steel 1100 - 1300 N/mm²	1.00	2	116	0.018	0.022	0.022	0.88	41960	1510	45°
	1.20	2	140	0.020	0.026	0.026	1.06	42040	1680	45°
	1.50	2	175	0.022	0.034	0.034	1.33	41885	1845	45°
	2.00	2	200	0.024	0.044	0.044	1.77	35965	1725	45°
	2.50	2	200	0.026	0.056	0.056	2.21	28805	1500	45°
	3.00	2	200	0.028	0.066	0.066	2.65	24025	1345	45°
Stainless steel [Cr-Ni/1.4301]	1.00	2	100	0.016	0.022	0.022	0.88	36170	1155	45°
	1.20	2	100	0.018	0.026	0.026	1.06	30030	1080	45°
	1.50	2	100	0.020	0.034	0.034	1.33	23935	955	45°
	2.00	2	100	0.020	0.044	0.044	1.77	17985	720	45°
	2.50	2	100	0.022	0.056	0.056	2.21	14405	635	45°
	3.00	2	100	0.026	0.066	0.066	2.65	12010	625	45°
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	80	0.014	0.022	0.022	0.88	28935	810	45°
	1.20	2	80	0.016	0.026	0.026	1.06	24025	770	45°
	1.50	2	80	0.016	0.034	0.034	1.33	19145	615	45°
	2.00	2	80	0.018	0.044	0.044	1.77	14385	520	45°
	2.50	2	80	0.020	0.056	0.056	2.21	11525	460	45°
	3.00	2	80	0.022	0.066	0.066	2.65	9610	425	45°

Ball nose end mills Microcut-B20

Shank ø 3mm, cylindrical neck, 20xd

HM MG10	λ 30° γ 5°

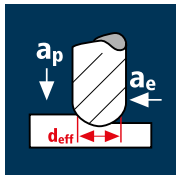


Rm < 850	Rm 850-1100	Rm 1100-1300							Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **15795** ø-Code **100**

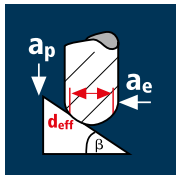
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	MICRO M15795
100	1.00	3.00	0.95	60	1.20	20.00	24.22	0.500	2.5°	2	●
108	1.20	3.00	1.10	60	1.44	24.00	27.94	0.600	2.0°	2	●
120	1.50	3.00	1.40	70	1.80	30.00	33.38	0.750	1.4°	2	●
140	2.00	3.00	1.90	80	2.40	40.00	42.45	1.000	0.8°	2	●
160	2.50	3.00	2.30	80	3.00	50.00	51.70	1.250	0.3°	2	●
180	3.00	3.00	2.80	90	3.60	59.56	60.00	1.500	0.0°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Steel < 850 N/mm²	0.50	2	32	0.014	0.030	0.100	0.24	42440	1190	3.6
	0.60	2	40	0.020	0.040	0.140	0.30	42440	1700	9.5
	0.80	2	51	0.022	0.050	0.160	0.39	41625	1830	14.7
	1.00	2	62	0.028	0.060	0.200	0.47	41990	2350	28.2
	1.20	2	74	0.034	0.070	0.240	0.56	42060	2860	48.1
	1.50	2	94	0.042	0.090	0.300	0.71	42140	3540	95.6
	2.00	2	120	0.058	0.120	0.400	0.95	40210	4665	223.9
	2.50	2	120	0.072	0.150	0.500	1.19	32100	4620	346.7
	3.00	2	120	0.086	0.180	0.600	1.42	26900	4625	499.7
Steel 850 - 1100 N/mm²	0.50	2	32	0.012	0.030	0.100	0.24	42440	1020	3.1
	0.60	2	40	0.016	0.040	0.120	0.30	42440	1360	6.5
	0.80	2	51	0.020	0.050	0.160	0.39	41625	1665	13.3
	1.00	2	62	0.026	0.060	0.200	0.47	41990	2185	26.2
	1.20	2	74	0.030	0.070	0.240	0.56	42060	2525	42.4
	1.50	2	80	0.038	0.090	0.300	0.71	35865	2725	73.6
	2.00	2	80	0.052	0.120	0.400	0.95	26805	2790	133.8
	2.50	2	80	0.064	0.150	0.500	1.19	21400	2740	205.4
	3.00	2	80	0.078	0.180	0.600	1.42	17935	2800	302.1
Unalloyed copper	0.50	2	32	0.016	0.030	0.100	0.24	42440	1360	4.1
	0.60	2	40	0.020	0.040	0.120	0.30	42440	1700	8.1
	0.80	2	51	0.024	0.050	0.160	0.39	41625	2000	16.0
	1.00	2	62	0.030	0.060	0.200	0.47	41990	2520	30.2
	1.20	2	74	0.038	0.070	0.240	0.56	42060	3195	53.7
	1.50	2	94	0.046	0.090	0.300	0.71	42140	3875	104.7
	2.00	2	125	0.064	0.120	0.400	0.95	41885	5360	257.3
	2.50	2	157	0.080	0.150	0.500	1.19	41995	6720	503.9
	3.00	2	187	0.094	0.180	0.600	1.42	41920	7880	851.1
Wrought aluminium Si < 6%	0.50	2	32	0.016	0.030	0.100	0.24	42440	1360	4.1
	0.60	2	40	0.020	0.040	0.120	0.30	42440	1700	8.1
	0.80	2	51	0.024	0.050	0.160	0.39	41625	2000	16.0
	1.00	2	62	0.030	0.060	0.200	0.47	41990	2520	30.2
	1.20	2	74	0.038	0.070	0.240	0.56	42060	3195	53.7
	1.50	2	94	0.046	0.090	0.300	0.71	42140	3875	104.7
	2.00	2	125	0.064	0.120	0.400	0.95	41885	5360	257.3
	2.50	2	157	0.080	0.150	0.500	1.19	41995	6720	503.9
	3.00	2	187	0.094	0.180	0.600	1.42	41920	7880	851.1

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Steel < 850 N/mm²	0.50	2	61	0.016	0.020	0.020	0.46	42210	1350	45°
	0.60	2	74	0.018	0.028	0.028	0.56	42060	1515	45°
	0.80	2	98	0.020	0.032	0.032	0.74	42155	1685	45°
	1.00	2	123	0.022	0.040	0.040	0.93	42100	1850	45°
	1.20	2	146	0.024	0.048	0.048	1.11	41870	2010	45°
	1.50	2	183	0.028	0.060	0.060	1.39	41905	2345	45°
	2.00	2	220	0.030	0.080	0.080	1.86	37650	2260	45°
	2.50	2	220	0.032	0.100	0.100	2.32	30185	1930	45°
	3.00	2	220	0.036	0.120	0.120	2.78	25190	1815	45°
Steel 850 - 1100 N/mm²	0.50	2	61	0.014	0.020	0.020	0.46	42210	1180	45°
	0.60	2	74	0.016	0.024	0.024	0.56	42060	1345	45°
	0.80	2	98	0.018	0.032	0.032	0.74	42155	1520	45°
	1.00	2	123	0.020	0.040	0.040	0.93	42100	1685	45°
	1.20	2	146	0.022	0.048	0.048	1.11	41870	1840	45°
	1.50	2	150	0.026	0.060	0.060	1.39	34350	1785	45°
	2.00	2	150	0.028	0.080	0.080	1.86	25670	1440	45°
	2.50	2	150	0.028	0.100	0.100	2.32	20580	1155	45°
	3.00	2	150	0.032	0.120	0.120	2.78	17175	1100	45°
Unalloyed copper	0.50	2	61	0.018	0.020	0.020	0.46	42210	1520	45°
	0.60	2	74	0.020	0.024	0.024	0.56	42060	1680	45°
	0.80	2	98	0.022	0.032	0.032	0.74	42155	1855	45°
	1.00	2	123	0.024	0.040	0.040	0.93	42100	2020	45°
	1.20	2	146	0.026	0.048	0.048	1.11	41870	2175	45°
	1.50	2	183	0.030	0.060	0.060	1.39	41905	2515	45°
	2.00	2	245	0.034	0.080	0.080	1.86	41930	2850	45°
	2.50	2	306	0.036	0.100	0.100	2.32	41985	3025	45°
	3.00	2	367	0.040	0.120	0.120	2.78	42020	3360	45°
Wrought aluminium Si < 6%	0.50	2	61	0.018	0.020	0.020	0.46	42210	1520	45°
	0.60	2	74	0.020	0.024	0.024	0.56	42060	1680	45°
	0.80	2	98	0.022	0.032	0.032	0.74	42155	1855	45°
	1.00	2	123	0.024	0.040	0.040	0.93	42100	2020	45°
	1.20	2	146	0.026	0.048	0.048	1.11	41870	2175	45°
	1.50	2	183	0.030	0.060	0.060	1.39	41905	2515	45°
	2.00	2	245	0.034	0.080	0.080	1.86	41930	2850	45°
	2.50	2	306	0.036	0.100	0.100	2.32	41985	3025	45°
	3.00	2	367	0.040	0.120	0.120	2.78	42020	3360	45°

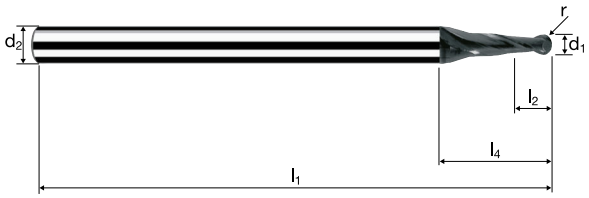
Ball nose end mills

Shank ø 3mm, 3xd

Favora® F

II

HM MG10	λ 30° γ 10°

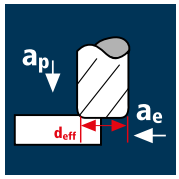


Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	Copper Aluminium

Example: **Order-N°.** Coating **M** Article-N°. **45785** ø-Code **030**

Ø Code	d_1 ±0.01	d_2 h6	l_1	l_2	l_4	r ±0.01	α	z	MICRO M45785
030	0.30	3.00	40	1.00	9.00	0.150	9.0°	2	●
040	0.40	3.00	40	1.00	8.70	0.200	8.9°	2	●
050	0.50	3.00	40	1.50	8.90	0.250	8.4°	2	●
060	0.60	3.00	40	1.50	8.60	0.300	8.3°	2	●
070	0.70	3.00	40	2.00	8.80	0.350	7.8°	2	●
080	0.80	3.00	40	2.00	8.60	0.400	7.7°	2	●
090	0.90	3.00	40	2.50	8.80	0.450	7.2°	2	●
100	1.00	3.00	40	3.00	9.00	0.500	6.7°	2	●
108	1.20	3.00	40	4.00	9.50	0.600	5.7°	2	●
120	1.50	3.00	40	4.00	8.60	0.750	5.3°	2	●
130	1.80	3.00	40	5.00	7.30	0.900	5.2°	2	●
140	2.00	3.00	40	5.00	7.00	1.000	4.6°	2	●
160	2.50	3.00	40	7.00	8.30	1.250	2.0°	2	●
180	3.00	4.00	44	10.00	12.40	1.500	2.6°	2	●

Application



Material

Hardened tool steel 42 - 48 HRC

X X

Hardened tool steel 48 - 52 HRC

X

Hardened tool steel 52 - 56 HRC

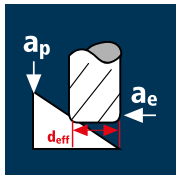
X

Hardened tool steel 56 - 60 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	r [mm]
0.20	2	22	0.004	0.016	0.040	0.17	41195	310	0.05
0.40	2	51	0.006	0.032	0.080	0.39	41625	525	0.05
0.50	2	65	0.006	0.032	0.080	0.49	42225	530	0.05
0.60	2	75	0.010	0.048	0.120	0.57	41885	845	0.10
0.80	2	104	0.013	0.065	0.160	0.79	41905	1055	0.10
1.00	2	132	0.016	0.081	0.200	1.00	42015	1375	0.10
1.50	2	140	0.024	0.121	0.300	1.47	30315	1450	0.20
2.00	2	140	0.032	0.162	0.400	1.99	22395	1410	0.20
0.20	2	22	0.004	0.016	0.040	0.17	41195	295	0.05
0.40	2	51	0.006	0.032	0.080	0.39	41625	500	0.05
0.50	2	65	0.006	0.032	0.080	0.49	42225	505	0.05
0.60	2	75	0.010	0.048	0.120	0.57	41885	805	0.10
0.80	2	104	0.012	0.065	0.160	0.79	41905	1005	0.10
1.00	2	120	0.016	0.081	0.200	1.00	38195	1190	0.10
1.50	2	120	0.023	0.121	0.300	1.47	25985	1185	0.20
2.00	2	120	0.030	0.162	0.400	1.99	19195	1150	0.20
0.20	2	22	0.003	0.016	0.040	0.17	41195	245	0.05
0.40	2	51	0.005	0.032	0.080	0.39	41625	415	0.05
0.50	2	65	0.005	0.032	0.080	0.49	42225	420	0.05
0.60	2	75	0.008	0.048	0.120	0.57	41885	670	0.10
0.80	2	100	0.010	0.065	0.160	0.79	40290	805	0.10
1.00	2	100	0.013	0.081	0.200	1.00	31830	830	0.10
1.50	2	100	0.019	0.121	0.300	1.47	21655	825	0.20
2.00	2	100	0.025	0.162	0.400	1.99	15995	800	0.20
0.20	2	22	0.003	0.016	0.040	0.17	41195	220	0.05
0.40	2	51	0.004	0.032	0.080	0.39	41625	375	0.05
0.50	2	60	0.004	0.032	0.080	0.49	38975	350	0.05
0.60	2	60	0.007	0.048	0.120	0.57	33505	480	0.10
0.80	2	60	0.009	0.065	0.160	0.79	24175	435	0.10
1.00	2	60	0.012	0.081	0.200	1.00	19100	445	0.10
1.50	2	60	0.017	0.121	0.300	1.47	12990	445	0.20
2.00	2	60	0.023	0.162	0.400	1.99	9595	430	0.20

Application



Material

Hardened tool steel 42 - 48 HRC

X X

Hardened tool steel 48 - 52 HRC

X

Hardened tool steel 52 - 56 HRC

X

Hardened tool steel 56 - 60 HRC

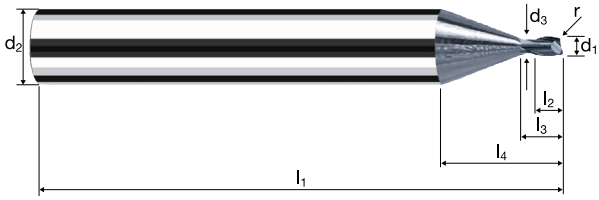
X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	β [°]
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.016	0.016	0.016	0.40	42175	1350	45°
0.50	2	66	0.020	0.022	0.022	0.50	42015	1680	45°
0.60	2	79	0.020	0.026	0.026	0.60	41910	1675	45°
0.80	2	106	0.022	0.034	0.034	0.80	42175	1855	45°
1.00	2	132	0.028	0.042	0.042	1.00	42015	2355	45°
1.50	2	198	0.034	0.064	0.064	1.50	42015	2855	45°
2.00	2	263	0.038	0.084	0.084	1.99	42070	3195	45°
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.016	0.016	0.016	0.40	42175	1350	45°
0.50	2	66	0.020	0.022	0.022	0.50	42015	1680	45°
0.60	2	79	0.020	0.026	0.026	0.60	41910	1675	45°
0.80	2	106	0.020	0.034	0.034	0.80	42175	1685	45°
1.00	2	132	0.026	0.042	0.042	1.00	42015	2185	45°
1.50	2	198	0.032	0.064	0.064	1.50	42015	2690	45°
2.00	2	250	0.036	0.084	0.084	1.99	39990	2880	45°
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.014	0.016	0.016	0.40	42175	1180	45°
0.50	2	66	0.018	0.022	0.022	0.50	42015	1515	45°
0.60	2	79	0.018	0.026	0.026	0.60	41910	1510	45°
0.80	2	106	0.020	0.034	0.034	0.80	42175	1685	45°
1.00	2	132	0.026	0.042	0.042	1.00	42015	2185	45°
1.50	2	198	0.030	0.064	0.064	1.50	42015	2520	45°
2.00	2	200	0.034	0.084	0.084	1.99	31990	2175	45°
0.20	2	26	0.008	0.008	0.008	0.20	41380	660	45°
0.40	2	53	0.012	0.016	0.016	0.40	42175	1010	45°
0.50	2	66	0.016	0.022	0.022	0.50	42015	1345	45°
0.60	2	79	0.016	0.026	0.026	0.60	41910	1340	45°
0.80	2	106	0.018	0.034	0.034	0.80	42175	1520	45°
1.00	2	132	0.022	0.042	0.042	1.00	42015	1850	45°
1.50	2	150	0.028	0.064	0.064	1.50	31830	1785	45°
2.00	2	150	0.030	0.084	0.084	1.99	23995	1440	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 2xd

HM XA	λ 25° γ -10°

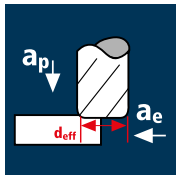


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6531** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6531
020	0.20	6.00	0.18	57	0.20	0.40	17.34	0.050	14.5°	2	●
040	0.40	6.00	0.35	57	0.40	0.80	17.26	0.050	14.0°	2	●
048	0.50	6.00	0.45	57	0.50	1.00	12.01	0.050	13.7°	2	●
042	0.40	6.00	0.35	57	0.40	0.80	17.26	0.100	14.0°	2	●
050	0.50	6.00	0.45	57	0.50	1.00	12.01	0.100	13.8°	2	●
060	0.60	6.00	0.55	57	0.60	1.20	12.03	0.100	13.5°	2	●
080	0.80	6.00	0.75	57	0.80	1.60	12.05	0.100	13.0°	2	●
098	1.00	6.00	0.95	57	1.00	2.00	12.08	0.100	12.5°	2	●
082	0.80	6.00	0.75	57	0.80	1.60	12.05	0.200	13.1°	2	●
100	1.00	6.00	0.95	57	1.00	2.00	12.08	0.200	12.6°	2	●
120	1.50	6.00	1.40	57	1.50	3.00	12.24	0.200	11.2°	2	●
140	2.00	6.00	1.90	57	2.00	4.00	12.31	0.200	9.9°	2	●
101	1.00	6.00	0.95	57	1.00	2.00	12.08	0.300	12.7°	2	●
145	2.00	6.00	1.90	57	2.00	4.00	12.31	0.500	10.2°	2	●

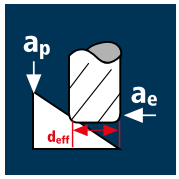
Application



Material

Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	0.20	2	21	0.003	0.011	0.040	0.16	41780	210	0.05
	0.40	2	50	0.005	0.021	0.080	0.38	41885	420	0.05
	0.50	2	58	0.006	0.027	0.100	0.44	41960	530	0.10
	0.80	2	100	0.011	0.043	0.160	0.76	41885	950	0.10
	1.00	2	115	0.014	0.054	0.200	0.87	42075	1165	0.20
	1.50	2	140	0.020	0.080	0.300	1.42	31385	1265	0.20
	2.00	2	140	0.028	0.107	0.400	1.95	22855	1265	0.20
	2.50	2	140	0.034	0.134	0.500	2.48	17970	1225	0.20
	3.00	2	140	0.040	0.161	0.600	2.99	14905	1200	0.20
Hardened tool steel 48 - 52 HRC	0.20	2	21	0.002	0.011	0.040	0.16	41780	200	0.05
	0.40	2	50	0.005	0.021	0.080	0.38	41885	400	0.05
	0.50	2	58	0.006	0.027	0.100	0.44	41960	505	0.10
	0.80	2	100	0.011	0.043	0.160	0.76	41885	905	0.10
	1.00	2	115	0.013	0.054	0.200	0.87	42075	1110	0.20
	1.50	2	120	0.019	0.080	0.300	1.42	26900	1035	0.20
	2.00	2	120	0.026	0.107	0.400	1.95	19590	1035	0.20
	2.50	2	120	0.032	0.134	0.500	2.48	15400	1000	0.20
	3.00	2	120	0.038	0.161	0.600	2.99	12775	980	0.20
Hardened tool steel 52 - 56 HRC	0.20	2	21	0.002	0.011	0.040	0.16	41780	165	0.05
	0.40	2	50	0.004	0.021	0.080	0.38	41885	335	0.05
	0.50	2	58	0.005	0.027	0.100	0.44	41960	420	0.10
	0.80	2	100	0.009	0.043	0.160	0.76	41885	755	0.10
	1.00	2	100	0.011	0.054	0.200	0.87	36585	805	0.20
	1.50	2	100	0.016	0.080	0.300	1.42	22415	715	0.20
	2.00	2	100	0.022	0.107	0.400	1.95	16325	720	0.20
	2.50	2	100	0.027	0.134	0.500	2.48	12835	695	0.20
	3.00	2	100	0.032	0.161	0.600	2.99	10645	680	0.20
Hardened tool steel 56 - 60 HRC	0.20	2	21	0.002	0.011	0.040	0.16	41780	150	0.05
	0.40	2	50	0.004	0.021	0.080	0.38	41885	300	0.05
	0.50	2	58	0.004	0.027	0.100	0.44	41960	380	0.10
	0.80	2	60	0.008	0.043	0.160	0.76	25130	405	0.10
	1.00	2	60	0.010	0.054	0.200	0.87	21950	435	0.20
	1.50	2	60	0.014	0.080	0.300	1.42	13450	385	0.20
	2.00	2	60	0.020	0.107	0.400	1.95	9795	390	0.20
	2.50	2	60	0.024	0.134	0.500	2.48	7700	375	0.20
	3.00	2	60	0.029	0.161	0.600	2.99	6385	370	0.20

Application



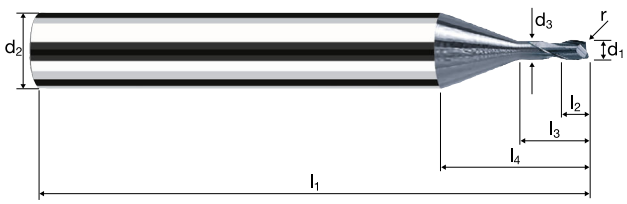
Material

Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
	0.40	2	53	0.016	0.016	0.016	0.40	42175	1350	45°
	0.50	2	66	0.020	0.022	0.022	0.50	42015	1680	45°
	0.80	2	106	0.022	0.034	0.034	0.80	42175	1855	45°
	1.00	2	132	0.028	0.042	0.042	1.00	42015	2355	45°
	1.50	2	198	0.034	0.064	0.064	1.50	42015	2855	45°
	2.00	2	263	0.038	0.084	0.084	1.99	42070	3195	45°
	2.50	2	300	0.040	0.106	0.106	2.48	38505	3080	45°
	3.00	2	300	0.046	0.126	0.126	2.97	32155	2960	45°
Hardened tool steel 48 - 52 HRC	0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
	0.40	2	53	0.016	0.016	0.016	0.40	42175	1350	45°
	0.50	2	66	0.020	0.022	0.022	0.50	42015	1680	45°
	0.80	2	106	0.020	0.034	0.034	0.80	42175	1685	45°
	1.00	2	132	0.026	0.042	0.042	1.00	42015	2185	45°
	1.50	2	198	0.032	0.064	0.064	1.50	42015	2690	45°
	2.00	2	250	0.036	0.084	0.084	1.99	39990	2880	45°
	2.50	2	250	0.038	0.106	0.106	2.48	32090	2440	45°
	3.00	2	250	0.044	0.126	0.126	2.97	26795	2360	45°
Hardened tool steel 52 - 56 HRC	0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
	0.40	2	53	0.014	0.016	0.016	0.40	42175	1180	45°
	0.50	2	66	0.018	0.022	0.022	0.50	42015	1515	45°
	0.80	2	106	0.020	0.034	0.034	0.80	42175	1685	45°
	1.00	2	132	0.026	0.042	0.042	1.00	42015	2185	45°
	1.50	2	198	0.030	0.064	0.064	1.50	42015	2520	45°
	2.00	2	200	0.034	0.084	0.084	1.99	31990	2175	45°
	2.50	2	200	0.036	0.106	0.106	2.48	25670	1850	45°
	3.00	2	200	0.042	0.126	0.126	2.97	21435	1800	45°
Hardened tool steel 56 - 60 HRC	0.20	2	26	0.008	0.008	0.008	0.20	41380	660	45°
	0.40	2	53	0.012	0.016	0.016	0.40	42175	1010	45°
	0.50	2	66	0.016	0.022	0.022	0.50	42015	1345	45°
	0.80	2	106	0.018	0.034	0.034	0.80	42175	1520	45°
	1.00	2	132	0.022	0.042	0.042	1.00	42015	1850	45°
	1.50	2	150	0.028	0.064	0.064	1.50	31830	1785	45°
	2.00	2	150	0.030	0.084	0.084	1.99	23995	1440	45°
	2.50	2	150	0.032	0.106	0.106	2.48	19255	1230	45°
	3.00	2	150	0.036	0.126	0.126	2.97	16075	1155	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 3xd

HM XA	λ 25° γ -10°

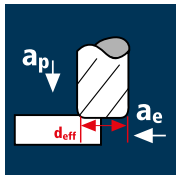


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6532** ø-Code **020**

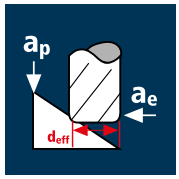
Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6532
020	0.20	6.00	0.18	57	0.20	0.60	17.54	0.050	14.3°	2	●
040	0.40	6.00	0.35	57	0.40	1.20	17.66	0.050	13.5°	2	●
048	0.50	6.00	0.45	57	0.50	1.50	12.51	0.050	13.2°	2	●
042	0.40	6.00	0.35	57	0.40	1.20	17.66	0.100	13.6°	2	●
050	0.50	6.00	0.45	57	0.50	1.50	12.51	0.100	13.2°	2	●
060	0.60	6.00	0.55	57	0.60	1.80	12.63	0.100	12.9°	2	●
080	0.80	6.00	0.75	57	0.80	2.40	12.85	0.100	12.2°	2	●
098	1.00	6.00	0.95	57	1.00	3.00	13.08	0.100	11.5°	2	●
082	0.80	6.00	0.75	57	0.80	2.40	12.85	0.200	12.3°	2	●
100	1.00	6.00	0.95	57	1.00	3.00	13.08	0.200	11.6°	2	●
108	1.20	6.00	1.10	57	1.20	3.60	13.40	0.200	10.9°	2	●
120	1.50	6.00	1.40	57	1.50	4.50	13.74	0.200	10.0°	2	●
140	2.00	6.00	1.90	57	2.00	6.00	14.31	0.200	8.6°	2	●
160	2.50	6.00	2.30	57	2.50	7.50	15.06	0.200	7.2°	2	●
180	3.00	6.00	2.80	57	3.00	9.00	15.63	0.200	6.0°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	1.00	2	98	0.014	0.054	0.200	0.74	42155	1170	0.30
	2.00	2	140	0.028	0.107	0.400	1.62	27510	1525	0.50
	2.50	2	140	0.034	0.134	0.500	2.18	20440	1390	0.50
	3.00	2	140	0.040	0.161	0.600	2.74	16265	1310	0.50
Hardened tool steel 48 - 52 HRC	1.00	2	98	0.013	0.054	0.200	0.74	42155	1115	0.30
	2.00	2	120	0.026	0.107	0.400	1.62	23580	1245	0.50
	2.50	2	120	0.032	0.134	0.500	2.18	17520	1135	0.50
	3.00	2	120	0.038	0.161	0.600	2.74	13940	1070	0.50
Hardened tool steel 52 - 56 HRC	1.00	2	98	0.011	0.054	0.200	0.74	42155	925	0.30
	2.00	2	100	0.022	0.107	0.400	1.62	19650	865	0.50
	2.50	2	100	0.027	0.134	0.500	2.18	14600	790	0.50
	3.00	2	100	0.032	0.161	0.600	2.74	11615	745	0.50
Hardened tool steel 56 - 60 HRC	1.00	2	60	0.010	0.054	0.200	0.74	25810	510	0.30
	2.00	2	60	0.020	0.107	0.400	1.62	11790	465	0.50
	2.50	2	60	0.024	0.134	0.500	2.18	8760	425	0.50
	3.00	2	60	0.029	0.161	0.600	2.74	6970	400	0.50

Application

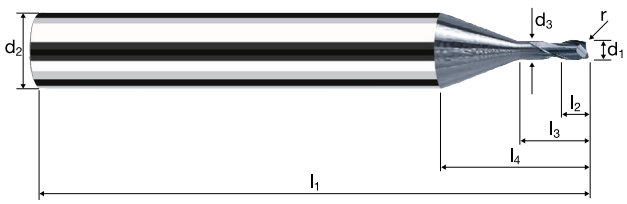


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	1.00	2	129	0.028	0.042	0.042	0.98	41900	2345	45°
	2.00	2	263	0.034	0.100	0.100	1.99	42070	2860	45°
	2.50	2	300	0.036	0.126	0.126	2.50	38195	2750	45°
	3.00	2	300	0.042	0.152	0.152	3.00	31830	2675	45°
Hardened tool steel 48 - 52 HRC	1.00	2	129	0.026	0.042	0.042	0.98	41900	2180	45°
	2.00	2	250	0.032	0.100	0.100	1.99	39990	2560	45°
	2.50	2	250	0.034	0.126	0.126	2.50	31830	2165	45°
	3.00	2	250	0.040	0.152	0.152	3.00	26525	2120	45°
Hardened tool steel 52 - 56 HRC	1.00	2	129	0.026	0.042	0.042	0.98	41900	2180	45°
	2.00	2	200	0.030	0.100	0.100	1.99	31990	1920	45°
	2.50	2	200	0.032	0.126	0.126	2.50	25465	1630	45°
	3.00	2	200	0.038	0.152	0.152	3.00	21220	1615	45°
Hardened tool steel 56 - 60 HRC	1.00	2	129	0.022	0.042	0.042	0.98	41900	1845	45°
	2.00	2	150	0.028	0.100	0.100	1.99	23995	1345	45°
	2.50	2	150	0.028	0.126	0.126	2.50	19100	1070	45°
	3.00	2	150	0.034	0.152	0.152	3.00	15915	1080	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 3xd

HM XA	λ 25° γ -10°

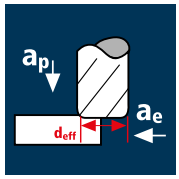


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6532** ø-Code **101**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL **X6532**
101	1.00	6.00	0.95	57	1.00	3.00	13.08	0.300	11.7°	2	●
145	2.00	6.00	1.90	57	2.00	6.00	14.31	0.500	8.7°	2	●
165	2.50	6.00	2.30	57	2.50	7.50	15.06	0.500	7.3°	2	●
185	3.00	6.00	2.80	57	3.00	9.00	15.63	0.500	6.1°	2	●

Application

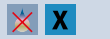


Material

Hardened tool steel 42 - 48 HRC

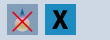
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
0.20	2	20	0.003	0.008	0.040	0.15	42440	215	0.05
0.40	2	49	0.005	0.016	0.080	0.37	42155	425	0.05
0.50	2	62	0.005	0.016	0.080	0.47	41990	425	0.05
0.60	2	70	0.008	0.024	0.120	0.53	42040	635	0.10
0.80	2	99	0.010	0.032	0.160	0.75	42015	845	0.10
1.00	2	127	0.013	0.040	0.200	0.96	42110	1060	0.10
1.50	2	140	0.019	0.060	0.300	1.39	32060	1210	0.20
2.00	2	140	0.026	0.080	0.400	1.92	23210	1230	0.20

Hardened tool steel 48 - 52 HRC



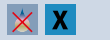
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
0.20	2	20	0.002	0.008	0.040	0.15	42440	205	0.05
0.40	2	49	0.005	0.016	0.080	0.37	42155	405	0.05
0.50	2	62	0.005	0.016	0.080	0.47	41990	405	0.05
0.60	2	70	0.007	0.024	0.120	0.53	42040	605	0.10
0.80	2	99	0.010	0.032	0.160	0.75	42015	805	0.10
1.00	2	120	0.012	0.040	0.200	0.96	39790	955	0.10
1.50	2	120	0.018	0.060	0.300	1.39	27480	990	0.20
2.00	2	120	0.025	0.080	0.400	1.92	19895	1005	0.20

Hardened tool steel 52 - 56 HRC



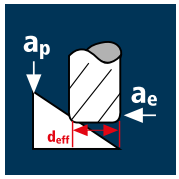
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
0.20	2	20	0.002	0.008	0.040	0.15	42440	170	0.05
0.40	2	49	0.004	0.016	0.080	0.37	42155	335	0.05
0.50	2	62	0.004	0.016	0.080	0.47	41990	335	0.05
0.60	2	70	0.006	0.024	0.120	0.53	42040	505	0.10
0.80	2	99	0.008	0.032	0.160	0.75	42015	670	0.10
1.00	2	100	0.010	0.040	0.200	0.96	33155	665	0.10
1.50	2	100	0.015	0.060	0.300	1.39	22900	685	0.20
2.00	2	100	0.021	0.080	0.400	1.92	16580	695	0.20

Hardened tool steel 56 - 60 HRC



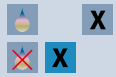
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
0.20	2	20	0.002	0.008	0.040	0.15	42440	155	0.05
0.40	2	49	0.004	0.016	0.080	0.37	42155	305	0.05
0.50	2	60	0.004	0.016	0.080	0.47	40635	295	0.05
0.60	2	60	0.005	0.024	0.120	0.53	36035	390	0.10
0.80	2	60	0.007	0.032	0.160	0.75	25465	365	0.10
1.00	2	60	0.009	0.040	0.200	0.96	19895	360	0.10
1.50	2	60	0.014	0.060	0.300	1.39	13740	370	0.20
2.00	2	60	0.019	0.080	0.400	1.92	9945	375	0.20

Application



Material

Hardened tool steel 42 - 48 HRC

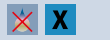


d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.016	0.016	0.016	0.40	42175	1350	45°
0.50	2	66	0.020	0.022	0.022	0.50	42015	1680	45°
0.60	2	79	0.020	0.026	0.026	0.60	41910	1675	45°
0.80	2	106	0.022	0.034	0.034	0.80	42175	1855	45°
1.00	2	132	0.028	0.042	0.042	1.00	42015	2355	45°
1.50	2	198	0.034	0.064	0.064	1.50	42015	2855	45°
2.00	2	263	0.038	0.084	0.084	1.99	42070	3195	45°

Hardened tool steel 48 - 52 HRC

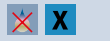
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.016	0.016	0.016	0.40	42175	1350	45°
0.50	2	66	0.020	0.022	0.022	0.50	42015	1680	45°
0.60	2	79	0.020	0.026	0.026	0.60	41910	1675	45°
0.80	2	106	0.020	0.034	0.034	0.80	42175	1685	45°
1.00	2	132	0.026	0.042	0.042	1.00	42015	2185	45°
1.50	2	198	0.032	0.064	0.064	1.50	42015	2690	45°
2.00	2	250	0.036	0.084	0.084	1.99	39990	2880	45°

Hardened tool steel 52 - 56 HRC



d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.014	0.016	0.016	0.40	42175	1180	45°
0.50	2	66	0.018	0.022	0.022	0.50	42015	1515	45°
0.60	2	79	0.018	0.026	0.026	0.60	41910	1510	45°
0.80	2	106	0.020	0.034	0.034	0.80	42175	1685	45°
1.00	2	132	0.026	0.042	0.042	1.00	42015	2185	45°
1.50	2	198	0.030	0.064	0.064	1.50	42015	2520	45°
2.00	2	200	0.034	0.084	0.084	1.99	31990	2175	45°

Hardened tool steel 56 - 60 HRC

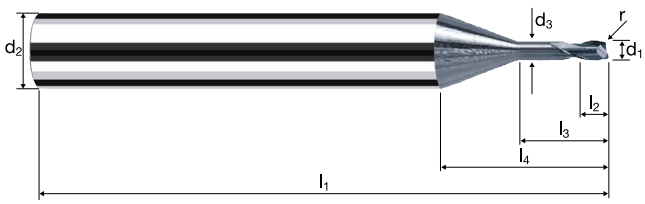


d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.20	2	26	0.008	0.008	0.008	0.20	41380	660	45°
0.40	2	53	0.012	0.016	0.016	0.40	42175	1010	45°
0.50	2	66	0.016	0.022	0.022	0.50	42015	1345	45°
0.60	2	79	0.016	0.026	0.026	0.60	41910	1340	45°
0.80	2	106	0.018	0.034	0.034	0.80	42175	1520	45°
1.00	2	132	0.022	0.042	0.042	1.00	42015	1850	45°
1.50	2	150	0.028	0.064	0.064	1.50	31830	1785	45°
2.00	2	150	0.030	0.084	0.084	1.99	23995	1440	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 4xd

HM XA	λ 25° γ -10°

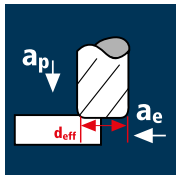


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6533** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL **X6533**
020	0.20	6.00	0.18	57	0.20	0.80	17.74	0.050	14.1°	2	●
040	0.40	6.00	0.35	57	0.40	1.60	18.06	0.050	13.1°	2	●
048	0.50	6.00	0.45	57	0.50	2.00	13.01	0.050	12.6°	2	●
042	0.40	6.00	0.35	57	0.40	1.60	18.06	0.100	13.1°	2	●
050	0.50	6.00	0.45	57	0.50	2.00	13.01	0.100	12.7°	2	●
060	0.60	6.00	0.55	57	0.60	2.40	13.23	0.100	12.3°	2	●
080	0.80	6.00	0.75	57	0.80	3.20	13.65	0.100	11.4°	2	●
098	1.00	6.00	0.95	57	1.00	4.00	14.08	0.100	10.7°	2	●
082	0.80	6.00	0.75	57	0.80	3.20	13.65	0.200	11.5°	2	●
100	1.00	6.00	0.95	57	1.00	4.00	14.08	0.200	10.7°	2	●
120	1.50	6.00	1.40	57	1.50	6.00	15.24	0.200	8.9°	2	●
140	2.00	6.00	1.90	61	2.00	8.00	16.31	0.200	7.4°	2	●
101	1.00	6.00	0.95	57	1.00	4.00	14.08	0.300	10.8°	2	●
145	2.00	6.00	1.90	61	2.00	8.00	16.31	0.500	7.5°	2	●

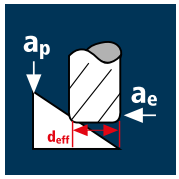
Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
0.20	2	20	0.003	0.006	0.040	0.15	42440	215	0.05
0.40	2	49	0.005	0.013	0.080	0.37	42155	425	0.05
0.50	2	54	0.006	0.016	0.100	0.41	41925	530	0.10
0.80	2	96	0.010	0.026	0.160	0.73	41860	845	0.10
1.00	2	108	0.013	0.032	0.200	0.82	41925	1055	0.20
1.50	2	140	0.019	0.048	0.300	1.36	32765	1240	0.20
2.00	2	140	0.025	0.064	0.400	1.89	23580	1190	0.20
2.50	2	140	0.032	0.080	0.500	2.42	18415	1160	0.20
3.00	2	140	0.039	0.096	0.600	2.94	15160	1185	0.20
Hardened tool steel 48 - 52 HRC									
0.20	2	20	0.002	0.006	0.040	0.15	42440	205	0.05
0.40	2	49	0.005	0.013	0.080	0.37	42155	405	0.05
0.50	2	54	0.006	0.016	0.100	0.41	41925	505	0.10
0.80	2	96	0.010	0.026	0.160	0.73	41860	805	0.10
1.00	2	108	0.012	0.032	0.200	0.82	41925	1005	0.20
1.50	2	120	0.018	0.048	0.300	1.36	28085	1010	0.20
2.00	2	120	0.024	0.064	0.400	1.89	20210	970	0.20
2.50	2	120	0.030	0.080	0.500	2.42	15785	945	0.20
3.00	2	120	0.037	0.096	0.600	2.94	12990	965	0.20
Hardened tool steel 52 - 56 HRC									
0.20	2	20	0.002	0.006	0.040	0.15	42440	170	0.05
0.40	2	49	0.004	0.013	0.080	0.37	42155	335	0.05
0.50	2	54	0.005	0.016	0.100	0.41	41925	420	0.10
0.80	2	96	0.008	0.026	0.160	0.73	41860	670	0.10
1.00	2	100	0.010	0.032	0.200	0.82	38820	775	0.20
1.50	2	100	0.015	0.048	0.300	1.36	23405	700	0.20
2.00	2	100	0.020	0.064	0.400	1.89	16840	675	0.20
2.50	2	100	0.025	0.080	0.500	2.42	13155	660	0.20
3.00	2	100	0.031	0.096	0.600	2.94	10825	670	0.20
Hardened tool steel 56 - 60 HRC									
0.20	2	20	0.002	0.006	0.040	0.15	42440	155	0.05
0.40	2	49	0.004	0.013	0.080	0.37	42155	305	0.05
0.50	2	54	0.004	0.016	0.100	0.41	41925	375	0.10
0.80	2	60	0.007	0.026	0.160	0.73	26160	375	0.10
1.00	2	60	0.009	0.032	0.200	0.82	23290	420	0.20
1.50	2	60	0.014	0.048	0.300	1.36	14045	380	0.20
2.00	2	60	0.018	0.064	0.400	1.89	10105	365	0.20
2.50	2	60	0.023	0.080	0.500	2.42	7890	355	0.20
3.00	2	60	0.028	0.096	0.600	2.94	6495	360	0.20

Application



Material

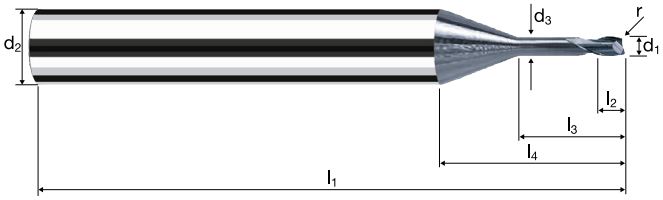
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.016	0.016	0.016	0.40	42175	1350	45°
0.50	2	66	0.020	0.022	0.022	0.50	42015	1680	45°
0.80	2	106	0.022	0.034	0.034	0.80	42175	1855	45°
1.00	2	132	0.028	0.042	0.042	1.00	42015	2355	45°
1.50	2	198	0.034	0.064	0.064	1.50	42015	2855	45°
2.00	2	263	0.038	0.084	0.084	1.99	42070	3195	45°
2.50	2	300	0.040	0.106	0.106	2.48	38505	3080	45°
3.00	2	300	0.046	0.126	0.126	2.97	32155	2960	45°
Hardened tool steel 48 - 52 HRC									
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.016	0.016	0.016	0.40	42175	1350	45°
0.50	2	66	0.020	0.022	0.022	0.50	42015	1680	45°
0.80	2	106	0.020	0.034	0.034	0.80	42175	1685	45°
1.00	2	132	0.026	0.042	0.042	1.00	42015	2185	45°
1.50	2	198	0.032	0.064	0.064	1.50	42015	2690	45°
2.00	2	250	0.036	0.084	0.084	1.99	39990	2880	45°
2.50	2	250	0.038	0.106	0.106	2.48	32090	2440	45°
3.00	2	250	0.044	0.126	0.126	2.97	26795	2360	45°
Hardened tool steel 52 - 56 HRC									
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.014	0.016	0.016	0.40	42175	1180	45°
0.50	2	66	0.018	0.022	0.022	0.50	42015	1515	45°
0.80	2	106	0.020	0.034	0.034	0.80	42175	1685	45°
1.00	2	132	0.026	0.042	0.042	1.00	42015	2185	45°
1.50	2	198	0.030	0.064	0.064	1.50	42015	2520	45°
2.00	2	200	0.034	0.084	0.084	1.99	31990	2175	45°
2.50	2	200	0.036	0.106	0.106	2.48	25670	1850	45°
3.00	2	200	0.042	0.126	0.126	2.97	21435	1800	45°
Hardened tool steel 56 - 60 HRC									
0.20	2	26	0.008	0.008	0.008	0.20	41380	660	45°
0.40	2	53	0.012	0.016	0.016	0.40	42175	1010	45°
0.50	2	66	0.016	0.022	0.022	0.50	42015	1345	45°
0.80	2	106	0.018	0.034	0.034	0.80	42175	1520	45°
1.00	2	132	0.022	0.042	0.042	1.00	42015	1850	45°
1.50	2	150	0.028	0.064	0.064	1.50	31830	1785	45°
2.00	2	150	0.030	0.084	0.084	1.99	23995	1440	45°
2.50	2	150	0.032	0.106	0.106	2.48	19255	1230	45°
3.00	2	150	0.036	0.126	0.126	2.97	16075	1155	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 5xd

HM
XA

λ 25°
γ -10°

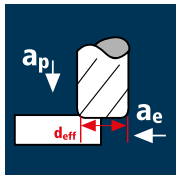


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6534** ø-Code **020**

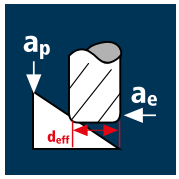
Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6534
020	0.20	6.00	0.18	57	0.20	1.00	17.94	0.050	13.8°	2	●
040	0.40	6.00	0.35	57	0.40	2.00	18.46	0.050	12.7°	2	●
048	0.50	6.00	0.45	57	0.50	2.50	13.51	0.050	12.2°	2	●
042	0.40	6.00	0.35	57	0.40	2.00	18.46	0.100	12.7°	2	●
050	0.50	6.00	0.45	57	0.50	2.50	13.51	0.100	12.2°	2	●
060	0.60	6.00	0.55	57	0.60	3.00	13.83	0.100	11.7°	2	●
080	0.80	6.00	0.75	57	0.80	4.00	14.45	0.100	10.8°	2	●
098	1.00	6.00	0.95	57	1.00	5.00	15.08	0.100	9.9°	2	●
082	0.80	6.00	0.75	57	0.80	4.00	14.45	0.200	10.9°	2	●
100	1.00	6.00	0.95	57	1.00	5.00	15.08	0.200	9.9°	2	●
108	1.20	6.00	1.10	57	1.20	6.00	15.80	0.200	9.2°	2	●
120	1.50	6.00	1.40	61	1.50	7.50	16.74	0.200	8.1°	2	●
140	2.00	6.00	1.90	61	2.00	10.00	18.31	0.200	6.6°	2	●
160	2.50	6.00	2.30	61	2.50	12.50	20.06	0.200	5.3°	2	●
180	3.00	6.00	2.80	66	3.00	15.00	21.63	0.200	4.2°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	1.00	2	88	0.013	0.032	0.200	0.67	41810	1055	0.30
	2.00	2	140	0.025	0.064	0.400	1.49	29910	1505	0.50
	2.50	2	140	0.032	0.080	0.500	2.04	21845	1375	0.50
	3.00	2	140	0.039	0.096	0.600	2.59	17205	1345	0.50
Hardened tool steel 48 - 52 HRC	1.00	2	88	0.012	0.032	0.200	0.67	41810	1005	0.30
	2.00	2	120	0.024	0.064	0.400	1.49	25635	1230	0.50
	2.50	2	120	0.030	0.080	0.500	2.04	18725	1125	0.50
	3.00	2	120	0.037	0.096	0.600	2.59	14750	1095	0.50
Hardened tool steel 52 - 56 HRC	1.00	2	88	0.010	0.032	0.200	0.67	41810	835	0.30
	2.00	2	100	0.020	0.064	0.400	1.49	21365	855	0.50
	2.50	2	100	0.025	0.080	0.500	2.04	15605	780	0.50
	3.00	2	100	0.031	0.096	0.600	2.59	12290	760	0.50
Hardened tool steel 56 - 60 HRC	1.00	2	60	0.009	0.032	0.200	0.67	28505	515	0.30
	2.00	2	60	0.018	0.064	0.400	1.49	12820	460	0.50
	2.50	2	60	0.023	0.080	0.500	2.04	9360	420	0.50
	3.00	2	60	0.028	0.096	0.600	2.59	7375	410	0.50

Application

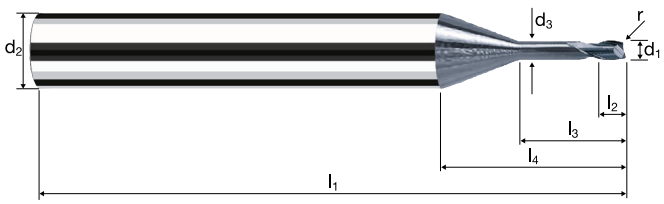


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	1.00	2	129	0.028	0.042	0.042	0.98	41900	2345	45°
	2.00	2	263	0.034	0.100	0.100	1.99	42070	2860	45°
	2.50	2	300	0.036	0.126	0.126	2.50	38195	2750	45°
	3.00	2	300	0.042	0.152	0.152	3.00	31830	2675	45°
Hardened tool steel 48 - 52 HRC	1.00	2	129	0.026	0.042	0.042	0.98	41900	2180	45°
	2.00	2	250	0.032	0.100	0.100	1.99	39990	2560	45°
	2.50	2	250	0.034	0.126	0.126	2.50	31830	2165	45°
	3.00	2	250	0.040	0.152	0.152	3.00	26525	2120	45°
Hardened tool steel 52 - 56 HRC	1.00	2	129	0.026	0.042	0.042	0.98	41900	2180	45°
	2.00	2	200	0.030	0.100	0.100	1.99	31990	1920	45°
	2.50	2	200	0.032	0.126	0.126	2.50	25465	1630	45°
	3.00	2	200	0.038	0.152	0.152	3.00	21220	1615	45°
Hardened tool steel 56 - 60 HRC	1.00	2	129	0.022	0.042	0.042	0.98	41900	1845	45°
	2.00	2	150	0.028	0.100	0.100	1.99	23995	1345	45°
	2.50	2	150	0.028	0.126	0.126	2.50	19100	1070	45°
	3.00	2	150	0.034	0.152	0.152	3.00	15915	1080	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 5xd

HM XA	λ 25° γ -10°

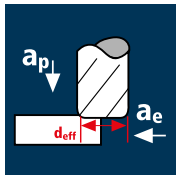


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6534** ø-Code **101**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6534
101	1.00	6.00	0.95	57	1.00	5.00	15.08	0.300	10.1°	2	●
145	2.00	6.00	1.90	61	2.00	10.00	18.31	0.500	6.7°	2	●
165	2.50	6.00	2.30	61	2.50	12.50	20.06	0.500	5.4°	2	●
185	3.00	6.00	2.80	66	3.00	15.00	21.63	0.500	4.3°	2	●

Application



Material

Hardened tool steel 42 - 48 HRC

X

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
0.20	2	20	0.003	0.006	0.040	0.15	42440	215	0.05
0.40	2	49	0.005	0.013	0.080	0.37	42155	425	0.05
0.50	2	62	0.006	0.016	0.100	0.47	41990	530	0.05
0.60	2	69	0.008	0.019	0.120	0.52	42235	640	0.10
0.80	2	96	0.010	0.026	0.160	0.73	41860	845	0.10
1.00	2	125	0.013	0.032	0.200	0.95	41885	1055	0.10
1.50	2	140	0.015	0.038	0.240	1.33	33505	1015	0.20
2.00	2	140	0.019	0.048	0.300	1.86	23960	905	0.20

Hardened tool steel 48 - 52 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
0.20	2	20	0.002	0.006	0.040	0.15	42440	205	0.05
0.40	2	49	0.005	0.013	0.080	0.37	42155	405	0.05
0.50	2	62	0.006	0.016	0.100	0.47	41990	505	0.05
0.60	2	69	0.007	0.019	0.120	0.52	42235	610	0.10
0.80	2	96	0.010	0.026	0.160	0.73	41860	805	0.10
1.00	2	120	0.012	0.032	0.200	0.95	40210	965	0.10
1.50	2	120	0.014	0.038	0.240	1.33	28720	825	0.20
2.00	2	120	0.018	0.048	0.300	1.86	20535	740	0.20

Hardened tool steel 52 - 56 HRC

X

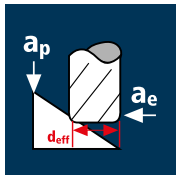
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
0.20	2	20	0.002	0.006	0.040	0.15	42440	170	0.05
0.40	2	49	0.004	0.013	0.080	0.37	42155	335	0.05
0.50	2	62	0.005	0.016	0.100	0.47	41990	420	0.05
0.60	2	69	0.006	0.019	0.120	0.52	42235	505	0.10
0.80	2	96	0.008	0.026	0.160	0.73	41860	670	0.10
1.00	2	100	0.010	0.032	0.200	0.95	33505	670	0.10
1.50	2	100	0.012	0.038	0.240	1.33	23935	575	0.20
2.00	2	100	0.015	0.048	0.300	1.86	17115	515	0.20

Hardened tool steel 56 - 60 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
0.20	2	20	0.002	0.006	0.040	0.15	42440	155	0.05
0.40	2	49	0.004	0.013	0.080	0.37	42155	305	0.05
0.50	2	60	0.004	0.016	0.100	0.47	40635	365	0.05
0.60	2	60	0.005	0.019	0.120	0.52	36730	395	0.10
0.80	2	60	0.007	0.026	0.160	0.73	26160	375	0.10
1.00	2	60	0.009	0.032	0.200	0.95	20105	360	0.10
1.50	2	60	0.011	0.038	0.240	1.33	14360	310	0.20
2.00	2	60	0.014	0.048	0.300	1.86	10270	275	0.20

Application



Material

Hardened tool steel 42 - 48 HRC

X

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.016	0.016	0.016	0.40	42175	1350	45°
0.50	2	66	0.020	0.022	0.022	0.50	42015	1680	45°
0.60	2	79	0.020	0.026	0.026	0.60	41910	1675	45°
0.80	2	106	0.022	0.034	0.034	0.80	42175	1855	45°
1.00	2	132	0.028	0.042	0.042	1.00	42015	2355	45°
1.50	2	198	0.034	0.064	0.064	1.50	42015	2855	45°
2.00	2	263	0.038	0.084	0.084	1.99	42070	3195	45°

Hardened tool steel 48 - 52 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.016	0.016	0.016	0.40	42175	1350	45°
0.50	2	66	0.020	0.022	0.022	0.50	42015	1680	45°
0.60	2	79	0.020	0.026	0.026	0.60	41910	1675	45°
0.80	2	106	0.020	0.034	0.034	0.80	42175	1685	45°
1.00	2	132	0.026	0.042	0.042	1.00	42015	2185	45°
1.50	2	198	0.032	0.064	0.064	1.50	42015	2690	45°
2.00	2	250	0.036	0.084	0.084	1.99	39990	2880	45°

Hardened tool steel 52 - 56 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.014	0.016	0.016	0.40	42175	1180	45°
0.50	2	66	0.018	0.022	0.022	0.50	42015	1515	45°
0.60	2	79	0.018	0.026	0.026	0.60	41910	1510	45°
0.80	2	106	0.020	0.034	0.034	0.80	42175	1685	45°
1.00	2	132	0.026	0.042	0.042	1.00	42015	2185	45°
1.50	2	198	0.030	0.064	0.064	1.50	42015	2520	45°
2.00	2	200	0.034	0.084	0.084	1.99	31990	2175	45°

Hardened tool steel 56 - 60 HRC

X

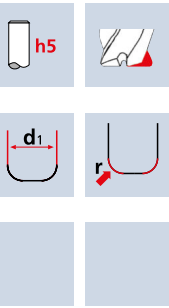
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.20	2	26	0.008	0.008	0.008	0.20	41380	660	45°
0.40	2	53	0.012	0.016	0.016	0.40	42175	1010	45°
0.50	2	66	0.016	0.022	0.022	0.50	42015	1345	45°
0.60	2	79	0.016	0.026	0.026	0.60	41910	1340	45°
0.80	2	106	0.018	0.034	0.034	0.80	42175	1520	45°
1.00	2	132	0.022	0.042	0.042	1.00	42015	1850	45°
1.50	2	150	0.028	0.064	0.064	1.50	31830	1785	45°
2.00	2	150	0.030	0.084	0.084	1.99	23995	1440	45°

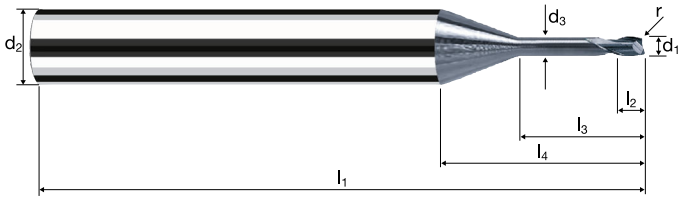
Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 6xd

HM
XA

λ 25°
γ -10°



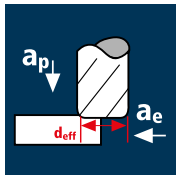


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6535** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6535
020	0.20	6.00	0.18	57	0.20	1.20	18.14	0.050	13.6°	2	●
040	0.40	6.00	0.35	57	0.40	2.40	18.86	0.050	12.3°	2	●
048	0.50	6.00	0.45	57	0.50	3.00	14.01	0.050	11.7°	2	●
042	0.40	6.00	0.35	57	0.40	2.40	18.86	0.100	12.3°	2	●
050	0.50	6.00	0.45	57	0.50	3.00	14.01	0.100	11.8°	2	●
060	0.60	6.00	0.55	57	0.60	3.60	14.43	0.100	11.2°	2	●
080	0.80	6.00	0.75	57	0.80	4.80	15.25	0.100	10.2°	2	●
098	1.00	6.00	0.95	57	1.00	6.00	16.08	0.100	9.3°	2	●
082	0.80	6.00	0.75	57	0.80	4.80	15.25	0.200	10.3°	2	●
100	1.00	6.00	0.95	57	1.00	6.00	16.08	0.200	9.4°	2	●
120	1.50	6.00	1.40	61	1.50	9.00	18.24	0.200	7.4°	2	●
140	2.00	6.00	1.90	66	2.00	12.00	20.31	0.200	5.9°	2	●
101	1.00	6.00	0.95	57	1.00	6.00	16.08	0.300	9.4°	2	●
145	2.00	6.00	1.90	66	2.00	12.00	20.31	0.500	6.0°	2	●

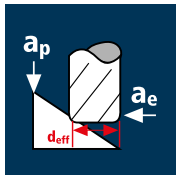
Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
0.20	2	18	0.003	0.004	0.040	0.14	40925	205	0.05
0.40	2	46	0.005	0.008	0.080	0.35	41835	420	0.05
0.50	2	51	0.006	0.010	0.100	0.39	41625	525	0.10
0.80	2	94	0.010	0.016	0.160	0.71	42140	850	0.10
1.00	2	102	0.013	0.020	0.200	0.77	42165	1065	0.20
1.50	2	140	0.019	0.030	0.300	1.31	34020	1285	0.20
2.00	2	140	0.025	0.040	0.400	1.84	24220	1220	0.20
2.50	2	140	0.032	0.050	0.500	2.36	18885	1190	0.20
3.00	2	140	0.038	0.060	0.600	2.89	15420	1165	0.20
Hardened tool steel 48 - 52 HRC									
0.20	2	18	0.002	0.004	0.040	0.14	40925	195	0.05
0.40	2	46	0.005	0.008	0.080	0.35	41835	400	0.05
0.50	2	51	0.006	0.010	0.100	0.39	41625	500	0.10
0.80	2	94	0.010	0.016	0.160	0.71	42140	810	0.10
1.00	2	102	0.012	0.020	0.200	0.77	42165	1010	0.20
1.50	2	120	0.018	0.030	0.300	1.31	29160	1050	0.20
2.00	2	120	0.024	0.040	0.400	1.84	20760	995	0.20
2.50	2	120	0.030	0.050	0.500	2.36	16185	970	0.20
3.00	2	120	0.036	0.060	0.600	2.89	13215	950	0.20
Hardened tool steel 52 - 56 HRC									
0.20	2	18	0.002	0.004	0.040	0.14	40925	165	0.05
0.40	2	46	0.004	0.008	0.080	0.35	41835	335	0.05
0.50	2	51	0.005	0.010	0.100	0.39	41625	415	0.10
0.80	2	94	0.008	0.016	0.160	0.71	42140	675	0.10
1.00	2	100	0.010	0.020	0.200	0.77	41340	825	0.20
1.50	2	100	0.015	0.030	0.300	1.31	24300	730	0.20
2.00	2	100	0.020	0.040	0.400	1.84	17300	690	0.20
2.50	2	100	0.025	0.050	0.500	2.36	13490	675	0.20
3.00	2	100	0.030	0.060	0.600	2.89	11015	660	0.20
Hardened tool steel 56 - 60 HRC									
0.20	2	18	0.002	0.004	0.040	0.14	40925	145	0.05
0.40	2	46	0.004	0.008	0.080	0.35	41835	300	0.05
0.50	2	51	0.004	0.010	0.100	0.39	41625	375	0.10
0.80	2	60	0.007	0.016	0.160	0.71	26900	385	0.10
1.00	2	60	0.009	0.020	0.200	0.77	24805	445	0.20
1.50	2	60	0.014	0.030	0.300	1.31	14580	395	0.20
2.00	2	60	0.018	0.040	0.400	1.84	10380	375	0.20
2.50	2	60	0.023	0.050	0.500	2.36	8095	365	0.20
3.00	2	60	0.027	0.060	0.600	2.89	6610	355	0.20

Application



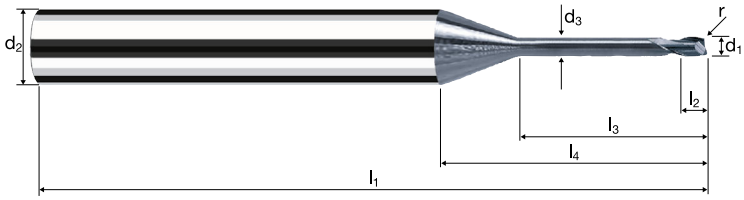
Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.016	0.016	0.016	0.40	42175	1350	45°
0.50	2	66	0.020	0.022	0.022	0.50	42015	1680	45°
0.80	2	106	0.022	0.034	0.034	0.80	42175	1855	45°
1.00	2	132	0.028	0.042	0.042	1.00	42015	2355	45°
1.50	2	198	0.034	0.064	0.064	1.50	42015	2855	45°
2.00	2	263	0.038	0.084	0.084	1.99	42070	3195	45°
2.50	2	300	0.040	0.106	0.106	2.48	38505	3080	45°
3.00	2	300	0.046	0.126	0.126	2.97	32155	2960	45°
Hardened tool steel 48 - 52 HRC									
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.016	0.016	0.016	0.40	42175	1350	45°
0.50	2	66	0.020	0.022	0.022	0.50	42015	1680	45°
0.80	2	106	0.020	0.034	0.034	0.80	42175	1685	45°
1.00	2	132	0.026	0.042	0.042	1.00	42015	2185	45°
1.50	2	198	0.032	0.064	0.064	1.50	42015	2690	45°
2.00	2	250	0.036	0.084	0.084	1.99	39990	2880	45°
2.50	2	250	0.038	0.106	0.106	2.48	32090	2440	45°
3.00	2	250	0.044	0.126	0.126	2.97	26795	2360	45°
Hardened tool steel 52 - 56 HRC									
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.014	0.016	0.016	0.40	42175	1180	45°
0.50	2	66	0.018	0.022	0.022	0.50	42015	1515	45°
0.80	2	106	0.020	0.034	0.034	0.80	42175	1685	45°
1.00	2	132	0.026	0.042	0.042	1.00	42015	2185	45°
1.50	2	198	0.030	0.064	0.064	1.50	42015	2520	45°
2.00	2	200	0.034	0.084	0.084	1.99	31990	2175	45°
2.50	2	200	0.036	0.106	0.106	2.48	25670	1850	45°
3.00	2	200	0.042	0.126	0.126	2.97	21435	1800	45°
Hardened tool steel 56 - 60 HRC									
0.20	2	26	0.008	0.008	0.008	0.20	41380	660	45°
0.40	2	53	0.012	0.016	0.016	0.40	42175	1010	45°
0.50	2	66	0.016	0.022	0.022	0.50	42015	1345	45°
0.80	2	106	0.018	0.034	0.034	0.80	42175	1520	45°
1.00	2	132	0.022	0.042	0.042	1.00	42015	1850	45°
1.50	2	150	0.028	0.064	0.064	1.50	31830	1785	45°
2.00	2	150	0.030	0.084	0.084	1.99	23995	1440	45°
2.50	2	150	0.032	0.106	0.106	2.48	19255	1230	45°
3.00	2	150	0.036	0.126	0.126	2.97	16075	1155	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 8xd

HM XA	λ 25° γ -10°

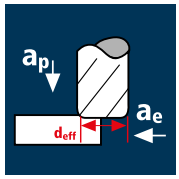


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6536** ø-Code **020**

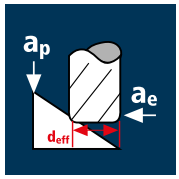
Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6536
020	0.20	6.00	0.18	57	0.20	1.60	18.22	0.050	13.2°	2	●
040	0.40	6.00	0.35	57	0.40	3.20	19.16	0.050	11.6°	2	●
048	0.50	6.00	0.45	57	0.50	4.00	15.01	0.050	11.0°	2	●
042	0.40	6.00	0.35	57	0.40	3.20	19.16	0.100	11.6°	2	●
050	0.50	6.00	0.45	57	0.50	4.00	15.01	0.100	11.1°	2	●
060	0.60	6.00	0.55	57	0.60	4.80	15.63	0.100	10.3°	2	●
080	0.80	6.00	0.75	57	0.80	6.40	16.85	0.100	9.2°	2	●
098	1.00	6.00	0.95	61	1.00	8.00	18.08	0.100	8.3°	2	●
082	0.80	6.00	0.75	57	0.80	6.40	16.85	0.200	9.3°	2	●
100	1.00	6.00	0.95	61	1.00	8.00	18.08	0.200	8.3°	2	●
108	1.20	6.00	1.10	61	1.20	9.60	19.40	0.200	7.3°	2	●
120	1.50	6.00	1.40	61	1.50	12.00	21.24	0.200	6.4°	2	●
140	2.00	6.00	1.90	66	2.00	16.00	24.31	0.200	4.9°	2	●
160	2.50	6.00	2.30	69	2.50	20.00	27.56	0.200	3.8°	2	●
180	3.00	6.00	2.80	75	3.00	24.00	30.63	0.200	2.9°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	1.00	2	82	0.013	0.020	0.200	0.62	42100	1060	0.30
	2.00	2	140	0.025	0.040	0.400	1.39	32060	1615	0.50
	2.50	2	140	0.032	0.050	0.500	1.94	22970	1445	0.50
	3.00	2	140	0.038	0.060	0.600	2.47	18040	1365	0.50
Hardened tool steel 48 - 52 HRC	1.00	2	82	0.012	0.020	0.200	0.62	42100	1010	0.30
	2.00	2	120	0.024	0.040	0.400	1.39	27480	1320	0.50
	2.50	2	120	0.030	0.050	0.500	1.94	19690	1180	0.50
	3.00	2	120	0.036	0.060	0.600	2.47	15465	1115	0.50
Hardened tool steel 52 - 56 HRC	1.00	2	82	0.010	0.020	0.200	0.62	42100	840	0.30
	2.00	2	100	0.020	0.040	0.400	1.39	22900	915	0.50
	2.50	2	100	0.025	0.050	0.500	1.94	16410	820	0.50
	3.00	2	100	0.030	0.060	0.600	2.47	12885	775	0.50
Hardened tool steel 56 - 60 HRC	1.00	2	60	0.009	0.020	0.200	0.62	30805	555	0.30
	2.00	2	60	0.018	0.040	0.400	1.39	13740	495	0.50
	2.50	2	60	0.023	0.050	0.500	1.94	9845	445	0.50
	3.00	2	60	0.027	0.060	0.600	2.47	7730	420	0.50

Application

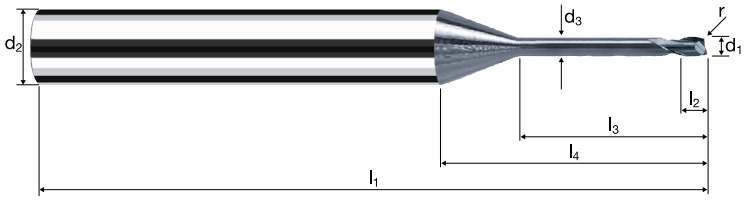


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	1.00	2	129	0.028	0.042	0.042	0.98	41900	2345	45°
	2.00	2	263	0.034	0.100	0.100	1.99	42070	2860	45°
	2.50	2	300	0.036	0.126	0.126	2.50	38195	2750	45°
	3.00	2	300	0.042	0.152	0.152	3.00	31830	2675	45°
Hardened tool steel 48 - 52 HRC	1.00	2	129	0.026	0.042	0.042	0.98	41900	2180	45°
	2.00	2	250	0.032	0.100	0.100	1.99	39990	2560	45°
	2.50	2	250	0.034	0.126	0.126	2.50	31830	2165	45°
	3.00	2	250	0.040	0.152	0.152	3.00	26525	2120	45°
Hardened tool steel 52 - 56 HRC	1.00	2	129	0.026	0.042	0.042	0.98	41900	2180	45°
	2.00	2	200	0.030	0.100	0.100	1.99	31990	1920	45°
	2.50	2	200	0.032	0.126	0.126	2.50	25465	1630	45°
	3.00	2	200	0.038	0.152	0.152	3.00	21220	1615	45°
Hardened tool steel 56 - 60 HRC	1.00	2	129	0.022	0.042	0.042	0.98	41900	1845	45°
	2.00	2	150	0.028	0.100	0.100	1.99	23995	1345	45°
	2.50	2	150	0.028	0.126	0.126	2.50	19100	1070	45°
	3.00	2	150	0.034	0.152	0.152	3.00	15915	1080	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 8xd

HM XA	λ 25° γ -10°

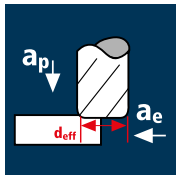


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6536** ø-Code **101**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6536
101	1.00	6.00	0.95	61	1.00	8.00	18.08	0.300	8.3°	2	●
145	2.00	6.00	1.90	66	2.00	16.00	24.31	0.500	5.0°	2	●
165	2.50	6.00	2.30	69	2.50	20.00	27.56	0.500	3.9°	2	●
185	3.00	6.00	2.80	75	3.00	24.00	30.63	0.500	3.0°	2	●

Application



Material

Hardened tool steel 42 - 48 HRC

X

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	r [mm]
0.20	2	17	0.003	0.003	0.040	0.13	41625	210	0.05
0.40	2	36	0.005	0.006	0.080	0.27	42440	430	0.10
0.50	2	50	0.006	0.008	0.100	0.38	41885	530	0.10
0.80	2	92	0.010	0.013	0.160	0.70	41835	845	0.10
1.00	2	100	0.013	0.016	0.200	0.76	41885	1055	0.20
1.50	2	140	0.019	0.024	0.300	1.29	34545	1305	0.20
2.00	2	140	0.025	0.032	0.400	1.82	24485	1235	0.20
2.50	2	140	0.032	0.040	0.500	2.34	19045	1200	0.20
3.00	2	140	0.038	0.048	0.600	2.86	15580	1180	0.20

Hardened tool steel 48 - 52 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	r [mm]
0.20	2	17	0.002	0.003	0.040	0.13	41625	200	0.05
0.40	2	36	0.005	0.006	0.080	0.27	42440	405	0.10
0.50	2	50	0.006	0.008	0.100	0.38	41885	505	0.10
0.80	2	92	0.010	0.013	0.160	0.70	41835	805	0.10
1.00	2	100	0.012	0.016	0.200	0.76	41885	1005	0.20
1.50	2	120	0.018	0.024	0.300	1.29	29610	1065	0.20
2.00	2	120	0.024	0.032	0.400	1.82	20985	1005	0.20
2.50	2	120	0.030	0.040	0.500	2.34	16325	980	0.20
3.00	2	120	0.036	0.048	0.600	2.86	13355	960	0.20

Hardened tool steel 52 - 56 HRC

X

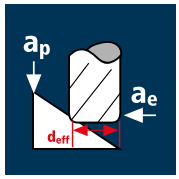
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	r [mm]
0.20	2	17	0.002	0.003	0.040	0.13	41625	165	0.05
0.40	2	36	0.004	0.006	0.080	0.27	42440	340	0.10
0.50	2	50	0.005	0.008	0.100	0.38	41885	420	0.10
0.80	2	92	0.008	0.013	0.160	0.70	41835	670	0.10
1.00	2	100	0.010	0.016	0.200	0.76	41885	840	0.20
1.50	2	100	0.015	0.024	0.300	1.29	24675	740	0.20
2.00	2	100	0.020	0.032	0.400	1.82	17490	700	0.20
2.50	2	100	0.025	0.040	0.500	2.34	13605	680	0.20
3.00	2	100	0.030	0.048	0.600	2.86	11130	670	0.20

Hardened tool steel 56 - 60 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	r [mm]
0.20	2	17	0.002	0.003	0.040	0.13	41625	150	0.05
0.40	2	36	0.004	0.006	0.080	0.27	42440	305	0.10
0.50	2	50	0.004	0.008	0.100	0.38	41885	375	0.10
0.80	2	60	0.007	0.013	0.160	0.70	27285	395	0.10
1.00	2	60	0.009	0.016	0.200	0.76	25130	450	0.20
1.50	2	60	0.014	0.024	0.300	1.29	14805	400	0.20
2.00	2	60	0.018	0.032	0.400	1.82	10495	380	0.20
2.50	2	60	0.023	0.040	0.500	2.34	8160	365	0.20
3.00	2	60	0.027	0.048	0.600	2.86	6680	360	0.20

Application



Material

Hardened tool steel 42 - 48 HRC

X

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	β [°]
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.016	0.016	0.016	0.40	42175	1350	45°
0.50	2	66	0.020	0.022	0.022	0.50	42015	1680	45°
0.80	2	106	0.022	0.034	0.034	0.80	42175	1855	45°
1.00	2	132	0.028	0.042	0.042	1.00	42015	2355	45°
1.50	2	198	0.030	0.050	0.050	1.50	42015	2520	45°
2.00	2	264	0.034	0.064	0.064	2.00	42015	2855	45°
2.50	2	300	0.038	0.084	0.084	2.49	38350	2915	45°
3.00	2	300	0.040	0.106	0.106	2.98	32045	2565	45°

Hardened tool steel 48 - 52 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	β [°]
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.016	0.016	0.016	0.40	42175	1350	45°
0.50	2	66	0.020	0.022	0.022	0.50	42015	1680	45°
0.80	2	106	0.020	0.034	0.034	0.80	42175	1685	45°
1.00	2	132	0.026	0.042	0.042	1.00	42015	2185	45°
1.50	2	198	0.028	0.050	0.050	1.50	42015	2355	45°
2.00	2	250	0.032	0.064	0.064	2.00	39790	2545	45°
2.50	2	250	0.036	0.084	0.084	2.49	31960	2300	45°
3.00	2	250	0.038	0.106	0.106	2.98	26705	2030	45°

Hardened tool steel 52 - 56 HRC

X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	β [°]
0.20	2	26	0.010	0.008	0.008	0.20	41380	830	45°
0.40	2	53	0.014	0.016	0.016	0.40	42175	1180	45°
0.50	2	66	0.018	0.022	0.022	0.50	42015	1515	45°
0.80	2	106	0.020	0.034	0.034	0.80	42175	1685	45°
1.00	2	132	0.026	0.042	0.042	1.00	42015	2185	45°
1.50	2	198	0.028	0.050	0.050	1.50	42015	2355	45°
2.00	2	200	0.030	0.064	0.064	2.00	31830	1910	45°
2.50	2	200	0.034	0.084	0.084	2.49	25565	1740	45°
3.00	2	200	0.036	0.106	0.106	2.98	21365	1540	45°

Hardened tool steel 56 - 60 HRC

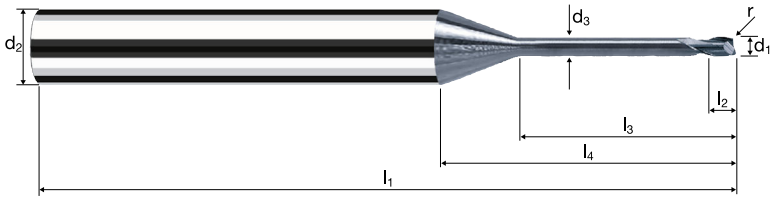
X

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	β [°]
0.20	2	26	0.008	0.008	0.008	0.20	41380	660	45°
0.40	2	53	0.012	0.016	0.016	0.40	42175	1010	45°
0.50	2	66	0.016	0.022	0.022	0.50	42015	1345	45°
0.80	2	106	0.018	0.034	0.034	0.80	42175	1520	45°
1.00	2	132	0.022	0.042	0.042	1.00	42015	1850	45°
1.50	2	150	0.024	0.050	0.050	1.50	31830	1530	45°
2.00	2	150	0.028	0.064	0.064	2.00	23875	1335	45°
2.50	2	150	0.030	0.084	0.084	2.49	19175	1150	45°
3.00	2	150	0.032	0.106	0.106	2.98	16020	1025	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 10xd

HM XA	λ 25° γ -10°

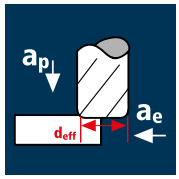


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6538** ø-Code **020**

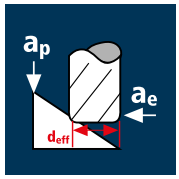
Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6538
020	0.20	6.00	0.18	57	0.20	2.00	18.62	0.050	12.8°	2	●
040	0.40	6.00	0.35	57	0.40	4.00	19.96	0.050	11.0°	2	●
048	0.50	6.00	0.45	57	0.50	5.00	16.01	0.050	10.2°	2	●
042	0.40	6.00	0.35	57	0.40	4.00	19.96	0.100	11.0°	2	●
050	0.50	6.00	0.45	57	0.50	5.00	16.01	0.100	10.3°	2	●
060	0.60	6.00	0.55	57	0.60	6.00	16.83	0.100	9.6°	2	●
080	0.80	6.00	0.75	61	0.80	8.00	18.45	0.100	8.4°	2	●
098	1.00	6.00	0.95	61	1.00	10.00	20.08	0.100	7.4°	2	●
082	0.80	6.00	0.75	61	0.80	8.00	18.45	0.200	8.5°	2	●
100	1.00	6.00	0.95	61	1.00	10.00	20.08	0.200	7.4°	2	●
120	1.50	6.00	1.40	66	1.50	15.00	24.24	0.200	5.5°	2	●
140	2.00	6.00	1.90	69	2.00	20.00	28.31	0.200	4.2°	2	●
160	2.50	6.00	2.30	75	2.50	25.00	32.56	0.200	3.2°	2	●
180	3.00	6.00	2.80	80	3.00	30.00	36.63	0.200	2.4°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	1.00	2	78	0.013	0.016	0.200	0.59	42080	1060	0.30
	2.00	2	140	0.025	0.032	0.400	1.35	33010	1665	0.50
	2.50	2	140	0.032	0.040	0.500	1.89	23580	1485	0.50
	3.00	2	140	0.038	0.048	0.600	2.43	18340	1385	0.50
Hardened tool steel 48 - 52 HRC	1.00	2	78	0.012	0.016	0.200	0.59	42080	1010	0.30
	2.00	2	120	0.024	0.032	0.400	1.35	28295	1360	0.50
	2.50	2	120	0.030	0.040	0.500	1.89	20210	1215	0.50
	3.00	2	120	0.036	0.048	0.600	2.43	15720	1130	0.50
Hardened tool steel 52 - 56 HRC	1.00	2	78	0.010	0.016	0.200	0.59	42080	840	0.30
	2.00	2	100	0.020	0.032	0.400	1.35	23580	945	0.50
	2.50	2	100	0.025	0.040	0.500	1.89	16840	840	0.50
	3.00	2	100	0.030	0.048	0.600	2.43	13100	785	0.50
Hardened tool steel 56 - 60 HRC	1.00	2	60	0.009	0.016	0.200	0.59	32370	585	0.30
	2.00	2	60	0.018	0.032	0.400	1.35	14145	510	0.50
	2.50	2	60	0.023	0.040	0.500	1.89	10105	455	0.50
	3.00	2	60	0.027	0.048	0.600	2.43	7860	425	0.50

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	1.00	2	131	0.046	0.126	0.126	0.99	42120	3875	45°
	2.00	2	255	0.028	0.042	0.042	1.93	42055	2355	45°
	2.50	2	300	0.034	0.100	0.100	2.49	38350	2610	45°
	3.00	2	300	0.036	0.126	0.126	3.00	31830	2290	45°
Hardened tool steel 48 - 52 HRC	1.00	2	131	0.044	0.126	0.126	0.99	42120	3705	45°
	2.00	2	250	0.026	0.042	0.042	1.93	41230	2145	45°
	2.50	2	250	0.032	0.100	0.100	2.49	31960	2045	45°
	3.00	2	250	0.034	0.126	0.126	3.00	26525	1805	45°
Hardened tool steel 52 - 56 HRC	1.00	2	131	0.042	0.126	0.126	0.99	42120	3540	45°
	2.00	2	200	0.026	0.042	0.042	1.93	32985	1715	45°
	2.50	2	200	0.030	0.100	0.100	2.49	25565	1535	45°
	3.00	2	200	0.032	0.126	0.126	3.00	21220	1360	45°
Hardened tool steel 56 - 60 HRC	1.00	2	131	0.036	0.126	0.126	0.99	42120	3035	45°
	2.00	2	150	0.022	0.042	0.042	1.93	24740	1090	45°
	2.50	2	150	0.028	0.100	0.100	2.49	19175	1075	45°
	3.00	2	150	0.028	0.126	0.126	3.00	15915	890	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 10xd

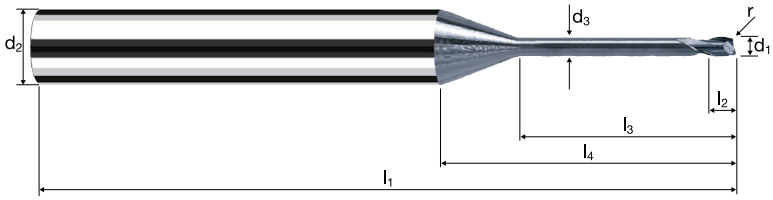
HM
XA

λ 25°
γ -10°

h5

d1

r

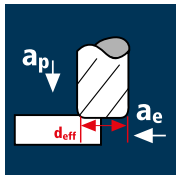


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6538** ø-Code **101**

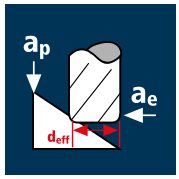
Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL
											X6538
101	1.00	6.00	0.95	61	1.00	10.00	20.08	0.300	7.5°	2	●
145	2.00	6.00	1.90	69	2.00	20.00	28.31	0.500	4.3°	2	●
165	2.50	6.00	2.30	75	2.50	25.00	32.56	0.500	3.2°	2	●
185	3.00	6.00	2.80	80	3.00	30.00	36.63	0.500	2.5°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	0.50	2	53	0.008	0.013	0.100	0.40	42175	640	0.10
	0.60	2	67	0.009	0.016	0.120	0.51	41815	740	0.10
	0.80	2	95	0.013	0.021	0.160	0.72	42000	1060	0.10
	1.00	2	106	0.015	0.027	0.200	0.80	42175	1275	0.20
	1.50	2	140	0.023	0.040	0.300	1.34	33255	1510	0.20
	2.00	2	140	0.030	0.053	0.400	1.87	23830	1440	0.20
Hardened tool steel 48 - 52 HRC	0.50	2	53	0.007	0.013	0.100	0.40	42175	605	0.10
	0.60	2	67	0.008	0.016	0.120	0.51	41815	705	0.10
	0.80	2	95	0.012	0.021	0.160	0.72	42000	1010	0.10
	1.00	2	106	0.014	0.027	0.200	0.80	42175	1215	0.20
	1.50	2	120	0.022	0.040	0.300	1.34	28505	1230	0.20
	2.00	2	120	0.029	0.053	0.400	1.87	20425	1175	0.20
Hardened tool steel 52 - 56 HRC	0.50	2	53	0.006	0.013	0.100	0.40	42175	505	0.10
	0.60	2	67	0.007	0.016	0.120	0.51	41815	585	0.10
	0.80	2	95	0.010	0.021	0.160	0.72	42000	840	0.10
	1.00	2	100	0.012	0.027	0.200	0.80	39790	955	0.20
	1.50	2	100	0.018	0.040	0.300	1.34	23755	855	0.20
	2.00	2	100	0.024	0.053	0.400	1.87	17020	815	0.20
Hardened tool steel 56 - 60 HRC	0.50	2	53	0.005	0.013	0.100	0.40	42175	455	0.10
	0.60	2	60	0.006	0.016	0.120	0.51	37450	470	0.10
	0.80	2	60	0.009	0.021	0.160	0.72	26525	475	0.10
	1.00	2	60	0.011	0.027	0.200	0.80	23875	515	0.20
	1.50	2	60	0.016	0.040	0.300	1.34	14255	460	0.20
	2.00	2	60	0.022	0.053	0.400	1.87	10215	440	0.20

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.50	2	66	0.022	0.016	0.016	0.50	42015	1850	45°
	0.60	2	79	0.024	0.020	0.020	0.60	41910	2010	45°
	0.80	2	106	0.028	0.032	0.032	0.80	42175	2360	45°
	1.00	2	132	0.034	0.040	0.040	1.00	42015	2855	45°
	1.50	2	198	0.040	0.060	0.060	1.50	42015	3360	45°
	2.00	2	264	0.046	0.080	0.080	2.00	42015	3865	45°
Hardened tool steel 48 - 52 HRC	0.50	2	66	0.020	0.016	0.016	0.50	42015	1680	45°
	0.60	2	79	0.022	0.020	0.020	0.60	41910	1845	45°
	0.80	2	106	0.026	0.032	0.032	0.80	42175	2195	45°
	1.00	2	132	0.032	0.040	0.040	1.00	42015	2690	45°
	1.50	2	198	0.038	0.060	0.060	1.50	42015	3195	45°
	2.00	2	250	0.044	0.080	0.080	2.00	39790	3500	45°
Hardened tool steel 52 - 56 HRC	0.50	2	66	0.020	0.016	0.016	0.50	42015	1680	45°
	0.60	2	79	0.022	0.020	0.020	0.60	41910	1845	45°
	0.80	2	106	0.026	0.032	0.032	0.80	42175	2195	45°
	1.00	2	132	0.030	0.040	0.040	1.00	42015	2520	45°
	1.50	2	198	0.036	0.060	0.060	1.50	42015	3025	45°
	2.00	2	200	0.042	0.080	0.080	2.00	31830	2675	45°
Hardened tool steel 56 - 60 HRC	0.50	2	66	0.018	0.016	0.016	0.50	42015	1515	45°
	0.60	2	79	0.020	0.020	0.020	0.60	41910	1675	45°
	0.80	2	106	0.022	0.032	0.032	0.80	42175	1855	45°
	1.00	2	132	0.028	0.040	0.040	1.00	42015	2355	45°
	1.50	2	150	0.032	0.060	0.060	1.50	31830	2035	45°
	2.00	2	150	0.036	0.080	0.080	2.00	23875	1720	45°

Corner radius end mills MicroX

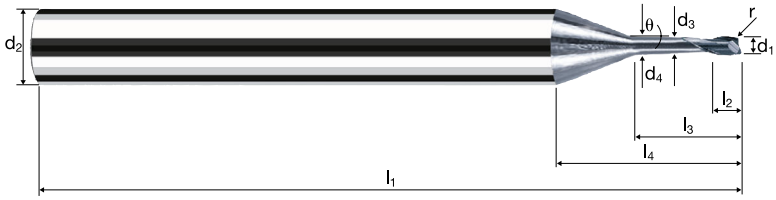
Shank ø 6mm, conical neck 0.9°, 6xd

HM XA	λ 25° γ -10°

h5

d1

r

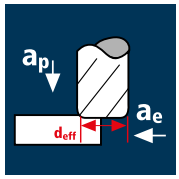


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6735** ø-Code **050**

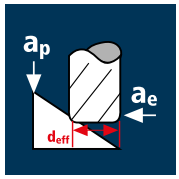
Ø Code	d_1 0/-0.01	d_2 h5	d_3	d_4	l_1	l_2	l_3	l_4	θ	r 0/+0.01	α	z	X-AL	X6735
050	0.50	6.00	0.45	0.53	57	0.40	3.00	13.87	0.9°	0.100	11.8°	2		●
060	0.60	6.00	0.55	0.65	57	0.50	3.60	14.24	0.9°	0.100	11.1°	2		●
080	0.80	6.00	0.75	0.88	57	0.65	4.80	15.01	0.9°	0.100	10.2°	2		●
100	1.00	6.00	0.95	1.11	57	0.80	6.00	15.78	0.9°	0.200	9.4°	2		●
120	1.50	6.00	1.40	1.65	61	1.20	9.00	17.78	0.9°	0.200	7.4°	2		●
140	2.00	6.00	1.90	2.23	66	1.60	12.00	19.69	0.9°	0.200	5.9°	2		●
145	2.00	6.00	1.90	2.23	66	1.60	12.00	19.69	0.9°	0.500	6.0°	2		●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	0.50	2	51	0.008	0.010	0.100	0.39	41625	630	0.10
	0.60	2	65	0.009	0.012	0.120	0.49	42225	745	0.10
	0.80	2	94	0.013	0.016	0.160	0.71	42140	1060	0.10
	1.00	2	102	0.015	0.020	0.200	0.77	42165	1275	0.20
	1.20	2	131	0.018	0.024	0.240	0.99	42120	1485	0.20
	1.50	2	140	0.023	0.030	0.300	1.31	34020	1545	0.20
	2.00	2	140	0.030	0.040	0.400	1.84	24220	1465	0.20
	2.50	2	140	0.038	0.050	0.500	2.36	18885	1430	0.20
	3.00	2	140	0.045	0.060	0.600	2.89	15420	1400	0.20
Hardened tool steel 48 - 52 HRC	0.50	2	51	0.007	0.010	0.100	0.39	41625	600	0.10
	0.60	2	65	0.008	0.012	0.120	0.49	42225	710	0.10
	0.80	2	94	0.012	0.016	0.160	0.71	42140	1010	0.10
	1.00	2	102	0.014	0.020	0.200	0.77	42165	1215	0.20
	1.20	2	120	0.017	0.024	0.240	0.99	38585	1295	0.20
	1.50	2	120	0.022	0.030	0.300	1.31	29160	1260	0.20
	2.00	2	120	0.029	0.040	0.400	1.84	20760	1195	0.20
	2.50	2	120	0.036	0.050	0.500	2.36	16185	1165	0.20
	3.00	2	120	0.043	0.060	0.600	2.89	13215	1140	0.20
Hardened tool steel 52 - 56 HRC	0.50	2	51	0.006	0.010	0.100	0.39	41625	500	0.10
	0.60	2	65	0.007	0.012	0.120	0.49	42225	590	0.10
	0.80	2	94	0.010	0.016	0.160	0.71	42140	845	0.10
	1.00	2	100	0.012	0.020	0.200	0.77	41340	990	0.20
	1.20	2	100	0.014	0.024	0.240	0.99	32155	900	0.20
	1.50	2	100	0.018	0.030	0.300	1.31	24300	875	0.20
	2.00	2	100	0.024	0.040	0.400	1.84	17300	830	0.20
	2.50	2	100	0.030	0.050	0.500	2.36	13490	810	0.20
	3.00	2	100	0.036	0.060	0.600	2.89	11015	795	0.20
Hardened tool steel 56 - 60 HRC	0.50	2	51	0.005	0.010	0.100	0.39	41625	450	0.10
	0.60	2	60	0.006	0.012	0.120	0.49	38975	490	0.10
	0.80	2	60	0.009	0.016	0.160	0.71	26900	485	0.10
	1.00	2	60	0.011	0.020	0.200	0.77	24805	535	0.20
	1.20	2	60	0.013	0.024	0.240	0.99	19290	485	0.20
	1.50	2	60	0.016	0.030	0.300	1.31	14580	470	0.20
	2.00	2	60	0.022	0.040	0.400	1.84	10380	450	0.20
	2.50	2	60	0.027	0.050	0.500	2.36	8095	435	0.20
	3.00	2	60	0.032	0.060	0.600	2.89	6610	430	0.20

Application



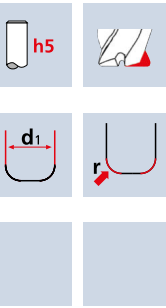
Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.50	2	66	0.022	0.016	0.016	0.50	42015	1850	45°
	0.60	2	79	0.024	0.020	0.020	0.60	41910	2010	45°
	0.80	2	106	0.028	0.032	0.032	0.80	42175	2360	45°
	1.00	2	132	0.034	0.040	0.040	1.00	42015	2855	45°
	1.20	2	158	0.036	0.048	0.048	1.20	41910	3020	45°
	1.50	2	198	0.040	0.060	0.060	1.50	42015	3360	45°
	2.00	2	264	0.046	0.080	0.080	2.00	42015	3865	45°
	2.50	2	300	0.048	0.100	0.100	2.49	38350	3680	45°
	3.00	2	300	0.056	0.120	0.120	2.97	32155	3600	45°
Hardened tool steel 48 - 52 HRC	0.50	2	66	0.020	0.016	0.016	0.50	42015	1680	45°
	0.60	2	79	0.022	0.020	0.020	0.60	41910	1845	45°
	0.80	2	106	0.026	0.032	0.032	0.80	42175	2195	45°
	1.00	2	132	0.032	0.040	0.040	1.00	42015	2690	45°
	1.20	2	158	0.034	0.048	0.048	1.20	41910	2850	45°
	1.50	2	198	0.038	0.060	0.060	1.50	42015	3195	45°
	2.00	2	250	0.044	0.080	0.080	2.00	39790	3500	45°
	2.50	2	250	0.046	0.100	0.100	2.49	31960	2940	45°
	3.00	2	250	0.054	0.120	0.120	2.97	26795	2895	45°
Hardened tool steel 52 - 56 HRC	0.50	2	66	0.020	0.016	0.016	0.50	42015	1680	45°
	0.60	2	79	0.022	0.020	0.020	0.60	41910	1845	45°
	0.80	2	106	0.026	0.032	0.032	0.80	42175	2195	45°
	1.00	2	132	0.030	0.040	0.040	1.00	42015	2520	45°
	1.20	2	158	0.032	0.048	0.048	1.20	41910	2680	45°
	1.50	2	198	0.036	0.060	0.060	1.50	42015	3025	45°
	2.00	2	200	0.042	0.080	0.080	2.00	31830	2675	45°
	2.50	2	200	0.044	0.100	0.100	2.49	25565	2250	45°
	3.00	2	200	0.050	0.120	0.120	2.97	21435	2145	45°
Hardened tool steel 56 - 60 HRC	0.50	2	66	0.018	0.016	0.016	0.50	42015	1515	45°
	0.60	2	79	0.020	0.020	0.020	0.60	41910	1675	45°
	0.80	2	106	0.022	0.032	0.032	0.80	42175	1855	45°
	1.00	2	132	0.028	0.040	0.040	1.00	42015	2355	45°
	1.20	2	150	0.028	0.048	0.048	1.20	39790	2230	45°
	1.50	2	150	0.032	0.060	0.060	1.50	31830	2035	45°
	2.00	2	150	0.036	0.080	0.080	2.00	23875	1720	45°
	2.50	2	150	0.038	0.100	0.100	2.49	19175	1455	45°
	3.00	2	150	0.044	0.120	0.120	2.97	16075	1415	45°

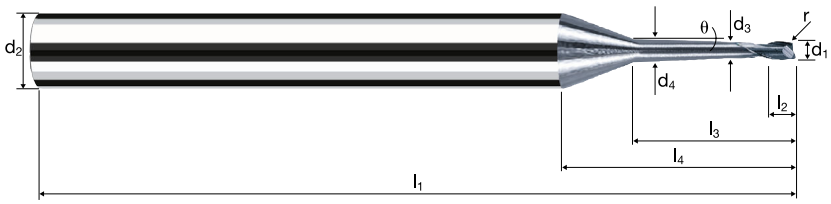
Corner radius end mills MicroX

Shank ø 6mm, conical neck 0.9°, 8xd

HM
XA

λ 25°
γ -10°



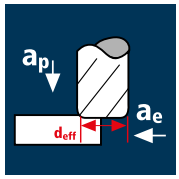


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6736** ø-Code **050**

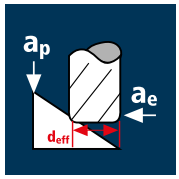
Ø Code	d_1 0/-0.01	d_2 h5	d_3	d_4	l_1	l_2	l_3	l_4	θ	r 0/+0.01	α	z	X-AL X6736
050	0.50	6.00	0.45	0.56	57	0.40	4.00	14.81	0.9°	0.100	11.1°	2	●
060	0.60	6.00	0.55	0.69	57	0.50	4.80	15.37	0.9°	0.100	10.3°	2	●
080	0.80	6.00	0.75	0.93	57	0.65	6.40	16.52	0.9°	0.100	9.2°	2	●
100	1.00	6.00	0.95	1.18	61	0.80	8.00	17.65	0.9°	0.200	8.3°	2	●
108	1.20	6.00	1.10	1.37	61	1.00	9.60	18.90	0.9°	0.200	7.3°	2	●
120	1.50	6.00	1.40	1.74	61	1.20	12.00	20.61	0.9°	0.200	6.4°	2	●
140	2.00	6.00	1.90	2.35	66	1.60	16.00	23.47	0.9°	0.200	4.9°	2	●
160	2.50	6.00	2.30	2.87	69	2.00	20.00	26.50	0.9°	0.200	3.8°	2	●
180	3.00	6.00	2.80	3.48	75	2.40	24.00	29.36	0.9°	0.200	2.9°	2	●
145	2.00	6.00	1.90	2.35	66	1.60	16.00	23.47	0.9°	0.500	5.0°	2	●
165	2.50	6.00	2.30	2.87	69	2.00	20.00	26.50	0.9°	0.500	3.9°	2	●
185	3.00	6.00	2.80	3.48	75	2.40	24.00	29.36	0.9°	0.500	3.0°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	0.50	2	50	0.008	0.008	0.100	0.38	41885	635	0.10
	0.60	2	65	0.009	0.010	0.120	0.49	42225	745	0.10
	0.80	2	79	0.013	0.000	0.130	0.60	41910	1055	0.10
	1.00	2	100	0.015	0.016	0.200	0.76	41885	1265	0.20
	1.20	2	128	0.018	0.019	0.240	0.97	42005	1480	0.20
	1.50	2	140	0.023	0.024	0.300	1.29	34545	1565	0.20
	2.00	2	140	0.030	0.032	0.400	1.82	24485	1480	0.20
	2.50	2	140	0.038	0.040	0.500	2.34	19045	1440	0.20
	3.00	2	140	0.045	0.048	0.600	2.86	15580	1415	0.20
Hardened tool steel 48 - 52 HRC	0.50	2	50	0.007	0.008	0.100	0.38	41885	605	0.10
	0.60	2	65	0.008	0.010	0.120	0.49	42225	710	0.10
	0.80	2	79	0.012	0.000	0.130	0.60	41910	1005	0.10
	1.00	2	100	0.014	0.016	0.200	0.76	41885	1205	0.20
	1.20	2	120	0.017	0.019	0.240	0.97	39380	1325	0.20
	1.50	2	120	0.022	0.024	0.300	1.29	29610	1280	0.20
	2.00	2	120	0.029	0.032	0.400	1.82	20985	1210	0.20
	2.50	2	120	0.036	0.040	0.500	2.34	16325	1175	0.20
	3.00	2	120	0.043	0.048	0.600	2.86	13355	1155	0.20
Hardened tool steel 52 - 56 HRC	0.50	2	50	0.006	0.008	0.100	0.38	41885	505	0.10
	0.60	2	65	0.007	0.010	0.120	0.49	42225	590	0.10
	0.80	2	79	0.010	0.000	0.130	0.60	41910	840	0.10
	1.00	2	100	0.012	0.016	0.200	0.76	41885	1005	0.20
	1.20	2	100	0.014	0.019	0.240	0.97	32815	920	0.20
	1.50	2	100	0.018	0.024	0.300	1.29	24675	890	0.20
	2.00	2	100	0.024	0.032	0.400	1.82	17490	840	0.20
	2.50	2	100	0.030	0.040	0.500	2.34	13605	815	0.20
	3.00	2	100	0.036	0.048	0.600	2.86	11130	800	0.20
Hardened tool steel 56 - 60 HRC	0.50	2	50	0.005	0.008	0.100	0.38	41885	450	0.10
	0.60	2	60	0.006	0.010	0.120	0.49	38975	490	0.10
	0.80	2	60	0.009	0.000	0.130	0.60	31830	575	0.10
	1.00	2	60	0.011	0.016	0.200	0.76	25130	545	0.20
	1.20	2	60	0.013	0.019	0.240	0.97	19690	495	0.20
	1.50	2	60	0.016	0.024	0.300	1.29	14805	480	0.20
	2.00	2	60	0.022	0.032	0.400	1.82	10495	455	0.20
	2.50	2	60	0.027	0.040	0.500	2.34	8160	440	0.20
	3.00	2	60	0.032	0.048	0.600	2.86	6680	435	0.20

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.50	2	66	0.022	0.016	0.016	0.50	42015	1850	45°
	0.60	2	79	0.024	0.020	0.020	0.60	41910	2010	45°
	0.80	2	106	0.028	0.032	0.032	0.80	42175	2360	45°
	1.00	2	132	0.034	0.040	0.040	1.00	42015	2855	45°
	1.20	2	158	0.036	0.048	0.048	1.20	41910	3020	45°
	1.50	2	198	0.040	0.060	0.060	1.50	42015	3360	45°
	2.00	2	264	0.046	0.080	0.080	2.00	42015	3865	45°
	2.50	2	300	0.048	0.100	0.100	2.49	38350	3680	45°
	3.00	2	300	0.056	0.120	0.120	2.97	32155	3600	45°
Hardened tool steel 48 - 52 HRC	0.50	2	66	0.020	0.016	0.016	0.50	42015	1680	45°
	0.60	2	79	0.022	0.020	0.020	0.60	41910	1845	45°
	0.80	2	106	0.026	0.032	0.032	0.80	42175	2195	45°
	1.00	2	132	0.032	0.040	0.040	1.00	42015	2690	45°
	1.20	2	158	0.034	0.048	0.048	1.20	41910	2850	45°
	1.50	2	198	0.038	0.060	0.060	1.50	42015	3195	45°
	2.00	2	250	0.044	0.080	0.080	2.00	39790	3500	45°
	2.50	2	250	0.046	0.100	0.100	2.49	31960	2940	45°
	3.00	2	250	0.054	0.120	0.120	2.97	26795	2895	45°
Hardened tool steel 52 - 56 HRC	0.50	2	66	0.020	0.016	0.016	0.50	42015	1680	45°
	0.60	2	79	0.022	0.020	0.020	0.60	41910	1845	45°
	0.80	2	106	0.026	0.032	0.032	0.80	42175	2195	45°
	1.00	2	132	0.030	0.040	0.040	1.00	42015	2520	45°
	1.20	2	158	0.032	0.048	0.048	1.20	41910	2680	45°
	1.50	2	198	0.036	0.060	0.060	1.50	42015	3025	45°
	2.00	2	200	0.042	0.080	0.080	2.00	31830	2675	45°
	2.50	2	200	0.044	0.100	0.100	2.49	25565	2250	45°
	3.00	2	200	0.050	0.120	0.120	2.97	21435	2145	45°
Hardened tool steel 56 - 60 HRC	0.50	2	66	0.018	0.016	0.016	0.50	42015	1515	45°
	0.60	2	79	0.020	0.020	0.020	0.60	41910	1675	45°
	0.80	2	106	0.022	0.032	0.032	0.80	42175	1855	45°
	1.00	2	132	0.028	0.040	0.040	1.00	42015	2355	45°
	1.20	2	150	0.028	0.048	0.048	1.20	39790	2230	45°
	1.50	2	150	0.032	0.060	0.060	1.50	31830	2035	45°
	2.00	2	150	0.036	0.080	0.080	2.00	23875	1720	45°
	2.50	2	150	0.038	0.100	0.100	2.49	19175	1455	45°
	3.00	2	150	0.044	0.120	0.120	2.97	16075	1415	45°

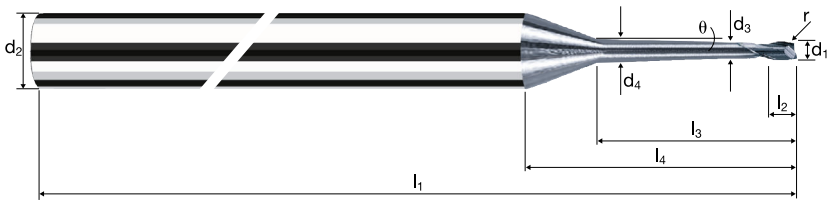
Corner radius end mills MicroX

Shank ø 6mm, conical neck 0.9°, 10xd

X-Generation X

II

HM XA	λ 25° γ -10°

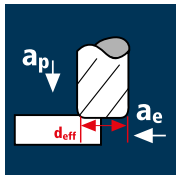


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6738** ø-Code **050**

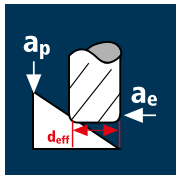
Ø Code	d_1 0/-0.01	d_2 h5	d_3	d_4	l_1	l_2	l_3	l_4	θ	r 0/+0.01	α	z	X-AL X6738
050	0.50	6.00	0.45	0.59	57	0.40	5.00	15.75	0.9°	0.100	10.4°	2	●
060	0.60	6.00	0.55	0.72	57	0.50	6.00	16.51	0.9°	0.100	9.6°	2	●
080	0.80	6.00	0.75	0.98	61	0.65	8.00	18.03	0.9°	0.100	8.6°	2	●
100	1.00	6.00	0.95	1.24	61	0.80	10.00	19.54	0.9°	0.200	7.6°	2	●
108	1.20	6.00	1.10	1.45	66	1.00	12.00	21.15	0.9°	0.200	6.8°	2	●
120	1.50	6.00	1.40	1.83	66	1.20	15.00	23.44	0.9°	0.200	5.8°	2	●
140	2.00	6.00	1.90	2.48	69	1.60	20.00	27.23	0.9°	0.200	4.4°	2	●
160	2.50	6.00	2.30	3.02	75	2.00	25.00	31.22	0.9°	0.200	3.4°	2	●
180	3.00	6.00	2.80	3.67	75	2.40	30.00	35.01	0.9°	0.200	2.6°	2	●
145	2.00	6.00	1.90	2.48	69	1.60	20.00	27.23	0.9°	0.500	4.4°	2	●
165	2.50	6.00	2.30	3.02	75	2.00	25.00	31.22	0.9°	0.500	3.4°	2	●
185	3.00	6.00	2.80	3.67	75	2.40	30.00	35.01	0.9°	0.500	2.6°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	0.50	2	49	0.008	0.007	0.100	0.37	42155	635	0.10
	0.60	2	63	0.009	0.008	0.120	0.48	41780	735	0.10
	0.80	2	91	0.013	0.011	0.160	0.69	41980	1060	0.10
	1.00	2	98	0.015	0.013	0.200	0.74	42155	1275	0.20
	1.20	2	127	0.018	0.016	0.240	0.96	42110	1485	0.20
	1.50	2	140	0.023	0.020	0.300	1.27	35090	1590	0.20
	2.00	2	140	0.030	0.027	0.400	1.80	24755	1495	0.20
	2.50	2	140	0.038	0.033	0.500	2.32	19210	1450	0.20
	3.00	2	140	0.045	0.040	0.600	2.84	15690	1425	0.20
Hardened tool steel 48 - 52 HRC	0.50	2	49	0.007	0.007	0.100	0.37	42155	605	0.10
	0.60	2	63	0.008	0.008	0.120	0.48	41780	700	0.10
	0.80	2	91	0.012	0.011	0.160	0.69	41980	1010	0.10
	1.00	2	98	0.014	0.013	0.200	0.74	42155	1215	0.20
	1.20	2	120	0.017	0.016	0.240	0.96	39790	1335	0.20
	1.50	2	120	0.022	0.020	0.300	1.27	30075	1300	0.20
	2.00	2	120	0.029	0.027	0.400	1.80	21220	1220	0.20
	2.50	2	120	0.036	0.033	0.500	2.32	16465	1185	0.20
	3.00	2	120	0.043	0.040	0.600	2.84	13450	1160	0.20
Hardened tool steel 52 - 56 HRC	0.50	2	49	0.006	0.007	0.100	0.37	42155	505	0.10
	0.60	2	63	0.007	0.008	0.120	0.48	41780	585	0.10
	0.80	2	91	0.010	0.011	0.160	0.69	41980	840	0.10
	1.00	2	98	0.012	0.013	0.200	0.74	42155	1010	0.20
	1.20	2	100	0.014	0.016	0.240	0.96	33155	930	0.20
	1.50	2	100	0.018	0.020	0.300	1.27	25065	900	0.20
	2.00	2	100	0.024	0.027	0.400	1.80	17685	850	0.20
	2.50	2	100	0.030	0.033	0.500	2.32	13720	825	0.20
	3.00	2	100	0.036	0.040	0.600	2.84	11210	805	0.20
Hardened tool steel 56 - 60 HRC	0.50	2	49	0.005	0.007	0.100	0.37	42155	455	0.10
	0.60	2	60	0.006	0.008	0.120	0.48	39790	500	0.10
	0.80	2	60	0.009	0.011	0.160	0.69	27680	500	0.10
	1.00	2	60	0.011	0.013	0.200	0.74	25810	555	0.20
	1.20	2	60	0.013	0.016	0.240	0.96	19895	500	0.20
	1.50	2	60	0.016	0.020	0.300	1.27	15040	485	0.20
	2.00	2	60	0.022	0.027	0.400	1.80	10610	460	0.20
	2.50	2	60	0.027	0.033	0.500	2.32	8230	445	0.20
	3.00	2	60	0.032	0.040	0.600	2.84	6725	435	0.20

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.50	2	66	0.022	0.016	0.016	0.50	42015	1850	45°
	0.60	2	79	0.024	0.020	0.020	0.60	41910	2010	45°
	0.80	2	106	0.028	0.032	0.032	0.80	42175	2360	45°
	1.00	2	132	0.034	0.040	0.040	1.00	42015	2855	45°
	1.20	2	158	0.036	0.048	0.048	1.20	41910	3020	45°
	1.50	2	198	0.040	0.060	0.060	1.50	42015	3360	45°
	2.00	2	264	0.046	0.080	0.080	2.00	42015	3865	45°
	2.50	2	300	0.048	0.100	0.100	2.49	38350	3680	45°
	3.00	2	300	0.056	0.120	0.120	2.97	32155	3600	45°
Hardened tool steel 48 - 52 HRC	0.50	2	66	0.020	0.016	0.016	0.50	42015	1680	45°
	0.60	2	79	0.022	0.020	0.020	0.60	41910	1845	45°
	0.80	2	106	0.026	0.032	0.032	0.80	42175	2195	45°
	1.00	2	132	0.032	0.040	0.040	1.00	42015	2690	45°
	1.20	2	158	0.034	0.048	0.048	1.20	41910	2850	45°
	1.50	2	198	0.038	0.060	0.060	1.50	42015	3195	45°
	2.00	2	250	0.044	0.080	0.080	2.00	39790	3500	45°
	2.50	2	250	0.046	0.100	0.100	2.49	31960	2940	45°
	3.00	2	250	0.054	0.120	0.120	2.97	26795	2895	45°
Hardened tool steel 52 - 56 HRC	0.50	2	66	0.020	0.016	0.016	0.50	42015	1680	45°
	0.60	2	79	0.022	0.020	0.020	0.60	41910	1845	45°
	0.80	2	106	0.026	0.032	0.032	0.80	42175	2195	45°
	1.00	2	132	0.030	0.040	0.040	1.00	42015	2520	45°
	1.20	2	158	0.032	0.048	0.048	1.20	41910	2680	45°
	1.50	2	198	0.036	0.060	0.060	1.50	42015	3025	45°
	2.00	2	200	0.042	0.080	0.080	2.00	31830	2675	45°
	2.50	2	200	0.044	0.100	0.100	2.49	25565	2250	45°
	3.00	2	200	0.050	0.120	0.120	2.97	21435	2145	45°
Hardened tool steel 56 - 60 HRC	0.50	2	66	0.018	0.016	0.016	0.50	42015	1515	45°
	0.60	2	79	0.020	0.020	0.020	0.60	41910	1675	45°
	0.80	2	106	0.022	0.032	0.032	0.80	42175	1855	45°
	1.00	2	132	0.028	0.040	0.040	1.00	42015	2355	45°
	1.20	2	150	0.028	0.048	0.048	1.20	39790	2230	45°
	1.50	2	150	0.032	0.060	0.060	1.50	31830	2035	45°
	2.00	2	150	0.036	0.080	0.080	2.00	23875	1720	45°
	2.50	2	150	0.038	0.100	0.100	2.49	19175	1455	45°
	3.00	2	150	0.044	0.120	0.120	2.97	16075	1415	45°

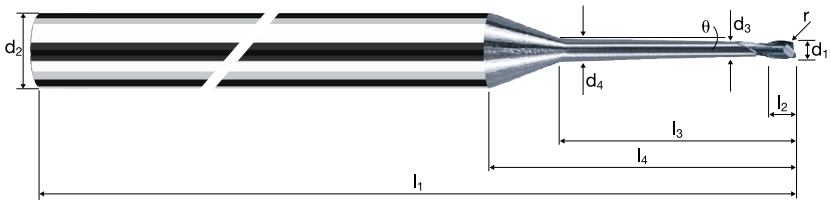
Corner radius end mills MicroX

Shank ø 6mm, conical neck 0.9°, 12xd

X-Generation X

II

HM XA	λ 25° γ -10°

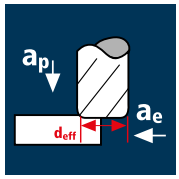


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6740** ø-Code **050**

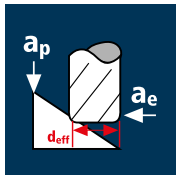
Ø Code	d_1 0/-0.01	d_2 h5	d_3	d_4	l_1	l_2	l_3	l_4	θ	r 0/+0.01	α	z	X-AL	X6740
050	0.50	6.00	0.45	0.63	57	0.40	6.00	16.68	0.9°	0.100	9.9°	2		●
060	0.60	6.00	0.55	0.76	57	0.50	7.20	17.64	0.9°	0.100	8.9°	2		●
080	0.80	6.00	0.75	1.03	61	0.65	9.60	19.53	0.9°	0.100	7.9°	2		●
100	1.00	6.00	0.95	1.30	66	0.80	12.00	21.43	0.9°	0.200	7.0°	2		●
108	1.20	6.00	1.10	1.52	66	1.00	14.40	23.42	0.9°	0.200	6.2°	2		●
120	1.50	6.00	1.40	1.93	69	1.20	18.00	26.25	0.9°	0.200	5.1°	2		●
140	2.00	6.00	1.90	2.60	75	1.60	24.00	31.00	0.9°	0.200	3.9°	2		●
160	2.50	6.00	2.30	3.18	80	2.00	30.00	35.92	0.9°	0.200	2.9°	2		●
180	3.00	6.00	2.80	3.86	87	2.40	36.00	40.65	0.9°	0.200	2.2°	2		●
145	2.00	6.00	1.90	2.60	75	1.60	24.00	31.00	0.9°	0.500	3.9°	2		●
165	2.50	6.00	2.30	3.18	80	2.00	30.00	35.92	0.9°	0.500	2.9°	2		●
185	3.00	6.00	2.80	3.86	87	2.40	36.00	40.65	0.9°	0.500	2.2°	2		●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	0.50	2	48	0.008	0.005	0.100	0.36	42440	640	0.10
	0.60	2	62	0.009	0.006	0.120	0.47	41990	740	0.10
	0.80	2	90	0.013	0.009	0.160	0.68	42130	1060	0.10
	1.00	2	96	0.015	0.011	0.200	0.73	41860	1265	0.20
	1.20	2	124	0.018	0.013	0.240	0.94	41990	1480	0.20
	1.50	2	140	0.023	0.016	0.300	1.26	35370	1605	0.20
	2.00	2	140	0.030	0.021	0.400	1.78	25035	1515	0.20
	2.50	2	140	0.038	0.027	0.500	2.30	19375	1465	0.20
	3.00	2	140	0.045	0.032	0.600	2.82	15805	1435	0.20
Hardened tool steel 48 - 52 HRC	0.50	2	48	0.007	0.005	0.100	0.36	42440	610	0.10
	0.60	2	62	0.008	0.006	0.120	0.47	41990	705	0.10
	0.80	2	90	0.012	0.009	0.160	0.68	42130	1010	0.10
	1.00	2	96	0.014	0.011	0.200	0.73	41860	1205	0.20
	1.20	2	120	0.017	0.013	0.240	0.94	40635	1365	0.20
	1.50	2	120	0.022	0.016	0.300	1.26	30315	1310	0.20
	2.00	2	120	0.029	0.021	0.400	1.78	21460	1235	0.20
	2.50	2	120	0.036	0.027	0.500	2.30	16605	1195	0.20
	3.00	2	120	0.043	0.032	0.600	2.82	13545	1170	0.20
Hardened tool steel 52 - 56 HRC	0.50	2	48	0.006	0.005	0.100	0.36	42440	510	0.10
	0.60	2	62	0.007	0.006	0.120	0.47	41990	590	0.10
	0.80	2	90	0.010	0.009	0.160	0.68	42130	845	0.10
	1.00	2	96	0.012	0.011	0.200	0.73	41860	1005	0.20
	1.20	2	100	0.014	0.013	0.240	0.94	33865	950	0.20
	1.50	2	100	0.018	0.016	0.300	1.26	25265	910	0.20
	2.00	2	100	0.024	0.021	0.400	1.78	17885	860	0.20
	2.50	2	100	0.030	0.027	0.500	2.30	13840	830	0.20
	3.00	2	100	0.036	0.032	0.600	2.82	11290	815	0.20
Hardened tool steel 56 - 60 HRC	0.50	2	48	0.005	0.005	0.100	0.36	42440	460	0.10
	0.60	2	60	0.006	0.006	0.120	0.47	40635	510	0.10
	0.80	2	60	0.009	0.009	0.160	0.68	28085	505	0.10
	1.00	2	60	0.011	0.011	0.200	0.73	26160	565	0.20
	1.20	2	60	0.013	0.013	0.240	0.94	20320	510	0.20
	1.50	2	60	0.016	0.016	0.300	1.26	15160	490	0.20
	2.00	2	60	0.022	0.021	0.400	1.78	10730	465	0.20
	2.50	2	60	0.027	0.027	0.500	2.30	8305	450	0.20
	3.00	2	60	0.032	0.032	0.600	2.82	6775	440	0.20

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.50	2	65	0.018	0.012	0.012	0.49	42225	1520	45°
	0.60	2	78	0.018	0.012	0.012	0.59	42080	1515	45°
	0.80	2	106	0.020	0.020	0.020	0.80	42175	1685	45°
	1.00	2	131	0.026	0.026	0.026	0.99	42120	2190	45°
	1.20	2	157	0.028	0.030	0.030	1.19	41995	2350	45°
	1.50	2	197	0.030	0.038	0.038	1.49	42085	2525	45°
	2.00	2	264	0.034	0.050	0.050	2.00	42015	2855	45°
	2.50	2	300	0.036	0.062	0.062	2.50	38195	2750	45°
	3.00	2	300	0.042	0.076	0.076	3.00	31830	2675	45°
Hardened tool steel 48 - 52 HRC	0.50	2	65	0.018	0.012	0.012	0.49	42225	1520	45°
	0.60	2	78	0.018	0.012	0.012	0.59	42080	1515	45°
	0.80	2	106	0.020	0.020	0.020	0.80	42175	1685	45°
	1.00	2	131	0.024	0.026	0.026	0.99	42120	2020	45°
	1.20	2	157	0.026	0.030	0.030	1.19	41995	2185	45°
	1.50	2	197	0.028	0.038	0.038	1.49	42085	2355	45°
	2.00	2	250	0.032	0.050	0.050	2.00	39790	2545	45°
	2.50	2	250	0.034	0.062	0.062	2.50	31830	2165	45°
	3.00	2	250	0.040	0.076	0.076	3.00	26525	2120	45°
Hardened tool steel 52 - 56 HRC	0.50	2	65	0.016	0.012	0.012	0.49	42225	1350	45°
	0.60	2	78	0.016	0.012	0.012	0.59	42080	1345	45°
	0.80	2	106	0.018	0.020	0.020	0.80	42175	1520	45°
	1.00	2	131	0.024	0.026	0.026	0.99	42120	2020	45°
	1.20	2	157	0.026	0.030	0.030	1.19	41995	2185	45°
	1.50	2	197	0.028	0.038	0.038	1.49	42085	2355	45°
	2.00	2	200	0.030	0.050	0.050	2.00	31830	1910	45°
	2.50	2	200	0.032	0.062	0.062	2.50	25465	1630	45°
	3.00	2	200	0.038	0.076	0.076	3.00	21220	1615	45°
Hardened tool steel 56 - 60 HRC	0.50	2	65	0.014	0.012	0.012	0.49	42225	1180	45°
	0.60	2	78	0.014	0.012	0.012	0.59	42080	1180	45°
	0.80	2	106	0.016	0.020	0.020	0.80	42175	1350	45°
	1.00	2	131	0.020	0.026	0.026	0.99	42120	1685	45°
	1.20	2	150	0.022	0.030	0.030	1.19	40125	1765	45°
	1.50	2	150	0.024	0.038	0.038	1.49	32045	1540	45°
	2.00	2	150	0.028	0.050	0.050	2.00	23875	1335	45°
	2.50	2	150	0.028	0.062	0.062	2.50	19100	1070	45°
	3.00	2	150	0.034	0.076	0.076	3.00	15915	1080	45°

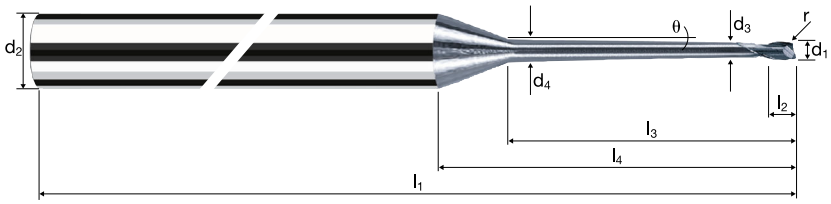
Corner radius end mills MicroX

Shank ø 6mm, conical neck 0.9°, 15xd

X-Generation X

II

HM XA	λ 25° γ -10°

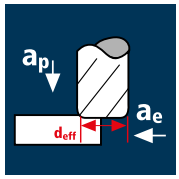


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6742** ø-Code **050**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	d_4	l_1	l_2	l_3	l_4	θ	r 0/+0.01	α	z	X-AL X6742
050	0.50	6.00	0.45	0.67	61	0.40	7.50	18.10	0.9°	0.100	9.1°	2	●
060	0.60	6.00	0.55	0.82	61	0.50	9.00	19.32	0.9°	0.100	8.1°	2	●
080	0.80	6.00	0.75	1.11	66	0.65	12.00	21.78	0.9°	0.100	7.1°	2	●
100	1.00	6.00	0.95	1.40	66	0.80	15.00	24.24	0.9°	0.200	6.1°	2	●
108	1.20	6.00	1.10	1.63	69	1.00	18.00	26.81	0.9°	0.200	5.3°	2	●
120	1.50	6.00	1.40	2.07	75	1.20	22.50	30.49	0.9°	0.200	4.4°	2	●
140	2.00	6.00	1.90	2.79	80	1.60	30.00	36.65	0.9°	0.200	3.3°	2	●
160	2.50	6.00	2.30	3.42	87	2.00	37.50	42.97	0.9°	0.200	2.4°	2	●
180	3.00	6.00	2.80	4.14	100	2.40	45.00	49.13	0.9°	0.200	1.8°	2	●
145	2.00	6.00	1.90	2.79	80	1.60	30.00	36.65	0.9°	0.500	3.3°	2	●
165	2.50	6.00	2.30	3.42	87	2.00	37.50	42.97	0.9°	0.500	2.4°	2	●
185	3.00	6.00	2.80	4.14	100	2.40	45.00	49.13	0.9°	0.500	1.8°	2	●

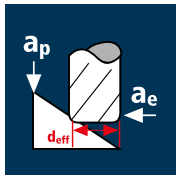
Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
0.50	2	48	0.008	0.004	0.100	0.36	42440	640	0.10
0.60	2	61	0.009	0.005	0.120	0.46	42210	745	0.10
0.80	2	88	0.013	0.006	0.160	0.67	41810	1055	0.10
1.00	2	94	0.015	0.008	0.200	0.71	42140	1275	0.20
1.50	2	140	0.023	0.012	0.300	1.24	35940	1630	0.20
2.00	2	140	0.030	0.016	0.400	1.76	25320	1530	0.20
2.50	2	140	0.038	0.020	0.500	2.27	19630	1485	0.20
3.00	2	140	0.045	0.024	0.600	2.79	15975	1450	0.20
Hardened tool steel 48 - 52 HRC									
0.50	2	48	0.007	0.004	0.100	0.36	42440	610	0.10
0.60	2	61	0.008	0.005	0.120	0.46	42210	710	0.10
0.80	2	88	0.012	0.006	0.160	0.67	41810	1005	0.10
1.00	2	94	0.014	0.008	0.200	0.71	42140	1215	0.20
1.50	2	120	0.022	0.012	0.300	1.24	30805	1330	0.20
2.00	2	120	0.029	0.016	0.400	1.76	21705	1250	0.20
2.50	2	120	0.036	0.020	0.500	2.27	16825	1210	0.20
3.00	2	120	0.043	0.024	0.600	2.79	13690	1185	0.20
Hardened tool steel 52 - 56 HRC									
0.50	2	48	0.006	0.004	0.100	0.36	42440	510	0.10
0.60	2	61	0.007	0.005	0.120	0.46	42210	590	0.10
0.80	2	88	0.010	0.006	0.160	0.67	41810	835	0.10
1.00	2	94	0.012	0.008	0.200	0.71	42140	1010	0.20
1.50	2	100	0.018	0.012	0.300	1.24	25670	925	0.20
2.00	2	100	0.024	0.016	0.400	1.76	18085	870	0.20
2.50	2	100	0.030	0.020	0.500	2.27	14020	840	0.20
3.00	2	100	0.036	0.024	0.600	2.79	11410	820	0.20
Hardened tool steel 56 - 60 HRC									
0.50	2	48	0.005	0.004	0.100	0.36	42440	460	0.10
0.60	2	60	0.006	0.005	0.120	0.46	41520	525	0.10
0.80	2	60	0.009	0.006	0.160	0.67	28505	515	0.10
1.00	2	60	0.011	0.008	0.200	0.71	26900	580	0.20
1.50	2	60	0.016	0.012	0.300	1.24	15400	500	0.20
2.00	2	60	0.022	0.016	0.400	1.76	10850	470	0.20
2.50	2	60	0.027	0.020	0.500	2.27	8415	455	0.20
3.00	2	60	0.032	0.024	0.600	2.79	6845	445	0.20

Application



Material

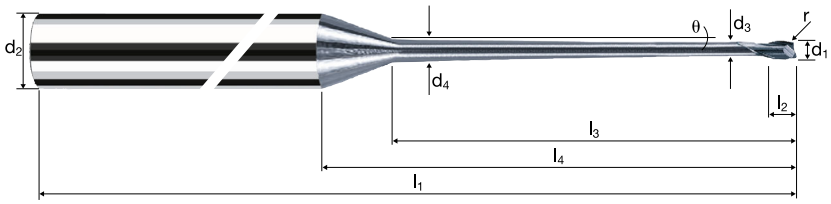
d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.50	2	65	0.018	0.012	0.012	0.49	42225	1520	45°
0.60	2	78	0.018	0.012	0.012	0.59	42080	1515	45°
0.80	2	106	0.020	0.020	0.020	0.80	42175	1685	45°
1.00	2	131	0.026	0.026	0.026	0.99	42120	2190	45°
1.50	2	197	0.030	0.038	0.038	1.49	42085	2525	45°
2.00	2	264	0.034	0.050	0.050	2.00	42015	2855	45°
2.50	2	300	0.036	0.062	0.062	2.50	38195	2750	45°
3.00	2	300	0.042	0.076	0.076	3.00	31830	2675	45°
Hardened tool steel 48 - 52 HRC									
0.50	2	65	0.018	0.012	0.012	0.49	42225	1520	45°
0.60	2	78	0.018	0.012	0.012	0.59	42080	1515	45°
0.80	2	106	0.020	0.020	0.020	0.80	42175	1685	45°
1.00	2	131	0.024	0.026	0.026	0.99	42120	2020	45°
1.50	2	197	0.028	0.038	0.038	1.49	42085	2355	45°
2.00	2	250	0.032	0.050	0.050	2.00	39790	2545	45°
2.50	2	250	0.034	0.062	0.062	2.50	31830	2165	45°
3.00	2	250	0.040	0.076	0.076	3.00	26525	2120	45°
Hardened tool steel 52 - 56 HRC									
0.50	2	65	0.016	0.012	0.012	0.49	42225	1350	45°
0.60	2	78	0.016	0.012	0.012	0.59	42080	1345	45°
0.80	2	106	0.018	0.020	0.020	0.80	42175	1520	45°
1.00	2	131	0.024	0.026	0.026	0.99	42120	2020	45°
1.50	2	197	0.028	0.038	0.038	1.49	42085	2355	45°
2.00	2	200	0.030	0.050	0.050	2.00	31830	1910	45°
2.50	2	200	0.032	0.062	0.062	2.50	25465	1630	45°
3.00	2	200	0.038	0.076	0.076	3.00	21220	1615	45°
Hardened tool steel 56 - 60 HRC									
0.50	2	65	0.014	0.012	0.012	0.49	42225	1180	45°
0.60	2	78	0.014	0.012	0.012	0.59	42080	1180	45°
0.80	2	106	0.016	0.020	0.020	0.80	42175	1350	45°
1.00	2	131	0.020	0.026	0.026	0.99	42120	1685	45°
1.50	2	150	0.024	0.038	0.038	1.49	32045	1540	45°
2.00	2	150	0.028	0.050	0.050	2.00	23875	1335	45°
2.50	2	150	0.028	0.062	0.062	2.50	19100	1070	45°
3.00	2	150	0.034	0.076	0.076	3.00	15915	1080	45°

Corner radius end mills MicroX

Shank ø 6mm, conical neck 0.9°, 20xd

HM
XA

λ 25°
γ -10°

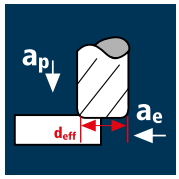


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6744** ø-Code **050**

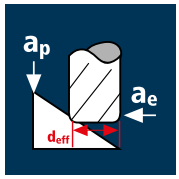
Ø Code	d_1 0/-0.01	d_2 h5	d_3	d_4	l_1	l_2	l_3	l_4	θ	r 0/+0.01	α	z	X-AL	X6744
050	0.50	6.00	0.45	0.75	61	0.40	10.00	20.45	0.9°	0.100	7.8°	2		●
060	0.60	6.00	0.55	0.91	66	0.50	12.00	22.16	0.9°	0.100	7.0°	2		●
080	0.80	6.00	0.75	1.23	69	0.65	16.00	25.56	0.9°	0.100	5.8°	2		●
100	1.00	6.00	0.95	1.55	69	0.80	20.00	28.96	0.9°	0.200	4.9°	2		●
120	1.50	6.00	1.40	2.30	80	1.20	30.00	37.56	0.9°	0.200	3.4°	2		●
140	2.00	6.00	1.90	3.11	87	1.60	40.00	46.05	0.9°	0.200	2.5°	2		●
160	2.50	6.00	2.30	3.81	100	2.00	50.00	54.74	0.9°	0.200	1.8°	2		●
180	3.00	6.00	2.80	4.61	100	2.40	60.00	63.25	0.9°	0.200	1.4°	2		●
145	2.00	6.00	1.90	3.11	87	1.60	40.00	46.05	0.9°	0.500	2.5°	2		●
165	2.50	6.00	2.30	3.81	100	2.00	50.00	54.74	0.9°	0.500	1.8°	2		●
185	3.00	6.00	2.80	4.61	100	2.40	60.00	63.25	0.9°	0.500	1.4°	2		●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	0.50	4	58	0.016	0.030	0.100	0.44	41960	2685	0.10
	0.80	4	102	0.026	0.050	0.160	0.77	42165	4385	0.10
	1.00	4	117	0.034	0.060	0.200	0.89	41845	5690	0.20
	1.20	4	140	0.040	0.070	0.240	1.10	40510	6480	0.20
	1.50	4	140	0.050	0.090	0.300	1.43	31165	6235	0.20
	2.00	4	140	0.066	0.120	0.400	1.97	22620	5970	0.20
	2.50	4	140	0.084	0.150	0.500	2.49	17895	6015	0.20
	3.00	4	140	0.100	0.180	0.600	3.00	14855	5940	0.20
Hardened tool steel 48 - 52 HRC	0.50	4	58	0.016	0.030	0.100	0.44	41960	2685	0.10
	0.80	4	102	0.024	0.050	0.160	0.77	42165	4050	0.10
	1.00	4	117	0.032	0.060	0.200	0.89	41845	5355	0.20
	1.20	4	120	0.038	0.070	0.240	1.10	34725	5280	0.20
	1.50	4	120	0.048	0.090	0.300	1.43	26710	5130	0.20
	2.00	4	120	0.062	0.120	0.400	1.97	19390	4810	0.20
	2.50	4	120	0.080	0.150	0.500	2.49	15340	4910	0.20
	3.00	4	120	0.096	0.180	0.600	3.00	12730	4890	0.20
Hardened tool steel 52 - 56 HRC	0.50	4	58	0.014	0.030	0.100	0.44	41960	2350	0.10
	0.80	4	100	0.022	0.050	0.160	0.77	41340	3640	0.10
	1.00	4	100	0.030	0.060	0.200	0.89	35765	4290	0.20
	1.20	4	100	0.036	0.070	0.240	1.10	28935	4165	0.20
	1.50	4	100	0.044	0.090	0.300	1.43	22260	3920	0.20
	2.00	4	100	0.058	0.120	0.400	1.97	16160	3750	0.20
	2.50	4	100	0.074	0.150	0.500	2.49	12785	3785	0.20
	3.00	4	100	0.088	0.180	0.600	3.00	10610	3735	0.20
Hardened tool steel 56 - 60 HRC	0.50	4	58	0.012	0.030	0.100	0.44	41960	2015	0.10
	0.80	4	60	0.020	0.050	0.160	0.77	24805	1985	0.10
	1.00	4	60	0.028	0.060	0.200	0.89	21460	2405	0.20
	1.20	4	60	0.032	0.070	0.240	1.10	17360	2220	0.20
	1.50	4	60	0.040	0.090	0.300	1.43	13355	2135	0.20
	2.00	4	60	0.052	0.120	0.400	1.97	9695	2015	0.20
	2.50	4	60	0.068	0.150	0.500	2.49	7670	2085	0.20
	3.00	4	60	0.080	0.180	0.600	3.00	6365	2035	0.20

Application

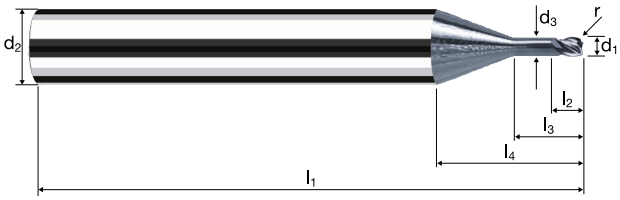


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.50	4	66	0.020	0.022	0.022	0.50	42015	3360	45°
	0.80	4	106	0.022	0.034	0.034	0.80	42175	3710	45°
	1.00	4	132	0.028	0.042	0.042	1.00	42015	4705	45°
	1.20	4	158	0.030	0.050	0.050	1.20	41910	5030	45°
	1.50	4	198	0.034	0.064	0.064	1.50	42015	5715	45°
	2.00	4	263	0.038	0.084	0.084	1.99	42070	6395	45°
	2.50	4	300	0.040	0.106	0.106	2.48	38505	6160	45°
	3.00	4	300	0.046	0.126	0.126	2.97	32155	5915	45°
Hardened tool steel 48 - 52 HRC	0.50	4	66	0.020	0.022	0.022	0.50	42015	3360	45°
	0.80	4	106	0.020	0.034	0.034	0.80	42175	3375	45°
	1.00	4	132	0.026	0.042	0.042	1.00	42015	4370	45°
	1.20	4	158	0.028	0.050	0.050	1.20	41910	4695	45°
	1.50	4	198	0.032	0.064	0.064	1.50	42015	5380	45°
	2.00	4	250	0.036	0.084	0.084	1.99	39990	5760	45°
	2.50	4	250	0.038	0.106	0.106	2.48	32090	4875	45°
	3.00	4	250	0.044	0.126	0.126	2.97	26795	4715	45°
Hardened tool steel 52 - 56 HRC	0.50	4	66	0.018	0.022	0.022	0.50	42015	3025	45°
	0.80	4	106	0.020	0.034	0.034	0.80	42175	3375	45°
	1.00	4	132	0.026	0.042	0.042	1.00	42015	4370	45°
	1.20	4	158	0.028	0.050	0.050	1.20	41910	4695	45°
	1.50	4	198	0.030	0.064	0.064	1.50	42015	5040	45°
	2.00	4	200	0.034	0.084	0.084	1.99	31990	4350	45°
	2.50	4	200	0.036	0.106	0.106	2.48	25670	3695	45°
	3.00	4	200	0.042	0.126	0.126	2.97	21435	3600	45°
Hardened tool steel 56 - 60 HRC	0.50	4	66	0.016	0.022	0.022	0.50	42015	2690	45°
	0.80	4	106	0.018	0.034	0.034	0.80	42175	3035	45°
	1.00	4	132	0.022	0.042	0.042	1.00	42015	3695	45°
	1.20	4	150	0.024	0.050	0.050	1.20	39790	3820	45°
	1.50	4	150	0.028	0.064	0.064	1.50	31830	3565	45°
	2.00	4	150	0.030	0.084	0.084	1.99	23995	2880	45°
	2.50	4	150	0.032	0.106	0.106	2.48	19255	2465	45°
	3.00	4	150	0.036	0.126	0.126	2.97	16075	2315	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 3xd

HM XA	λ 30° γ -5°

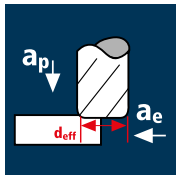


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **6632** ø-Code **050**

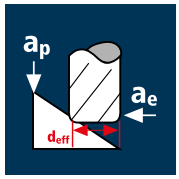
Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6632
050	0.50	6.00	0.45	57	0.50	1.50	12.51	0.100	13.2°	4	●
080	0.80	6.00	0.75	57	0.80	2.40	12.85	0.100	12.2°	4	●
100	1.00	6.00	0.95	57	1.00	3.00	13.08	0.200	11.6°	4	●
108	1.20	6.00	1.10	57	1.20	3.60	13.40	0.200	10.9°	4	●
120	1.50	6.00	1.40	57	1.50	4.50	13.74	0.200	10.0°	4	●
140	2.00	6.00	1.90	57	2.00	6.00	14.31	0.200	8.6°	4	●
160	2.50	6.00	2.30	57	2.50	7.50	15.06	0.200	7.2°	4	●
180	3.00	6.00	2.80	57	3.00	9.00	15.63	0.200	6.0°	4	●
145	2.00	6.00	1.90	57	2.00	6.00	14.31	0.500	8.7°	4	●
165	2.50	6.00	2.30	57	2.50	7.50	15.06	0.500	7.3°	4	●
185	3.00	6.00	2.80	57	3.00	9.00	15.63	0.500	6.1°	4	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	0.50	4	58	0.016	0.030	0.100	0.44	41960	2685	0.10
	0.80	4	100	0.026	0.040	0.160	0.76	41885	4355	0.10
	1.00	4	113	0.034	0.050	0.200	0.86	41825	5690	0.20
	1.20	4	140	0.040	0.060	0.240	1.09	40885	6540	0.20
	1.50	4	140	0.050	0.080	0.300	1.42	31385	6275	0.20
	2.00	4	140	0.066	0.100	0.400	1.95	22855	6035	0.20
	2.50	4	140	0.084	0.130	0.500	2.47	18040	6060	0.20
	3.00	4	140	0.100	0.150	0.600	2.99	14905	5960	0.20
Hardened tool steel 48 - 52 HRC	0.50	4	58	0.016	0.030	0.100	0.44	41960	2685	0.10
	0.80	4	100	0.024	0.040	0.160	0.76	41885	4020	0.10
	1.00	4	113	0.032	0.050	0.200	0.86	41825	5355	0.20
	1.20	4	120	0.038	0.060	0.240	1.09	35045	5325	0.20
	1.50	4	120	0.048	0.080	0.300	1.42	26900	5165	0.20
	2.00	4	120	0.062	0.100	0.400	1.95	19590	4860	0.20
	2.50	4	120	0.080	0.130	0.500	2.47	15465	4950	0.20
	3.00	4	120	0.096	0.150	0.600	2.99	12775	4905	0.20
Hardened tool steel 52 - 56 HRC	0.50	4	58	0.014	0.030	0.100	0.44	41960	2350	0.10
	0.80	4	100	0.022	0.040	0.160	0.76	41885	3685	0.10
	1.00	4	100	0.030	0.050	0.200	0.86	37015	4440	0.20
	1.20	4	100	0.036	0.060	0.240	1.09	29205	4205	0.20
	1.50	4	100	0.044	0.080	0.300	1.42	22415	3945	0.20
	2.00	4	100	0.058	0.100	0.400	1.95	16325	3785	0.20
	2.50	4	100	0.074	0.130	0.500	2.47	12885	3815	0.20
	3.00	4	100	0.088	0.150	0.600	2.99	10645	3745	0.20
Hardened tool steel 56 - 60 HRC	0.50	4	58	0.012	0.030	0.100	0.44	41960	2015	0.10
	0.80	4	60	0.020	0.040	0.160	0.76	25130	2010	0.10
	1.00	4	60	0.028	0.050	0.200	0.86	22210	2485	0.20
	1.20	4	60	0.032	0.060	0.240	1.09	17520	2245	0.20
	1.50	4	60	0.040	0.080	0.300	1.42	13450	2150	0.20
	2.00	4	60	0.052	0.100	0.400	1.95	9795	2035	0.20
	2.50	4	60	0.068	0.130	0.500	2.47	7730	2105	0.20
	3.00	4	60	0.080	0.150	0.600	2.99	6385	2045	0.20

Application

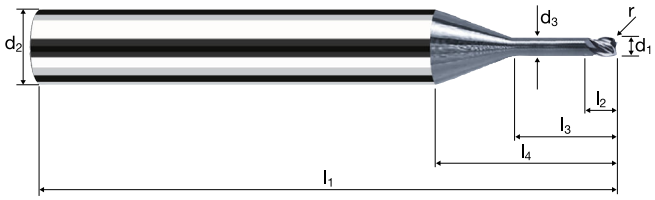


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min-1]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.50	4	66	0.020	0.020	0.020	0.50	42015	3360	45°
	0.80	4	106	0.022	0.032	0.032	0.80	42175	3710	45°
	1.00	4	132	0.028	0.042	0.042	1.00	42015	4705	45°
	1.20	4	158	0.030	0.050	0.050	1.20	41910	5030	45°
	1.50	4	198	0.034	0.062	0.062	1.50	42015	5715	45°
	2.00	4	264	0.038	0.082	0.082	2.00	42015	6385	45°
	2.50	4	300	0.040	0.102	0.102	2.49	38350	6135	45°
	3.00	4	300	0.046	0.122	0.122	2.97	32155	5915	45°
Hardened tool steel 48 - 52 HRC	0.50	4	66	0.020	0.020	0.020	0.50	42015	3360	45°
	0.80	4	106	0.020	0.032	0.032	0.80	42175	3375	45°
	1.00	4	132	0.026	0.042	0.042	1.00	42015	4370	45°
	1.20	4	158	0.028	0.050	0.050	1.20	41910	4695	45°
	1.50	4	198	0.032	0.062	0.062	1.50	42015	5380	45°
	2.00	4	250	0.036	0.082	0.082	2.00	39790	5730	45°
	2.50	4	250	0.038	0.102	0.102	2.49	31960	4860	45°
	3.00	4	250	0.044	0.122	0.122	2.97	26795	4715	45°
Hardened tool steel 52 - 56 HRC	0.50	4	66	0.018	0.020	0.020	0.50	42015	3025	45°
	0.80	4	106	0.020	0.032	0.032	0.80	42175	3375	45°
	1.00	4	132	0.026	0.042	0.042	1.00	42015	4370	45°
	1.20	4	158	0.028	0.050	0.050	1.20	41910	4695	45°
	1.50	4	198	0.030	0.062	0.062	1.50	42015	5040	45°
	2.00	4	200	0.034	0.082	0.082	2.00	31830	4330	45°
	2.50	4	200	0.036	0.102	0.102	2.49	25565	3680	45°
	3.00	4	200	0.042	0.122	0.122	2.97	21435	3600	45°
Hardened tool steel 56 - 60 HRC	0.50	4	66	0.016	0.020	0.020	0.50	42015	2690	45°
	0.80	4	106	0.018	0.032	0.032	0.80	42175	3035	45°
	1.00	4	132	0.022	0.042	0.042	1.00	42015	3695	45°
	1.20	4	150	0.024	0.050	0.050	1.20	39790	3820	45°
	1.50	4	150	0.028	0.062	0.062	1.50	31830	3565	45°
	2.00	4	150	0.030	0.082	0.082	2.00	23875	2865	45°
	2.50	4	150	0.032	0.102	0.102	2.49	19175	2455	45°
	3.00	4	150	0.036	0.122	0.122	2.97	16075	2315	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 5xd

HM XA	λ 30° γ -5°

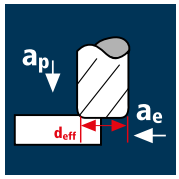


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **6634** ø-Code **050**

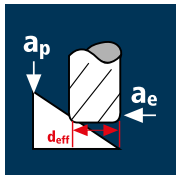
Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6634
050	0.50	6.00	0.45	57	0.50	2.50	13.51	0.100	12.2°	4	●
080	0.80	6.00	0.75	57	0.80	4.00	14.45	0.100	10.8°	4	●
100	1.00	6.00	0.95	57	1.00	5.00	15.08	0.200	9.9°	4	●
108	1.20	6.00	1.10	57	1.20	6.00	15.80	0.200	9.2°	4	●
120	1.50	6.00	1.40	61	1.50	7.50	16.74	0.200	8.1°	4	●
140	2.00	6.00	1.90	61	2.00	10.00	18.31	0.200	6.6°	4	●
160	2.50	6.00	2.30	61	2.50	12.50	20.06	0.200	5.3°	4	●
180	3.00	6.00	2.80	66	3.00	15.00	21.63	0.200	4.2°	4	●
145	2.00	6.00	1.90	61	2.00	10.00	18.31	0.500	6.7°	4	●
165	2.50	6.00	2.30	61	2.50	12.50	20.06	0.500	5.4°	4	●
185	3.00	6.00	2.80	66	3.00	15.00	21.63	0.500	4.3°	4	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	1.00	2	117	0.026	0.060	0.200	0.89	41845	2175	0.20
	1.20	2	140	0.030	0.070	0.240	1.10	40510	2430	0.20
	1.50	2	140	0.038	0.090	0.300	1.43	31165	2370	0.20
	2.00	2	140	0.050	0.120	0.400	1.97	22620	2260	0.20
	2.50	2	140	0.062	0.150	0.500	2.49	17895	2220	0.20
	3.00	2	140	0.076	0.180	0.600	3.00	14855	2260	0.20
Hardened tool steel 48 - 52 HRC	1.00	2	117	0.024	0.060	0.200	0.89	41845	2010	0.20
	1.20	2	120	0.028	0.070	0.240	1.10	34725	1945	0.20
	1.50	2	120	0.036	0.090	0.300	1.43	26710	1925	0.20
	2.00	2	120	0.048	0.120	0.400	1.97	19390	1860	0.20
	2.50	2	120	0.058	0.150	0.500	2.49	15340	1780	0.20
	3.00	2	120	0.072	0.180	0.600	3.00	12730	1835	0.20
Hardened tool steel 52 - 56 HRC	1.00	2	100	0.022	0.060	0.200	0.89	35765	1575	0.20
	1.20	2	100	0.026	0.070	0.240	1.10	28935	1505	0.20
	1.50	2	100	0.034	0.090	0.300	1.43	22260	1515	0.20
	2.00	2	100	0.044	0.120	0.400	1.97	16160	1420	0.20
	2.50	2	100	0.054	0.150	0.500	2.49	12785	1380	0.20
	3.00	2	100	0.066	0.180	0.600	3.00	10610	1400	0.20
Hardened tool steel 56 - 60 HRC	1.00	2	60	0.020	0.060	0.200	0.89	21460	860	0.20
	1.20	2	60	0.024	0.070	0.240	1.10	17360	835	0.20
	1.50	2	60	0.030	0.090	0.300	1.43	13355	800	0.20
	2.00	2	60	0.040	0.120	0.400	1.97	9695	775	0.20
	2.50	2	60	0.050	0.150	0.500	2.49	7670	765	0.20
	3.00	2	60	0.060	0.180	0.600	3.00	6365	765	0.20

Application



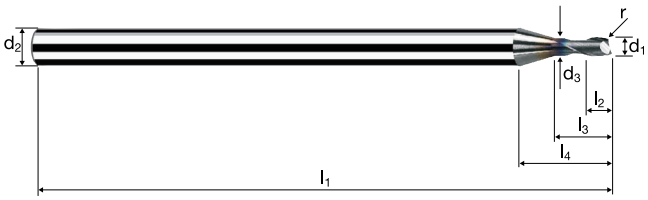
Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	1.00	2	132	0.022	0.042	0.042	1.00	42015	1850	45°
	1.20	2	158	0.024	0.050	0.050	1.20	41910	2010	45°
	1.50	2	198	0.028	0.062	0.062	1.50	42015	2355	45°
	2.00	2	264	0.030	0.082	0.082	2.00	42015	2520	45°
	2.50	2	300	0.032	0.102	0.102	2.49	38350	2455	45°
	3.00	2	300	0.036	0.122	0.122	2.97	32155	2315	45°
Hardened tool steel 48 - 52 HRC	1.00	2	132	0.020	0.042	0.042	1.00	42015	1680	45°
	1.20	2	158	0.022	0.050	0.050	1.20	41910	1845	45°
	1.50	2	198	0.026	0.062	0.062	1.50	42015	2185	45°
	2.00	2	250	0.028	0.082	0.082	2.00	39790	2230	45°
	2.50	2	250	0.030	0.102	0.102	2.49	31960	1920	45°
	3.00	2	250	0.034	0.122	0.122	2.97	26795	1820	45°
Hardened tool steel 52 - 56 HRC	1.00	2	132	0.020	0.042	0.042	1.00	42015	1680	45°
	1.20	2	158	0.022	0.050	0.050	1.20	41910	1845	45°
	1.50	2	198	0.026	0.062	0.062	1.50	42015	2185	45°
	2.00	2	200	0.028	0.082	0.082	2.00	31830	1785	45°
	2.50	2	200	0.028	0.102	0.102	2.49	25565	1430	45°
	3.00	2	200	0.032	0.122	0.122	2.97	21435	1370	45°
Hardened tool steel 56 - 60 HRC	1.00	2	132	0.018	0.042	0.042	1.00	42015	1515	45°
	1.20	2	150	0.020	0.050	0.050	1.20	39790	1590	45°
	1.50	2	150	0.022	0.062	0.062	1.50	31830	1400	45°
	2.00	2	150	0.024	0.082	0.082	2.00	23875	1145	45°
	2.50	2	150	0.026	0.102	0.102	2.49	19175	995	45°
	3.00	2	150	0.028	0.122	0.122	2.97	16075	900	45°

Corner radius end mills Microcut-T3H

Shank ø 3mm, cylindrical neck, 3xd

HM
XA

λ 25°
γ -10°



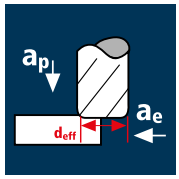
ToolSchool

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	

Example: **Order-N°.** Coating **D** Article-N°. **5762** ø-Code **100**

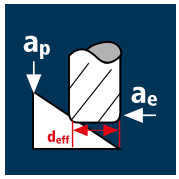
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	DURO-S D5762
100	1.00	3.00	0.95	50	1.20	3.00	7.22	0.200	8.5°	2	●
108	1.20	3.00	1.10	50	1.44	3.60	7.54	0.200	7.4°	2	●
120	1.50	3.00	1.40	50	1.80	4.50	7.88	0.200	5.9°	2	●
140	2.00	3.00	1.90	50	2.40	6.00	8.45	0.200	3.7°	2	●
160	2.50	3.00	2.30	50	3.00	7.50	9.20	0.200	1.7°	2	●
180	3.00	3.00	2.80	50	3.60	8.56	9.00	0.200	0.0°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	1.00	2	113	0.026	0.050	0.200	0.86	41825	2175	0.20
	1.20	2	140	0.030	0.060	0.240	1.09	40885	2455	0.20
	1.50	2	140	0.038	0.080	0.300	1.42	31385	2385	0.20
	2.00	2	140	0.050	0.100	0.400	1.95	22855	2285	0.20
	2.50	2	140	0.062	0.130	0.500	2.47	18040	2235	0.20
	3.00	2	140	0.076	0.150	0.600	2.99	14905	2265	0.20
Hardened tool steel 48 - 52 HRC	1.00	2	113	0.024	0.050	0.200	0.86	41825	2010	0.20
	1.20	2	120	0.028	0.060	0.240	1.09	35045	1960	0.20
	1.50	2	120	0.036	0.080	0.300	1.42	26900	1935	0.20
	2.00	2	120	0.048	0.100	0.400	1.95	19590	1880	0.20
	2.50	2	120	0.058	0.130	0.500	2.47	15465	1795	0.20
	3.00	2	120	0.072	0.150	0.600	2.99	12775	1840	0.20
Hardened tool steel 52 - 56 HRC	1.00	2	100	0.022	0.050	0.200	0.86	37015	1630	0.20
	1.20	2	100	0.026	0.060	0.240	1.09	29205	1520	0.20
	1.50	2	100	0.034	0.080	0.300	1.42	22415	1525	0.20
	2.00	2	100	0.044	0.100	0.400	1.95	16325	1435	0.20
	2.50	2	100	0.054	0.130	0.500	2.47	12885	1390	0.20
	3.00	2	100	0.066	0.150	0.600	2.99	10645	1405	0.20
Hardened tool steel 56 - 60 HRC	1.00	2	60	0.020	0.050	0.200	0.86	22210	890	0.20
	1.20	2	60	0.024	0.060	0.240	1.09	17520	840	0.20
	1.50	2	60	0.030	0.080	0.300	1.42	13450	805	0.20
	2.00	2	60	0.040	0.100	0.400	1.95	9795	785	0.20
	2.50	2	60	0.050	0.130	0.500	2.47	7730	775	0.20
	3.00	2	60	0.060	0.150	0.600	2.99	6385	765	0.20

Application



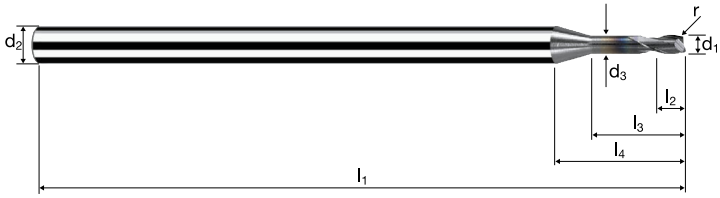
Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	1.00	2	132	0.022	0.040	0.040	1.00	42015	1850	45°
	1.20	2	158	0.024	0.048	0.048	1.20	41910	2010	45°
	1.50	2	198	0.028	0.060	0.060	1.50	42015	2355	45°
	2.00	2	264	0.030	0.080	0.080	2.00	42015	2520	45°
	2.50	2	300	0.032	0.100	0.100	2.49	38350	2455	45°
	3.00	2	300	0.036	0.120	0.120	2.97	32155	2315	45°
Hardened tool steel 48 - 52 HRC	1.00	2	132	0.020	0.040	0.040	1.00	42015	1680	45°
	1.20	2	158	0.022	0.048	0.048	1.20	41910	1845	45°
	1.50	2	198	0.026	0.060	0.060	1.50	42015	2185	45°
	2.00	2	250	0.028	0.080	0.080	2.00	39790	2230	45°
	2.50	2	250	0.030	0.100	0.100	2.49	31960	1920	45°
	3.00	2	250	0.034	0.120	0.120	2.97	26795	1820	45°
Hardened tool steel 52 - 56 HRC	1.00	2	132	0.020	0.040	0.040	1.00	42015	1680	45°
	1.20	2	158	0.022	0.048	0.048	1.20	41910	1845	45°
	1.50	2	198	0.026	0.060	0.060	1.50	42015	2185	45°
	2.00	2	200	0.028	0.080	0.080	2.00	31830	1785	45°
	2.50	2	200	0.028	0.100	0.100	2.49	25565	1430	45°
	3.00	2	200	0.032	0.120	0.120	2.97	21435	1370	45°
Hardened tool steel 56 - 60 HRC	1.00	2	132	0.018	0.040	0.040	1.00	42015	1515	45°
	1.20	2	150	0.020	0.048	0.048	1.20	39790	1590	45°
	1.50	2	150	0.022	0.060	0.060	1.50	31830	1400	45°
	2.00	2	150	0.024	0.080	0.080	2.00	23875	1145	45°
	2.50	2	150	0.026	0.100	0.100	2.49	19175	995	45°
	3.00	2	150	0.028	0.120	0.120	2.97	16075	900	45°

Corner radius end mills Microcut-T5H

Shank ø 3mm, cylindrical neck, 5xd

HM
XA

λ 25°
γ -10°



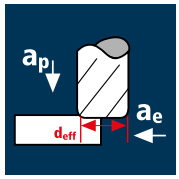
ToolSchool

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	

Example: **Order-N°.** Coating **D** Article-N°. **5764** ø-Code **100**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	DURO-S D5764
100	1.00	3.00	0.95	50	1.20	5.00	9.22	0.200	6.6°	2	●
108	1.20	3.00	1.10	50	1.44	6.00	9.94	0.200	5.5°	2	●
120	1.50	3.00	1.40	50	1.80	7.50	10.88	0.200	4.2°	2	●
140	2.00	3.00	1.90	50	2.40	10.00	12.45	0.200	2.5°	2	●
160	2.50	3.00	2.30	50	3.00	12.50	14.20	0.200	1.1°	2	●
180	3.00	3.00	2.80	50	3.60	14.56	15.00	0.200	0.0°	2	●

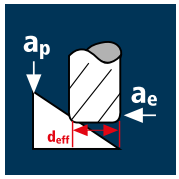
Application



Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Steel 850 - 1100 N/mm²									
1.00	2	121	0.036	0.080	0.200	0.92	41865	3015	0.20
1.20	2	152	0.042	0.100	0.240	1.15	42070	3535	0.20
1.50	2	180	0.054	0.120	0.300	1.47	38975	4210	0.20
2.00	2	180	0.072	0.160	0.400	1.99	28790	4145	0.20
2.50	2	180	0.090	0.200	0.500	2.50	22920	4125	0.20
3.00	2	180	0.108	0.240	0.600	2.99	19160	4140	0.20
Steel 1100 - 1300 N/mm²									
1.00	2	121	0.032	0.080	0.200	0.92	41865	2680	0.20
1.20	2	152	0.038	0.100	0.240	1.15	42070	3195	0.20
1.50	2	160	0.048	0.120	0.300	1.47	34645	3325	0.20
2.00	2	160	0.064	0.160	0.400	1.99	25595	3275	0.20
2.50	2	160	0.082	0.200	0.500	2.50	20370	3340	0.20
3.00	2	160	0.098	0.240	0.600	2.99	17035	3340	0.20
Stainless steel [Cr-Ni/1.4301]									
1.00	2	80	0.032	0.080	0.200	0.92	27680	1770	0.20
1.20	2	80	0.038	0.100	0.240	1.15	22145	1685	0.20
1.50	2	80	0.048	0.120	0.300	1.47	17325	1665	0.20
2.00	2	80	0.064	0.160	0.400	1.99	12795	1640	0.20
2.50	2	80	0.082	0.200	0.500	2.50	10185	1670	0.20
3.00	2	80	0.098	0.240	0.600	2.99	8515	1670	0.20
Titanium alloys up to 300 HB [Ti5Al2.5Sn]									
1.00	2	60	0.026	0.080	0.200	0.92	20760	1080	0.20
1.20	2	60	0.030	0.100	0.240	1.15	16605	995	0.20
1.50	2	60	0.038	0.120	0.300	1.47	12990	985	0.20
2.00	2	60	0.050	0.160	0.400	1.99	9595	960	0.20
2.50	2	60	0.064	0.200	0.500	2.50	7640	980	0.20
3.00	2	60	0.076	0.240	0.600	2.99	6385	970	0.20

Application



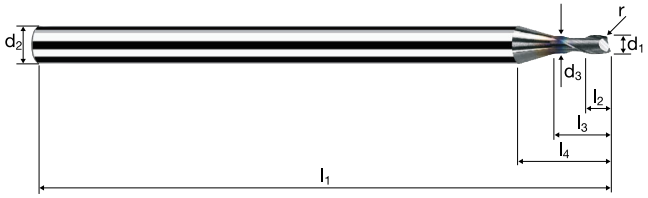
Material

d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²									
1.00	2	132	0.028	0.042	0.042	1.00	42015	2355	45°
1.20	2	158	0.030	0.050	0.050	1.20	41910	2515	45°
1.50	2	198	0.034	0.064	0.064	1.50	42015	2855	45°
2.00	2	263	0.038	0.084	0.084	1.99	42070	3195	45°
2.50	2	300	0.040	0.106	0.106	2.48	38505	3080	45°
3.00	2	300	0.046	0.126	0.126	2.97	32155	2960	45°
Steel 1100 - 1300 N/mm²									
1.00	2	132	0.026	0.042	0.042	1.00	42015	2185	45°
1.20	2	158	0.028	0.050	0.050	1.20	41910	2345	45°
1.50	2	198	0.030	0.064	0.064	1.50	42015	2520	45°
2.00	2	250	0.034	0.084	0.084	1.99	39990	2720	45°
2.50	2	250	0.036	0.106	0.106	2.48	32090	2310	45°
3.00	2	250	0.042	0.126	0.126	2.97	26795	2250	45°
Stainless steel [Cr-Ni/1.4301]									
1.00	2	120	0.022	0.042	0.042	1.00	38195	1680	45°
1.20	2	120	0.024	0.050	0.050	1.20	31830	1530	45°
1.50	2	120	0.028	0.064	0.064	1.50	25465	1425	45°
2.00	2	120	0.030	0.084	0.084	1.99	19195	1150	45°
2.50	2	120	0.032	0.106	0.106	2.48	15400	985	45°
3.00	2	120	0.036	0.126	0.126	2.97	12860	925	45°
Titanium alloys up to 300 HB [Ti5Al2.5Sn]									
1.00	2	100	0.020	0.042	0.042	1.00	31830	1275	45°
1.20	2	100	0.022	0.050	0.050	1.20	26525	1165	45°
1.50	2	100	0.024	0.064	0.064	1.50	21220	1020	45°
2.00	2	100	0.026	0.084	0.084	1.99	15995	830	45°
2.50	2	100	0.028	0.106	0.106	2.48	12835	720	45°
3.00	2	100	0.032	0.126	0.126	2.97	10720	685	45°

Corner radius end mills Microcut-T3

Shank ø 3mm, cylindrical neck, 3xd

HM MG10	λ 25° γ 6°

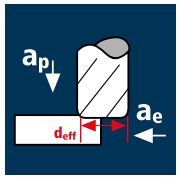


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5752** ø-Code **100**

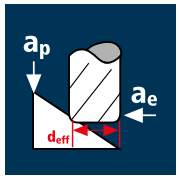
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	MICRO M5752
100	1.00	3.00	0.95	50	1.20	3.00	7.22	0.200	8.5°	2	●
108	1.20	3.00	1.10	50	1.44	3.60	7.54	0.200	7.4°	2	●
120	1.50	3.00	1.40	50	1.80	4.50	7.88	0.200	5.9°	2	●
140	2.00	3.00	1.90	50	2.40	6.00	8.45	0.200	3.7°	2	●
160	2.50	3.00	2.30	50	3.00	7.50	9.20	0.200	1.7°	2	●
180	3.00	3.00	2.80	50	3.60	8.56	9.00	0.200	0.0°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Steel 850 - 1100 N/mm²	1.00	2	119	0.036	0.070	0.200	0.90	42090	3030	0.20
	1.20	2	148	0.042	0.080	0.240	1.12	42060	3535	0.20
	1.50	2	180	0.054	0.110	0.300	1.46	39245	4240	0.20
	2.00	2	180	0.072	0.140	0.400	1.98	28935	4165	0.20
	2.50	2	180	0.090	0.180	0.500	2.50	22920	4125	0.20
	3.00	2	180	0.108	0.210	0.600	3.00	19100	4125	0.20
Steel 1100 - 1300 N/mm²	1.00	2	119	0.032	0.070	0.200	0.90	42090	2695	0.20
	1.20	2	148	0.038	0.080	0.240	1.12	42060	3195	0.20
	1.50	2	160	0.048	0.110	0.300	1.46	34885	3350	0.20
	2.00	2	160	0.064	0.140	0.400	1.98	25720	3290	0.20
	2.50	2	160	0.082	0.180	0.500	2.50	20370	3340	0.20
	3.00	2	160	0.098	0.210	0.600	3.00	16975	3325	0.20
Stainless steel [Cr-Ni/1.4301]	1.00	2	80	0.032	0.070	0.200	0.90	28295	1810	0.20
	1.20	2	80	0.038	0.080	0.240	1.12	22735	1730	0.20
	1.50	2	80	0.048	0.110	0.300	1.46	17440	1675	0.20
	2.00	2	80	0.064	0.140	0.400	1.98	12860	1645	0.20
	2.50	2	80	0.082	0.180	0.500	2.50	10185	1670	0.20
	3.00	2	80	0.098	0.210	0.600	3.00	8490	1665	0.20
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	60	0.026	0.070	0.200	0.90	21220	1105	0.20
	1.20	2	60	0.030	0.080	0.240	1.12	17050	1025	0.20
	1.50	2	60	0.038	0.110	0.300	1.46	13080	995	0.20
	2.00	2	60	0.050	0.140	0.400	1.98	9645	965	0.20
	2.50	2	60	0.064	0.180	0.500	2.50	7640	980	0.20
	3.00	2	60	0.076	0.210	0.600	3.00	6365	970	0.20

Application

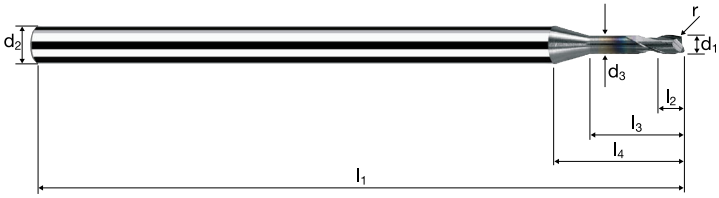


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²	1.00	2	132	0.022	0.040	0.040	1.00	42015	1850	45°
	1.20	2	158	0.024	0.048	0.048	1.20	41910	2010	45°
	1.50	2	198	0.028	0.060	0.060	1.50	42015	2355	45°
	2.00	2	264	0.030	0.080	0.080	2.00	42015	2520	45°
	2.50	2	300	0.032	0.100	0.100	2.49	38350	2455	45°
	3.00	2	300	0.036	0.120	0.120	2.97	32155	2315	45°
Steel 1100 - 1300 N/mm²	1.00	2	132	0.020	0.040	0.040	1.00	42015	1680	45°
	1.20	2	158	0.022	0.048	0.048	1.20	41910	1845	45°
	1.50	2	198	0.026	0.060	0.060	1.50	42015	2185	45°
	2.00	2	250	0.028	0.080	0.080	2.00	39790	2230	45°
	2.50	2	250	0.028	0.100	0.100	2.49	31960	1790	45°
	3.00	2	250	0.032	0.120	0.120	2.97	26795	1715	45°
Stainless steel [Cr-Ni/1.4301]	1.00	2	120	0.018	0.040	0.040	1.00	38195	1375	45°
	1.20	2	120	0.020	0.048	0.048	1.20	31830	1275	45°
	1.50	2	120	0.022	0.060	0.060	1.50	25465	1120	45°
	2.00	2	120	0.024	0.080	0.080	2.00	19100	915	45°
	2.50	2	120	0.026	0.100	0.100	2.49	15340	800	45°
	3.00	2	120	0.028	0.120	0.120	2.97	12860	720	45°
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	100	0.016	0.040	0.040	1.00	31830	1020	45°
	1.20	2	100	0.016	0.048	0.048	1.20	26525	850	45°
	1.50	2	100	0.020	0.060	0.060	1.50	21220	850	45°
	2.00	2	100	0.022	0.080	0.080	2.00	15915	700	45°
	2.50	2	100	0.022	0.100	0.100	2.49	12785	560	45°
	3.00	2	100	0.026	0.120	0.120	2.97	10720	555	45°

Corner radius end mills Microcut-T5

Shank ø 3mm, cylindrical neck, 5xd

HM MG10	λ 25° γ 6°

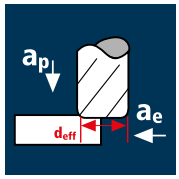


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5754** ø-Code **100**

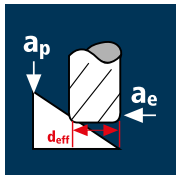
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	MICRO M5754
100	1.00	3.00	0.95	50	1.20	5.00	9.22	0.200	6.6°	2	●
108	1.20	3.00	1.10	50	1.44	6.00	9.94	0.200	5.5°	2	●
120	1.50	3.00	1.40	50	1.80	7.50	10.88	0.200	4.2°	2	●
140	2.00	3.00	1.90	50	2.40	10.00	12.45	0.200	2.5°	2	●
160	2.50	3.00	2.30	50	3.00	12.50	14.20	0.200	1.1°	2	●
180	3.00	3.00	2.80	50	3.60	14.56	15.00	0.200	0.0°	2	●

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Steel 850 - 1100 N/mm²	1.00	2	113	0.036	0.050	0.200	0.86	41825	3010	0.20
	1.20	2	144	0.042	0.060	0.240	1.09	42050	3530	0.20
	1.50	2	180	0.054	0.080	0.300	1.42	40350	4360	0.20
	2.00	2	180	0.072	0.100	0.400	1.95	29380	4230	0.20
	2.50	2	180	0.090	0.130	0.500	2.47	23195	4175	0.20
	3.00	2	180	0.108	0.150	0.600	2.99	19160	4140	0.20
Steel 1100 - 1300 N/mm²	1.00	2	113	0.032	0.050	0.200	0.86	41825	2675	0.20
	1.20	2	144	0.038	0.060	0.240	1.09	42050	3195	0.20
	1.50	2	160	0.048	0.080	0.300	1.42	35865	3445	0.20
	2.00	2	160	0.064	0.100	0.400	1.95	26120	3345	0.20
	2.50	2	160	0.082	0.130	0.500	2.47	20620	3380	0.20
	3.00	2	160	0.098	0.150	0.600	2.99	17035	3340	0.20
Stainless steel [Cr-Ni/1.4301]	1.00	2	80	0.032	0.050	0.200	0.86	29610	1895	0.20
	1.20	2	80	0.038	0.060	0.240	1.09	23360	1775	0.20
	1.50	2	80	0.048	0.080	0.300	1.42	17935	1720	0.20
	2.00	2	80	0.064	0.100	0.400	1.95	13060	1670	0.20
	2.50	2	80	0.082	0.130	0.500	2.47	10310	1690	0.20
	3.00	2	80	0.098	0.150	0.600	2.99	8515	1670	0.20
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	60	0.026	0.050	0.200	0.86	22210	1155	0.20
	1.20	2	60	0.030	0.060	0.240	1.09	17520	1050	0.20
	1.50	2	60	0.038	0.080	0.300	1.42	13450	1020	0.20
	2.00	2	60	0.050	0.100	0.400	1.95	9795	980	0.20
	2.50	2	60	0.064	0.130	0.500	2.47	7730	990	0.20
	3.00	2	60	0.076	0.150	0.600	2.99	6385	970	0.20

Application

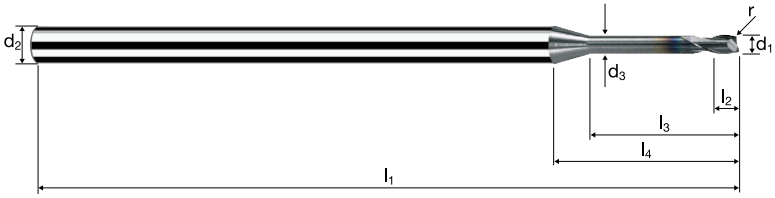


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²	1.00	2	131	0.022	0.038	0.038	0.99	42120	1855	45°
	1.20	2	158	0.024	0.046	0.046	1.20	41910	2010	45°
	1.50	2	198	0.028	0.058	0.058	1.50	42015	2355	45°
	2.00	2	264	0.030	0.076	0.076	2.00	42015	2520	45°
	2.50	2	300	0.032	0.096	0.096	2.49	38350	2455	45°
	3.00	2	300	0.036	0.114	0.114	2.98	32045	2305	45°
Steel 1100 - 1300 N/mm²	1.00	2	131	0.020	0.038	0.038	0.99	42120	1685	45°
	1.20	2	158	0.022	0.046	0.046	1.20	41910	1845	45°
	1.50	2	198	0.026	0.058	0.058	1.50	42015	2185	45°
	2.00	2	250	0.028	0.076	0.076	2.00	39790	2230	45°
	2.50	2	250	0.028	0.096	0.096	2.49	31960	1790	45°
	3.00	2	250	0.032	0.114	0.114	2.98	26705	1710	45°
Stainless steel [Cr-Ni/1.4301]	1.00	2	120	0.018	0.038	0.038	0.99	38585	1390	45°
	1.20	2	120	0.020	0.046	0.046	1.20	31830	1275	45°
	1.50	2	120	0.022	0.058	0.058	1.50	25465	1120	45°
	2.00	2	120	0.024	0.076	0.076	2.00	19100	915	45°
	2.50	2	120	0.026	0.096	0.096	2.49	15340	800	45°
	3.00	2	120	0.028	0.114	0.114	2.98	12820	720	45°
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	100	0.016	0.038	0.038	0.99	32155	1030	45°
	1.20	2	100	0.016	0.046	0.046	1.20	26525	850	45°
	1.50	2	100	0.020	0.058	0.058	1.50	21220	850	45°
	2.00	2	100	0.022	0.076	0.076	2.00	15915	700	45°
	2.50	2	100	0.022	0.096	0.096	2.49	12785	560	45°
	3.00	2	100	0.026	0.114	0.114	2.98	10680	555	45°

Corner radius end mills Microcut-T8

Shank ø 3mm, cylindrical neck, 8xd

HM MG10	λ 25° γ 6°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5756** ø-Code **100**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	MICRO M5756
100	1.00	3.00	0.95	50	1.20	8.00	12.22	0.200	4.9°	2	●
108	1.20	3.00	1.10	50	1.44	9.60	13.54	0.200	4.0°	2	●
120	1.50	3.00	1.40	60	1.80	12.00	15.38	0.200	3.0°	2	●
140	2.00	3.00	1.90	60	2.40	16.00	18.45	0.200	1.7°	2	●
160	2.50	3.00	2.30	60	3.00	20.00	21.70	0.200	0.7°	2	●
180	3.00	3.00	2.80	60	3.60	23.56	24.00	0.200	0.0°	2	●

passion
for precision
fraisa

End milling tools for aluminium and copper
Smooth-edged, cylindrical

Normal version

N° 15520 / 15620	**AX-NV2**	X-Generation X	Roughing Finishing	d_1 2 – 20 90°	**Al** Aluminium Alloy	**Cu** Copper	**Plastic** Thermoplast	617
N° 15525 / 15625	**AX-NV2**	X-Generation X	Roughing Finishing	d_1 6 – 20 90°	**Al** Aluminium Alloy	**Cu** Copper	**Plastic** Thermoplast	619
N° 15530 / 15630	**AX-NV3**	X-Generation X	Roughing Finishing	d_1 3 – 20 90°	**Al** Aluminium Alloy	**Cu** Copper	**Plastic** Thermoplast	621
N° 15535 / 15635	**AX-NV3**	X-Generation X	Roughing Finishing	d_1 6 – 20 90°	**Al** Aluminium Alloy	**Cu** Copper	**Plastic** Thermoplast	623
N° 5272 / 5500	**Alucut**	Favora® F	Roughing Finishing	d_1 2 – 20 45°	**Al** Aluminium Alloy	**Cu** Copper	**Plastic** Thermoplast	625

Medium length version

N° 15550 / 15650	**AX-NV2**	X-Generation X	Roughing Finishing	d_1 3 – 20 90°	**Al** Aluminium Alloy	**Cu** Copper	**Plastic** Thermoplast	627
N° 15557 / 15657	**AX-NV3**	X-Generation X	Roughing Finishing	d_1 3 – 20 90°	**Al** Aluminium Alloy	**Cu** Copper	**Plastic** Thermoplast	629
N° 15560 / 15660	**AX-NV3**	X-Generation X	Roughing Finishing	d_1 3 – 20 90°	**Al** Aluminium Alloy	**Cu** Copper	**Plastic** Thermoplast	631

Long version

N° 15559 / 15659	**AX-NV3**	X-Generation X	Roughing Finishing	d_1 6 – 20 90°	**Al** Aluminium Alloy	**Cu** Copper	**Plastic** Thermoplast	633
N° 15561 / 15661	**AX-V3**	X-Generation X	Roughing Finishing	d_1 6 – 20 90°	**Al** Aluminium Alloy	**Cu** Copper	**Plastic** Thermoplast	635

End milling tools for aluminium and copper
Smooth-edged, with corner radius

2xd – 5xd version

N° 15572	**AX-RV2**	X-Generation X	Roughing Finishing	r 1.5, 2.5, 4.0	Al Aluminium Alloy				637
N° 15573	**AX-RV2**	X-Generation X	Roughing Finishing	r 0.5, 1.0, 1.5, 2.0, 2.5, 4.0	Al Aluminium Alloy				639
N° 15574	**AX-RV2**	X-Generation X	Roughing Finishing	r 1.0, 1.5, 2.0, 2.5, 4.0	Al Aluminium Alloy				643
N° 15575	**AX-RV2**	X-Generation X	Roughing Finishing	r 1.0, 2.5, 4.0	Al Aluminium Alloy				647
N° 15582	**AX-RV3**	X-Generation X	Roughing Finishing	r 2.5, 4.0	Al Aluminium Alloy				649
N° 15583	**AX-RV3**	X-Generation X	Roughing Finishing	r 0.5, 1.0, 1.5, 2.0, 2.5, 4.0	Al Aluminium Alloy				651
N° 15584	**AX-RV3**	X-Generation X	Roughing Finishing	r 1.0, 2.5, 4.0	Al Aluminium Alloy				655
N° 15585	**AX-RV3**	X-Generation X	Roughing Finishing	r 1.0, 2.5, 4.0	Al Aluminium Alloy				657

End milling tools for aluminium and copper
Profiled, cylindrical

Normal version

N° 15500 / 15600

AX-FPS — X-Generation X — Roughing, Finishing — d_1 6 – 25 — r — Al Aluminium Alloy — 659

N° 5297 / 5397

AX-FP — X-Generation X — Roughing, Finishing — d_1 6 – 20 — 45° — Al Aluminium Alloy, Cu Copper — 661

N° 0391

HSS — Roughing, Finishing — d_1 6 – 25 — 45° — Al Aluminium Alloy, Cu Copper — 663

Medium length version

N° 15506 / 15606

AX-FPS new! — X-Generation X — Roughing, Finishing — d_1 6 – 20 — r — Al Aluminium Alloy — 665

N° 15297 / 15397

AX-FP — X-Generation X — Roughing, Finishing — d_1 6 – 20 — 45° — Al Aluminium Alloy, Cu Copper — 667

N° 0393

HSS — Roughing, Finishing — d_1 10 – 25 — 45° — Al Aluminium Alloy, Cu Copper — 669

Medium length version with neck

N° 15505 / 15605

AX-FPS — X-Generation X — Roughing, Finishing — d_1 6 – 25 — r — Al Aluminium Alloy — 671

N° 15298 / 15398

AX-FP — X-Generation X — Roughing, Finishing — d_1 6 – 25 — 45° — Al Aluminium Alloy, Cu Copper — 673

Medium length version

N° 15507 / 15607

AX-FPS new! — X-Generation X — Roughing, Finishing — d_1 6 – 20 — r — Al Aluminium Alloy — 675

End milling tools for aluminium and copper
Finishing, with corner radius

Normal version

N° 15502

AX-RFPS

X-Generation

Roughing

Finishing

r 0.5, 1.0, 2.0, 2.5, 3.0, 4.0 5.0

Al Aluminium Alloy

677

End milling tools for aluminium and copper
Finishing, cylindrical

Normal version

N° 15589

Multicut XA

X-Generation X | Roughing | Finishing | d_1 6 – 20 | r | Al Aluminium Alloy | 681

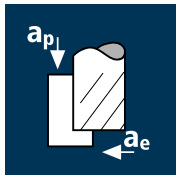
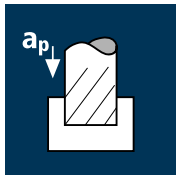
Medium length version

N° 15590

Multicut XA

X-Generation X | Roughing | Finishing | d_1 6 – 20 | r | Al Aluminium Alloy | 683

III

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Si < 6%	3.00	2	396	0.055	4.500	1.800	42015	4620	37.4
		4.00	2	528	0.075	6.000	2.400	42015	6305	90.8
		5.00	2	550	0.090	7.500	3.000	35015	6305	141.8
		6.00	2	550	0.120	9.000	3.600	29180	7005	226.9
		8.00	2	550	0.160	12.000	4.800	21885	7005	403.4
		10.00	2	550	0.200	15.000	6.000	17505	7005	630.3
		12.00	2	550	0.220	18.000	7.200	14590	6420	831.9
		16.00	2	550	0.245	24.000	9.600	10940	5360	1235.3
		20.00	2	550	0.285	30.000	12.000	8755	4990	1796.2
	Unalloyed copper	3.00	2	396	0.030	4.500	1.800	42015	2520	20.4
		4.00	2	400	0.060	6.000	2.400	31830	3820	55.0
		5.00	2	400	0.070	7.500	3.000	25465	3565	80.2
		6.00	2	400	0.095	9.000	3.600	21220	4030	130.6
		8.00	2	400	0.130	12.000	4.800	15915	4140	238.4
		10.00	2	400	0.160	15.000	6.000	12730	4075	366.7
		12.00	2	400	0.175	18.000	7.200	10610	3715	481.3
		16.00	2	400	0.195	24.000	9.600	7960	3105	715.1
		20.00	2	400	0.230	30.000	12.000	6365	2930	1054.2
	Thermoplastics	3.00	2	396	0.035	4.500	1.800	42015	2940	23.8
		4.00	2	528	0.075	6.000	2.400	42015	6305	90.8
		5.00	2	660	0.090	7.500	3.000	42015	7565	170.2
		6.00	2	792	0.120	9.000	3.600	42015	10085	326.7
		8.00	2	1000	0.160	12.000	4.800	39790	12730	733.4
		10.00	2	1000	0.200	15.000	6.000	31830	12730	1145.9
		12.00	2	1000	0.220	18.000	7.200	26525	11670	1512.6
		16.00	2	1000	0.245	24.000	9.600	19895	9750	2246.0
		20.00	2	1000	0.285	30.000	12.000	15915	9070	3265.9
	Cast aluminium Si 6% - 15%	3.00	2	396	0.055	4.500	1.800	42015	4620	37.4
		4.00	2	440	0.075	6.000	2.400	35015	5250	75.6
		5.00	2	440	0.090	7.500	3.000	28010	5040	113.4
		6.00	2	440	0.120	9.000	3.600	23345	5600	181.5
		8.00	2	440	0.160	12.000	4.800	17505	5600	322.7
		10.00	2	440	0.200	15.000	6.000	14005	5600	504.2
		12.00	2	440	0.220	18.000	7.200	11670	5135	665.5
		16.00	2	440	0.245	24.000	9.600	8755	4290	988.2
		20.00	2	440	0.285	30.000	12.000	7005	3990	1437.0
	Wrought aluminium Si < 6%	3.00	2	396	0.025	3.000	3.000	42015	2100	18.9
		4.00	2	450	0.055	4.000	4.000	35810	3940	63.0
		5.00	2	450	0.065	5.000	5.000	28650	3725	93.1
		6.00	2	450	0.085	6.000	6.000	23875	4060	146.1
		8.00	2	450	0.110	8.000	8.000	17905	3940	252.1
		10.00	2	450	0.140	10.000	10.000	14325	4010	401.1
		12.00	2	450	0.155	12.000	12.000	11935	3700	532.9
		16.00	2	450	0.170	16.000	16.000	8950	3045	779.2
		20.00	2	450	0.200	20.000	20.000	7160	2865	1145.9
	Unalloyed copper	3.00	2	350	0.020	3.000	3.000	37135	1485	13.4
		4.00	2	350	0.045	4.000	4.000	27850	2505	40.1
		5.00	2	350	0.050	5.000	5.000	22280	2230	55.7
		6.00	2	350	0.070	6.000	6.000	18570	2600	93.6
		8.00	2	350	0.090	8.000	8.000	13925	2505	160.4
		10.00	2	350	0.110	10.000	10.000	11140	2450	245.1
		12.00	2	350	0.125	12.000	12.000	9285	2320	334.2
		16.00	2	350	0.135	16.000	16.000	6965	1880	481.3
		20.00	2	350	0.160	20.000	20.000	5570	1785	713.0
	Thermoplastics	3.00	2	396	0.025	3.000	3.000	42015	2100	18.9
		4.00	2	528	0.055	4.000	4.000	42015	4620	73.9
		5.00	2	660	0.065	5.000	5.000	42015	5460	136.6
		6.00	2	792	0.085	6.000	6.000	42015	7145	257.1
		8.00	2	800	0.110	8.000	8.000	31830	7005	448.2
		10.00	2	800	0.140	10.000	10.000	25465	7130	713.0
		12.00	2	800	0.155	12.000	12.000	21220	6580	947.3
		16.00	2	800	0.170	16.000	16.000	15915	5410	1385.3
		20.00	2	800	0.200	20.000	20.000	12730	5095	2037.2
	Cast aluminium Si 6% - 15%	3.00	2	360	0.025	3.000	3.000	38195	1910	17.2
		4.00	2	360	0.055	4.000	4.000	28650	3150	50.4
		5.00	2	360	0.065	5.000	5.000	22920	2980	74.5
		6.00	2	360	0.085	6.000	6.000	19100	3245	116.9
		8.00	2	360	0.110	8.000	8.000	14325	3150	201.7
		10.00	2	360	0.140	10.000	10.000	11460	3210	320.9
		12.00	2	360	0.155	12.000	12.000	9550	2960	426.3
		16.00	2	360	0.170	16.000	16.000	7160	2435	623.4
		20.00	2	360	0.200	20.000	20.000	5730	2290	916.7

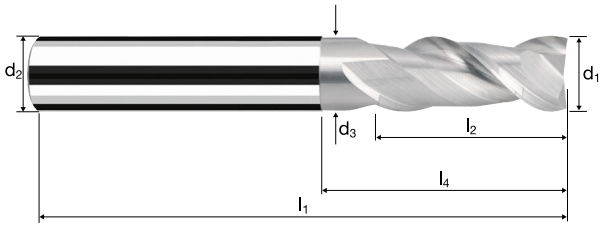
Cylindrical end mills AX-NV2

Smooth-edged, normal version with short neck

X-Generation X

III

HM MG10	λ 40° γ 20°
90°	
Vario	



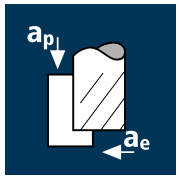
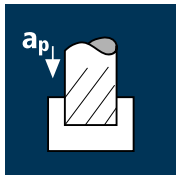
Roughing

Finishing

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15520** ø-Code **140**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	α	z	15620	CELERO C15620
										15520	C15520
140	2.00	6.00	1.90	57	7.00	10.00	18.31	7.0°	2	●	●
180	3.00	6.00	2.80	57	8.00	14.00	20.63	4.5°	2	●	●
220	4.00	6.00	3.70	57	11.00	16.00	20.95	3.0°	2	●	●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	1.5°	2	●	●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.0°	2	●	●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	0.0°	2	●	●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	0.0°	2	●	●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	0.0°	2	●	●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	0.0°	2	●	●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	0.0°	2	●	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Si < 6%	6.00	2	650	0.065	9.000	3.300	34485	4485	133.1
		8.00	2	650	0.090	12.000	4.400	25865	4655	245.8
		10.00	2	650	0.110	15.000	5.500	20690	4550	375.5
		12.00	2	650	0.120	18.000	6.600	17240	4140	491.6
		16.00	2	650	0.135	24.000	8.800	12930	3490	737.4
		20.00	2	650	0.155	30.000	11.000	10345	3205	1058.3
	Unalloyed copper	6.00	2	500	0.050	9.000	3.300	26525	2655	78.8
		8.00	2	500	0.070	12.000	4.400	19895	2785	147.1
		10.00	2	500	0.090	15.000	5.500	15915	2865	236.3
		12.00	2	500	0.095	18.000	6.600	13265	2520	299.4
		16.00	2	500	0.105	24.000	8.800	9945	2090	441.2
		20.00	2	500	0.125	30.000	11.000	7960	1990	656.5
	Thermoplastics	6.00	2	792	0.065	9.000	3.300	42015	5460	162.2
		8.00	2	1056	0.090	12.000	4.400	42015	7565	399.3
		10.00	2	1200	0.110	15.000	5.500	38195	8405	693.3
		12.00	2	1200	0.120	18.000	6.600	31830	7640	907.6
		16.00	2	1200	0.135	24.000	8.800	23875	6445	1361.3
		20.00	2	1200	0.155	30.000	11.000	19100	5920	1953.8
	Cast aluminium Si 6% - 15%	6.00	2	520	0.065	9.000	3.300	27585	3585	106.5
		8.00	2	520	0.090	12.000	4.400	20690	3725	196.6
		10.00	2	520	0.110	15.000	5.500	16550	3640	300.4
		12.00	2	520	0.120	18.000	6.600	13795	3310	393.3
		16.00	2	520	0.135	24.000	8.800	10345	2795	589.9
		20.00	2	520	0.155	30.000	11.000	8275	2565	846.6
	Wrought aluminium Si < 6%	6.00	2	550	0.045	5.400	6.000	29180	2625	85.1
		8.00	2	550	0.060	7.200	8.000	21885	2625	151.3
		10.00	2	550	0.075	9.000	10.000	17505	2625	236.3
		12.00	2	550	0.085	10.800	12.000	14590	2480	321.4
		16.00	2	550	0.095	14.400	16.000	10940	2080	479.0
		20.00	2	550	0.110	18.000	20.000	8755	1925	693.3
	Unalloyed copper	6.00	2	450	0.040	5.400	6.000	23875	1910	61.9
		8.00	2	450	0.050	7.200	8.000	17905	1790	103.1
		10.00	2	450	0.060	9.000	10.000	14325	1720	154.7
		12.00	2	450	0.070	10.800	12.000	11935	1670	216.6
		16.00	2	450	0.075	14.400	16.000	8950	1345	309.4
		20.00	2	450	0.090	18.000	20.000	7160	1290	464.1
	Thermoplastics	6.00	2	792	0.045	5.400	6.000	42015	3780	122.5
		8.00	2	1000	0.060	7.200	8.000	39790	4775	275.0
		10.00	2	1000	0.075	9.000	10.000	31830	4775	429.7
		12.00	2	1000	0.085	10.800	12.000	26525	4510	584.4
		16.00	2	1000	0.095	14.400	16.000	19895	3780	870.9
		20.00	2	1000	0.110	18.000	20.000	15915	3500	1260.5
	Cast aluminium Si 6% - 15%	6.00	2	440	0.045	5.400	6.000	23345	2100	68.1
		8.00	2	440	0.060	7.200	8.000	17505	2100	121.0
		10.00	2	440	0.075	9.000	10.000	14005	2100	189.1
		12.00	2	440	0.085	10.800	12.000	11670	1985	257.1
		16.00	2	440	0.095	14.400	16.000	8755	1665	383.2
		20.00	2	440	0.110	18.000	20.000	7005	1540	554.6

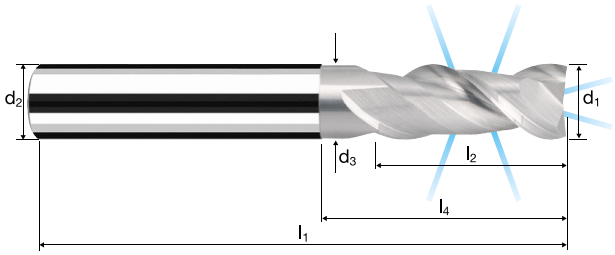
Cylindrical end mills AX-NV2

Smooth-edged, normal version with short neck, with integral cooling channel

X-Generation

III

HM MG10	λ 40° γ 20°
90°	
Vario	



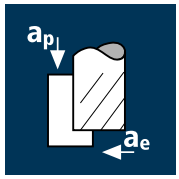
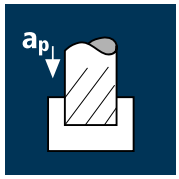
Roughing

Finishing

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15525** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	z	15625	CELERO C15625
									15525	C15525
300	6.00	6.00	5.50	57	13.00	19.34	20.00	2	●	●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	2	●	●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	2	●	●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	2	●	●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	2	●	●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	2	●	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Si < 6%	3.00	3	396	0.050	4.500	1.400	42015	6305	39.7
		4.00	3	528	0.065	6.000	1.800	42015	8195	88.5
		5.00	3	550	0.085	7.500	2.300	35015	8930	154.0
		6.00	3	550	0.110	9.000	2.700	29180	9630	234.0
		8.00	3	550	0.135	12.000	3.600	21885	8865	382.9
		10.00	3	550	0.165	15.000	4.500	17505	8665	585.0
		12.00	3	550	0.200	18.000	5.400	14590	8755	850.8
		16.00	3	550	0.215	24.000	7.200	10940	7060	1219.5
		20.00	3	550	0.250	30.000	9.000	8755	6565	1772.6
	Unalloyed copper	3.00	3	396	0.040	4.500	1.350	42015	5040	30.6
		4.00	3	400	0.050	6.000	1.800	31830	4775	51.6
		5.00	3	400	0.070	7.500	2.250	25465	5350	90.2
		6.00	3	400	0.090	9.000	2.700	21220	5730	139.2
		8.00	3	400	0.110	12.000	3.600	15915	5250	226.9
		10.00	3	400	0.130	15.000	4.500	12730	4965	335.2
		12.00	3	400	0.160	18.000	5.400	10610	5095	495.0
		16.00	3	400	0.170	24.000	7.200	7960	4060	701.3
		20.00	3	400	0.200	30.000	9.000	6365	3820	1031.3
	Thermoplastics	3.00	3	396	0.050	4.500	1.350	42015	6305	38.3
		4.00	3	528	0.065	6.000	1.800	42015	8195	88.5
		5.00	3	660	0.085	7.500	2.250	42015	10715	180.8
		6.00	3	792	0.110	9.000	2.700	42015	13865	336.9
		8.00	3	1000	0.135	12.000	3.600	39790	16115	696.1
		10.00	3	1000	0.165	15.000	4.500	31830	15755	1063.6
		12.00	3	1000	0.200	18.000	5.400	26525	15915	1547.0
		16.00	3	1000	0.215	24.000	7.200	19895	12830	2217.3
		20.00	3	1000	0.250	30.000	9.000	15915	11935	3222.9
	Cast aluminium Si 6% - 15%	3.00	3	396	0.050	4.500	1.350	42015	6305	38.3
		4.00	3	440	0.065	6.000	1.800	35015	6830	73.7
		5.00	3	440	0.085	7.500	2.250	28010	7145	120.5
		6.00	3	440	0.110	9.000	2.700	23345	7705	187.2
		8.00	3	440	0.135	12.000	3.600	17505	7090	306.3
		10.00	3	440	0.165	15.000	4.500	14005	6935	468.0
		12.00	3	440	0.200	18.000	5.400	11670	7005	680.7
		16.00	3	440	0.215	24.000	7.200	8755	5645	975.6
		20.00	3	440	0.250	30.000	9.000	7005	5250	1418.1
	Wrought aluminium Si < 6%	3.00	3	396	0.035	1.800	3.000	42015	4410	23.8
		4.00	3	450	0.045	2.400	4.000	35810	4835	46.4
		5.00	3	450	0.060	3.000	5.000	28650	5155	77.3
		6.00	3	450	0.075	3.600	6.000	23875	5370	116.0
		8.00	3	450	0.095	4.800	8.000	17905	5105	196.0
		10.00	3	450	0.115	6.000	10.000	14325	4940	296.5
		12.00	3	450	0.140	7.200	12.000	11935	5015	433.2
		16.00	3	450	0.150	9.600	16.000	8950	4030	618.8
		20.00	3	450	0.175	12.000	20.000	7160	3760	902.4
	Unalloyed copper	3.00	3	350	0.030	1.800	3.000	37135	3340	18.0
		4.00	3	350	0.035	2.400	4.000	27850	2925	28.1
		5.00	3	350	0.050	3.000	5.000	22280	3340	50.1
		6.00	3	350	0.060	3.600	6.000	18570	3340	72.2
		8.00	3	350	0.075	4.800	8.000	13925	3135	120.3
		10.00	3	350	0.090	6.000	10.000	11140	3010	180.5
		12.00	3	350	0.110	7.200	12.000	9285	3065	264.7
		16.00	3	350	0.120	9.600	16.000	6965	2505	385.0
		20.00	3	350	0.140	12.000	20.000	5570	2340	561.5
	Thermoplastics	3.00	3	396	0.035	1.800	3.000	42015	4410	23.8
		4.00	3	528	0.045	2.400	4.000	42015	5670	54.5
		5.00	3	660	0.060	3.000	5.000	42015	7565	113.4
		6.00	3	792	0.075	3.600	6.000	42015	9455	204.2
		8.00	3	800	0.095	4.800	8.000	31830	9070	348.4
		10.00	3	800	0.115	6.000	10.000	25465	8785	527.1
		12.00	3	800	0.140	7.200	12.000	21220	8915	770.1
		16.00	3	800	0.150	9.600	16.000	15915	7160	1100.1
		20.00	3	800	0.175	12.000	20.000	12730	6685	1604.3
	Cast aluminium Si 6% - 15%	3.00	3	360	0.035	1.800	3.000	38195	4010	21.7
		4.00	3	360	0.045	2.400	4.000	28650	3865	37.1
		5.00	3	360	0.060	3.000	5.000	22920	4125	61.9
		6.00	3	360	0.075	3.600	6.000	19100	4295	92.8
		8.00	3	360	0.095	4.800	8.000	14325	4080	156.8
		10.00	3	360	0.115	6.000	10.000	11460	3955	237.2
		12.00	3	360	0.140	7.200	12.000	9550	4010	346.5
		16.00	3	360	0.150	9.600	16.000	7160	3225	495.0
		20.00	3	360	0.175	12.000	20.000	5730	3010	721.9

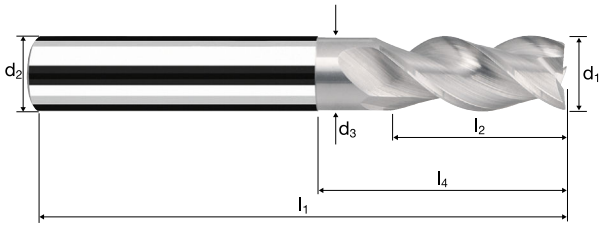
Cylindrical end mills AX-NV3

Smooth-edged, normal version with short neck

X-Generation X

III

HM MG10	λ 40° γ 20°
90°	
Vario	



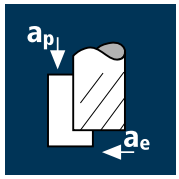
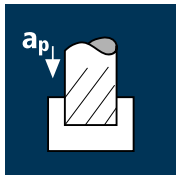
Roughing

Finishing

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15530** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	α	z	15630	CELERO C15630
										15530	C15530
180	3.00	6.00	2.80	57	8.00	14.00	20.63	4.5°	3	●	●
220	4.00	6.00	3.70	57	11.00	16.00	20.95	3.0°	3	●	●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	1.5°	3	●	●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.0°	3	●	●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	0.0°	3	●	●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	0.0°	3	●	●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	0.0°	3	●	●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	0.0°	3	●	●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	0.0°	3	●	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Si < 6%	6.00	3	650	0.060	9.000	2.400	34485	6205	134.1
		8.00	3	650	0.075	12.000	3.200	25865	5820	223.5
		10.00	3	650	0.090	15.000	4.000	20690	5585	335.2
		12.00	3	650	0.110	18.000	4.800	17240	5690	491.6
		16.00	3	650	0.120	24.000	6.400	12930	4655	715.1
		20.00	3	650	0.140	30.000	8.000	10345	4345	1042.8
	Unalloyed copper	6.00	3	500	0.050	9.000	2.400	26525	3980	85.9
		8.00	3	500	0.060	12.000	3.200	19895	3580	137.5
		10.00	3	500	0.070	15.000	4.000	15915	3340	200.5
		12.00	3	500	0.090	18.000	4.800	13265	3580	309.4
		16.00	3	500	0.095	24.000	6.400	9945	2835	435.4
		20.00	3	500	0.110	30.000	8.000	7960	2625	630.3
	Thermoplastics	6.00	3	792	0.060	9.000	2.400	42015	7565	163.4
		8.00	3	1056	0.075	12.000	3.200	42015	9455	363.0
		10.00	3	1200	0.090	15.000	4.000	38195	10315	618.8
		12.00	3	1200	0.110	18.000	4.800	31830	10505	907.6
		16.00	3	1200	0.120	24.000	6.400	23875	8595	1320.1
		20.00	3	1200	0.140	30.000	8.000	19100	8020	1925.1
	Cast aluminium Si 6% - 15%	6.00	3	520	0.060	9.000	2.400	27585	4965	107.3
		8.00	3	520	0.075	12.000	3.200	20690	4655	178.8
		10.00	3	520	0.090	15.000	4.000	16550	4470	268.1
		12.00	3	520	0.110	18.000	4.800	13795	4550	393.3
		16.00	3	520	0.120	24.000	6.400	10345	3725	572.0
		20.00	3	520	0.140	30.000	8.000	8275	3475	834.2
	Wrought aluminium Si < 6%	6.00	3	550	0.040	3.000	6.000	29180	3500	63.0
		8.00	3	550	0.050	4.000	8.000	21885	3285	105.0
		10.00	3	550	0.065	5.000	10.000	17505	3415	170.7
		12.00	3	550	0.075	6.000	12.000	14590	3285	236.3
		16.00	3	550	0.085	8.000	16.000	10940	2790	357.1
		20.00	3	550	0.095	10.000	20.000	8755	2495	499.0
	Unalloyed copper	6.00	3	450	0.035	3.000	6.000	23875	2505	45.1
		8.00	3	450	0.040	4.000	8.000	17905	2150	68.8
		10.00	3	450	0.050	5.000	10.000	14325	2150	107.4
		12.00	3	450	0.060	6.000	12.000	11935	2150	154.7
		16.00	3	450	0.065	8.000	16.000	8950	1745	223.5
		20.00	3	450	0.075	10.000	20.000	7160	1610	322.3
	Thermoplastics	6.00	3	792	0.040	3.000	6.000	42015	5040	90.8
		8.00	3	1000	0.050	4.000	8.000	39790	5970	191.0
		10.00	3	1000	0.065	5.000	10.000	31830	6205	310.4
		12.00	3	1000	0.075	6.000	12.000	26525	5970	429.7
		16.00	3	1000	0.085	8.000	16.000	19895	5075	649.4
		20.00	3	1000	0.095	10.000	20.000	15915	4535	907.2
	Cast aluminium Si 6% - 15%	6.00	3	440	0.040	3.000	6.000	23345	2800	50.4
		8.00	3	440	0.050	4.000	8.000	17505	2625	84.0
		10.00	3	440	0.065	5.000	10.000	14005	2730	136.6
		12.00	3	440	0.075	6.000	12.000	11670	2625	189.1
		16.00	3	440	0.085	8.000	16.000	8755	2230	285.7
		20.00	3	440	0.095	10.000	20.000	7005	1995	399.2

Cylindrical end mills AX-NV3

Smooth-edged, normal version with short neck, with integral cooling channel

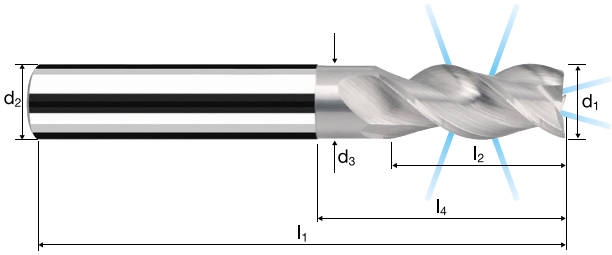
X-Generation

HM MG10

λ 40°
γ 20°

90°

Vario



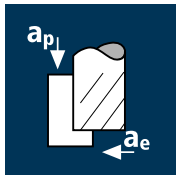
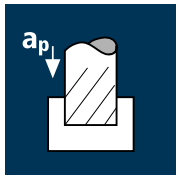
Roughing

Finishing

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15535** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	z	15635	CELERO C15635
									15535	C15535
300	6.00	6.00	5.50	57	13.00	19.34	20.00	3	●	●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	3	●	●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	3	●	●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	3	●	●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	3	●	●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	3	●	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Si < 6% C	3.00	2	396	0.040	4.500	1.400	42015	3360	21.2
		4.00	2	528	0.055	6.000	1.800	42015	4620	49.9
		5.00	2	550	0.070	7.500	2.300	35015	4900	84.6
		6.00	2	550	0.090	9.000	2.700	29180	5250	127.6
		8.00	2	550	0.120	12.000	3.600	21885	5250	226.9
		10.00	2	550	0.150	15.000	4.500	17505	5250	354.5
		12.00	2	550	0.165	18.000	5.400	14590	4815	468.0
		16.00	2	550	0.185	24.000	7.200	10940	4050	699.6
		20.00	2	550	0.215	30.000	9.000	8755	3765	1016.3
	Unalloyed copper C	3.00	2	396	0.030	4.500	1.350	42015	2520	15.3
		4.00	2	400	0.045	6.000	1.800	31830	2865	30.9
		5.00	2	400	0.055	7.500	2.250	25465	2800	47.3
		6.00	2	400	0.070	9.000	2.700	21220	2970	72.2
		8.00	2	400	0.095	12.000	3.600	15915	3025	130.6
		10.00	2	400	0.120	15.000	4.500	12730	3055	206.3
		12.00	2	400	0.130	18.000	5.400	10610	2760	268.1
		16.00	2	400	0.150	24.000	7.200	7960	2385	412.5
		20.00	2	400	0.170	30.000	9.000	6365	2165	584.4
	Thermoplastics C	3.00	2	396	0.040	4.500	1.350	42015	3360	20.4
		4.00	2	528	0.055	6.000	1.800	42015	4620	49.9
		5.00	2	660	0.070	7.500	2.250	42015	5880	99.3
		6.00	2	792	0.090	9.000	2.700	42015	7565	183.8
		8.00	2	1000	0.120	12.000	3.600	39790	9550	412.5
		10.00	2	1000	0.150	15.000	4.500	31830	9550	644.6
		12.00	2	1000	0.165	18.000	5.400	26525	8755	850.8
		16.00	2	1000	0.185	24.000	7.200	19895	7360	1272.0
		20.00	2	1000	0.215	30.000	9.000	15915	6845	1847.8
	Cast aluminium Si 6% - 15% C	3.00	2	396	0.040	4.500	1.350	42015	3360	20.4
		4.00	2	440	0.055	6.000	1.800	35015	3850	41.6
		5.00	2	440	0.070	7.500	2.250	28010	3920	66.2
		6.00	2	440	0.090	9.000	2.700	23345	4200	102.1
		8.00	2	440	0.120	12.000	3.600	17505	4200	181.5
		10.00	2	440	0.150	15.000	4.500	14005	4200	283.6
		12.00	2	440	0.165	18.000	5.400	11670	3850	374.4
		16.00	2	440	0.185	24.000	7.200	8755	3240	559.7
		20.00	2	440	0.215	30.000	9.000	7005	3010	813.0
	Wrought aluminium Si < 6% C	3.00	2	396	0.030	1.500	3.000	42015	2520	11.3
		4.00	2	450	0.040	2.000	4.000	35810	2865	22.9
		5.00	2	450	0.050	2.500	5.000	28650	2865	35.8
		6.00	2	450	0.065	3.000	6.000	23875	3105	55.9
		8.00	2	450	0.085	4.000	8.000	17905	3045	97.4
		10.00	2	450	0.105	5.000	10.000	14325	3010	150.4
		12.00	2	450	0.115	6.000	12.000	11935	2745	197.7
		16.00	2	450	0.130	8.000	16.000	8950	2330	297.9
		20.00	2	450	0.150	10.000	20.000	7160	2150	429.7
	Unalloyed copper C	3.00	2	350	0.025	1.500	3.000	37135	1855	8.4
		4.00	2	350	0.030	2.000	4.000	27850	1670	13.4
		5.00	2	350	0.040	2.500	5.000	22280	1785	22.3
		6.00	2	350	0.050	3.000	6.000	18570	1855	33.4
		8.00	2	350	0.070	4.000	8.000	13925	1950	62.4
		10.00	2	350	0.085	5.000	10.000	11140	1895	94.7
		12.00	2	350	0.090	6.000	12.000	9285	1670	120.3
		16.00	2	350	0.105	8.000	16.000	6965	1460	187.2
		20.00	2	350	0.120	10.000	20.000	5570	1335	267.4
	Thermoplastics C	3.00	2	396	0.030	1.500	3.000	42015	2520	11.3
		4.00	2	528	0.040	2.000	4.000	42015	3360	26.9
		5.00	2	660	0.050	2.500	5.000	42015	4200	52.5
		6.00	2	792	0.065	3.000	6.000	42015	5460	98.3
		8.00	2	800	0.085	4.000	8.000	31830	5410	173.2
		10.00	2	800	0.105	5.000	10.000	25465	5350	267.4
		12.00	2	800	0.115	6.000	12.000	21220	4880	351.4
		16.00	2	800	0.130	8.000	16.000	15915	4140	529.7
		20.00	2	800	0.150	10.000	20.000	12730	3820	763.9
	Cast aluminium Si 6% - 15% C	3.00	2	360	0.030	1.500	3.000	38195	2290	10.3
		4.00	2	360	0.040	2.000	4.000	28650	2290	18.3
		5.00	2	360	0.050	2.500	5.000	22920	2290	28.6
		6.00	2	360	0.065	3.000	6.000	19100	2485	44.7
		8.00	2	360	0.085	4.000	8.000	14325	2435	77.9
		10.00	2	360	0.105	5.000	10.000	11460	2405	120.3
		12.00	2	360	0.115	6.000	12.000	9550	2195	158.1
		16.00	2	360	0.130	8.000	16.000	7160	1860	238.4
		20.00	2	360	0.150	10.000	20.000	5730	1720	343.8

Cylindrical end mills Alucut

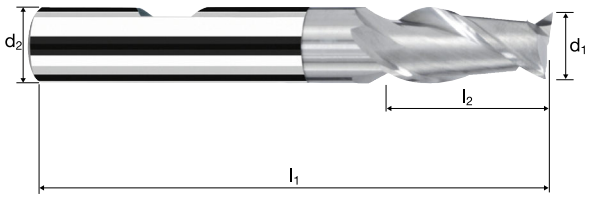
Smooth-edged, normal version

Favora® F

III

HM MG10	λ 40° γ 18°

45°



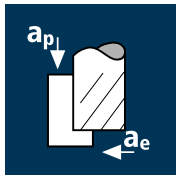
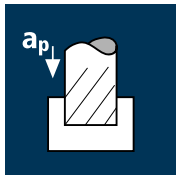
Roughing

Finishing

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **5500** ø-Code **140**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	CELERO C5500	CELERO C5272
140	2.00	6.00	54	6.00	15.32	0.10	8.0°	2		●
180	3.00	6.00	57	7.00	14.96	0.10	6.0°	2		●
220	4.00	6.00	57	8.00	14.59	0.10	4.5°	2		●
260	5.00	6.00	57	10.00	14.72	0.15	2.5°	2		●
300	6.00	6.00	57	10.00	-	0.15	0.0°	2		●
391	8.00	8.00	63	16.00	-	0.15	0.0°	2		●
450	10.00	10.00	72	19.00	-	0.20	0.0°	2		●
501	12.00	12.00	83	22.00	-	0.20	0.0°	2		●
610	16.00	16.00	92	26.00	-	0.20	0.0°	2		●
682	20.00	20.00	104	32.00	-	0.20	0.0°	2		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Si < 6%	3.00	2	396	0.050	4.500	1.200	42015	4200	22.7
		4.00	2	528	0.065	6.000	1.600	42015	5460	52.4
		5.00	2	550	0.080	7.500	2.000	35015	5600	84.0
		6.00	2	550	0.110	9.000	2.400	29180	6420	138.7
		8.00	2	550	0.145	12.000	3.200	21885	6345	243.7
		10.00	2	550	0.180	15.000	4.000	17505	6305	378.2
		12.00	2	550	0.195	18.000	4.800	14590	5690	491.6
		16.00	2	550	0.220	24.000	6.400	10940	4815	739.5
		20.00	2	550	0.255	30.000	8.000	8755	4465	1071.4
	Unalloyed copper	3.00	2	396	0.040	4.500	1.200	42015	3360	18.2
		4.00	2	400	0.050	6.000	1.600	31830	3185	30.6
		5.00	2	400	0.065	7.500	2.000	25465	3310	49.7
		6.00	2	400	0.090	9.000	2.400	21220	3820	82.5
		8.00	2	400	0.115	12.000	3.200	15915	3660	140.6
		10.00	2	400	0.145	15.000	4.000	12730	3690	221.5
		12.00	2	400	0.155	18.000	4.800	10610	3290	284.2
		16.00	2	400	0.175	24.000	6.400	7960	2785	427.8
		20.00	2	400	0.205	30.000	8.000	6365	2610	626.4
	Thermoplastics	3.00	2	396	0.050	4.500	1.200	42015	4200	22.7
		4.00	2	528	0.065	6.000	1.600	42015	5460	52.4
		5.00	2	660	0.080	7.500	2.000	42015	6725	100.8
		6.00	2	792	0.110	9.000	2.400	42015	9245	199.7
		8.00	2	1000	0.145	12.000	3.200	39790	11540	443.1
		10.00	2	1000	0.180	15.000	4.000	31830	11460	687.5
		12.00	2	1000	0.195	18.000	4.800	26525	10345	893.8
		16.00	2	1000	0.220	24.000	6.400	19895	8755	1344.5
		20.00	2	1000	0.255	30.000	8.000	15915	8115	1948.1
	Cast aluminium Si 6% - 15%	3.00	2	396	0.050	4.500	1.200	42015	4200	22.7
		4.00	2	440	0.065	6.000	1.600	35015	4550	43.7
		5.00	2	440	0.080	7.500	2.000	28010	4480	67.2
		6.00	2	440	0.110	9.000	2.400	23345	5135	110.9
		8.00	2	440	0.145	12.000	3.200	17505	5075	195.0
		10.00	2	440	0.180	15.000	4.000	14005	5040	302.5
		12.00	2	440	0.195	18.000	4.800	11670	4550	393.3
		16.00	2	440	0.220	24.000	6.400	8755	3850	591.6
		20.00	2	440	0.255	30.000	8.000	7005	3570	857.1
	Wrought aluminium Si < 6%	3.00	2	396	0.035	2.100	3.000	42015	2940	18.5
		4.00	2	450	0.045	2.800	4.000	35810	3225	36.1
		5.00	2	450	0.055	3.500	5.000	28650	3150	55.1
		6.00	2	450	0.075	4.200	6.000	23875	3580	90.2
		8.00	2	450	0.100	5.600	8.000	17905	3580	160.4
		10.00	2	450	0.125	7.000	10.000	14325	3580	250.7
		12.00	2	450	0.135	8.400	12.000	11935	3225	324.9
		16.00	2	450	0.155	11.200	16.000	8950	2775	497.3
		20.00	2	450	0.180	14.000	20.000	7160	2580	721.9
	Unalloyed copper	3.00	2	350	0.030	2.100	3.000	37135	2230	14.0
		4.00	2	350	0.035	2.800	4.000	27850	1950	21.8
		5.00	2	350	0.045	3.500	5.000	22280	2005	35.1
		6.00	2	350	0.060	4.200	6.000	18570	2230	56.1
		8.00	2	350	0.080	5.600	8.000	13925	2230	99.8
		10.00	2	350	0.100	7.000	10.000	11140	2230	156.0
		12.00	2	350	0.110	8.400	12.000	9285	2040	205.9
		16.00	2	350	0.125	11.200	16.000	6965	1740	311.9
		20.00	2	350	0.145	14.000	20.000	5570	1615	452.3
	Thermoplastics	3.00	2	396	0.035	2.100	3.000	42015	2940	18.5
		4.00	2	528	0.045	2.800	4.000	42015	3780	42.4
		5.00	2	660	0.055	3.500	5.000	42015	4620	80.9
		6.00	2	792	0.075	4.200	6.000	42015	6305	158.8
		8.00	2	800	0.100	5.600	8.000	31830	6365	285.2
		10.00	2	800	0.125	7.000	10.000	25465	6365	445.6
		12.00	2	800	0.135	8.400	12.000	21220	5730	577.5
		16.00	2	800	0.155	11.200	16.000	15915	4935	884.1
		20.00	2	800	0.180	14.000	20.000	12730	4585	1283.4
	Cast aluminium Si 6% - 15%	3.00	2	360	0.035	2.100	3.000	38195	2675	16.8
		4.00	2	360	0.045	2.800	4.000	28650	2580	28.9
		5.00	2	360	0.055	3.500	5.000	22920	2520	44.1
		6.00	2	360	0.075	4.200	6.000	19100	2865	72.2
		8.00	2	360	0.100	5.600	8.000	14325	2865	128.3
		10.00	2	360	0.125	7.000	10.000	11460	2865	200.5
		12.00	2	360	0.135	8.400	12.000	9550	2580	259.9
		16.00	2	360	0.155	11.200	16.000	7160	2220	397.9
		20.00	2	360	0.180	14.000	20.000	5730	2065	577.5

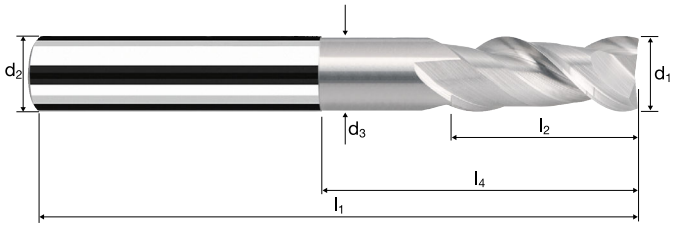
Cylindrical end mills AX-NV2

Smooth-edged, medium length version with neck

X-Generation

III

HM MG10	λ 40° γ 20°
90°	
Vario	



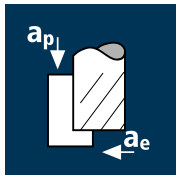
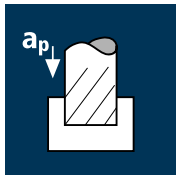
Roughing

Finishing

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15550** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	α	z	15650	CELERO C15650
										15550	C15550
180	3.00	6.00	2.80	63	8.00	20.00	26.63	3.5°	2	●	●
220	4.00	6.00	3.70	63	11.00	22.00	26.95	2.5°	2	●	●
260	5.00	6.00	4.60	63	13.00	24.00	27.27	1.5°	2	●	●
300	6.00	6.00	5.50	63	13.00	25.34	26.00	0.0°	2	●	●
391	8.00	8.00	7.40	72	19.00	34.29	35.00	0.0°	2	●	●
450	10.00	10.00	9.20	84	22.00	42.20	43.00	0.0°	2	●	●
501	12.00	12.00	11.00	97	26.00	50.13	51.00	0.0°	2	●	●
610	16.00	16.00	15.00	108	32.00	58.13	59.00	0.0°	2	●	●
682	20.00	20.00	19.00	122	38.00	70.13	71.00	0.0°	2	●	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Si < 6%	3.00	3	396	0.045	4.500	0.900	42015	5670	23.0
		4.00	3	528	0.060	6.000	1.200	42015	7565	54.5
		5.00	3	550	0.075	7.500	1.500	35015	7880	88.6
		6.00	3	550	0.100	9.000	1.800	29180	8755	141.8
		8.00	3	550	0.120	12.000	2.400	21885	7880	226.9
		10.00	3	550	0.150	15.000	3.000	17505	7880	354.5
		12.00	3	550	0.180	18.000	3.600	14590	7880	510.5
		16.00	3	550	0.190	24.000	4.800	10940	6235	718.5
		20.00	3	550	0.225	30.000	6.000	8755	5910	1063.6
	Unalloyed copper	3.00	3	396	0.035	4.500	0.900	42015	4410	17.9
		4.00	3	400	0.050	6.000	1.200	31830	4775	34.4
		5.00	3	400	0.060	7.500	1.500	25465	4585	51.6
		6.00	3	400	0.080	9.000	1.800	21220	5095	82.5
		8.00	3	400	0.095	12.000	2.400	15915	4535	130.6
		10.00	3	400	0.120	15.000	3.000	12730	4585	206.3
		12.00	3	400	0.145	18.000	3.600	10610	4615	299.1
		16.00	3	400	0.150	24.000	4.800	7960	3580	412.5
		20.00	3	400	0.180	30.000	6.000	6365	3440	618.8
	Thermoplastics	3.00	3	396	0.045	4.500	0.900	42015	5670	23.0
		4.00	3	528	0.060	6.000	1.200	42015	7565	54.5
		5.00	3	660	0.075	7.500	1.500	42015	9455	106.4
		6.00	3	792	0.100	9.000	1.800	42015	12605	204.2
		8.00	3	1000	0.120	12.000	2.400	39790	14325	412.5
		10.00	3	1000	0.150	15.000	3.000	31830	14325	644.6
		12.00	3	1000	0.180	18.000	3.600	26525	14325	928.2
		16.00	3	1000	0.190	24.000	4.800	19895	11340	1306.3
		20.00	3	1000	0.225	30.000	6.000	15915	10745	1933.7
	Cast aluminium Si 6% - 15%	3.00	3	396	0.045	4.500	0.900	42015	5670	23.0
		4.00	3	440	0.060	6.000	1.200	35015	6305	45.4
		5.00	3	440	0.075	7.500	1.500	28010	6305	70.9
		6.00	3	440	0.100	9.000	1.800	23345	7005	113.4
		8.00	3	440	0.120	12.000	2.400	17505	6305	181.5
		10.00	3	440	0.150	15.000	3.000	14005	6305	283.6
		12.00	3	440	0.180	18.000	3.600	11670	6305	408.4
		16.00	3	440	0.190	24.000	4.800	8755	4990	574.8
		20.00	3	440	0.225	30.000	6.000	7005	4725	850.8
	Wrought aluminium Si < 6%	3.00	3	396	0.030	1.350	3.000	42015	3780	15.3
		4.00	3	450	0.040	1.800	4.000	35810	4295	30.9
		5.00	3	450	0.055	2.250	5.000	28650	4725	53.2
		6.00	3	450	0.070	2.700	6.000	23875	5015	81.2
		8.00	3	450	0.085	3.600	8.000	17905	4565	131.5
		10.00	3	450	0.105	4.500	10.000	14325	4510	203.0
		12.00	3	450	0.125	5.400	12.000	11935	4475	290.1
		16.00	3	450	0.135	7.200	16.000	8950	3625	417.7
		20.00	3	450	0.160	9.000	20.000	7160	3440	618.8
	Unalloyed copper	3.00	3	350	0.025	1.350	3.000	37135	2785	11.3
		4.00	3	350	0.030	1.800	4.000	27850	2505	18.0
		5.00	3	350	0.045	2.250	5.000	22280	3010	33.8
		6.00	3	350	0.055	2.700	6.000	18570	3065	49.6
		8.00	3	350	0.070	3.600	8.000	13925	2925	84.2
		10.00	3	350	0.085	4.500	10.000	11140	2840	127.8
		12.00	3	350	0.100	5.400	12.000	9285	2785	180.5
		16.00	3	350	0.110	7.200	16.000	6965	2300	264.7
		20.00	3	350	0.130	9.000	20.000	5570	2170	391.0
	Thermoplastics	3.00	3	396	0.030	1.350	3.000	42015	3780	15.3
		4.00	3	528	0.040	1.800	4.000	42015	5040	36.3
		5.00	3	660	0.055	2.250	5.000	42015	6935	78.0
		6.00	3	792	0.070	2.700	6.000	42015	8825	142.9
		8.00	3	800	0.085	3.600	8.000	31830	8115	233.8
		10.00	3	800	0.105	4.500	10.000	25465	8020	361.0
		12.00	3	800	0.125	5.400	12.000	21220	7960	515.7
		16.00	3	800	0.135	7.200	16.000	15915	6445	742.6
		20.00	3	800	0.160	9.000	20.000	12730	6110	1100.1
	Cast aluminium Si 6% - 15%	3.00	3	360	0.030	1.350	3.000	38195	3440	13.9
		4.00	3	360	0.040	1.800	4.000	28650	3440	24.8
		5.00	3	360	0.055	2.250	5.000	22920	3780	42.5
		6.00	3	360	0.070	2.700	6.000	19100	4010	65.0
		8.00	3	360	0.085	3.600	8.000	14325	3655	105.2
		10.00	3	360	0.105	4.500	10.000	11460	3610	162.4
		12.00	3	360	0.125	5.400	12.000	9550	3580	232.0
		16.00	3	360	0.135	7.200	16.000	7160	2900	334.1
		20.00	3	360	0.160	9.000	20.000	5730	2750	495.0

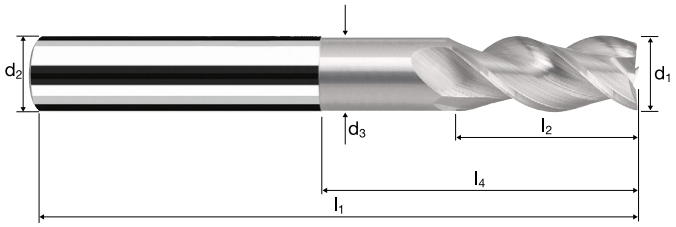
Cylindrical end mills AX-NV3

Smooth-edged, medium length version with neck

X-Generation

III

HM MG10	λ 40° γ 20°
90°	
Vario	



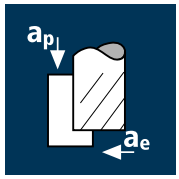
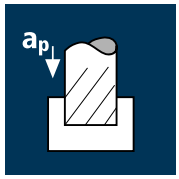
Roughing

Finishing

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15557** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	α	z	15657	CELERO C15657
										15557	C15557
180	3.00	6.00	2.80	63	8.00	20.00	26.63	3.5°	3	●	●
220	4.00	6.00	3.70	63	11.00	22.00	26.95	2.5°	3	●	●
260	5.00	6.00	4.60	63	13.00	24.00	27.27	1.5°	3	●	●
300	6.00	6.00	5.50	63	13.00	25.34	26.00	0.0°	3	●	●
391	8.00	8.00	7.40	72	19.00	34.29	35.00	0.0°	3	●	●
450	10.00	10.00	9.20	84	22.00	42.20	43.00	0.0°	3	●	●
501	12.00	12.00	11.00	97	26.00	50.13	51.00	0.0°	3	●	●
610	16.00	16.00	15.00	108	32.00	58.13	59.00	0.0°	3	●	●
682	20.00	20.00	19.00	122	38.00	70.13	71.00	0.0°	3	●	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Si < 6%	3.00	3	396	0.035	7.500	0.600	42015	4410	19.9
		4.00	3	528	0.045	10.000	0.800	42015	5670	45.4
		5.00	3	550	0.060	12.500	1.000	35015	6305	78.8
		6.00	3	550	0.075	15.000	1.200	29180	6565	118.2
		8.00	3	550	0.095	20.000	1.600	21885	6235	199.6
		10.00	3	550	0.115	25.000	2.000	17505	6040	302.0
		12.00	3	550	0.140	30.000	2.400	14590	6125	441.2
		16.00	3	550	0.150	40.000	3.200	10940	4925	630.3
		20.00	3	550	0.175	50.000	4.000	8755	4595	919.1
	Unalloyed copper	3.00	3	396	0.030	7.500	0.600	42015	3780	17.0
		4.00	3	400	0.035	10.000	0.800	31830	3340	26.7
		5.00	3	400	0.050	12.500	1.000	25465	3820	47.7
		6.00	3	400	0.060	15.000	1.200	21220	3820	68.8
		8.00	3	400	0.075	20.000	1.600	15915	3580	114.6
		10.00	3	400	0.090	25.000	2.000	12730	3440	171.9
		12.00	3	400	0.110	30.000	2.400	10610	3500	252.1
		16.00	3	400	0.120	40.000	3.200	7960	2865	366.7
		20.00	3	400	0.140	50.000	4.000	6365	2675	534.8
	Thermoplastics	3.00	3	396	0.035	7.500	0.600	42015	4410	19.9
		4.00	3	528	0.045	10.000	0.800	42015	5670	45.4
		5.00	3	660	0.060	12.500	1.000	42015	7565	94.5
		6.00	3	792	0.075	15.000	1.200	42015	9455	170.2
		8.00	3	1000	0.095	20.000	1.600	39790	11340	362.9
		10.00	3	1000	0.115	25.000	2.000	31830	10980	549.1
		12.00	3	1000	0.140	30.000	2.400	26525	11140	802.1
		16.00	3	1000	0.150	40.000	3.200	19895	8950	1145.9
		20.00	3	1000	0.175	50.000	4.000	15915	8355	1671.1
	Cast aluminium Si 6% - 15%	3.00	3	396	0.035	7.500	0.600	42015	4410	19.9
		4.00	3	440	0.045	10.000	0.800	35015	4725	37.8
		5.00	3	440	0.060	12.500	1.000	28010	5040	63.0
		6.00	3	440	0.075	15.000	1.200	23345	5250	94.5
		8.00	3	440	0.095	20.000	1.600	17505	4990	159.7
		10.00	3	440	0.115	25.000	2.000	14005	4830	241.6
		12.00	3	440	0.140	30.000	2.400	11670	4900	352.9
		16.00	3	440	0.150	40.000	3.200	8755	3940	504.2
		20.00	3	440	0.175	50.000	4.000	7005	3675	735.3
	Wrought aluminium Si < 6%	3.00	3	396	0.025	1.200	3.000	42015	3150	11.3
		4.00	3	450	0.030	1.600	4.000	35810	3225	20.6
		5.00	3	450	0.040	2.000	5.000	28650	3440	34.4
		6.00	3	450	0.055	2.400	6.000	23875	3940	56.7
		8.00	3	450	0.065	3.200	8.000	17905	3490	89.4
		10.00	3	450	0.080	4.000	10.000	14325	3440	137.5
		12.00	3	450	0.100	4.800	12.000	11935	3580	206.3
		16.00	3	450	0.105	6.400	16.000	8950	2820	288.8
		20.00	3	450	0.125	8.000	20.000	7160	2685	429.7
	Unalloyed copper	3.00	3	350	0.020	1.200	3.000	37135	2230	8.0
		4.00	3	350	0.025	1.600	4.000	27850	2090	13.4
		5.00	3	350	0.030	2.000	5.000	22280	2005	20.1
		6.00	3	350	0.045	2.400	6.000	18570	2505	36.1
		8.00	3	350	0.050	3.200	8.000	13925	2090	53.5
		10.00	3	350	0.065	4.000	10.000	11140	2170	86.9
		12.00	3	350	0.080	4.800	12.000	9285	2230	128.3
		16.00	3	350	0.085	6.400	16.000	6965	1775	181.8
		20.00	3	350	0.100	8.000	20.000	5570	1670	267.4
	Thermoplastics	3.00	3	396	0.025	1.200	3.000	42015	3150	11.3
		4.00	3	528	0.030	1.600	4.000	42015	3780	24.2
		5.00	3	660	0.040	2.000	5.000	42015	5040	50.4
		6.00	3	792	0.055	2.400	6.000	42015	6935	99.8
		8.00	3	800	0.065	3.200	8.000	31830	6205	158.9
		10.00	3	800	0.080	4.000	10.000	25465	6110	244.5
		12.00	3	800	0.100	4.800	12.000	21220	6365	366.7
		16.00	3	800	0.105	6.400	16.000	15915	5015	513.4
		20.00	3	800	0.125	8.000	20.000	12730	4775	763.9
	Cast aluminium Si 6% - 15%	3.00	3	360	0.025	1.200	3.000	38195	2865	10.3
		4.00	3	360	0.030	1.600	4.000	28650	2580	16.5
		5.00	3	360	0.040	2.000	5.000	22920	2750	27.5
		6.00	3	360	0.055	2.400	6.000	19100	3150	45.4
		8.00	3	360	0.065	3.200	8.000	14325	2795	71.5
		10.00	3	360	0.080	4.000	10.000	11460	2750	110.0
		12.00	3	360	0.100	4.800	12.000	9550	2865	165.0
		16.00	3	360	0.105	6.400	16.000	7160	2255	231.0
		20.00	3	360	0.125	8.000	20.000	5730	2150	343.8

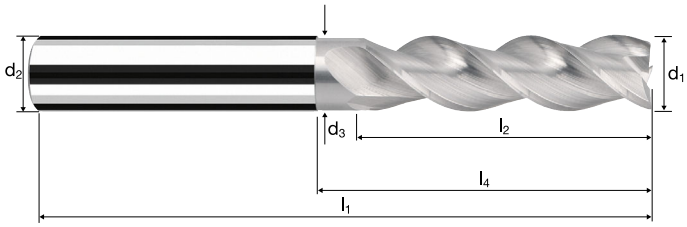
Cylindrical end mills AX-NV3

Smooth-edged, medium length version with short neck

X-Generation X

III

HM MG10	λ 40° γ 20°
90°	
Vario	



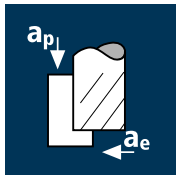
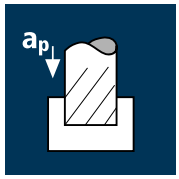
Roughing

Finishing

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15560** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	α	z	15660	CELERO C15660
										15560	C15560
180	3.00	6.00	2.80	63	14.00	20.00	26.63	3.5°	3	●	●
220	4.00	6.00	3.70	63	17.00	22.00	26.95	2.5°	3	●	●
260	5.00	6.00	4.60	63	19.00	24.00	27.27	1.5°	3	●	●
300	6.00	6.00	5.50	63	19.00	25.34	26.00	0.0°	3	●	●
391	8.00	8.00	7.40	72	28.00	34.29	35.00	0.0°	3	●	●
450	10.00	10.00	9.20	84	34.00	42.20	43.00	0.0°	3	●	●
501	12.00	12.00	11.00	97	40.00	50.13	51.00	0.0°	3	●	●
610	16.00	16.00	15.00	108	48.00	58.13	59.00	0.0°	3	●	●
682	20.00	20.00	19.00	122	56.00	70.13	71.00	0.0°	3	●	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Si < 6%	6.00	3	550	0.085	9.000	1.500	29180	7440	100.4
		8.00	3	550	0.105	12.000	2.000	21885	6895	165.4
		10.00	3	550	0.135	15.000	2.500	17505	7090	265.9
		12.00	3	550	0.160	18.000	3.000	14590	7005	378.2
		16.00	3	550	0.170	24.000	4.000	10940	5580	535.7
		20.00	3	550	0.200	30.000	5.000	8755	5250	787.8
	Unalloyed copper	6.00	3	400	0.070	9.000	1.500	21220	4455	60.2
		8.00	3	400	0.085	12.000	2.000	15915	4060	97.4
		10.00	3	400	0.110	15.000	2.500	12730	4200	157.6
		12.00	3	400	0.130	18.000	3.000	10610	4140	223.5
		16.00	3	400	0.135	24.000	4.000	7960	3225	309.4
		20.00	3	400	0.160	30.000	5.000	6365	3055	458.4
	Thermoplastics	6.00	3	792	0.085	9.000	1.500	42015	10715	144.6
		8.00	3	1000	0.105	12.000	2.000	39790	12535	300.8
		10.00	3	1000	0.135	15.000	2.500	31830	12890	483.4
		12.00	3	1000	0.160	18.000	3.000	26525	12730	687.5
		16.00	3	1000	0.170	24.000	4.000	19895	10145	974.0
		20.00	3	1000	0.200	30.000	5.000	15915	9550	1432.4
	Cast aluminium Si 6% - 15%	6.00	3	440	0.085	9.000	1.500	23345	5950	80.4
		8.00	3	440	0.105	12.000	2.000	17505	5515	132.4
		10.00	3	440	0.135	15.000	2.500	14005	5670	212.7
		12.00	3	440	0.160	18.000	3.000	11670	5600	302.5
		16.00	3	440	0.170	24.000	4.000	8755	4465	428.6
		20.00	3	440	0.200	30.000	5.000	7005	4200	630.3
	Wrought aluminium Si < 6%	6.00	3	450	0.060	2.100	6.000	23875	4295	54.1
		8.00	3	450	0.075	2.800	8.000	17905	4030	90.2
		10.00	3	450	0.095	3.500	10.000	14325	4080	142.9
		12.00	3	450	0.110	4.200	12.000	11935	3940	198.5
		16.00	3	450	0.120	5.600	16.000	8950	3225	288.8
		20.00	3	450	0.140	7.000	20.000	7160	3010	421.1
	Unalloyed copper	6.00	3	350	0.050	2.100	6.000	18570	2785	35.1
		8.00	3	350	0.060	2.800	8.000	13925	2505	56.1
		10.00	3	350	0.075	3.500	10.000	11140	2505	87.7
		12.00	3	350	0.090	4.200	12.000	9285	2505	126.3
		16.00	3	350	0.095	5.600	16.000	6965	1985	177.8
		20.00	3	350	0.110	7.000	20.000	5570	1840	257.4
	Thermoplastics	6.00	3	792	0.060	2.100	6.000	42015	7565	95.3
		8.00	3	800	0.075	2.800	8.000	31830	7160	160.4
		10.00	3	800	0.095	3.500	10.000	25465	7255	254.0
		12.00	3	800	0.110	4.200	12.000	21220	7005	352.9
		16.00	3	800	0.120	5.600	16.000	15915	5730	513.4
		20.00	3	800	0.140	7.000	20.000	12730	5350	748.7
	Cast aluminium Si 6% - 15%	6.00	3	360	0.060	2.100	6.000	19100	3440	43.3
		8.00	3	360	0.075	2.800	8.000	14325	3225	72.2
		10.00	3	360	0.095	3.500	10.000	11460	3265	114.3
		12.00	3	360	0.110	4.200	12.000	9550	3150	158.8
		16.00	3	360	0.120	5.600	16.000	7160	2580	231.0
		20.00	3	360	0.140	7.000	20.000	5730	2405	336.9

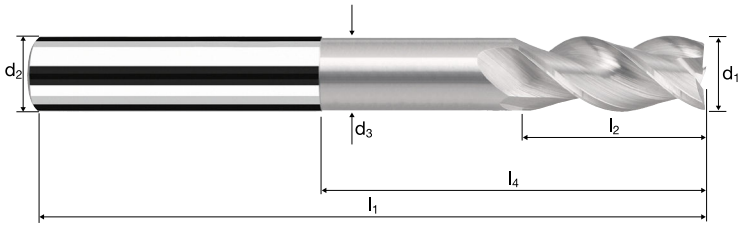
Cylindrical end mills AX-NV3

Smooth-edged, long version with neck

X-Generation X

III

HM MG10	λ 40° γ 20°
90°	
Vario	



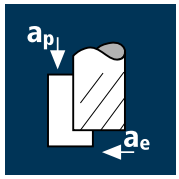
Roughing

Finishing

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15559** ø-Code **300**

									CELERO
								15659	C15659
								15559	C15559
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	z	
300	6.00	6.00	5.50	70	13.00	32.34	33.00	3	●	●
391	8.00	8.00	7.40	80	19.00	42.29	43.00	3	●	●
450	10.00	10.00	9.20	100	22.00	58.20	59.00	3	●	●
501	12.00	12.00	11.00	110	26.00	63.13	64.00	3	●	●
610	16.00	16.00	15.00	123	32.00	73.13	74.00	3	●	●
682	20.00	20.00	19.00	141	38.00	89.13	90.00	3	●	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Si < 6%	6.00	3	350	0.065	18.000	0.900	18570	3620	58.7
		8.00	3	350	0.080	24.000	1.200	13925	3340	96.3
		10.00	3	350	0.100	30.000	1.500	11140	3340	150.4
		16.00	3	350	0.130	48.000	2.400	6965	2715	312.8
		12.00	3	350	0.120	36.000	1.800	9285	3340	216.6
		20.00	3	350	0.150	60.000	3.000	5570	2505	451.2
	Unalloyed copper	6.00	3	220	0.050	18.000	0.900	11670	1750	28.4
		8.00	3	220	0.065	24.000	1.200	8755	1705	49.2
		10.00	3	220	0.080	30.000	1.500	7005	1680	75.6
		16.00	3	220	0.105	48.000	2.400	4375	1380	158.8
		12.00	3	220	0.095	36.000	1.800	5835	1665	107.8
		20.00	3	220	0.120	60.000	3.000	3500	1260	226.9
	Thermoplastics	6.00	3	600	0.065	18.000	0.900	31830	6205	100.6
		8.00	3	600	0.080	24.000	1.200	23875	5730	165.0
		10.00	3	600	0.100	30.000	1.500	19100	5730	257.8
		12.00	3	600	0.120	36.000	1.800	15915	5730	371.3
		16.00	3	600	0.130	48.000	2.400	11935	4655	536.3
		20.00	3	600	0.150	60.000	3.000	9550	4295	773.5
	Cast aluminium Si 6% - 15%	6.00	3	280	0.065	18.000	0.900	14855	2895	46.9
		8.00	3	280	0.080	24.000	1.200	11140	2675	77.0
		10.00	3	280	0.100	30.000	1.500	8915	2675	120.3
		16.00	3	280	0.130	48.000	2.400	5570	2170	250.3
		12.00	3	280	0.120	36.000	1.800	7425	2675	173.3
		20.00	3	280	0.150	60.000	3.000	4455	2005	361.0

Cylindrical end mills AX-V3

Smooth-edged, long version

X-Generation

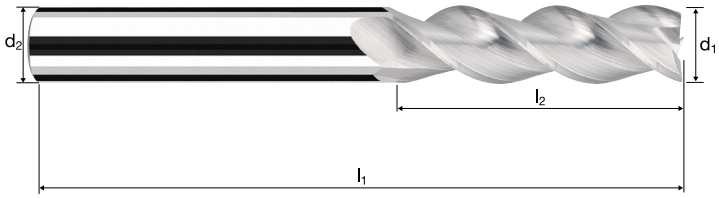
III

HM MG10

λ 40°
γ 20°

90°

Vario



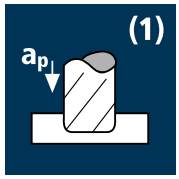
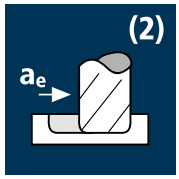
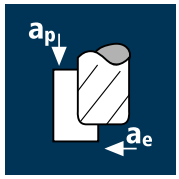
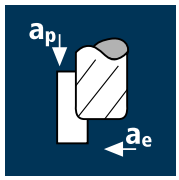
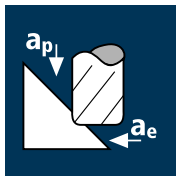
Roughing

Finishing

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15561** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	z	15661	CELERO C15661
						15561	C15561
300	6.00	6.00	70	26.00	3	●	●
391	8.00	8.00	80	36.00	3	●	●
450	10.00	10.00	100	45.00	3	●	●
501	12.00	12.00	110	53.00	3	●	●
610	16.00	16.00	123	63.00	3	●	●
682	20.00	20.00	141	75.00	3	●	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Wrought aluminium Si < 6% C	10.00	2	0.175	6.000	10.000	3500	5250	7000	10500
		12.00	2	0.210	6.500	12.000	4200	6300	8400	12600
		16.00	2	0.225	7.000	16.000	4500	6750	9000	13500
		20.00	2	0.240	7.000	20.000	4800	7200	9600	14400
		25.00	2	0.250	7.000	25.000	5000	7500	10000	15000
	Wrought aluminium Si < 6% C	10.00	2	0.175	6.000	8.000	3500	5250	7000	10500
		12.00	2	0.210	6.500	9.600	4200	6300	8400	12600
		16.00	2	0.225	7.000	12.800	4500	6750	9000	13500
		20.00	2	0.240	7.000	16.000	4800	7200	9600	14400
		25.00	2	0.250	7.000	20.000	5000	7500	10000	15000
	Wrought aluminium Si < 6% C	10.00	2	0.175	9.000	6.000	3500	5250	7000	10500
		12.00	2	0.210	9.800	7.200	4200	6300	8400	12600
		16.00	2	0.225	10.500	9.600	4500	6750	9000	13500
		20.00	2	0.240	10.500	12.000	4800	7200	9600	14400
		25.00	2	0.250	10.500	15.000	5000	7500	10000	15000
	Wrought aluminium Si < 6% C	10.00	2	0.055	9.000	0.300	1100	1650	2200	3300
		12.00	2	0.065	9.800	0.350	1300	1950	2600	3900
		16.00	2	0.070	10.500	0.500	1400	2100	2800	4200
		20.00	2	0.070	10.500	0.600	1400	2100	2800	4200
		25.00	2	0.075	10.500	0.750	1500	2250	3000	4500
	Wrought aluminium Si < 6% C	10.00	2	0.385	0.500	0.500	7700	11550	15400	23100
		12.00	2	0.460	0.600	0.600	9200	13800	18400	27600
		16.00	2	0.495	0.750	0.750	9900	14850	19800	29700
		20.00	2	0.530	1.000	1.000	10600	15900	21200	31800
		25.00	2	0.550	1.200	1.200	11000	16500	22000	33000

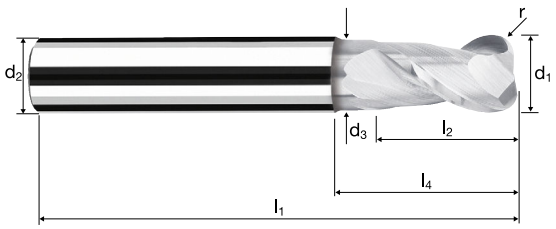
Corner radius end mills AX-RV2

Smooth-edged, version 2xd with neck

HM MG10	λ 40° γ 20°

G 2.5

Vario



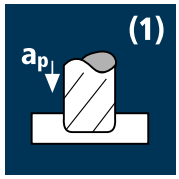
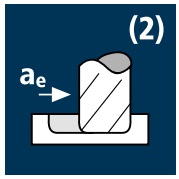
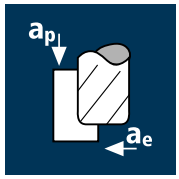
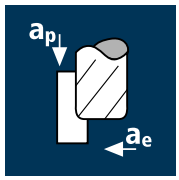
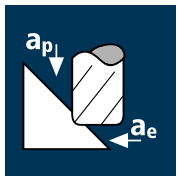
Roughing

Finishing

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15572** ø-Code **610**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	z	15572	CELERO C15572
610	16.00	16.00	15.00	82	18.00	27.73	32.00	1.500	2	●	-
457	10.00	10.00	9.20	63	11.00	16.99	20.00	2.500	2	●	●
506	12.00	12.00	11.00	73	13.00	20.29	24.00	2.500	2	●	●
612	16.00	16.00	15.00	82	18.00	27.73	32.00	2.500	2	●	●
684	20.00	20.00	19.00	92	22.00	35.23	40.00	2.500	2	●	●
774	25.00	25.00	24.00	107	27.00	44.68	50.00	2.500	2	●	●
508	12.00	12.00	11.00	73	13.00	20.29	24.00	4.000	2	●	●
614	16.00	16.00	15.00	82	18.00	27.73	32.00	4.000	2	●	●
686	20.00	20.00	19.00	92	22.00	35.23	40.00	4.000	2	●	●
776	25.00	25.00	24.00	107	27.00	44.68	50.00	4.000	2	●	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Wrought aluminium Si < 6% C	3.00	2	0.050	2.000	3.000	1000	1500	2000	3000
		4.00	2	0.065	3.000	4.000	1300	1950	2600	3900
		6.00	2	0.100	4.000	6.000	2000	3000	4000	6000
		8.00	2	0.130	5.000	8.000	2600	3900	5200	7800
		10.00	2	0.165	5.500	10.000	3300	4950	6600	9900
		12.00	2	0.195	6.000	12.000	3900	5850	7800	11700
		16.00	2	0.210	6.500	16.000	4200	6300	8400	12600
		20.00	2	0.220	7.000	20.000	4400	6600	8800	13200
		25.00	2	0.230	7.000	25.000	4600	6900	9200	13800
	Wrought aluminium Si < 6% C	3.00	2	0.050	2.000	2.400	1000	1500	2000	3000
		4.00	2	0.065	3.000	3.200	1300	1950	2600	3900
		6.00	2	0.100	4.000	4.800	2000	3000	4000	6000
		8.00	2	0.130	5.000	6.400	2600	3900	5200	7800
		10.00	2	0.165	5.500	8.000	3300	4950	6600	9900
		12.00	2	0.195	6.000	9.600	3900	5850	7800	11700
		16.00	2	0.210	6.500	12.800	4200	6300	8400	12600
		20.00	2	0.220	7.000	16.000	4400	6600	8800	13200
		25.00	2	0.230	7.000	20.000	4600	6900	9200	13800
	Wrought aluminium Si < 6% C	3.00	2	0.050	3.000	1.800	1000	1500	2000	3000
		4.00	2	0.065	4.500	2.400	1300	1950	2600	3900
		6.00	2	0.100	6.000	3.600	2000	3000	4000	6000
		8.00	2	0.130	7.500	4.800	2600	3900	5200	7800
		10.00	2	0.165	8.300	6.000	3300	4950	6600	9900
		12.00	2	0.195	9.000	7.200	3900	5850	7800	11700
		16.00	2	0.210	9.800	9.600	4200	6300	8400	12600
		20.00	2	0.220	10.500	12.000	4400	6600	8800	13200
		25.00	2	0.230	10.500	15.000	4600	6900	9200	13800
	Wrought aluminium Si < 6% C	3.00	2	0.015	3.000	0.100	300	450	600	900
		4.00	2	0.020	4.500	0.100	400	600	800	1200
		6.00	2	0.030	6.000	0.200	600	900	1200	1800
		8.00	2	0.040	7.500	0.250	800	1200	1600	2400
		10.00	2	0.050	8.300	0.300	1000	1500	2000	3000
		12.00	2	0.060	9.000	0.350	1200	1800	2400	3600
		16.00	2	0.065	9.800	0.500	1300	1950	2600	3900
		20.00	2	0.065	10.500	0.600	1300	1950	2600	3900
		25.00	2	0.070	10.500	0.750	1400	2100	2800	4200
	Wrought aluminium Si < 6% C	3.00	2	0.110	0.300	0.300	2200	3300	4400	6600
		4.00	2	0.145	0.350	0.350	2900	4350	5800	8700
		6.00	2	0.220	0.400	0.400	4400	6600	8800	13200
		8.00	2	0.285	0.450	0.450	5700	8550	11400	17100
		10.00	2	0.365	0.500	0.500	7300	10950	14600	21900
		12.00	2	0.430	0.600	0.600	8600	12900	17200	25800
		16.00	2	0.460	0.750	0.750	9200	13800	18400	27600
		20.00	2	0.485	1.000	1.000	9700	14550	19400	29100
		25.00	2	0.505	1.200	1.200	10100	15150	20200	30300

Corner radius end mills AX-RV2

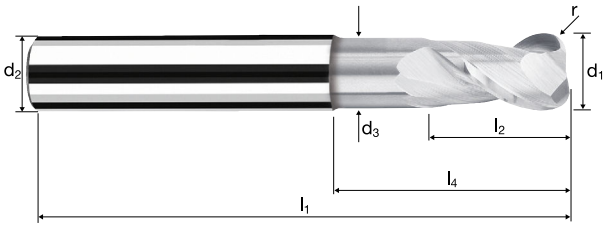
Smooth-edged, version 3xd with neck

X-Generation

HM MG10	λ 40° γ 20°

G 2.5

Vario



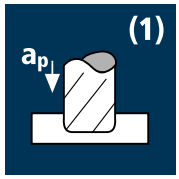
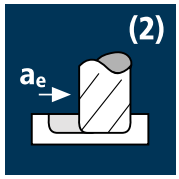
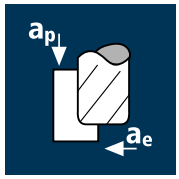
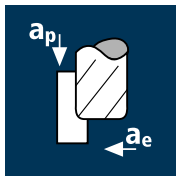
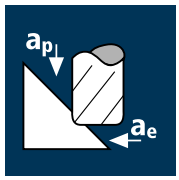
Roughing

Finishing

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15573** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	CELERO 15573	CELERO C15573
180	3.00	6.00	2.80	54	4.00	9.00	15.37	0.500	5.9°	2	●	●
220	4.00	6.00	3.70	54	5.00	12.00	16.82	0.500	3.7°	2	●	●
260	5.00	6.00	4.60	54	6.00	15.00	18.27	0.500	1.7°	2	●	●
300	6.00	6.00	5.50	54	7.00	16.15	18.00	0.500	0.0°	2	●	●
302	6.00	6.00	5.50	54	7.00	16.15	18.00	1.000	0.0°	2	●	●
391	8.00	8.00	7.40	63	9.00	21.63	24.00	1.000	0.0°	2	●	●
450	10.00	10.00	9.20	72	11.00	26.99	30.00	1.000	0.0°	2	●	●
501	12.00	12.00	11.00	83	13.00	32.29	36.00	1.000	0.0°	2	●	●
608	16.00	16.00	15.00	97	18.00	43.73	48.00	1.000	0.0°	2	●	●
680	20.00	20.00	19.00	111	22.00	55.23	60.00	1.000	0.0°	2	●	●
770	25.00	25.00	24.00	132	27.00	69.68	75.00	1.000	0.0°	2	●	●
453	10.00	10.00	9.20	72	11.00	26.99	30.00	1.500	0.0°	2	●	-
503	12.00	12.00	11.00	83	13.00	32.29	36.00	1.500	0.0°	2	●	-
611	16.00	16.00	15.00	97	18.00	43.73	48.00	2.000	0.0°	2	●	-
683	20.00	20.00	19.00	111	22.00	55.23	60.00	2.000	0.0°	2	●	-

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Wrought aluminium Si < 6% C	6.00	2	0.100	4.000	6.000	2000	3000	4000	6000
		8.00	2	0.130	5.000	8.000	2600	3900	5200	7800
		10.00	2	0.165	5.500	10.000	3300	4950	6600	9900
		12.00	2	0.195	6.000	12.000	3900	5850	7800	11700
		16.00	2	0.210	6.500	16.000	4200	6300	8400	12600
		20.00	2	0.220	7.000	20.000	4400	6600	8800	13200
		25.00	2	0.230	7.000	25.000	4600	6900	9200	13800
	Wrought aluminium Si < 6% C	6.00	2	0.100	4.000	4.800	2000	3000	4000	6000
		8.00	2	0.130	5.000	6.400	2600	3900	5200	7800
		10.00	2	0.165	5.500	8.000	3300	4950	6600	9900
		12.00	2	0.195	6.000	9.600	3900	5850	7800	11700
		16.00	2	0.210	6.500	12.800	4200	6300	8400	12600
		20.00	2	0.220	7.000	16.000	4400	6600	8800	13200
		25.00	2	0.230	7.000	20.000	4600	6900	9200	13800
	Wrought aluminium Si < 6% C	6.00	2	0.100	6.000	3.600	2000	3000	4000	6000
		8.00	2	0.130	7.500	4.800	2600	3900	5200	7800
		10.00	2	0.165	8.300	6.000	3300	4950	6600	9900
		12.00	2	0.195	9.000	7.200	3900	5850	7800	11700
		16.00	2	0.210	9.800	9.600	4200	6300	8400	12600
		20.00	2	0.220	10.500	12.000	4400	6600	8800	13200
		25.00	2	0.230	10.500	15.000	4600	6900	9200	13800
	Wrought aluminium Si < 6% C	6.00	2	0.030	6.000	0.200	600	900	1200	1800
		8.00	2	0.040	7.500	0.250	800	1200	1600	2400
		10.00	2	0.050	8.300	0.300	1000	1500	2000	3000
		12.00	2	0.060	9.000	0.350	1200	1800	2400	3600
		16.00	2	0.065	9.800	0.500	1300	1950	2600	3900
		20.00	2	0.065	10.500	0.600	1300	1950	2600	3900
		25.00	2	0.070	10.500	0.750	1400	2100	2800	4200
	Wrought aluminium Si < 6% C	6.00	2	0.220	0.400	0.400	4400	6600	8800	13200
		8.00	2	0.285	0.450	0.450	5700	8550	11400	17100
		10.00	2	0.365	0.500	0.500	7300	10950	14600	21900
		12.00	2	0.430	0.600	0.600	8600	12900	17200	25800
		16.00	2	0.460	0.750	0.750	9200	13800	18400	27600
		20.00	2	0.485	1.000	1.000	9700	14550	19400	29100
		25.00	2	0.505	1.200	1.200	10100	15150	20200	30300

Corner radius end mills AX-RV2

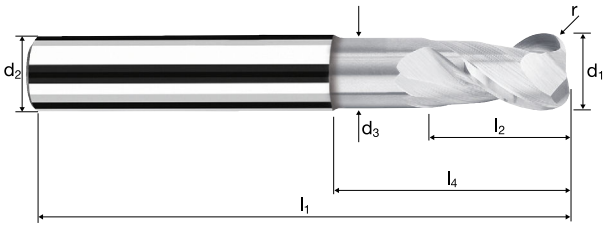
Smooth-edged, version 3xd with neck

X-Generation

HM MG10	λ 40° γ 20°

G 2.5

Vario



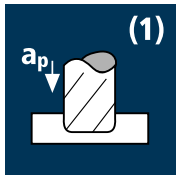
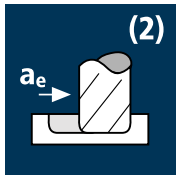
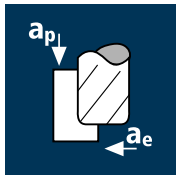
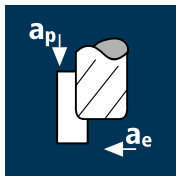
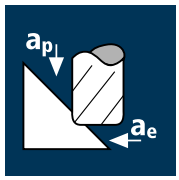
Roughing

Finishing

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15573** ø-Code **307**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	15573	CELERO C15573
307	6.00	6.00	5.50	54	7.00	16.15	18.00	2.500	0.0°	2	●	●
397	8.00	8.00	7.40	63	9.00	21.63	24.00	2.500	0.0°	2	●	●
457	10.00	10.00	9.20	72	11.00	26.99	30.00	2.500	0.0°	2	●	●
506	12.00	12.00	11.00	83	13.00	32.29	36.00	2.500	0.0°	2	●	●
612	16.00	16.00	15.00	97	18.00	43.73	48.00	2.500	0.0°	2	●	●
684	20.00	20.00	19.00	111	22.00	55.23	60.00	2.500	0.0°	2	●	●
774	25.00	25.00	24.00	132	27.00	69.68	75.00	2.500	0.0°	2	●	●
459	10.00	10.00	9.20	72	11.00	26.99	30.00	4.000	0.0°	2	●	●
508	12.00	12.00	11.00	83	13.00	32.29	36.00	4.000	0.0°	2	●	●
614	16.00	16.00	15.00	97	18.00	43.73	48.00	4.000	0.0°	2	●	●
686	20.00	20.00	19.00	111	22.00	55.23	60.00	4.000	0.0°	2	●	●
776	25.00	25.00	24.00	132	27.00	69.68	75.00	4.000	0.0°	2	●	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Wrought aluminium Si < 6% C	6.00	2	0.090	3.500	6.000	1800	2700	3600	5400
		8.00	2	0.120	4.500	8.000	2400	3600	4800	7200
		10.00	2	0.150	5.000	10.000	3000	4500	6000	9000
		12.00	2	0.180	5.500	12.000	3600	5400	7200	10800
		16.00	2	0.190	6.000	16.000	3800	5700	7600	11400
		20.00	2	0.205	6.500	20.000	4100	6150	8200	12300
		25.00	2	0.215	6.500	25.000	4300	6450	8600	12900
	Wrought aluminium Si < 6% C	6.00	2	0.090	3.500	3.600	1800	2700	3600	5400
		8.00	2	0.120	4.500	4.800	2400	3600	4800	7200
		10.00	2	0.150	5.000	6.000	3000	4500	6000	9000
		12.00	2	0.180	5.500	7.200	3600	5400	7200	10800
		16.00	2	0.190	6.000	9.600	3800	5700	7600	11400
		20.00	2	0.205	6.500	12.000	4100	6150	8200	12300
		25.00	2	0.215	6.500	15.000	4300	6450	8600	12900
	Wrought aluminium Si < 6% C	6.00	2	0.090	5.300	3.600	1800	2700	3600	5400
		8.00	2	0.120	6.800	4.800	2400	3600	4800	7200
		10.00	2	0.150	7.500	6.000	3000	4500	6000	9000
		12.00	2	0.180	8.300	7.200	3600	5400	7200	10800
		16.00	2	0.190	9.000	9.600	3800	5700	7600	11400
		20.00	2	0.205	9.800	12.000	4100	6150	8200	12300
		25.00	2	0.215	9.800	15.000	4300	6450	8600	12900
	Wrought aluminium Si < 6% C	6.00	2	0.025	5.300	0.200	500	750	1000	1500
		8.00	2	0.035	6.800	0.250	700	1050	1400	2100
		10.00	2	0.045	7.500	0.300	900	1350	1800	2700
		12.00	2	0.055	8.300	0.350	1100	1650	2200	3300
		16.00	2	0.055	9.000	0.500	1100	1650	2200	3300
		20.00	2	0.060	9.800	0.600	1200	1800	2400	3600
		25.00	2	0.065	9.800	0.750	1300	1950	2600	3900
	Wrought aluminium Si < 6% C	6.00	2	0.200	0.400	0.400	4000	6000	8000	12000
		8.00	2	0.265	0.450	0.450	5300	7950	10600	15900
		10.00	2	0.330	0.500	0.500	6600	9900	13200	19800
		12.00	2	0.395	0.600	0.600	7900	11850	15800	23700
		16.00	2	0.420	0.750	0.750	8400	12600	16800	25200
		20.00	2	0.450	1.000	1.000	9000	13500	18000	27000
		25.00	2	0.475	1.200	1.200	9500	14250	19000	28500

Corner radius end mills AX-RV2

Smooth-edged, version 4xd with neck

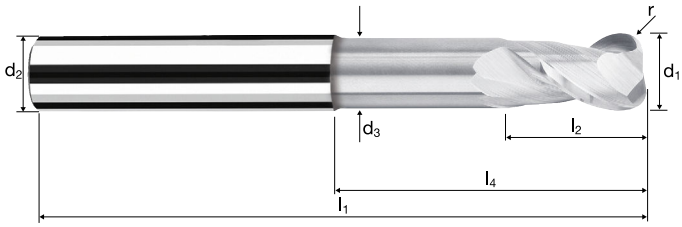
X-Generation

III

HM MG10	λ 40° γ 20°

G 2.5

Vario



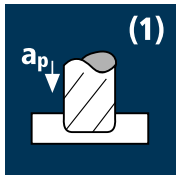
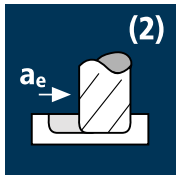
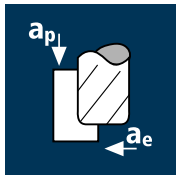
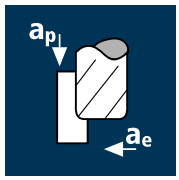
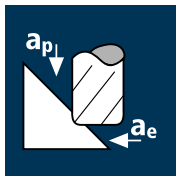
Roughing

Finishing

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15574** ø-Code **302**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	z	15574	CELERO C15574
302	6.00	6.00	5.50	60	7.00	22.15	24.00	1.000	2	●	●
391	8.00	8.00	7.40	68	9.00	29.63	32.00	1.000	2	●	●
450	10.00	10.00	9.20	84	11.00	36.99	40.00	1.000	2	●	●
501	12.00	12.00	11.00	97	13.00	44.29	48.00	1.000	2	●	●
608	16.00	16.00	15.00	115	18.00	59.73	64.00	1.000	2	●	●
680	20.00	20.00	19.00	130	22.00	75.23	80.00	1.000	2	●	●
770	25.00	25.00	24.00	157	27.00	94.68	100.00	1.000	2	●	●
453	10.00	10.00	9.20	84	11.00	36.99	40.00	1.500	2	●	-
503	12.00	12.00	11.00	97	13.00	44.29	48.00	1.500	2	●	-
611	16.00	16.00	15.00	115	18.00	59.73	64.00	2.000	2	●	-
683	20.00	20.00	19.00	130	22.00	75.23	80.00	2.000	2	●	-
307	6.00	6.00	5.50	60	7.00	22.15	24.00	2.500	2	●	●
397	8.00	8.00	7.40	68	9.00	29.63	32.00	2.500	2	●	●
457	10.00	10.00	9.20	84	11.00	36.99	40.00	2.500	2	●	●
506	12.00	12.00	11.00	97	13.00	44.29	48.00	2.500	2	●	●
612	16.00	16.00	15.00	115	18.00	59.73	64.00	2.500	2	●	●
684	20.00	20.00	19.00	130	22.00	75.23	80.00	2.500	2	●	●
774	25.00	25.00	24.00	157	27.00	94.68	100.00	2.500	2	●	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Wrought aluminium Si < 6% C	10.00	2	0.150	5.000	10.000	3000	4500	6000	9000
		12.00	2	0.180	5.500	12.000	3600	5400	7200	10800
		16.00	2	0.190	6.000	16.000	3800	5700	7600	11400
		20.00	2	0.205	6.500	20.000	4100	6150	8200	12300
		25.00	2	0.215	6.500	25.000	4300	6450	8600	12900
	Wrought aluminium Si < 6% C	10.00	2	0.150	5.000	6.000	3000	4500	6000	9000
		12.00	2	0.180	5.500	7.200	3600	5400	7200	10800
		16.00	2	0.190	6.000	9.600	3800	5700	7600	11400
		20.00	2	0.205	6.500	12.000	4100	6150	8200	12300
		25.00	2	0.215	6.500	15.000	4300	6450	8600	12900
	Wrought aluminium Si < 6% C	10.00	2	0.150	7.500	6.000	3000	4500	6000	9000
		12.00	2	0.180	8.300	7.200	3600	5400	7200	10800
		16.00	2	0.190	9.000	9.600	3800	5700	7600	11400
		20.00	2	0.205	9.800	12.000	4100	6150	8200	12300
		25.00	2	0.215	9.800	15.000	4300	6450	8600	12900
	Wrought aluminium Si < 6% C	10.00	2	0.045	7.500	0.300	900	1350	1800	2700
		12.00	2	0.055	8.300	0.350	1100	1650	2200	3300
		16.00	2	0.055	9.000	0.500	1100	1650	2200	3300
		20.00	2	0.060	9.800	0.600	1200	1800	2400	3600
		25.00	2	0.065	9.800	0.750	1300	1950	2600	3900
	Wrought aluminium Si < 6% C	10.00	2	0.330	0.500	0.500	6600	9900	13200	19800
		12.00	2	0.395	0.600	0.600	7900	11850	15800	23700
		16.00	2	0.420	0.750	0.750	8400	12600	16800	25200
		20.00	2	0.450	1.000	1.000	9000	13500	18000	27000
		25.00	2	0.475	1.200	1.200	9500	14250	19000	28500

Corner radius end mills AX-RV2

Smooth-edged, version 4xd with neck

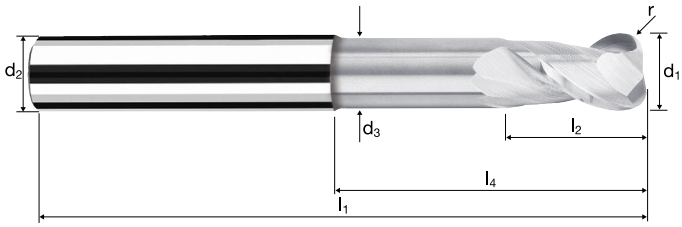
X-Generation

III

HM MG10	λ 40° γ 20°

G 2.5

Vario



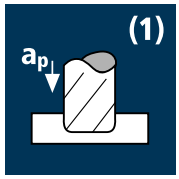
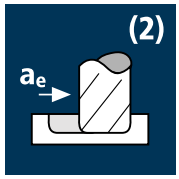
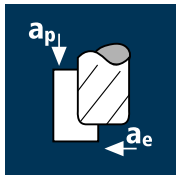
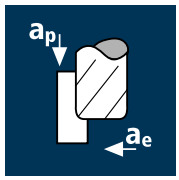
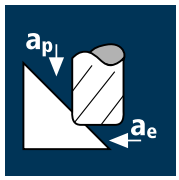
Roughing

Finishing

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15574** ø-Code **459**

										CELERO	
										15574	C15574
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	z		
459	10.00	10.00	9.20	84	11.00	36.99	40.00	4.000	2	●	●
508	12.00	12.00	11.00	97	13.00	44.29	48.00	4.000	2	●	●
614	16.00	16.00	15.00	115	18.00	59.73	64.00	4.000	2	●	●
686	20.00	20.00	19.00	130	22.00	75.23	80.00	4.000	2	●	●
776	25.00	25.00	24.00	157	27.00	94.68	100.00	4.000	2	●	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Wrought aluminium Si < 6% C	6.00	2	0.065	4.000	6.000	1300	1950	2600	3900
		8.00	2	0.085	4.500	8.000	1700	2550	3400	5100
		10.00	2	0.110	5.000	10.000	2200	3300	4400	6600
		12.00	2	0.120	5.000	12.000	2400	3600	4800	7200
		16.00	2	0.150	5.000	16.000	3000	4500	6000	9000
		20.00	2	0.180	5.000	20.000	3600	5400	7200	10800
		25.00	2	0.200	5.000	25.000	4000	6000	8000	12000
	Wrought aluminium Si < 6% C	6.00	2	0.065	4.000	3.600	1300	1950	2600	3900
		8.00	2	0.085	4.500	4.800	1700	2550	3400	5100
		10.00	2	0.110	5.000	6.000	2200	3300	4400	6600
		12.00	2	0.120	5.000	7.200	2400	3600	4800	7200
		16.00	2	0.150	5.000	9.600	3000	4500	6000	9000
		20.00	2	0.180	5.000	12.000	3600	5400	7200	10800
		25.00	2	0.200	5.000	15.000	4000	6000	8000	12000
	Wrought aluminium Si < 6% C	6.00	2	0.065	6.000	3.600	1300	1950	2600	3900
		8.00	2	0.085	6.800	4.800	1700	2550	3400	5100
		10.00	2	0.110	7.500	6.000	2200	3300	4400	6600
		12.00	2	0.120	7.500	7.200	2400	3600	4800	7200
		16.00	2	0.150	7.500	9.600	3000	4500	6000	9000
		20.00	2	0.180	7.500	12.000	3600	5400	7200	10800
		25.00	2	0.200	7.500	15.000	4000	6000	8000	12000
	Wrought aluminium Si < 6% C	6.00	2	0.020	6.000	0.200	400	600	800	1200
		8.00	2	0.025	6.800	0.250	500	750	1000	1500
		10.00	2	0.035	7.500	0.300	700	1050	1400	2100
		12.00	2	0.035	7.500	0.350	700	1050	1400	2100
		16.00	2	0.045	7.500	0.500	900	1350	1800	2700
		20.00	2	0.055	7.500	0.600	1100	1650	2200	3300
		25.00	2	0.060	7.500	0.750	1200	1800	2400	3600
	Wrought aluminium Si < 6% C	6.00	2	0.145	0.350	0.350	2900	4350	5800	8700
		8.00	2	0.185	0.400	0.400	3700	5550	7400	11100
		10.00	2	0.240	0.450	0.450	4800	7200	9600	14400
		12.00	2	0.265	0.500	0.500	5300	7950	10600	15900
		16.00	2	0.330	0.600	0.600	6600	9900	13200	19800
		20.00	2	0.395	0.750	0.750	7900	11850	15800	23700
		25.00	2	0.440	0.800	0.800	8800	13200	17600	26400

Corner radius end mills AX-RV2

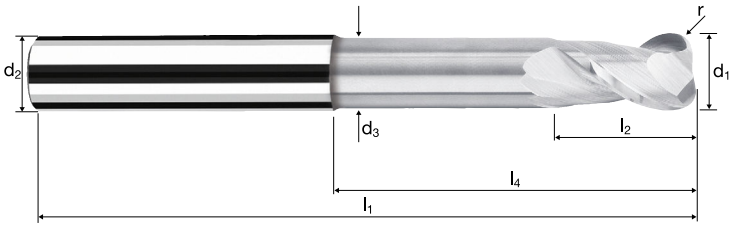
Smooth-edged, version 5xd with neck

X-Generation

HM MG10	λ 40° γ 20°

G 2.5

Vario



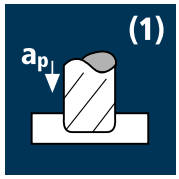
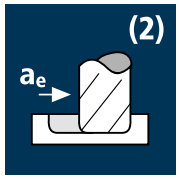
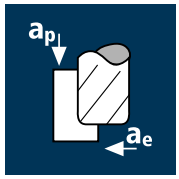
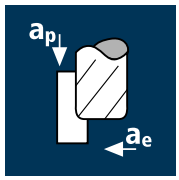
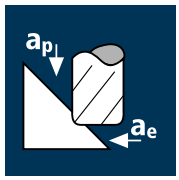
Roughing

Finishing

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15575** ø-Code **302**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	z	15575	CELERO C15575
302	6.00	6.00	5.50	66	7.00	28.15	30.00	1.000	2	●	-
391	8.00	8.00	7.40	76	9.00	37.63	40.00	1.000	2	●	-
450	10.00	10.00	9.20	91	11.00	46.99	50.00	1.000	2	●	●
501	12.00	12.00	11.00	106	13.00	56.29	60.00	1.000	2	●	●
608	16.00	16.00	15.00	129	18.00	75.73	80.00	1.000	2	●	●
680	20.00	20.00	19.00	151	22.00	95.23	100.00	1.000	2	●	●
770	25.00	25.00	24.00	182	27.00	119.68	125.00	1.000	2	●	●
307	6.00	6.00	5.50	66	7.00	28.15	30.00	2.500	2	●	●
397	8.00	8.00	7.40	76	9.00	37.63	40.00	2.500	2	●	●
457	10.00	10.00	9.20	91	11.00	46.99	50.00	2.500	2	●	●
506	12.00	12.00	11.00	106	13.00	56.29	60.00	2.500	2	●	●
612	16.00	16.00	15.00	129	18.00	75.73	80.00	2.500	2	●	●
684	20.00	20.00	19.00	151	22.00	95.23	100.00	2.500	2	●	●
774	25.00	25.00	24.00	182	27.00	119.68	125.00	2.500	2	●	●
459	10.00	10.00	9.20	91	11.00	46.99	50.00	4.000	2	●	●
508	12.00	12.00	11.00	106	13.00	56.29	60.00	4.000	2	●	●
614	16.00	16.00	15.00	129	18.00	75.73	80.00	4.000	2	●	●
686	20.00	20.00	19.00	151	22.00	95.23	100.00	4.000	2	●	●
776	25.00	25.00	24.00	182	27.00	119.68	125.00	4.000	2	●	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Wrought aluminium Si < 6% C	10.00	3	0.115	6.000	10.000	3450	5175	6900	10350
		12.00	3	0.135	6.500	12.000	4050	6075	8100	12150
		16.00	3	0.145	7.000	16.000	4350	6525	8700	13050
		20.00	3	0.155	7.000	20.000	4650	6975	9300	13950
		25.00	3	0.160	7.000	25.000	4800	7200	9600	14400
	Wrought aluminium Si < 6% C	10.00	3	0.115	6.000	8.000	3450	5175	6900	10350
		12.00	3	0.135	6.500	9.600	4050	6075	8100	12150
		16.00	3	0.145	7.000	12.800	4350	6525	8700	13050
		20.00	3	0.155	7.000	16.000	4650	6975	9300	13950
		25.00	3	0.160	7.000	20.000	4800	7200	9600	14400
	Wrought aluminium Si < 6% C	10.00	3	0.115	9.000	6.000	3450	5175	6900	10350
		12.00	3	0.135	9.800	7.200	4050	6075	8100	12150
		16.00	3	0.145	10.500	9.600	4350	6525	8700	13050
		20.00	3	0.155	10.500	12.000	4650	6975	9300	13950
		25.00	3	0.160	10.500	15.000	4800	7200	9600	14400
	Wrought aluminium Si < 6% C	10.00	3	0.035	9.000	0.300	1050	1575	2100	3150
		12.00	3	0.040	9.800	0.350	1200	1800	2400	3600
		16.00	3	0.045	10.500	0.500	1350	2025	2700	4050
		20.00	3	0.045	10.500	0.600	1350	2025	2700	4050
		25.00	3	0.050	10.500	0.750	1500	2250	3000	4500
	Wrought aluminium Si < 6% C	10.00	3	0.255	0.500	0.500	7650	11475	15300	22950
		12.00	3	0.295	0.600	0.600	8850	13275	17700	26550
		16.00	3	0.320	0.750	0.750	9600	14400	19200	28800
		20.00	3	0.340	1.000	1.000	10200	15300	20400	30600
		25.00	3	0.350	1.200	1.200	10500	15750	21000	31500

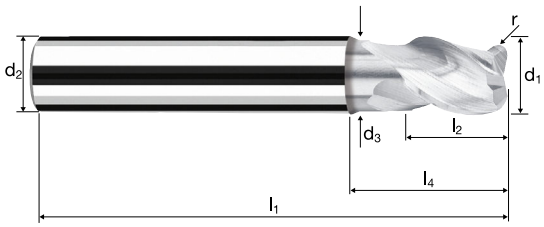
Corner radius end mills AX-RV3

Smooth-edged, version 2xd with neck

HM MG10	λ 40° γ 20°

G 2.5

Vario



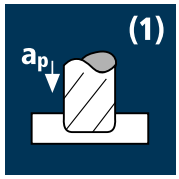
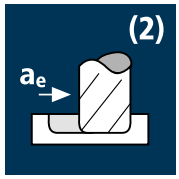
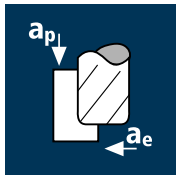
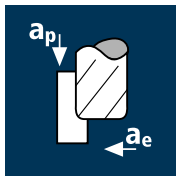
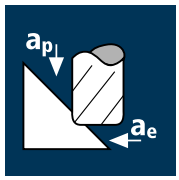
Roughing

Finishing

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15582** ø-Code **457**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	z	15582	CELERO C15582
457	10.00	10.00	9.20	63	11.00	16.99	20.00	2.500	3	●	●
506	12.00	12.00	11.00	73	13.00	20.29	24.00	2.500	3	●	●
612	16.00	16.00	15.00	82	18.00	27.73	32.00	2.500	3	●	●
684	20.00	20.00	19.00	92	22.00	35.23	40.00	2.500	3	●	●
774	25.00	25.00	24.00	107	27.00	44.68	50.00	2.500	3	●	●
508	12.00	12.00	11.00	73	13.00	20.29	24.00	4.000	3	●	●
614	16.00	16.00	15.00	82	18.00	27.73	32.00	4.000	3	●	●
686	20.00	20.00	19.00	92	22.00	35.23	40.00	4.000	3	●	●
776	25.00	25.00	24.00	107	27.00	44.68	50.00	4.000	3	●	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Wrought aluminium Si < 6% C	3.00	3	0.030	2.000	3.000	900	1350	1800	2700
		4.00	3	0.040	3.000	4.000	1200	1800	2400	3600
		6.00	3	0.060	4.000	6.000	1800	2700	3600	5400
		8.00	3	0.085	5.000	8.000	2550	3825	5100	7650
		10.00	3	0.105	5.500	10.000	3150	4725	6300	9450
		12.00	3	0.125	6.000	12.000	3750	5625	7500	11250
		16.00	3	0.135	6.500	16.000	4050	6075	8100	12150
		20.00	3	0.140	7.000	20.000	4200	6300	8400	12600
		25.00	3	0.150	7.000	25.000	4500	6750	9000	13500
	Wrought aluminium Si < 6% C	3.00	3	0.030	2.000	2.400	900	1350	1800	2700
		4.00	3	0.040	3.000	3.200	1200	1800	2400	3600
		6.00	3	0.060	4.000	4.800	1800	2700	3600	5400
		8.00	3	0.085	5.000	6.400	2550	3825	5100	7650
		10.00	3	0.105	5.500	8.000	3150	4725	6300	9450
		12.00	3	0.125	6.000	9.600	3750	5625	7500	11250
		16.00	3	0.135	6.500	12.800	4050	6075	8100	12150
		20.00	3	0.140	7.000	16.000	4200	6300	8400	12600
		25.00	3	0.150	7.000	20.000	4500	6750	9000	13500
	Wrought aluminium Si < 6% C	3.00	3	0.030	3.000	1.800	900	1350	1800	2700
		4.00	3	0.040	4.500	2.400	1200	1800	2400	3600
		6.00	3	0.060	6.000	3.600	1800	2700	3600	5400
		8.00	3	0.085	7.500	4.800	2550	3825	5100	7650
		10.00	3	0.105	8.300	6.000	3150	4725	6300	9450
		12.00	3	0.125	9.000	7.200	3750	5625	7500	11250
		16.00	3	0.135	9.800	9.600	4050	6075	8100	12150
		20.00	3	0.140	10.500	12.000	4200	6300	8400	12600
		25.00	3	0.150	10.500	15.000	4500	6750	9000	13500
	Wrought aluminium Si < 6% C	3.00	3	0.010	3.000	0.100	300	450	600	900
		4.00	3	0.010	4.500	0.100	300	450	600	900
		6.00	3	0.020	6.000	0.200	600	900	1200	1800
		8.00	3	0.025	7.500	0.250	750	1125	1500	2250
		10.00	3	0.030	8.300	0.300	900	1350	1800	2700
		12.00	3	0.040	9.000	0.350	1200	1800	2400	3600
		16.00	3	0.040	9.800	0.500	1200	1800	2400	3600
		20.00	3	0.040	10.500	0.600	1200	1800	2400	3600
		25.00	3	0.045	10.500	0.750	1350	2025	2700	4050
	Wrought aluminium Si < 6% C	3.00	3	0.065	0.400	0.400	1950	2925	3900	5850
		4.00	3	0.090	0.450	0.450	2700	4050	5400	8100
		6.00	3	0.130	0.400	0.400	3900	5850	7800	11700
		8.00	3	0.185	0.450	0.450	5550	8325	11100	16650
		10.00	3	0.230	0.500	0.500	6900	10350	13800	20700
		12.00	3	0.275	0.600	0.600	8250	12375	16500	24750
		16.00	3	0.295	0.750	0.750	8850	13275	17700	26550
		20.00	3	0.310	1.000	1.000	9300	13950	18600	27900
		25.00	3	0.330	1.200	1.200	9900	14850	19800	29700

Corner radius end mills AX-RV3

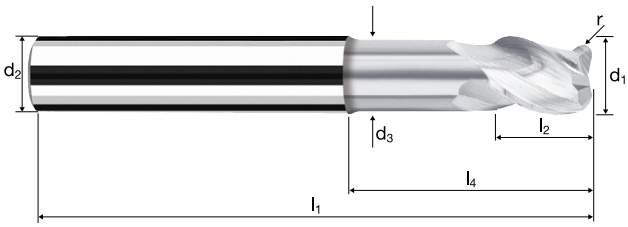
Smooth-edged, version 3xd with neck

X-Generation

HM MG10	λ 40° γ 20°

G 2.5

Vario



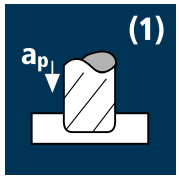
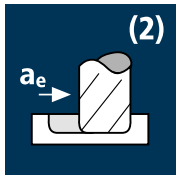
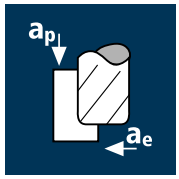
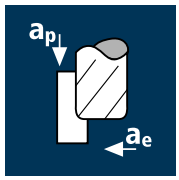
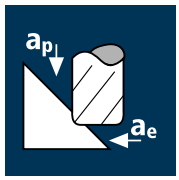
Roughing

Finishing

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15583** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	15583	CELERO C15583
180	3.00	6.00	2.80	54	4.00	9.00	15.37	0.500	5.9°	3	●	●
220	4.00	6.00	3.70	54	5.00	12.00	16.82	0.500	3.7°	3	●	●
260	5.00	6.00	4.60	54	6.00	15.00	18.27	0.500	1.7°	3	●	●
300	6.00	6.00	5.50	54	7.00	16.15	18.00	0.500	0.0°	3	●	●
302	6.00	6.00	5.50	54	7.00	16.15	18.00	1.000	0.0°	3	●	●
391	8.00	8.00	7.40	63	9.00	21.63	24.00	1.000	0.0°	3	●	●
450	10.00	10.00	9.20	72	11.00	26.99	30.00	1.000	0.0°	3	●	●
501	12.00	12.00	11.00	83	13.00	32.29	36.00	1.000	0.0°	3	●	●
608	16.00	16.00	15.00	97	18.00	43.73	48.00	1.000	0.0°	3	●	●
680	20.00	20.00	19.00	111	22.00	55.23	60.00	1.000	0.0°	3	●	●
770	25.00	25.00	24.00	132	27.00	69.68	75.00	1.000	0.0°	3	●	●
453	10.00	10.00	9.20	72	11.00	26.99	30.00	1.500	0.0°	3	●	-
503	12.00	12.00	11.00	83	13.00	32.29	36.00	1.500	0.0°	3	●	-
611	16.00	16.00	15.00	97	18.00	43.73	48.00	2.000	0.0°	3	●	-
683	20.00	20.00	19.00	111	22.00	55.23	60.00	2.000	0.0°	3	●	-

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Wrought aluminium Si < 6% C	6.00	3	0.060	4.000	6.000	1800	2700	3600	5400
		8.00	3	0.085	5.000	8.000	2550	3825	5100	7650
		10.00	3	0.105	5.500	10.000	3150	4725	6300	9450
		12.00	3	0.125	6.000	12.000	3750	5625	7500	11250
		16.00	3	0.135	6.500	16.000	4050	6075	8100	12150
		20.00	3	0.140	7.000	20.000	4200	6300	8400	12600
		25.00	3	0.150	7.000	25.000	4500	6750	9000	13500
	Wrought aluminium Si < 6% C	6.00	3	0.060	4.000	4.800	1800	2700	3600	5400
		8.00	3	0.085	5.000	6.400	2550	3825	5100	7650
		10.00	3	0.105	5.500	8.000	3150	4725	6300	9450
		12.00	3	0.125	6.000	9.600	3750	5625	7500	11250
		16.00	3	0.135	6.500	12.800	4050	6075	8100	12150
		20.00	3	0.140	7.000	16.000	4200	6300	8400	12600
		25.00	3	0.150	7.000	20.000	4500	6750	9000	13500
	Wrought aluminium Si < 6% C	6.00	3	0.060	6.000	3.600	1800	2700	3600	5400
		8.00	3	0.085	7.500	4.800	2550	3825	5100	7650
		10.00	3	0.105	8.300	6.000	3150	4725	6300	9450
		12.00	3	0.125	9.000	7.200	3750	5625	7500	11250
		16.00	3	0.135	9.800	9.600	4050	6075	8100	12150
		20.00	3	0.140	10.500	12.000	4200	6300	8400	12600
		25.00	3	0.150	10.500	15.000	4500	6750	9000	13500
	Wrought aluminium Si < 6% C	6.00	3	0.020	6.000	0.200	600	900	1200	1800
		8.00	3	0.025	7.500	0.250	750	1125	1500	2250
		10.00	3	0.030	8.300	0.300	900	1350	1800	2700
		12.00	3	0.040	9.000	0.350	1200	1800	2400	3600
		16.00	3	0.040	9.800	0.500	1200	1800	2400	3600
		20.00	3	0.040	10.500	0.600	1200	1800	2400	3600
		25.00	3	0.045	10.500	0.750	1350	2025	2700	4050
	Wrought aluminium Si < 6% C	6.00	3	0.130	0.400	0.400	3900	5850	7800	11700
		8.00	3	0.185	0.450	0.450	5550	8325	11100	16650
		10.00	3	0.230	0.500	0.500	6900	10350	13800	20700
		12.00	3	0.275	0.600	0.600	8250	12375	16500	24750
		16.00	3	0.295	0.750	0.750	8850	13275	17700	26550
		20.00	3	0.310	1.000	1.000	9300	13950	18600	27900
		25.00	3	0.330	1.200	1.200	9900	14850	19800	29700

Corner radius end mills AX-RV3

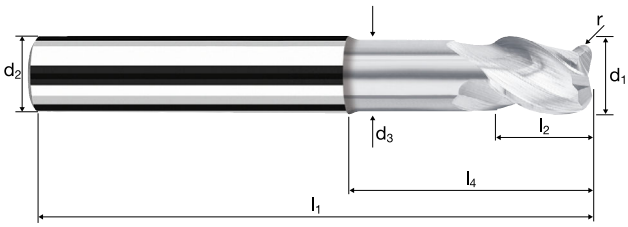
Smooth-edged, version 3xd with neck

X-Generation

HM MG10	λ 40° γ 20°

G 2.5

Vario



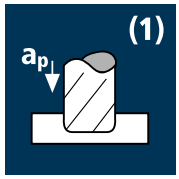
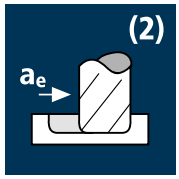
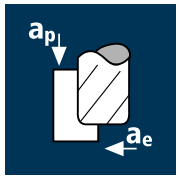
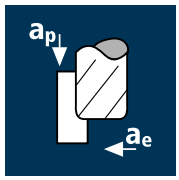
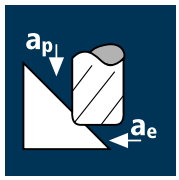
Roughing

Finishing

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15583** ø-Code **307**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	15583	CELERO C15583
307	6.00	6.00	5.50	54	7.00	16.15	18.00	2.500	0.0°	3	●	●
397	8.00	8.00	7.40	63	9.00	21.63	24.00	2.500	0.0°	3	●	●
457	10.00	10.00	9.20	72	11.00	26.99	30.00	2.500	0.0°	3	●	●
506	12.00	12.00	11.00	83	13.00	32.29	36.00	2.500	0.0°	3	●	●
612	16.00	16.00	15.00	97	18.00	43.73	48.00	2.500	0.0°	3	●	●
684	20.00	20.00	19.00	111	22.00	55.23	60.00	2.500	0.0°	3	●	●
774	25.00	25.00	24.00	132	27.00	69.68	75.00	2.500	0.0°	3	●	●
459	10.00	10.00	9.20	72	11.00	26.99	30.00	4.000	0.0°	3	●	●
508	12.00	12.00	11.00	83	13.00	32.29	36.00	4.000	0.0°	3	●	●
614	16.00	16.00	15.00	97	18.00	43.73	48.00	4.000	0.0°	3	●	●
686	20.00	20.00	19.00	111	22.00	55.23	60.00	4.000	0.0°	3	●	●
776	25.00	25.00	24.00	132	27.00	69.68	75.00	4.000	0.0°	3	●	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Wrought aluminium Si < 6% C	6.00	3	0.060	3.500	6.000	1800	2700	3600	5400
		8.00	3	0.075	4.500	8.000	2250	3375	4500	6750
		10.00	3	0.095	5.000	10.000	2850	4275	5700	8550
		12.00	3	0.115	5.500	12.000	3450	5175	6900	10350
		16.00	3	0.125	6.000	16.000	3750	5625	7500	11250
		20.00	3	0.130	6.500	20.000	3900	5850	7800	11700
		25.00	3	0.140	6.500	25.000	4200	6300	8400	12600
	Wrought aluminium Si < 6% C	6.00	3	0.060	3.500	3.600	1800	2700	3600	5400
		8.00	3	0.075	4.500	4.800	2250	3375	4500	6750
		10.00	3	0.095	5.000	6.000	2850	4275	5700	8550
		12.00	3	0.115	5.500	7.200	3450	5175	6900	10350
		16.00	3	0.125	6.000	9.600	3750	5625	7500	11250
		20.00	3	0.130	6.500	12.000	3900	5850	7800	11700
		25.00	3	0.140	6.500	15.000	4200	6300	8400	12600
	Wrought aluminium Si < 6% C	6.00	3	0.060	5.300	3.600	1800	2700	3600	5400
		8.00	3	0.075	6.800	4.800	2250	3375	4500	6750
		10.00	3	0.095	7.500	6.000	2850	4275	5700	8550
		12.00	3	0.115	8.300	7.200	3450	5175	6900	10350
		16.00	3	0.125	9.000	9.600	3750	5625	7500	11250
		20.00	3	0.130	9.800	12.000	3900	5850	7800	11700
		25.00	3	0.140	9.800	15.000	4200	6300	8400	12600
	Wrought aluminium Si < 6% C	6.00	3	0.020	5.300	0.200	600	900	1200	1800
		8.00	3	0.025	6.800	0.250	750	1125	1500	2250
		10.00	3	0.030	7.500	0.300	900	1350	1800	2700
		12.00	3	0.035	8.300	0.350	1050	1575	2100	3150
		16.00	3	0.040	9.000	0.500	1200	1800	2400	3600
		20.00	3	0.040	9.800	0.600	1200	1800	2400	3600
		25.00	3	0.040	9.800	0.750	1200	1800	2400	3600
	Wrought aluminium Si < 6% C	6.00	3	0.130	0.350	0.350	3900	5850	7800	11700
		8.00	3	0.165	0.400	0.400	4950	7425	9900	14850
		10.00	3	0.210	0.450	0.450	6300	9450	12600	18900
		12.00	3	0.255	0.500	0.500	7650	11475	15300	22950
		16.00	3	0.275	0.600	0.600	8250	12375	16500	24750
		20.00	3	0.285	0.750	0.750	8550	12825	17100	25650
		25.00	3	0.310	0.800	0.800	9300	13950	18600	27900

Corner radius end mills AX-RV3

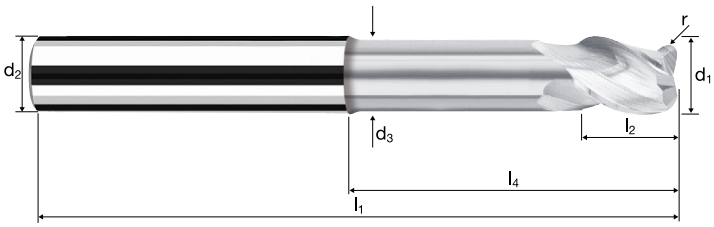
Smooth-edged, version 4xd with neck

X-Generation

HM MG10	λ 40° γ 20°

G 2.5

Vario



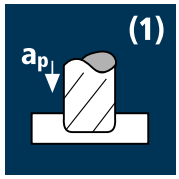
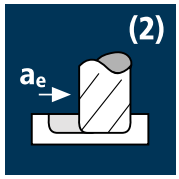
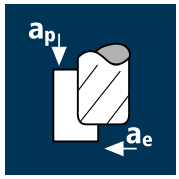
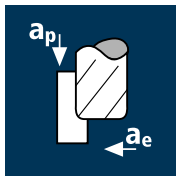
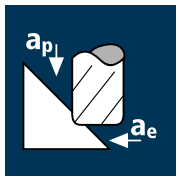
Roughing

Finishing

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15584** ø-Code **302**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	z	15584	CELERO C15584
302	6.00	6.00	5.50	60	7.00	22.15	24.00	1.000	3	●	●
391	8.00	8.00	7.40	68	9.00	29.63	32.00	1.000	3	●	●
450	10.00	10.00	9.20	84	11.00	36.99	40.00	1.000	3	●	●
501	12.00	12.00	11.00	97	13.00	44.29	48.00	1.000	3	●	●
608	16.00	16.00	15.00	115	18.00	59.73	64.00	1.000	3	●	●
680	20.00	20.00	19.00	130	22.00	75.23	80.00	1.000	3	●	●
770	25.00	25.00	24.00	157	27.00	94.68	100.00	1.000	3	●	●
307	6.00	6.00	5.50	60	7.00	22.15	24.00	2.500	3	●	●
397	8.00	8.00	7.40	68	9.00	29.63	32.00	2.500	3	●	●
457	10.00	10.00	9.20	84	11.00	36.99	40.00	2.500	3	●	●
506	12.00	12.00	11.00	97	13.00	44.29	48.00	2.500	3	●	●
612	16.00	16.00	15.00	115	18.00	59.73	64.00	2.500	3	●	●
684	20.00	20.00	19.00	130	22.00	75.23	80.00	2.500	3	●	●
774	25.00	25.00	24.00	157	27.00	94.68	100.00	2.500	3	●	●
459	10.00	10.00	9.20	84	11.00	36.99	40.00	4.000	3	●	●
508	12.00	12.00	11.00	97	13.00	44.29	48.00	4.000	3	●	●
614	16.00	16.00	15.00	115	18.00	59.73	64.00	4.000	3	●	●
686	20.00	20.00	19.00	130	22.00	75.23	80.00	4.000	3	●	●
776	25.00	25.00	24.00	157	27.00	94.68	100.00	4.000	3	●	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Wrought aluminium Si < 6% C	6.00	3	0.040	4.000	6.000	1200	1800	2400	3600
		8.00	3	0.055	4.500	8.000	1650	2475	3300	4950
		10.00	3	0.070	5.000	10.000	2100	3150	4200	6300
		12.00	3	0.075	5.000	12.000	2250	3375	4500	6750
		16.00	3	0.095	5.000	16.000	2850	4275	5700	8550
		20.00	3	0.115	5.000	20.000	3450	5175	6900	10350
		25.00	3	0.130	5.000	25.000	3900	5850	7800	11700
	Wrought aluminium Si < 6% C	6.00	3	0.040	4.000	3.600	1200	1800	2400	3600
		8.00	3	0.055	4.500	4.800	1650	2475	3300	4950
		10.00	3	0.070	5.000	6.000	2100	3150	4200	6300
		12.00	3	0.075	5.000	7.200	2250	3375	4500	6750
		16.00	3	0.095	5.000	9.600	2850	4275	5700	8550
		20.00	3	0.115	5.000	12.000	3450	5175	6900	10350
		25.00	3	0.130	5.000	15.000	3900	5850	7800	11700
	Wrought aluminium Si < 6% C	6.00	3	0.040	6.000	3.600	1200	1800	2400	3600
		8.00	3	0.055	6.800	4.800	1650	2475	3300	4950
		10.00	3	0.070	7.500	6.000	2100	3150	4200	6300
		12.00	3	0.075	7.500	7.200	2250	3375	4500	6750
		16.00	3	0.095	7.500	9.600	2850	4275	5700	8550
		20.00	3	0.115	7.500	12.000	3450	5175	6900	10350
		25.00	3	0.130	7.500	15.000	3900	5850	7800	11700
	Wrought aluminium Si < 6% C	6.00	3	0.010	6.000	0.200	300	450	600	900
		8.00	3	0.015	6.800	0.250	450	675	900	1350
		10.00	3	0.020	7.500	0.300	600	900	1200	1800
		12.00	3	0.025	7.500	0.350	750	1125	1500	2250
		16.00	3	0.030	7.500	0.500	900	1350	1800	2700
		20.00	3	0.035	7.500	0.600	1050	1575	2100	3150
		25.00	3	0.040	7.500	0.750	1200	1800	2400	3600
	Wrought aluminium Si < 6% C	6.00	3	0.090	0.450	0.450	2700	4050	5400	8100
		8.00	3	0.120	0.500	0.500	3600	5400	7200	10800
		10.00	3	0.155	0.450	0.450	4650	6975	9300	13950
		12.00	3	0.165	0.500	0.500	4950	7425	9900	14850
		16.00	3	0.210	0.600	0.600	6300	9450	12600	18900
		20.00	3	0.255	0.750	0.750	7650	11475	15300	22950
		25.00	3	0.285	0.800	0.800	8550	12825	17100	25650

Corner radius end mills AX-RV3

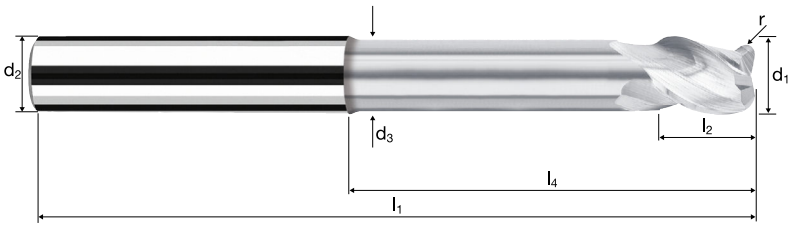
Smooth-edged, version 5xd with neck

X-Generation

HM MG10	λ 40° γ 20°

G 2.5

Vario



Roughing

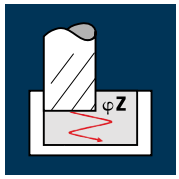
Finishing

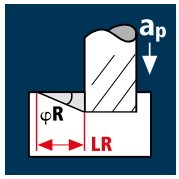
			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

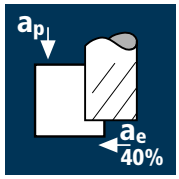
Example: **Order-N°.** Coating **C** Article-N°. **15585** ø-Code **450**

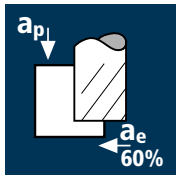
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	z	15585	CELERO C15585
450	10.00	10.00	9.20	91	11.00	46.99	50.00	1.000	3	●	●
501	12.00	12.00	11.00	106	13.00	56.29	60.00	1.000	3	●	●
608	16.00	16.00	15.00	129	18.00	75.73	80.00	1.000	3	●	●
680	20.00	20.00	19.00	151	22.00	95.23	100.00	1.000	3	●	●
770	25.00	25.00	24.00	182	27.00	119.68	125.00	1.000	3	●	●
307	6.00	6.00	5.50	66	7.00	28.15	30.00	2.500	3	●	●
397	8.00	8.00	7.40	76	9.00	37.63	40.00	2.500	3	●	●
457	10.00	10.00	9.20	91	11.00	46.99	50.00	2.500	3	●	●
506	12.00	12.00	11.00	106	13.00	56.29	60.00	2.500	3	●	●
612	16.00	16.00	15.00	129	18.00	75.73	80.00	2.500	3	●	●
684	20.00	20.00	19.00	151	22.00	95.23	100.00	2.500	3	●	●
774	25.00	25.00	24.00	182	27.00	119.68	125.00	2.500	3	●	●
459	10.00	10.00	9.20	91	11.00	46.99	50.00	4.000	3	●	●
508	12.00	12.00	11.00	106	13.00	56.29	60.00	4.000	3	●	●
614	16.00	16.00	15.00	129	18.00	75.73	80.00	4.000	3	●	●
686	20.00	20.00	19.00	151	22.00	95.23	100.00	4.000	3	●	●
776	25.00	25.00	24.00	182	27.00	119.68	125.00	4.000	3	●	●

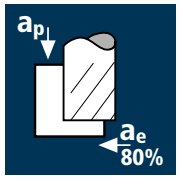
Applications

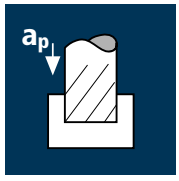












Cutting data calculator ToolExpert AX-FPS

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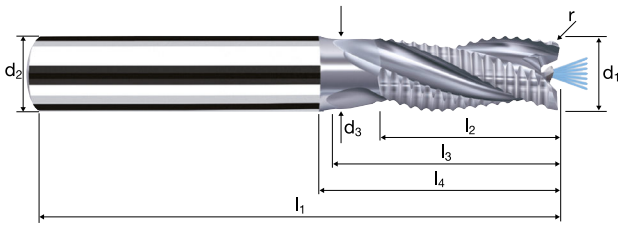
Cylindrical end mills AX-FPS

Profiled, normal version with short neck
High-performance penetration edge with central cooling channel

X-Generation X

III

HM MG10	λ 30° γ 20°



Roughing

Finishing

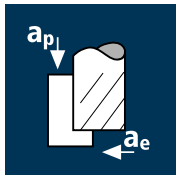
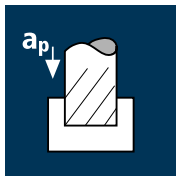
			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating: — Article-N°.: **15500** ø-Code: **300**

											15600	
											15500	
Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r	z			
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.100	3		●	
391	8.00	8.00	7.40	63	18.00	23.63	26.00	0.150	3		●	
450	10.00	10.00	9.20	72	22.00	27.99	31.00	0.200	3		●	
501	12.00	12.00	11.00	83	26.00	33.29	37.00	0.200	3		●	
610	16.00	16.00	15.00	95	32.00	41.73	46.00	0.200	3		●	
682	20.00	20.00	19.00	104	40.00	48.23	53.00	0.200	3		●	
770*	25.00	25.00	24.00	121	44.00	58.68	64.00	0.250	3		●	
772**	25.00	25.00	24.00	121	50.00	64.68	70.00	0.250	3		●	

* Cylindrical shank HA, shank length = 50 mm

** Shank with side clamping according to DIN 6535 HB

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Si < 6%	6.00	3	600	0.065	9.000	3.600	31830	6205	201.1
		8.00	3	600	0.090	12.000	4.800	23875	6445	371.3
		10.00	3	600	0.110	15.000	6.000	19100	6305	567.2
		12.00	3	600	0.135	18.000	7.200	15915	6445	835.4
		16.00	3	600	0.180	24.000	9.600	11935	6445	1485.1
		20.00	3	600	0.220	30.000	12.000	9550	6305	2268.9
	Unalloyed copper	6.00	3	400	0.065	9.000	3.600	21220	4140	134.1
		8.00	3	400	0.090	12.000	4.800	15915	4295	247.5
		10.00	3	400	0.110	15.000	6.000	12730	4200	378.2
		12.00	3	400	0.135	18.000	7.200	10610	4295	556.9
		16.00	3	400	0.180	24.000	9.600	7960	4295	990.1
		20.00	3	400	0.220	30.000	12.000	6365	4200	1512.6
	Thermoplastics	6.00	3	650	0.065	9.000	3.600	34485	6725	217.9
		8.00	3	650	0.090	12.000	4.800	25865	6985	402.2
		10.00	3	650	0.110	15.000	6.000	20690	6830	614.5
		12.00	3	650	0.135	18.000	7.200	17240	6985	905.0
		16.00	3	650	0.180	24.000	9.600	12930	6985	1608.9
		20.00	3	650	0.220	30.000	12.000	10345	6830	2458.0
	Wrought aluminium Si < 6%	6.00	3	500	0.060	9.000	6.000	26525	4775	257.8
		8.00	3	500	0.080	12.000	8.000	19895	4775	458.4
		10.00	3	500	0.100	15.000	10.000	15915	4775	716.2
		12.00	3	500	0.120	18.000	12.000	13265	4775	1031.3
		16.00	3	500	0.160	24.000	16.000	9945	4775	1833.5
		20.00	3	500	0.200	30.000	20.000	7960	4775	2864.8
	Unalloyed copper	6.00	3	270	0.060	9.000	6.000	14325	2580	139.2
		8.00	3	270	0.080	12.000	8.000	10745	2580	247.5
		10.00	3	270	0.100	15.000	10.000	8595	2580	386.7
		12.00	3	270	0.120	18.000	12.000	7160	2580	556.9
		16.00	3	270	0.160	24.000	16.000	5370	2580	990.1
		20.00	3	270	0.200	30.000	20.000	4295	2580	1547.0
	Thermoplastics	6.00	3	650	0.060	9.000	6.000	34485	6205	335.2
		8.00	3	650	0.080	12.000	8.000	25865	6205	595.9
		10.00	3	650	0.100	15.000	10.000	20690	6205	931.1
		12.00	3	650	0.120	18.000	12.000	17240	6205	1340.7
		16.00	3	650	0.160	24.000	16.000	12930	6205	2383.5
		20.00	3	650	0.200	30.000	20.000	10345	6205	3724.2

Cylindrical end mills AX-FP

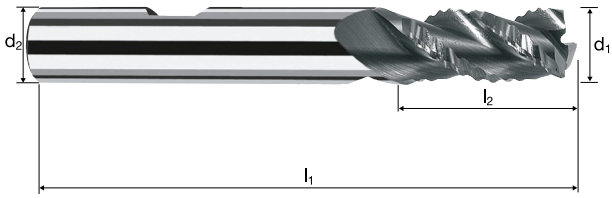
Profiled, normal version

X-Generation X

III

HM MG10	λ 40° γ 18°

45°



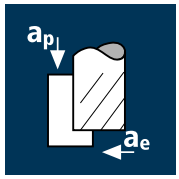
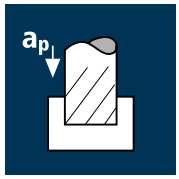
Roughing

Finishing

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **5397** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z	CELERO C5397	CELERO C5297
300	6.00	6.00	57	13.00	0.40	3		●
391	8.00	8.00	63	19.00	0.40	3		●
450	10.00	10.00	72	22.00	0.40	3		●
501	12.00	12.00	83	26.00	0.40	3		●
610	16.00	16.00	92	32.00	0.50	3		●
682	20.00	20.00	104	38.00	0.50	3		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Si < 6%	6.00	3	207	0.055	9.000	2.400	10980	1810	39.1
		8.00	3	207	0.070	12.000	3.200	8235	1730	66.4
		10.00	3	207	0.090	15.000	4.000	6590	1780	106.7
		12.00	3	207	0.125	18.000	4.800	5490	2060	177.9
		16.00	3	207	0.170	24.000	6.400	4120	2100	322.6
		20.00	3	207	0.210	30.000	8.000	3295	2075	498.1
		25.00	3	207	0.265	37.500	10.000	2635	2095	785.7
	Unalloyed copper	6.00	3	88	0.055	9.000	2.400	4670	770	16.6
		8.00	3	88	0.070	12.000	3.200	3500	735	28.2
		10.00	3	88	0.090	15.000	4.000	2800	755	45.4
		12.00	3	88	0.125	18.000	4.800	2335	875	75.6
		16.00	3	88	0.170	24.000	6.400	1750	895	137.1
		20.00	3	88	0.210	30.000	8.000	1400	880	211.8
		25.00	3	88	0.265	37.500	10.000	1120	890	334.0
	Thermoplastics	6.00	3	224	0.055	9.000	2.400	11885	1960	42.4
		8.00	3	224	0.070	12.000	3.200	8915	1870	71.9
		10.00	3	224	0.090	15.000	4.000	7130	1925	115.5
		12.00	3	224	0.125	18.000	4.800	5940	2230	192.5
		16.00	3	224	0.170	24.000	6.400	4455	2275	349.1
		20.00	3	224	0.210	30.000	8.000	3565	2245	539.0
		25.00	3	224	0.265	37.500	10.000	2850	2265	850.3
	Wrought aluminium Si < 6%	6.00	3	189	0.045	6.000	6.000	10025	1355	48.7
		8.00	3	189	0.055	8.000	8.000	7520	1240	79.4
		10.00	3	189	0.070	10.000	10.000	6015	1265	126.3
		12.00	3	189	0.100	12.000	12.000	5015	1505	216.6
		16.00	3	189	0.135	16.000	16.000	3760	1525	389.8
		20.00	3	189	0.170	20.000	20.000	3010	1535	613.6
		25.00	3	189	0.210	25.000	25.000	2405	1515	947.5
	Unalloyed copper	6.00	3	82	0.045	6.000	6.000	4350	585	21.1
		8.00	3	82	0.055	8.000	8.000	3265	540	34.5
		10.00	3	82	0.070	10.000	10.000	2610	550	54.8
		12.00	3	82	0.100	12.000	12.000	2175	655	94.0
		16.00	3	82	0.135	16.000	16.000	1630	660	169.1
		20.00	3	82	0.170	20.000	20.000	1305	665	266.2
		25.00	3	82	0.210	25.000	25.000	1045	660	411.1
	Thermoplastics	6.00	3	224	0.045	6.000	6.000	11885	1605	57.8
		8.00	3	224	0.055	8.000	8.000	8915	1470	94.1
		10.00	3	224	0.070	10.000	10.000	7130	1495	149.7
		12.00	3	224	0.100	12.000	12.000	5940	1785	256.7
		16.00	3	224	0.135	16.000	16.000	4455	1805	462.0
		20.00	3	224	0.170	20.000	20.000	3565	1820	727.3
		25.00	3	224	0.210	25.000	25.000	2850	1795	1123.0

Cylindrical end mills

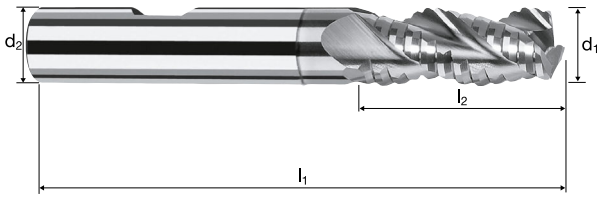
Profiled, normal version

HSS

III

HSS-E Co8	λ 40° γ 18°

45°



Roughing

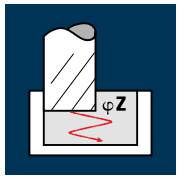
Finishing

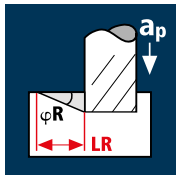
Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy			Cu Copper	Plastic Thermoplast	

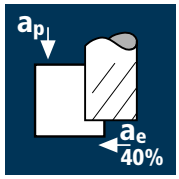
Example: **Order-N°.** Coating **C** Article-N°. **0391** ø-Code **300**

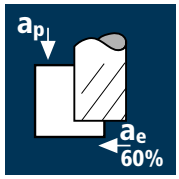
Ø Code	d_1 k8	d_2 h6	l_1	l_2	l_4	45°	α	z	CELERO C0391
300	6.00	6.00	57	13.00	-	0.40	0.0°	3	●
402	8.00	10.00	69	19.00	28.50	0.40	2.5°	3	●
450	10.00	10.00	72	22.00	-	0.40	0.0°	3	●
501	12.00	12.00	83	26.00	-	0.40	0.0°	3	●
610	16.00	16.00	92	32.00	-	0.50	0.0°	3	●
682	20.00	20.00	104	38.00	-	0.50	0.0°	3	●
772	25.00	25.00	121	45.00	-	0.70	0.0°	3	●

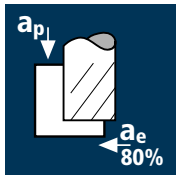
Applications

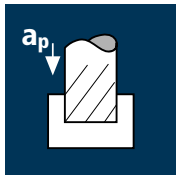












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Cylindrical end mills AX-FPS

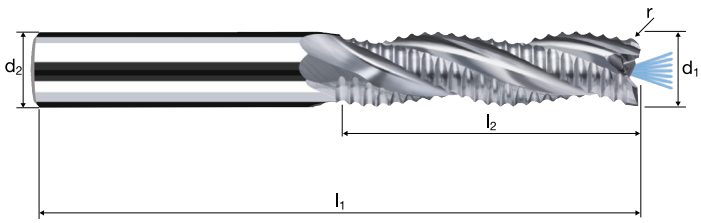
Profiled, medium length version
High-performance penetration edge with central cooling channel

X-Generation X

III

HM MG10	λ 30° γ 20°
r	G 2.5

new!



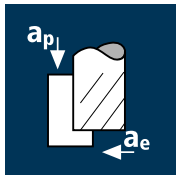
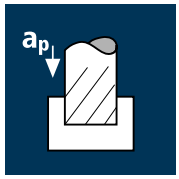
Roughing

Finishing

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating: **15506** ø-Code: **300**

Ø Code	d_1 e8	d_2 h5	l_1	l_2	r	z	15606	15506
300	6.00	6.00	63	19.00	0.100	3	●	
391	8.00	8.00	72	28.00	0.150	3	●	
450	10.00	10.00	84	34.00	0.200	3	●	
501	12.00	12.00	97	40.00	0.200	3	●	
610	16.00	16.00	108	48.00	0.200	3	●	
682	20.00	20.00	122	56.00	0.200	3	●	

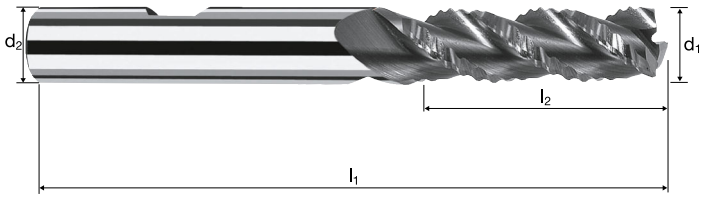
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Si < 6%	6.00	3	600	0.065	12.000	1.800	31830	6205	134.1
		8.00	3	600	0.090	16.000	2.400	23875	6445	247.5
		10.00	3	600	0.110	20.000	3.000	19100	6305	378.2
		12.00	3	600	0.135	24.000	3.600	15915	6445	556.9
		16.00	3	600	0.180	32.000	4.800	11935	6445	990.1
		20.00	3	600	0.220	40.000	6.000	9550	6305	1512.6
	Unalloyed copper	6.00	3	400	0.065	12.000	1.800	21220	4140	89.4
		8.00	3	400	0.090	16.000	2.400	15915	4295	165.0
		10.00	3	400	0.110	20.000	3.000	12730	4200	252.1
		12.00	3	400	0.135	24.000	3.600	10610	4295	371.3
		16.00	3	400	0.180	32.000	4.800	7960	4295	660.0
		20.00	3	400	0.220	40.000	6.000	6365	4200	1008.4
	Thermoplastics	6.00	3	650	0.065	12.000	1.800	34485	6725	145.2
		8.00	3	650	0.090	16.000	2.400	25865	6985	268.1
		10.00	3	650	0.110	20.000	3.000	20690	6830	409.7
		12.00	3	650	0.135	24.000	3.600	17240	6985	603.3
		16.00	3	650	0.180	32.000	4.800	12930	6985	1072.6
		20.00	3	650	0.220	40.000	6.000	10345	6830	1638.7
	Wrought aluminium Si < 6%	6.00	3	500	0.060	4.200	6.000	26525	4775	120.3
		8.00	3	500	0.080	5.600	8.000	19895	4775	213.9
		10.00	3	500	0.100	7.000	10.000	15915	4775	334.2
		12.00	3	500	0.120	8.400	12.000	13265	4775	481.3
		16.00	3	500	0.160	11.200	16.000	9945	4775	855.6
		20.00	3	500	0.200	14.000	20.000	7960	4775	1336.9
	Unalloyed copper	6.00	3	270	0.060	4.200	6.000	14325	2580	65.0
		8.00	3	270	0.080	5.600	8.000	10745	2580	115.5
		10.00	3	270	0.100	7.000	10.000	8595	2580	180.5
		12.00	3	270	0.120	8.400	12.000	7160	2580	259.9
		16.00	3	270	0.160	11.200	16.000	5370	2580	462.0
		20.00	3	270	0.200	14.000	20.000	4295	2580	721.9
	Thermoplastics	6.00	3	650	0.060	4.200	6.000	34485	6205	156.4
		8.00	3	650	0.080	5.600	8.000	25865	6205	278.1
		10.00	3	650	0.100	7.000	10.000	20690	6205	434.5
		12.00	3	650	0.120	8.400	12.000	17240	6205	625.7
		16.00	3	650	0.160	11.200	16.000	12930	6205	1112.3
		20.00	3	650	0.200	14.000	20.000	10345	6205	1738.0

Cylindrical end mills AX-FP

Profiled, medium length version

HM MG10	λ 40° γ 18°

45°



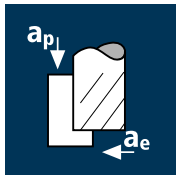
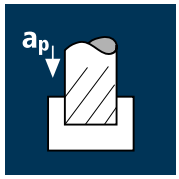
Roughing

Finishing

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15397** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z	CELERO C15397	CELERO C15297
300	6.00	6.00	63	19.00	0.40	3		●
391	8.00	8.00	72	28.00	0.40	3		●
450	10.00	10.00	84	34.00	0.40	3		●
501	12.00	12.00	97	40.00	0.40	3		●
610	16.00	16.00	108	48.00	0.50	3		●
682	20.00	20.00	122	56.00	0.50	3		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Si < 6%	10.00	3	173	0.060	30.000	2.000	5505	990	59.5
		12.00	3	173	0.090	36.000	2.400	4590	1240	107.1
		16.00	3	173	0.120	48.000	3.200	3440	1240	190.3
		20.00	3	173	0.145	60.000	4.000	2755	1200	287.5
		25.00	3	173	0.185	75.000	5.000	2205	1225	458.4
	Unalloyed copper	10.00	3	73	0.060	30.000	2.000	2325	420	25.1
		12.00	3	73	0.090	36.000	2.400	1935	525	45.2
		16.00	3	73	0.120	48.000	3.200	1450	525	80.3
		20.00	3	73	0.145	60.000	4.000	1160	505	121.3
		25.00	3	73	0.185	75.000	5.000	930	515	193.4
	Thermoplastics	10.00	3	183	0.060	30.000	2.000	5825	1050	62.9
		12.00	3	183	0.090	36.000	2.400	4855	1310	113.2
		16.00	3	183	0.120	48.000	3.200	3640	1310	201.3
		20.00	3	183	0.145	60.000	4.000	2915	1265	304.1
		25.00	3	183	0.185	75.000	5.000	2330	1295	484.9
	Wrought aluminium Si < 6%	10.00	3	157	0.050	5.000	10.000	4995	750	37.5
		12.00	3	157	0.070	6.000	12.000	4165	875	63.0
		16.00	3	157	0.095	8.000	16.000	3125	890	113.9
		20.00	3	157	0.120	10.000	20.000	2500	900	179.9
		25.00	3	157	0.145	12.500	25.000	2000	870	271.7
	Unalloyed copper	10.00	3	68	0.050	5.000	10.000	2165	325	16.2
		12.00	3	68	0.070	6.000	12.000	1805	380	27.3
		16.00	3	68	0.095	8.000	16.000	1355	385	49.4
		20.00	3	68	0.120	10.000	20.000	1080	390	77.9
		25.00	3	68	0.145	12.500	25.000	865	375	117.7
	Thermoplastics	10.00	3	168	0.050	5.000	10.000	5350	800	40.1
		12.00	3	168	0.070	6.000	12.000	4455	935	67.4
		16.00	3	168	0.095	8.000	16.000	3340	955	121.9
		20.00	3	168	0.120	10.000	20.000	2675	965	192.5
		25.00	3	168	0.145	12.500	25.000	2140	930	290.8

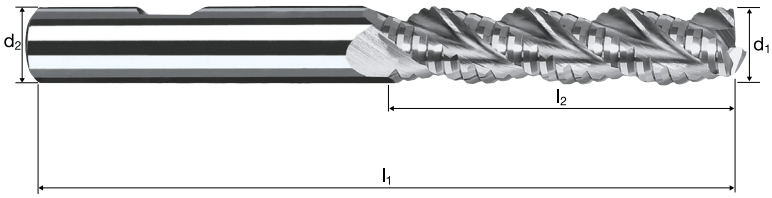
Cylindrical end mills

Profiled, medium length version

HSS

III

HSS-E Co8	λ 40° γ 18°



45°

Roughing

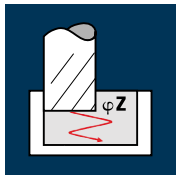
Finishing

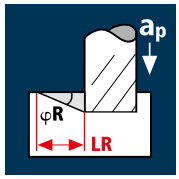
Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy			Cu Copper	Plastic Thermoplast	

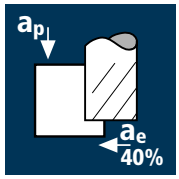
Example: **Order-N°.** Coating **C** Article-N°. **0393** ø-Code **450**

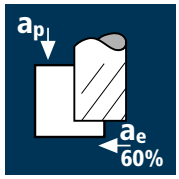
Ø Code	d_1 k8	d_2 h6	l_1	l_2	45°	z	CELERO C0393
450	10.00	10.00	95	45.00	0.40	3	●
501	12.00	12.00	110	53.00	0.40	3	●
610	16.00	16.00	123	63.00	0.50	3	●
682	20.00	20.00	141	75.00	0.50	3	●
772	25.00	25.00	166	90.00	0.70	3	●

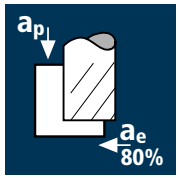
Applications

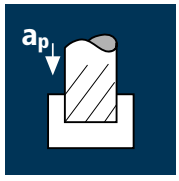












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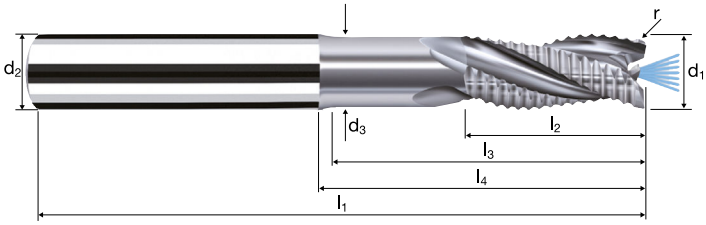
Cylindrical end mills AX-FPS

Profiled, medium length version with neck
High-performance penetration edge with central cooling channel

X-Generation X

III

HM MG10	λ 30° γ 20°



Roughing

Finishing

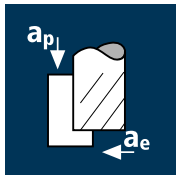
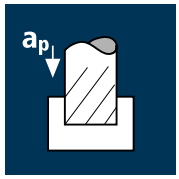
				Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **15505** Article-N°. ø-Code **300**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r	z	15605	15505
300	6.00	6.00	5.50	63	13.00	24.15	26.00	0.100	3	●	
391	8.00	8.00	7.40	72	18.00	32.63	35.00	0.150	3	●	
450	10.00	10.00	9.20	84	22.00	39.99	43.00	0.200	3	●	
501	12.00	12.00	11.00	97	26.00	47.29	51.00	0.200	3	●	
610	16.00	16.00	15.00	108	32.00	54.73	59.00	0.200	3	●	
682	20.00	20.00	19.00	122	40.00	66.23	71.00	0.200	3	●	
770*	25.00	25.00	24.00	144	50.00	81.68	87.00	0.250	3	●	
772**	25.00	25.00	24.00	144	50.00	86.68	92.00	0.250	3	●	

* Cylindrical shank HA, shank length = 50 mm

** Shank with side clamping according to DIN 6535 HB

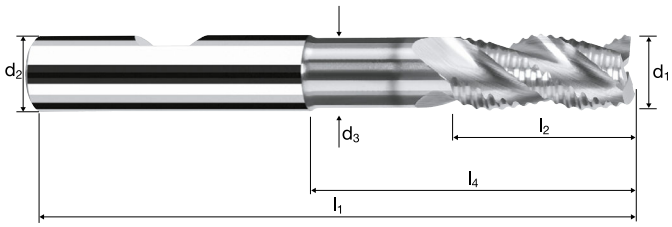
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Si < 6%	6.00	3	600	0.065	9.000	2.400	31830	6205	134.1
		8.00	3	600	0.090	12.000	3.200	23875	6445	247.5
		10.00	3	600	0.110	15.000	4.000	19100	6305	378.2
		12.00	3	600	0.135	18.000	4.800	15915	6445	556.9
		16.00	3	600	0.180	24.000	6.400	11935	6445	990.1
		20.00	3	600	0.220	30.000	8.000	9550	6305	1512.6
		25.00	3	600	0.280	37.500	10.000	7640	6415	2406.4
	Unalloyed copper	6.00	3	400	0.065	9.000	2.400	21220	4140	89.4
		8.00	3	400	0.090	12.000	3.200	15915	4295	165.0
		10.00	3	400	0.110	15.000	4.000	12730	4200	252.1
		12.00	3	400	0.135	18.000	4.800	10610	4295	371.3
		16.00	3	400	0.180	24.000	6.400	7960	4295	660.0
		20.00	3	400	0.220	30.000	8.000	6365	4200	1008.4
		25.00	3	400	0.280	37.500	10.000	5095	4280	1604.3
	Thermoplastics	6.00	3	792	0.065	9.000	2.400	42015	8195	177.0
		8.00	3	800	0.090	12.000	3.200	31830	8595	330.0
		10.00	3	800	0.110	15.000	4.000	25465	8405	504.2
		12.00	3	800	0.135	18.000	4.800	21220	8595	742.6
		16.00	3	800	0.180	24.000	6.400	15915	8595	1320.1
		20.00	3	800	0.220	30.000	8.000	12730	8405	2016.8
		25.00	3	800	0.280	37.500	10.000	10185	8555	3208.6
	Wrought aluminium Si < 6%	6.00	3	500	0.060	4.800	6.000	26525	4775	137.5
		8.00	3	500	0.080	6.400	8.000	19895	4775	244.5
		10.00	3	500	0.100	8.000	10.000	15915	4775	382.0
		12.00	3	500	0.120	9.600	12.000	13265	4775	550.0
		16.00	3	500	0.160	12.800	16.000	9945	4775	977.8
		20.00	3	500	0.200	16.000	20.000	7960	4775	1527.9
		25.00	3	500	0.250	20.000	25.000	6365	4775	2387.3
	Unalloyed copper	6.00	3	270	0.060	4.800	6.000	14325	2580	74.3
		8.00	3	270	0.080	6.400	8.000	10745	2580	132.0
		10.00	3	270	0.100	8.000	10.000	8595	2580	206.3
		12.00	3	270	0.120	9.600	12.000	7160	2580	297.0
		16.00	3	270	0.160	12.800	16.000	5370	2580	528.0
		20.00	3	270	0.200	16.000	20.000	4295	2580	825.1
		25.00	3	270	0.250	20.000	25.000	3440	2580	1289.2
	Thermoplastics	6.00	3	792	0.060	4.800	6.000	42015	7565	217.8
		8.00	3	800	0.080	6.400	8.000	31830	7640	391.1
		10.00	3	800	0.100	8.000	10.000	25465	7640	611.2
		12.00	3	800	0.120	9.600	12.000	21220	7640	880.1
		16.00	3	800	0.160	12.800	16.000	15915	7640	1564.6
		20.00	3	800	0.200	16.000	20.000	12730	7640	2444.6
		25.00	3	800	0.250	20.000	25.000	10185	7640	3819.7

Cylindrical end mills AX-FP

Profiled, medium length version with neck

HM MG10	λ 40° γ 18°

45°



Roughing

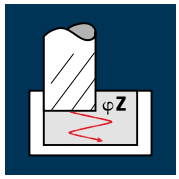
Finishing

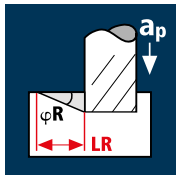
Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

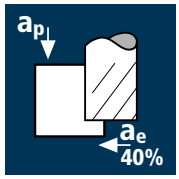
Example: **Order-N°.** Coating **C** Article-N°. **15398** ø-Code **300**

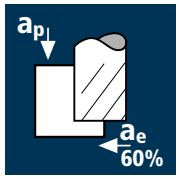
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	z	CELERO C15398	CELERO C15298
300	6.00	6.00	5.50	63	13.00	25.34	26.00	0.40	3		●
391	8.00	8.00	7.40	72	19.00	34.29	35.00	0.40	3		●
450	10.00	10.00	9.20	84	22.00	42.20	43.00	0.40	3		●
501	12.00	12.00	11.00	97	26.00	50.13	51.00	0.40	3		●
610	16.00	16.00	15.00	108	32.00	58.13	59.00	0.50	3		●
682	20.00	20.00	19.00	122	38.00	70.13	71.00	0.50	3		●
772	25.00	25.00	24.00	144	45.00	86.13	87.00	0.70	3		●

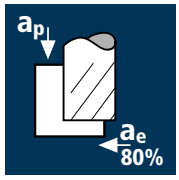
Applications

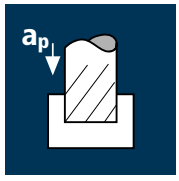












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Cylindrical end mills AX-FPS

Profiled, extra-long version 5.2xd
High-performance penetration edge with central cooling channel

X-Generation X

III

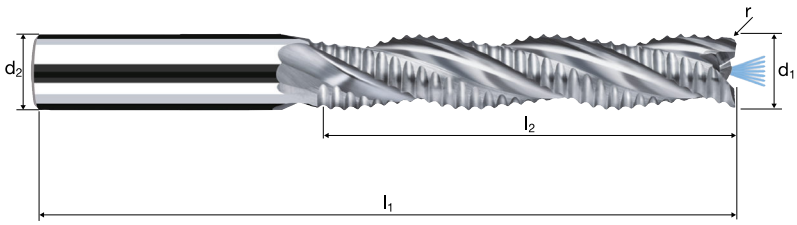
HM
MG10

λ 30°
γ 20°

r

G 2.5

new!



Roughing

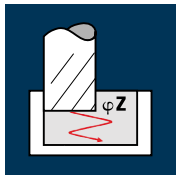
Finishing

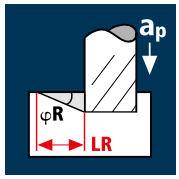
			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

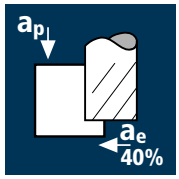
Example: **Order-N°.** Coating **15507** Article-N°. **300** ø-Code

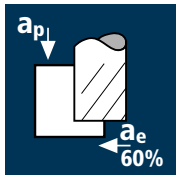
Ø Code	d_1 e8	d_2 h5	l_1	l_2	r	z	15607	15507
300	6.00	6.00	73	32.00	0.100	3	●	
391	8.00	8.00	84	42.00	0.150	3	●	
450	10.00	10.00	100	53.00	0.200	3	●	
501	12.00	12.00	117	63.00	0.200	3	●	
610	16.00	16.00	144	84.00	0.200	3	●	
682	20.00	20.00	169	105.00	0.200	3	●	

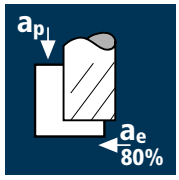
Applications

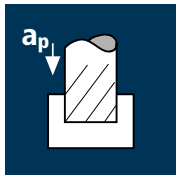












Cutting data calculator ToolExpert AX-FPS

Use ToolExpert AX-FPS to determine the best possible cutting data for your machining environment!

With the new ToolExpert AX-FPS calculator, you are guaranteed the most cost-effective solution on the market for determining the cutting data for roughing aluminium in line with your machining environment!

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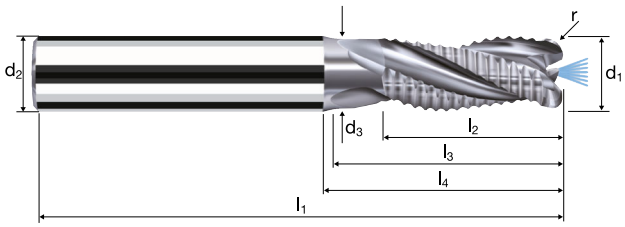
Corner radius end mills AX-RFPS

Profiled, normal version with short neck
High-performance penetration edge with central cooling channel

X-Generation

III

HM MG10	λ 30° γ 20°



Roughing

Finishing

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

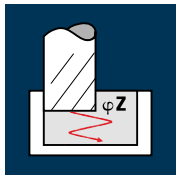
Example: **Order-N°.** Coating: **15** Article-N°.: **502** ø-Code: **498**

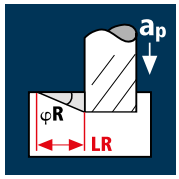
Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	z	15502	
498	12.00	12.00	11.00	83	26.00	33.29	37.00	0.500	3	●	I
606	16.00	16.00	15.00	95	32.00	41.73	46.00	0.500	3	●	I
501	12.00	12.00	11.00	83	26.00	33.29	37.00	1.000	3	●	I
608	16.00	16.00	15.00	95	32.00	41.73	46.00	1.000	3	●	I
680	20.00	20.00	19.00	104	40.00	48.23	53.00	1.000	3	●	I
770*	25.00	25.00	24.00	121	50.00	64.68	70.00	1.000	3	●	I
505	12.00	12.00	11.00	83	26.00	33.29	37.00	2.000	3	●	I
611	16.00	16.00	15.00	95	32.00	41.73	46.00	2.000	3	●	I
683	20.00	20.00	19.00	104	40.00	48.23	53.00	2.000	3	●	I
772*	25.00	25.00	24.00	121	50.00	64.68	70.00	2.000	3	●	I
506	12.00	12.00	11.00	83	26.00	33.29	37.00	2.500	3	●	I
612	16.00	16.00	15.00	95	32.00	41.73	46.00	2.500	3	●	I
684	20.00	20.00	19.00	104	40.00	48.23	53.00	2.500	3	●	I
774*	25.00	25.00	24.00	121	50.00	64.68	70.00	2.500	3	●	I

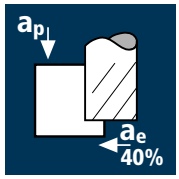
* Cylindrical shank HA, shank length = 50 mm

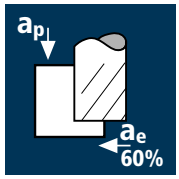
I Availability and delivery dates on request.

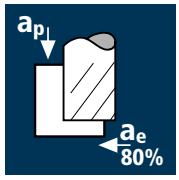
Applications

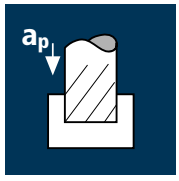












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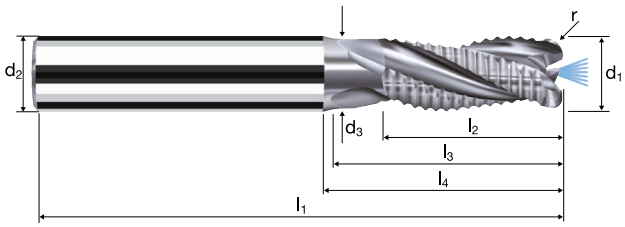
Corner radius end mills AX-RFPS

Profiled, normal version with short neck
High-performance penetration edge with central cooling channel

X-Generation X

III

HM MG10	λ 30° γ 20°



Roughing

Finishing

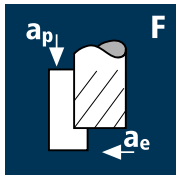
			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating | Article-N°. **15502** | ø-Code **613**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	z	15502	
613	16.00	16.00	15.00	95	32.00	41.73	46.00	3.000	3	●	❙
685	20.00	20.00	19.00	104	40.00	48.23	53.00	3.000	3	●	❙
775*	25.00	25.00	24.00	121	50.00	64.68	70.00	3.000	3	●	❙
686	20.00	20.00	19.00	104	40.00	48.23	53.00	4.000	3	●	❙
776*	25.00	25.00	24.00	121	50.00	64.68	70.00	4.000	3	●	❙
777*	25.00	25.00	24.00	121	50.00	64.68	70.00	5.000	3	●	❙

* Cylindrical shank HA, shank length = 50 mm

❙ Availability and delivery dates on request.

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min^{-1} vf [mm/min]	n=15000 min^{-1} vf [mm/min]	n=20000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]
	Wrought aluminium Si < 6%	6.00	6	0.020	12.000	0.100	1200	1800	2400	3600
		8.00	6	0.020	16.000	0.100	1200	1800	2400	3600
		10.00	6	0.025	20.000	0.150	1500	2250	3000	4500
		12.00	6	0.025	24.000	0.200	1500	2250	3000	4500
		16.00	6	0.030	32.000	0.250	1800	2700	3600	5400
		20.00	6	0.030	40.000	0.300	1800	2700	3600	5400
	Unalloyed copper	6.00	6	0.020	12.000	0.100	1200	1800	2400	3600
		8.00	6	0.020	16.000	0.100	1200	1800	2400	3600
		10.00	6	0.025	20.000	0.150	1500	2250	3000	4500
		12.00	6	0.025	24.000	0.200	1500	2250	3000	4500
		16.00	6	0.030	32.000	0.250	1800	2700	3600	5400
		20.00	6	0.030	40.000	0.300	1800	2700	3600	5400
	Thermoplastics	6.00	6	0.020	12.000	0.100	1200	1800	2400	3600
		8.00	6	0.020	16.000	0.100	1200	1800	2400	3600
		10.00	6	0.025	20.000	0.150	1500	2250	3000	4500
		12.00	6	0.025	24.000	0.200	1500	2250	3000	4500
		16.00	6	0.030	32.000	0.250	1800	2700	3600	5400
		20.00	6	0.030	40.000	0.300	1800	2700	3600	5400
	Cast aluminium Si 6% - 15%	6.00	6	0.020	12.000	0.100	1200	1800	2400	3600
		8.00	6	0.020	16.000	0.100	1200	1800	2400	3600
		10.00	6	0.025	20.000	0.150	1500	2250	3000	4500
		12.00	6	0.025	24.000	0.200	1500	2250	3000	4500
		16.00	6	0.030	32.000	0.250	1800	2700	3600	5400
		20.00	6	0.030	40.000	0.300	1800	2700	3600	5400

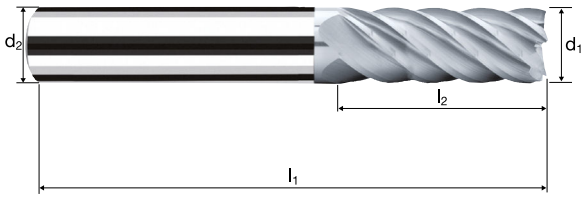
Cylindrical end mills Multicut XA

Finishing, normal version

X-Generation

III

HM MG10	λ 40° γ 20°
r	G 2.5
Vario	



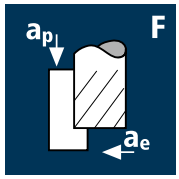
Roughing

Finishing

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15589** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	r	z	15589	CELERO C15589
300	6.00	6.00	57	13.00	0.150	6	●	●
391	8.00	8.00	63	19.00	0.150	6	●	●
450	10.00	10.00	72	22.00	0.200	6	●	●
501	12.00	12.00	83	26.00	0.200	6	●	●
610	16.00	16.00	92	32.00	0.200	6	●	●
682	20.00	20.00	104	40.00	0.200	6	●	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min^{-1} vf [mm/min]	n=15000 min^{-1} vf [mm/min]	n=20000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]
	Wrought aluminium Si < 6% C	6.00	6	0.020	18.000	0.100	1200	1800	2400	3600
		8.00	6	0.020	24.000	0.100	1200	1800	2400	3600
		10.00	6	0.025	30.000	0.150	1500	2250	3000	4500
		12.00	6	0.025	36.000	0.200	1500	2250	3000	4500
		16.00	6	0.030	48.000	0.250	1800	2700	3600	5400
		20.00	6	0.030	60.000	0.300	1800	2700	3600	5400
	Unalloyed copper C	6.00	6	0.020	18.000	0.100	1200	1800	2400	3600
		8.00	6	0.020	24.000	0.100	1200	1800	2400	3600
		10.00	6	0.025	30.000	0.150	1500	2250	3000	4500
		12.00	6	0.025	36.000	0.200	1500	2250	3000	4500
		16.00	6	0.030	48.000	0.250	1800	2700	3600	5400
		20.00	6	0.030	60.000	0.300	1800	2700	3600	5400
	Thermoplastics	6.00	6	0.020	18.000	0.100	1200	1800	2400	3600
		8.00	6	0.020	24.000	0.100	1200	1800	2400	3600
		10.00	6	0.025	30.000	0.150	1500	2250	3000	4500
		12.00	6	0.025	36.000	0.200	1500	2250	3000	4500
		16.00	6	0.030	48.000	0.250	1800	2700	3600	5400
		20.00	6	0.030	60.000	0.300	1800	2700	3600	5400
	Cast aluminium Si 6% - 15% C	6.00	6	0.020	18.000	0.100	1200	1800	2400	3600
		8.00	6	0.020	24.000	0.100	1200	1800	2400	3600
		10.00	6	0.025	30.000	0.150	1500	2250	3000	4500
		12.00	6	0.025	36.000	0.200	1500	2250	3000	4500
		16.00	6	0.030	48.000	0.250	1800	2700	3600	5400
		20.00	6	0.030	60.000	0.300	1800	2700	3600	5400

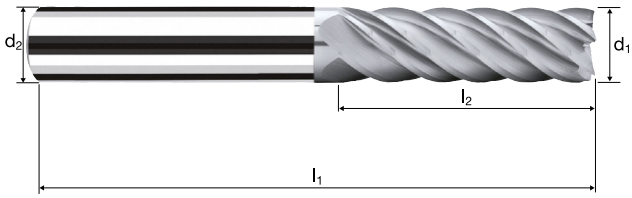
Cylindrical end mills Multicut XA

Finishing, medium length version

X-Generation

III

HM MG10	λ 40° γ 20°
r	G 2.5
Vario	



Roughing

Finishing

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15590** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	r	z	15590	CELERO C15590
300	6.00	6.00	63	18.00	0.150	6	●	●
391	8.00	8.00	72	24.00	0.150	6	●	●
450	10.00	10.00	84	30.00	0.200	6	●	●
501	12.00	12.00	97	36.00	0.200	6	●	●
610	16.00	16.00	108	48.00	0.200	6	●	●
682	20.00	20.00	122	60.00	0.200	6	●	●

passion
for precision
fraisa

End milling tools for graphite
Micro with ball nose

Shank ø 6mm, tolerance r ±0.005

N° 6062		MicrospheroXG	X-Generation X	3xd R F	d_1 1.5 – 6.0	C Graphite			691
N° 6064		MicrospheroXG	X-Generation X	5xd R F	d_1 0.1 – 6.0	C Graphite			693
N° 6066		MicrospheroXG	X-Generation X	8xd R F	d_1 0.1 – 6.0	C Graphite			695
N° 6068		MicrospheroXG	X-Generation X	10xd R F	d_1 0.2 – 6.0	C Graphite			697
N° 6070		MicrospheroXG	X-Generation X	12xd R F	d_1 0.2 – 4.0	C Graphite			699
N° 6072		MicrospheroXG	X-Generation X	15xd R F	d_1 0.3 – 4.0	C Graphite			701
N° 6074		MicrospheroXG	X-Generation X	20xd R F	d_1 0.3 – 4.0	C Graphite			703

Shank ø 3mm, tolerance r ±0.01

N° 5782		Microcut-B3	Base-X B	3xd R F	d_1 0.2 – 3.0	C Graphite			705
N° 5784		Microcut-B5	Base-X B	5xd R F	d_1 0.5 – 3.0	C Graphite			707
N° 5786		Microcut-B8	Base-X B	8xd R F	d_1 0.5 – 3.0	C Graphite			709
N° 5787		Microcut-B10	Base-X B	10xd R F	d_1 0.5 – 3.0	C Graphite			711
N° 5791		Microcut-B12	Base-X B	12xd R F	d_1 1.0 – 3.0	C Graphite			713
N° 5793		Microcut-B15	Base-X B	15xd R F	d_1 1.0 – 3.0	C Graphite			715
N° 15795		Microcut-B20	Base-X B	20xd R F	d_1 1.0 – 3.0	C Graphite			717

IV

End milling tools for graphite
Micro with corner radius

Shank ø 6mm, tolerance r ±0.005

N° 6032		**MicrotoroXG**	X-Generation X	3xd R F	r 0.2, 0.5	C Graphite			719
N° 6034		**MicrotoroXG**	X-Generation X	5xd R F	r 0.05, 0.1, 0.2, 0.5	C Graphite			721
N° 6036		**MicrotoroXG**	X-Generation X	8xd R F	r 0.05, 0.1, 0.2, 0.5	C Graphite			725
N° 6038		**MicrotoroXG**	X-Generation X	10xd R F	r 0.05, 0.1, 0.2, 0.5	C Graphite			729
N° 6040		**MicrotoroXG**	X-Generation X	12xd R F	r 0.05, 0.1, 0.2, 0.5	C Graphite			733
N° 6042		**MicrotoroXG**	X-Generation X	15xd R F	r 0.05, 0.1, 0.2, 0.5	C Graphite			735
N° 6044		**MicrotoroXG**	X-Generation X	20xd R F	r 0.05, 0.1, 0.2, 0.5	C Graphite			737

Shank ø 3mm, tolerance r 0/+0.03

N° 5752		**Microcut-T3**	Base-X B	3xd R F	r 0.2	C Graphite			739
N° 5754		**Microcut-T5**	Base-X B	5xd R F	r 0.2	C Graphite			741
N° 5756		**Microcut-T8**	Base-X B	8xd R F	r 0.2	C Graphite			743

End milling tools for graphite
Micro, cylindrical

Shank ø 3mm

N° 5712	**Microcut-C3**	Base-X **B**	**3xd** R F	d_1 0.2 – 3.0 45°	**C** Graphite			745
N° 5714	**Microcut-C5**	Base-X **B**	**5xd** R F	d_1 0.5 – 3.0 45°	**C** Graphite			747
N° 5716	**Microcut-C8**	Base-X **B**	**8xd** R F	d_1 0.5 – 3.0 45°	**C** Graphite			749
N° 5717	**Microcut-C10**	Base-X **B**	**10xd** R F	d_1 0.5 – 3.0 45°	**C** Graphite			751

End milling tools for graphite
Ball nose

Tolerance r ±0.005

N° 7484 **SpheroXG**

X-Generation **X** | **6xd** | **R** | **F** | d_1 6 – 12 | **C** Graphite | 753

N° 7488 **SpheroXG**

X-Generation **X** | **9xd** | **R** | **F** | d_1 6 – 12 | **C** Graphite | 755

End milling tools for graphite
Corner radius

Tolerance r ±0.005

N° 7284 **ToroXG**

X-Generation **X** | 6xd | R F | r 0.5, 1.0 | **C** Graphite | 757

N° 7288 **ToroXG**

X-Generation **X** | 9xd | R F | r 0.5, 1.0 | **C** Graphite | 759

Tolerance r 0/+0.03

N° 5640

Base-X **B** | R F | r 0.15, 0.2, 0.3, 0.5 | **C** Graphite | 761

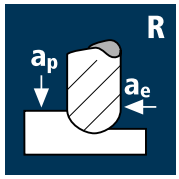
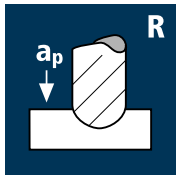
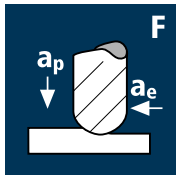
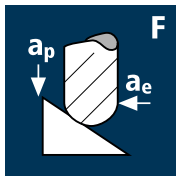
N° 5645

Base-X **B** | R F | r 0.15, 0.2, 0.3, 0.5 | **C** Graphite | 763

N° 5650

Base-X **B** | R F | r 0.5 | **C** Graphite | 765

IV

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite	1.50	2	0.018	0.750	0.900	540	900	1080	1620
		2.00	2	0.024	1.000	1.200	720	1200	1440	2160
		3.00	2	0.035	1.500	1.800	1050	1750	2100	3150
		4.00	2	0.047	2.000	2.400	1410	2350	2820	4230
		5.00	2	0.059	2.500	3.000	1770	2950	3540	5310
		6.00	2	0.071	3.000	3.600	2130	3550	4260	6390
	Graphite	1.50	2	0.014	0.750	1.500	420	700	840	1260
		2.00	2	0.018	1.000	2.000	540	900	1080	1620
		3.00	2	0.027	1.500	3.000	810	1350	1620	2430
		4.00	2	0.036	2.000	4.000	1080	1800	2160	3240
		5.00	2	0.045	2.500	5.000	1350	2250	2700	4050
		6.00	2	0.055	3.000	6.000	1650	2750	3300	4950
	Graphite	1.50	2	0.020	0.230	0.300	600	1000	1200	1800
		2.00	2	0.027	0.300	0.400	810	1350	1620	2430
		3.00	2	0.040	0.450	0.600	1200	2000	2400	3600
		4.00	2	0.053	0.600	0.800	1590	2650	3180	4770
		5.00	2	0.067	0.750	1.000	2010	3350	4020	6030
		6.00	2	0.080	0.900	1.200	2400	4000	4800	7200
	Graphite	1.50	2	0.020	0.300	0.300	600	1000	1200	1800
		2.00	2	0.027	0.400	0.400	810	1350	1620	2430
		3.00	2	0.040	0.600	0.600	1200	2000	2400	3600
		4.00	2	0.053	0.800	0.800	1590	2650	3180	4770
		5.00	2	0.067	1.000	1.000	2010	3350	4020	6030
		6.00	2	0.080	1.200	1.200	2400	4000	4800	7200

Ball nose end mills MicrospheroXG

Shank ø 6mm, cylindrical neck, 3xd

X-Generation X

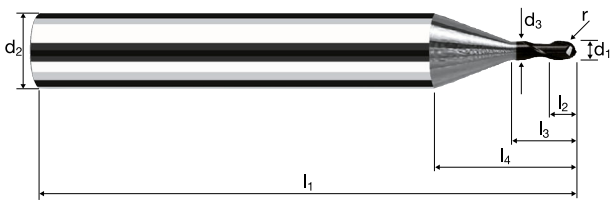
HM
XA

λ 30°
γ 15°

h5

d1

r



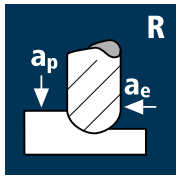
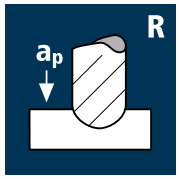
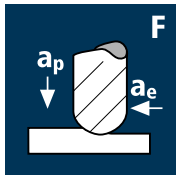
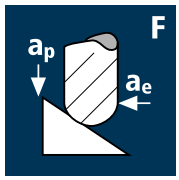
IV

C
Graphite

CF / GF
Fiber Reinforced
Plastics

Example:
Order-N°. Coating **B** Article-Nr. **6062** ø-Code **120**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6062
120	1.50	6.00	1.40	57	1.50	4.50	13.74	0.750	10.3°	2	●
140	2.00	6.00	1.90	57	2.00	6.00	14.31	1.000	9.0°	2	●
180	3.00	6.00	2.80	57	3.00	9.00	15.63	1.500	6.4°	2	●
220	4.00	6.00	3.70	57	4.00	12.00	16.95	2.000	4.1°	2	●
260	5.00	6.00	4.60	57	5.00	15.00	18.27	2.500	2.0°	2	●
300	6.00	6.00	5.50	57	6.00	17.34	18.00	3.000	0.0°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.20	2	0.002	0.100	0.100	60	100	120	180
		0.50	2	0.006	0.250	0.300	180	300	360	540
		0.80	2	0.009	0.350	0.500	270	450	540	810
		1.00	2	0.012	0.450	0.600	360	600	720	1080
		2.00	2	0.024	0.900	1.200	720	1200	1440	2160
		3.00	2	0.035	1.350	1.800	1050	1750	2100	3150
		4.00	2	0.047	1.800	2.400	1410	2350	2820	4230
		5.00	2	0.059	2.250	3.000	1770	2950	3540	5310
		6.00	2	0.071	2.700	3.600	2130	3550	4260	6390
	Graphite B	0.20	2	0.002	0.100	0.200	60	100	120	180
		0.50	2	0.005	0.250	0.500	150	250	300	450
		0.80	2	0.007	0.350	0.800	210	350	420	630
		1.00	2	0.009	0.450	1.000	270	450	540	810
		2.00	2	0.018	0.900	2.000	540	900	1080	1620
		3.00	2	0.027	1.350	3.000	810	1350	1620	2430
		4.00	2	0.036	1.800	4.000	1080	1800	2160	3240
		5.00	2	0.045	2.250	5.000	1350	2250	2700	4050
		6.00	2	0.055	2.700	6.000	1650	2750	3300	4950
	Graphite B	0.20	2	0.003	0.030	0.040	90	150	180	270
		0.50	2	0.007	0.070	0.100	210	350	420	630
		0.80	2	0.011	0.110	0.160	330	550	660	990
		1.00	2	0.013	0.140	0.200	390	650	780	1170
		2.00	2	0.027	0.280	0.400	810	1350	1620	2430
		3.00	2	0.040	0.420	0.600	1200	2000	2400	3600
		4.00	2	0.053	0.560	0.800	1590	2650	3180	4770
		5.00	2	0.067	0.700	1.000	2010	3350	4020	6030
		6.00	2	0.080	0.840	1.200	2400	4000	4800	7200
	Graphite B	0.20	2	0.003	0.040	0.040	90	150	180	270
		0.50	2	0.007	0.090	0.090	210	350	420	630
		0.80	2	0.011	0.140	0.140	330	550	660	990
		1.00	2	0.013	0.180	0.180	390	650	780	1170
		2.00	2	0.027	0.360	0.360	810	1350	1620	2430
		3.00	2	0.040	0.540	0.540	1200	2000	2400	3600
		4.00	2	0.053	0.720	0.720	1590	2650	3180	4770
		5.00	2	0.067	0.900	0.900	2010	3350	4020	6030
		6.00	2	0.080	1.080	1.080	2400	4000	4800	7200

Ball nose end mills MicrospheroXG

Shank ø 6mm, cylindrical neck, 5xd

X-Generation X

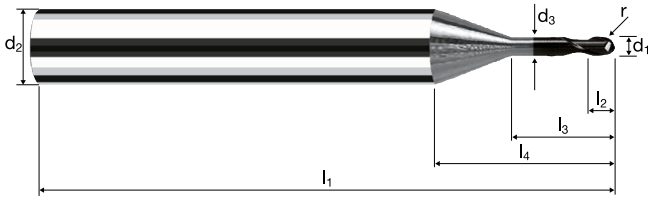
HM
XA

λ 30°
γ 15°

h5

d1

r



IV

C
Graphite

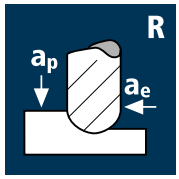
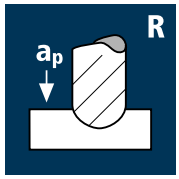
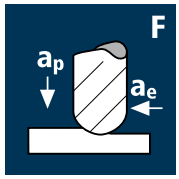
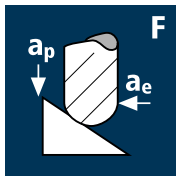
CF/GF
Fiber Reinforced
Plastics

Example:
Order-N°. Coating **B** Article-Nr. **6064** ø-Code **010**

DIAPLUS

B6064

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	
010	0.10	6.00	0.09	57	0.10	0.50	17.70	0.050	14.5°	2	●
015	0.15	6.00	0.13	57	0.15	0.75	17.83	0.075	14.2°	2	●
020	0.20	6.00	0.18	57	0.20	1.00	17.94	0.100	13.9°	2	●
030	0.30	6.00	0.25	57	0.30	1.50	18.24	0.150	13.8°	2	●
040	0.40	6.00	0.35	57	0.40	2.00	18.46	0.200	12.8°	2	●
050	0.50	6.00	0.45	57	0.50	2.50	13.51	0.250	12.3°	2	●
060	0.60	6.00	0.55	57	0.60	3.00	13.83	0.300	11.9°	2	●
080	0.80	6.00	0.75	57	0.80	4.00	14.45	0.400	11.0°	2	●
100	1.00	6.00	0.95	57	1.00	5.00	15.08	0.500	10.2°	2	●
120	1.50	6.00	1.40	57	1.50	7.50	16.74	0.750	8.4°	2	●
140	2.00	6.00	1.90	57	2.00	10.00	18.31	1.000	6.9°	2	●
180	3.00	6.00	2.80	57	3.00	15.00	21.63	1.500	4.4°	2	●
182	3.00	6.00	2.80	61	3.00	18.00	24.63	1.500	3.9°	2	●
220	4.00	6.00	3.70	61	4.00	20.00	24.95	2.000	2.6°	2	●
222	4.00	6.00	3.70	66	4.00	25.00	29.95	2.000	2.2°	2	●
260	5.00	6.00	4.60	66	5.00	25.00	28.27	2.500	1.2°	2	●
300	6.00	6.00	5.50	69	6.00	29.34	30.00	3.000	0.0°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.20	2	0.002	0.100	0.100	60	100	120	180
		0.50	2	0.006	0.200	0.300	180	300	360	540
		0.80	2	0.009	0.300	0.500	270	450	540	810
		1.00	2	0.012	0.400	0.600	360	600	720	1080
		2.00	2	0.024	0.800	1.200	720	1200	1440	2160
		3.00	2	0.035	1.200	1.800	1050	1750	2100	3150
		4.00	2	0.047	1.600	2.400	1410	2350	2820	4230
		5.00	2	0.059	2.000	3.000	1770	2950	3540	5310
		6.00	2	0.071	2.400	3.600	2130	3550	4260	6390
	Graphite B	0.20	2	0.002	0.100	0.200	60	100	120	180
		0.50	2	0.005	0.200	0.500	150	250	300	450
		0.80	2	0.007	0.300	0.800	210	350	420	630
		1.00	2	0.009	0.400	1.000	270	450	540	810
		2.00	2	0.018	0.800	2.000	540	900	1080	1620
		3.00	2	0.027	1.200	3.000	810	1350	1620	2430
		4.00	2	0.036	1.600	4.000	1080	1800	2160	3240
		5.00	2	0.045	2.000	5.000	1350	2250	2700	4050
		6.00	2	0.055	2.400	6.000	1650	2750	3300	4950
	Graphite B	0.20	2	0.003	0.020	0.040	90	150	180	270
		0.50	2	0.007	0.060	0.090	210	350	420	630
		0.80	2	0.011	0.100	0.140	330	550	660	990
		1.00	2	0.013	0.120	0.180	390	650	780	1170
		2.00	2	0.027	0.240	0.360	810	1350	1620	2430
		3.00	2	0.040	0.360	0.540	1200	2000	2400	3600
		4.00	2	0.053	0.480	0.720	1590	2650	3180	4770
		5.00	2	0.067	0.600	0.900	2010	3350	4020	6030
		6.00	2	0.080	0.720	1.080	2400	4000	4800	7200
	Graphite B	0.20	2	0.003	0.030	0.030	90	150	180	270
		0.50	2	0.007	0.080	0.080	210	350	420	630
		0.80	2	0.011	0.130	0.130	330	550	660	990
		1.00	2	0.013	0.160	0.160	390	650	780	1170
		2.00	2	0.027	0.320	0.320	810	1350	1620	2430
		3.00	2	0.040	0.480	0.480	1200	2000	2400	3600
		4.00	2	0.053	0.640	0.640	1590	2650	3180	4770
		5.00	2	0.067	0.800	0.800	2010	3350	4020	6030
		6.00	2	0.080	0.960	0.960	2400	4000	4800	7200

Ball nose end mills MicrospheroXG

Shank ø 6mm, cylindrical neck, 8xd

X-Generation

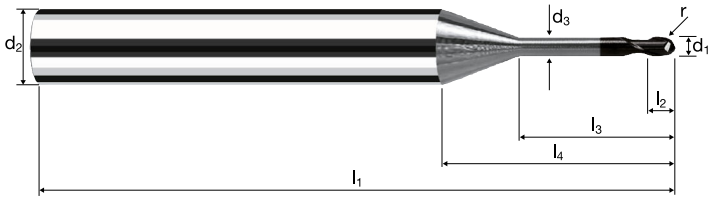
HM
XA

λ 30°
γ 15°

h5

d1

r



IV

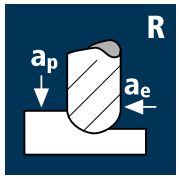
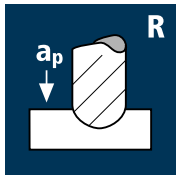
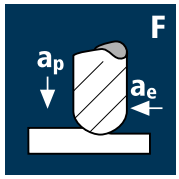
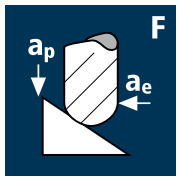
C
Graphite

CF/GF
Fiber Reinforced
Plastics

Example:
Order-N°. Coating **B** Article-Nr. **6066** ø-Code **010**

DIAPLUS
B6066

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	
010	0.10	6.00	0.09	57	0.10	0.80	18.00	0.050	14.1°	2	●
015	0.15	6.00	0.13	57	0.15	1.20	18.28	0.075	13.7°	2	●
020	0.20	6.00	0.18	57	0.20	1.60	18.54	0.100	13.2°	2	●
030	0.30	6.00	0.25	57	0.30	2.40	19.14	0.150	12.4°	2	●
040	0.40	6.00	0.35	57	0.40	3.20	19.66	0.200	11.7°	2	●
050	0.50	6.00	0.45	57	0.50	4.00	15.01	0.250	11.1°	2	●
060	0.60	6.00	0.55	57	0.60	4.80	15.63	0.300	10.5°	2	●
080	0.80	6.00	0.75	57	0.80	6.40	16.85	0.400	9.4°	2	●
100	1.00	6.00	0.95	57	1.00	8.00	18.08	0.500	8.4°	2	●
120	1.50	6.00	1.40	57	1.50	12.00	21.24	0.750	6.5°	2	●
140	2.00	6.00	1.90	61	2.00	16.00	24.31	1.000	5.1°	2	●
180	3.00	6.00	2.80	66	3.00	24.00	30.63	1.500	3.1°	2	●
220	4.00	6.00	3.70	75	4.00	32.00	36.95	2.000	1.7°	2	●
260	5.00	6.00	4.60	80	5.00	40.00	43.27	2.500	0.8°	2	●
300	6.00	6.00	5.50	87	6.00	47.34	48.00	3.000	0.0°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.20	2	0.002	0.080	0.080	60	100	120	180
		0.50	2	0.006	0.200	0.200	180	300	360	540
		0.80	2	0.009	0.300	0.300	270	450	540	810
		1.00	2	0.012	0.400	0.400	360	600	720	1080
		2.00	2	0.024	0.800	0.800	720	1200	1440	2160
		3.00	2	0.035	1.200	1.200	1050	1750	2100	3150
		4.00	2	0.047	1.600	1.600	1410	2350	2820	4230
		5.00	2	0.059	2.000	2.000	1770	2950	3540	5310
		6.00	2	0.071	2.400	2.400	2130	3550	4260	6390
	Graphite B	0.20	2	0.001	0.060	0.200	30	50	60	90
		0.50	2	0.004	0.150	0.500	120	200	240	360
		0.80	2	0.006	0.250	0.800	180	300	360	540
		1.00	2	0.007	0.300	1.000	210	350	420	630
		2.00	2	0.015	0.600	2.000	450	750	900	1350
		3.00	2	0.022	0.900	3.000	660	1100	1320	1980
		4.00	2	0.029	1.200	4.000	870	1450	1740	2610
		5.00	2	0.036	1.500	5.000	1080	1800	2160	3240
		6.00	2	0.044	1.800	6.000	1320	2200	2640	3960
	Graphite B	0.20	2	0.003	0.020	0.030	90	150	180	270
		0.50	2	0.007	0.050	0.080	210	350	420	630
		0.80	2	0.011	0.080	0.130	330	550	660	990
		1.00	2	0.013	0.100	0.160	390	650	780	1170
		2.00	2	0.027	0.200	0.320	810	1350	1620	2430
		3.00	2	0.040	0.300	0.480	1200	2000	2400	3600
		4.00	2	0.053	0.400	0.640	1590	2650	3180	4770
		5.00	2	0.067	0.500	0.800	2010	3350	4020	6030
		6.00	2	0.080	0.600	0.960	2400	4000	4800	7200
	Graphite B	0.20	2	0.003	0.030	0.030	90	150	180	270
		0.50	2	0.007	0.070	0.070	210	350	420	630
		0.80	2	0.011	0.110	0.110	330	550	660	990
		1.00	2	0.013	0.140	0.140	390	650	780	1170
		2.00	2	0.027	0.280	0.280	810	1350	1620	2430
		3.00	2	0.040	0.420	0.420	1200	2000	2400	3600
		4.00	2	0.053	0.560	0.560	1590	2650	3180	4770
		5.00	2	0.067	0.700	0.700	2010	3350	4020	6030
		6.00	2	0.080	0.840	0.840	2400	4000	4800	7200

Ball nose end mills MicrospheroXG

Shank ø 6mm, cylindrical neck, 10xd

X-Generation X

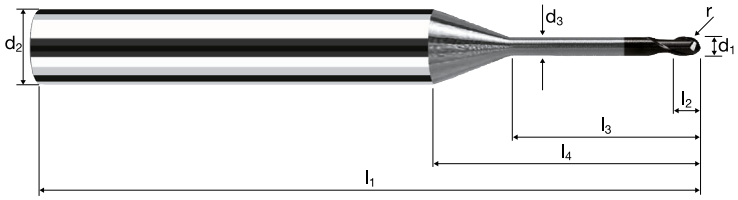
HM
XA

λ 30°
γ 15°

h5

d1

r



IV

C
Graphite

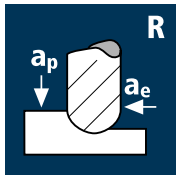
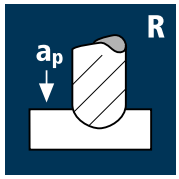
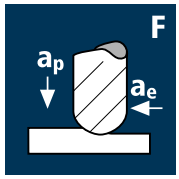
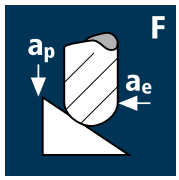
CF/GF
Fiber Reinforced
Plastics

Example:
Order-N°. Coating **B** Article-Nr. **6068** ø-Code **020**

DIAPLUS

B6068

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	
020	0.20	6.00	0.18	57	0.20	2.00	18.94	0.100	12.8°	2	●
030	0.30	6.00	0.25	57	0.30	3.00	19.74	0.150	11.9°	2	●
040	0.40	6.00	0.35	57	0.40	4.00	20.46	0.200	11.1°	2	●
050	0.50	6.00	0.45	57	0.50	5.00	16.01	0.250	10.3°	2	●
060	0.60	6.00	0.55	57	0.60	6.00	16.83	0.300	9.7°	2	●
080	0.80	6.00	0.75	57	0.80	8.00	18.45	0.400	8.5°	2	●
100	1.00	6.00	0.95	57	1.00	10.00	20.08	0.500	7.5°	2	●
120	1.50	6.00	1.40	61	1.50	15.00	24.24	0.750	5.7°	2	●
140	2.00	6.00	1.90	66	2.00	20.00	28.31	1.000	4.3°	2	●
180	3.00	6.00	2.80	75	3.00	30.00	36.63	1.500	2.5°	2	●
220	4.00	6.00	3.70	80	4.00	40.00	44.95	2.000	1.4°	2	●
260	5.00	6.00	4.60	100	5.00	50.00	53.27	2.500	0.6°	2	●
300	6.00	6.00	5.50	100	6.00	59.34	60.00	3.000	0.0°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.20	2	0.002	0.060	0.080	60	100	120	180
		0.50	2	0.005	0.150	0.200	150	250	300	450
		0.60	2	0.006	0.200	0.250	180	300	360	540
		0.80	2	0.008	0.250	0.300	240	400	480	720
		1.00	2	0.009	0.300	0.400	270	450	540	810
		1.50	2	0.014	0.450	0.600	420	700	840	1260
		2.00	2	0.019	0.600	0.800	570	950	1140	1710
		3.00	2	0.028	0.900	1.200	840	1400	1680	2520
		4.00	2	0.038	1.200	1.600	1140	1900	2280	3420
	Graphite B	0.20	2	0.001	0.040	0.200	30	50	60	90
		0.50	2	0.004	0.100	0.500	120	200	240	360
		0.60	2	0.004	0.100	0.600	120	200	240	360
		0.80	2	0.006	0.150	0.800	180	300	360	540
		1.00	2	0.007	0.200	1.000	210	350	420	630
		1.50	2	0.011	0.300	1.500	330	550	660	990
		2.00	2	0.015	0.400	2.000	450	750	900	1350
		3.00	2	0.022	0.060	3.000	660	1100	1320	1980
		4.00	2	0.029	0.800	4.000	870	1450	1740	2610
	Graphite B	0.20	2	0.002	0.020	0.030	60	100	120	180
		0.50	2	0.005	0.050	0.070	150	250	300	450
		0.60	2	0.006	0.060	0.080	180	300	360	540
		0.80	2	0.009	0.080	0.110	270	450	540	810
		1.00	2	0.011	0.100	0.140	330	550	660	990
		1.50	2	0.016	0.150	0.210	480	800	960	1440
		2.00	2	0.021	0.200	0.280	630	1050	1260	1890
		3.00	2	0.032	0.300	0.420	960	1600	1920	2880
		4.00	2	0.043	0.400	0.560	1290	2150	2580	3870
	Graphite B	0.20	2	0.002	0.020	0.020	60	100	120	180
		0.50	2	0.005	0.050	0.050	150	250	300	450
		0.60	2	0.006	0.060	0.060	180	300	360	540
		0.80	2	0.009	0.080	0.080	270	450	540	810
		1.00	2	0.011	0.100	0.100	330	550	660	990
		1.50	2	0.016	0.150	0.150	480	800	960	1440
		2.00	2	0.021	0.200	0.200	630	1050	1260	1890
		3.00	2	0.032	0.300	0.300	960	1600	1920	2880
		4.00	2	0.043	0.400	0.400	1290	2150	2580	3870

Ball nose end mills MicrospheroXG

Shank ø 6mm, cylindrical neck, 12xd

X-Generation

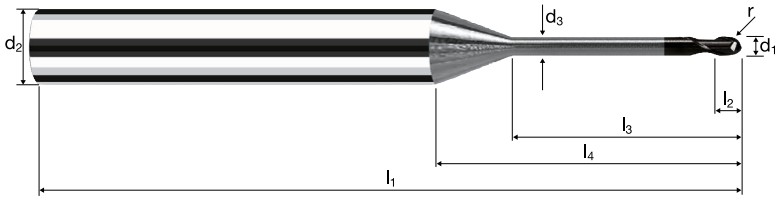
HM
XA

λ 30°
γ 15°

h5

d1

r



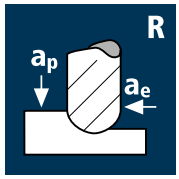
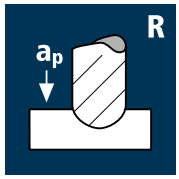
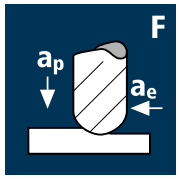
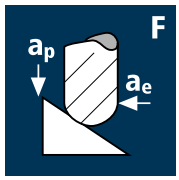
IV

C
Graphite

CF/GF
Fiber Reinforced
Plastics

Example:
Order-N°. Coating **B** Article-Nr. **6070** ø-Code **020**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6070
020	0.20	6.00	0.18	57	0.20	2.40	19.34	0.100	12.5°	2	●
030	0.30	6.00	0.25	57	0.30	3.60	20.34	0.150	11.4°	2	●
040	0.40	6.00	0.35	57	0.40	4.80	21.26	0.200	10.5°	2	●
050	0.50	6.00	0.45	57	0.50	6.00	17.01	0.250	9.9°	2	●
060	0.60	6.00	0.55	57	0.60	7.20	18.03	0.300	9.2°	2	●
080	0.80	6.00	0.75	57	0.80	9.60	20.05	0.400	8.0°	2	●
100	1.00	6.00	0.95	61	1.00	12.00	22.08	0.500	7.0°	2	●
120	1.50	6.00	1.40	66	1.50	18.00	27.24	0.750	5.1°	2	●
140	2.00	6.00	1.90	69	2.00	24.00	32.31	1.000	3.9°	2	●
180	3.00	6.00	2.80	80	3.00	36.00	42.63	1.500	2.2°	2	●
220	4.00	6.00	3.70	100	4.00	48.00	52.95	2.000	1.2°	2	●

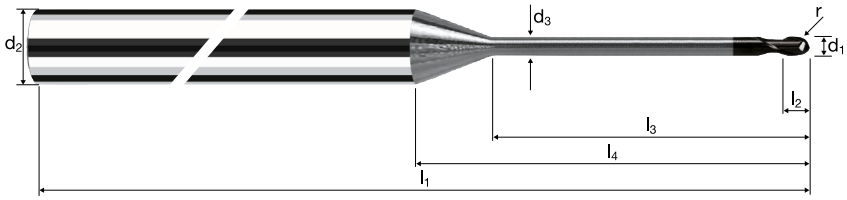
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.30	2	0.002	0.060	0.090	60	100	120	180
		0.50	2	0.004	0.100	0.150	120	200	240	360
		0.60	2	0.005	0.100	0.200	150	250	300	450
		0.80	2	0.007	0.150	0.250	210	350	420	630
		1.00	2	0.008	0.200	0.300	240	400	480	720
		1.50	2	0.012	0.300	0.450	360	600	720	1080
		2.00	2	0.016	0.400	0.600	480	800	960	1440
		3.00	2	0.025	0.600	0.900	750	1250	1500	2250
		4.00	2	0.033	0.800	1.200	990	1650	1980	2970
	Graphite B	0.30	2	0.002	0.030	0.300	60	100	120	180
		0.50	2	0.003	0.050	0.500	90	150	180	270
		0.60	2	0.004	0.060	0.600	120	200	240	360
		0.80	2	0.005	0.080	0.800	150	250	300	450
		1.00	2	0.006	0.100	1.000	180	300	360	540
		1.50	2	0.010	0.150	1.500	300	500	600	900
		2.00	2	0.013	0.200	2.000	390	650	780	1170
		3.00	2	0.019	0.300	3.000	570	950	1140	1710
		4.00	2	0.025	0.400	4.000	750	1250	1500	2250
	Graphite B	0.30	2	0.003	0.020	0.030	90	150	180	270
		0.50	2	0.005	0.040	0.050	150	250	300	450
		0.60	2	0.006	0.050	0.060	180	300	360	540
		0.80	2	0.007	0.060	0.080	210	350	420	630
		1.00	2	0.009	0.080	0.100	270	450	540	810
		1.50	2	0.014	0.120	0.150	420	700	840	1260
		2.00	2	0.019	0.160	0.200	570	950	1140	1710
		3.00	2	0.028	0.240	0.300	840	1400	1680	2520
		4.00	2	0.037	0.320	0.400	1110	1850	2220	3330
	Graphite B	0.30	2	0.003	0.020	0.020	90	150	180	270
		0.50	2	0.005	0.040	0.040	150	250	300	450
		0.60	2	0.006	0.050	0.050	180	300	360	540
		0.80	2	0.007	0.060	0.060	210	350	420	630
		1.00	2	0.009	0.080	0.080	270	450	540	810
		1.50	2	0.014	0.120	0.120	420	700	840	1260
		2.00	2	0.019	0.160	0.160	570	950	1140	1710
		3.00	2	0.028	0.240	0.240	840	1400	1680	2520
		4.00	2	0.037	0.320	0.320	1110	1850	2220	3330

Ball nose end mills MicrospheroXG

Shank ø 6mm, cylindrical neck, 15xd

X-Generation X

HM XA	λ 30° γ 15°

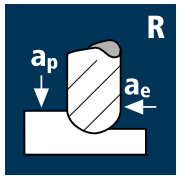
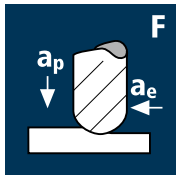
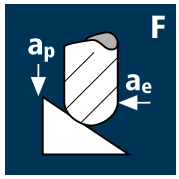


IV

				C Graphite					CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **6072** ø-Code **030**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6072
030	0.30	6.00	0.25	61	0.30	4.50	21.24	0.150	10.7°	2	●
040	0.40	6.00	0.35	61	0.40	6.00	22.46	0.200	9.8°	2	●
050	0.50	6.00	0.45	57	0.50	7.50	18.51	0.250	8.9°	2	●
060	0.60	6.00	0.55	57	0.60	9.00	19.83	0.300	8.4°	2	●
080	0.80	6.00	0.75	61	0.80	12.00	22.45	0.400	7.0°	2	●
100	1.00	6.00	0.95	66	1.00	15.00	25.08	0.500	6.0°	2	●
120	1.50	6.00	1.40	69	1.50	22.50	31.74	0.750	4.3°	2	●
140	2.00	6.00	1.90	75	2.00	30.00	38.31	1.000	3.2°	2	●
180	3.00	6.00	2.80	100	3.00	45.00	51.63	1.500	1.8°	2	●
220	4.00	6.00	3.70	105	4.00	60.00	64.95	2.000	1.0°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.30	2	0.002	0.050	0.060	60	100	120	180
		0.50	2	0.004	0.080	0.100	120	200	240	360
		0.60	2	0.005	0.100	0.100	150	250	300	450
		0.80	2	0.007	0.100	0.150	210	350	420	630
		1.00	2	0.008	0.150	0.200	240	400	480	720
		1.50	2	0.012	0.250	0.300	360	600	720	1080
		2.00	2	0.016	0.300	0.400	480	800	960	1440
		3.00	2	0.025	0.450	0.600	750	1250	1500	2250
		4.00	2	0.033	0.600	0.800	990	1650	1980	2970
	Graphite B	0.30	2	0.003	0.020	0.020	90	150	180	270
		0.50	2	0.005	0.030	0.040	150	250	300	450
		0.60	2	0.006	0.040	0.050	180	300	360	540
		0.80	2	0.007	0.050	0.060	210	350	420	630
		1.00	2	0.009	0.060	0.080	270	450	540	810
		1.50	2	0.014	0.090	0.120	420	700	840	1260
		2.00	2	0.019	0.120	0.160	570	950	1140	1710
		3.00	2	0.028	0.180	0.240	840	1400	1680	2520
		4.00	2	0.037	0.240	0.320	1110	1850	2220	3330
	Graphite B	0.30	2	0.003	0.020	0.020	90	150	180	270
		0.50	2	0.005	0.030	0.030	150	250	300	450
		0.60	2	0.006	0.040	0.040	180	300	360	540
		0.80	2	0.007	0.050	0.050	210	350	420	630
		1.00	2	0.009	0.060	0.060	270	450	540	810
		1.50	2	0.014	0.090	0.090	420	700	840	1260
		2.00	2	0.019	0.120	0.120	570	950	1140	1710
		3.00	2	0.028	0.180	0.180	840	1400	1680	2520
		4.00	2	0.037	0.240	0.240	1110	1850	2220	3330

Ball nose end mills MicrospheroXG

Shank ø 6mm, cylindrical neck, 20xd

X-Generation X

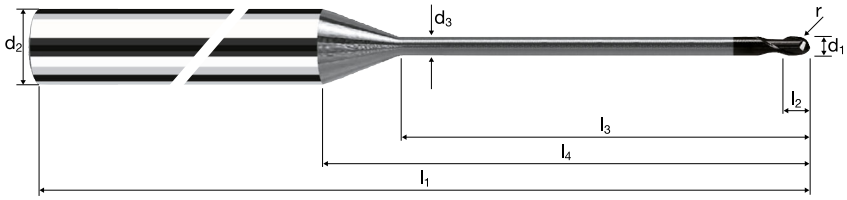
HM
XA

λ 30°
γ 15°

h5

d1

r



IV

C
Graphite

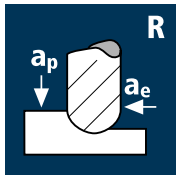
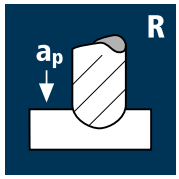
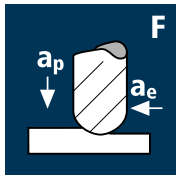
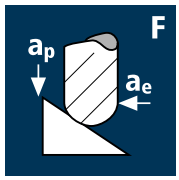
CF/GF
Fiber Reinforced
Plastics

Example:
Order-N°. Coating **B** Article-Nr. **6074** ø-Code **030**

DIAPLUS

B6074

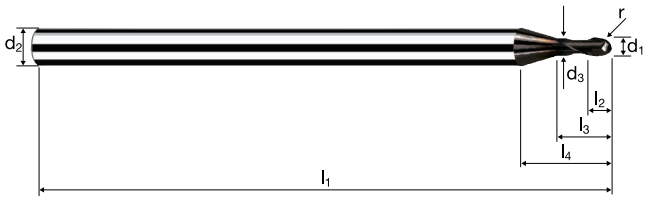
Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	
030	0.30	6.00	0.25	61	0.30	6.00	17.39	0.150	9.8°	2	●
040	0.40	6.00	0.35	61	0.40	8.00	19.20	0.200	8.7°	2	●
050	0.50	6.00	0.45	61	0.50	10.00	21.01	0.250	7.8°	2	●
060	0.60	6.00	0.55	61	0.60	12.00	22.83	0.300	7.1°	2	●
080	0.80	6.00	0.75	66	0.80	16.00	26.45	0.400	5.9°	2	●
100	1.00	6.00	0.95	69	1.00	20.00	30.08	0.500	5.0°	2	●
120	1.50	6.00	1.40	80	1.50	30.00	39.24	0.750	3.4°	2	●
140	2.00	6.00	1.90	87	2.00	40.00	48.31	1.000	2.5°	2	●
180	3.00	6.00	2.80	105	3.00	60.00	66.63	1.500	1.4°	2	●
220	4.00	6.00	3.70	122	4.00	80.00	84.95	2.000	0.7°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.30	2	0.003	0.150	0.200	90	150	180	270
		0.50	2	0.005	0.250	0.300	150	250	300	450
		0.80	2	0.008	0.400	0.500	240	400	480	720
		1.00	2	0.009	0.500	0.600	270	450	540	810
		1.20	2	0.011	0.600	0.700	330	550	660	990
		1.50	2	0.014	0.750	0.900	420	700	840	1260
		2.00	2	0.019	1.000	1.200	570	950	1140	1710
		2.50	2	0.024	1.250	1.500	720	1200	1440	2160
		3.00	2	0.028	1.500	1.800	840	1400	1680	2520
	Graphite B	0.30	2	0.002	0.150	0.300	60	100	120	180
		0.50	2	0.004	0.250	0.500	120	200	240	360
		0.80	2	0.006	0.400	0.800	180	300	360	540
		1.00	2	0.007	0.500	1.000	210	350	420	630
		1.20	2	0.009	0.600	1.200	270	450	540	810
		1.50	2	0.011	0.750	1.500	330	550	660	990
		2.00	2	0.015	1.000	2.000	450	750	900	1350
		2.50	2	0.018	1.250	2.500	540	900	1080	1620
		3.00	2	0.022	1.500	3.000	660	1100	1320	1980
	Graphite B	0.30	2	0.003	0.050	0.060	90	150	180	270
		0.50	2	0.005	0.080	0.100	150	250	300	450
		0.80	2	0.009	0.120	0.160	270	450	540	810
		1.00	2	0.011	0.150	0.200	330	550	660	990
		1.20	2	0.013	0.180	0.240	390	650	780	1170
		1.50	2	0.016	0.230	0.300	480	800	960	1440
		2.00	2	0.021	0.300	0.400	630	1050	1260	1890
		2.50	2	0.027	0.380	0.500	810	1350	1620	2430
		3.00	2	0.032	0.450	0.600	960	1600	1920	2880
	Graphite B	0.30	2	0.003	0.060	0.060	90	150	180	270
		0.50	2	0.005	0.100	0.100	150	250	300	450
		0.80	2	0.009	0.160	0.160	270	450	540	810
		1.00	2	0.011	0.200	0.200	330	550	660	990
		1.20	2	0.013	0.240	0.240	390	650	780	1170
		1.50	2	0.016	0.300	0.300	480	800	960	1440
		2.00	2	0.021	0.400	0.400	630	1050	1260	1890
		2.50	2	0.027	0.500	0.500	810	1350	1620	2430
		3.00	2	0.032	0.600	0.600	960	1600	1920	2880

Ball nose end mills Microcut-B3

Shank ø 3mm, cylindrical neck, 3xd

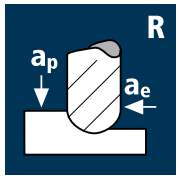
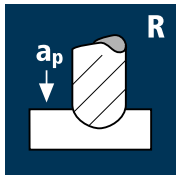
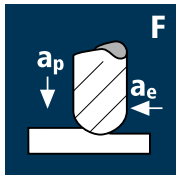
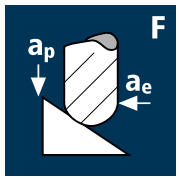
HM MG10	λ 30° γ 5°



				C Graphite					CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **5782** ø-Code **020**

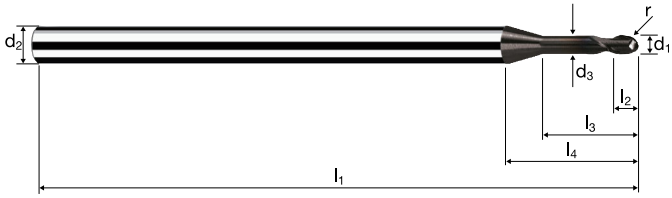
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	DIAMANT B5782
020	0.20	3.00	0.18	40	0.24	0.60	8.86	0.100	9.4°	2	●
030	0.30	3.00	0.25	40	0.36	0.90	8.96	0.150	9.0°	2	●
040	0.40	3.00	0.35	40	0.48	1.20	8.98	0.200	8.7°	2	●
050	0.50	3.00	0.45	40	0.60	1.50	6.65	0.250	11.8°	2	●
060	0.60	3.00	0.55	40	0.72	1.80	6.77	0.300	11.2°	2	●
080	0.80	3.00	0.75	40	0.96	2.40	6.99	0.400	10.1°	2	●
100	1.00	3.00	0.95	50	1.20	3.00	7.22	0.500	9.0°	2	●
108	1.20	3.00	1.10	50	1.44	3.60	7.54	0.600	7.9°	2	●
120	1.50	3.00	1.40	50	1.80	4.50	7.88	0.750	6.5°	2	●
140	2.00	3.00	1.90	50	2.40	6.00	8.45	1.000	4.1°	2	●
160	2.50	3.00	2.30	50	3.00	7.50	9.20	1.250	2.0°	2	●
180	3.00	3.00	2.80	50	3.60	8.56	9.00	1.500	0.0°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.50	2	0.005	0.250	0.300	150	250	300	450
		0.60	2	0.006	0.250	0.350	180	300	360	540
		0.80	2	0.008	0.350	0.500	240	400	480	720
		1.00	2	0.009	0.450	0.600	270	450	540	810
		1.20	2	0.011	0.550	0.700	330	550	660	990
		1.50	2	0.014	0.700	0.900	420	700	840	1260
		2.00	2	0.019	0.900	1.200	570	950	1140	1710
		2.50	2	0.024	1.150	1.500	720	1200	1440	2160
		3.00	2	0.028	1.350	1.800	840	1400	1680	2520
	Graphite B	0.50	2	0.004	0.250	0.500	120	200	240	360
		0.60	2	0.004	0.250	0.600	120	200	240	360
		0.80	2	0.006	0.350	0.800	180	300	360	540
		1.00	2	0.007	0.450	1.000	210	350	420	630
		1.20	2	0.009	0.550	1.200	270	450	540	810
		1.50	2	0.011	0.700	1.500	330	550	660	990
		2.00	2	0.015	0.900	2.000	450	750	900	1350
		2.50	2	0.018	1.150	2.500	540	900	1080	1620
		3.00	2	0.022	1.350	3.000	660	1100	1320	1980
	Graphite B	0.50	2	0.005	0.070	0.100	150	250	300	450
		0.60	2	0.006	0.080	0.120	180	300	360	540
		0.80	2	0.009	0.110	0.160	270	450	540	810
		1.00	2	0.011	0.140	0.200	330	550	660	990
		1.20	2	0.013	0.170	0.240	390	650	780	1170
		1.50	2	0.016	0.210	0.300	480	800	960	1440
		2.00	2	0.021	0.280	0.400	630	1050	1260	1890
		2.50	2	0.027	0.350	0.500	810	1350	1620	2430
		3.00	2	0.032	0.420	0.600	960	1600	1920	2880
	Graphite B	0.50	2	0.005	0.090	0.090	150	250	300	450
		0.60	2	0.006	0.110	0.110	180	300	360	540
		0.80	2	0.009	0.140	0.140	270	450	540	810
		1.00	2	0.011	0.180	0.180	330	550	660	990
		1.20	2	0.013	0.220	0.220	390	650	780	1170
		1.50	2	0.016	0.270	0.270	480	800	960	1440
		2.00	2	0.021	0.360	0.360	630	1050	1260	1890
		2.50	2	0.027	0.450	0.450	810	1350	1620	2430
		3.00	2	0.032	0.540	0.540	960	1600	1920	2880

Ball nose end mills Microcut-B5

Shank ø 3mm, cylindrical neck, 5xd

HM MG10	λ 30° γ 5°



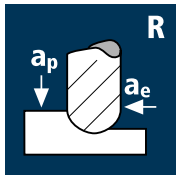
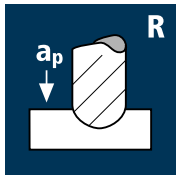
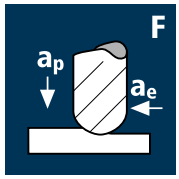
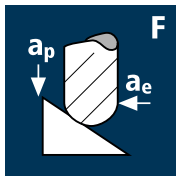
C Graphite

CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **5784** ø-Code **050**

DIAMANT **B5784**

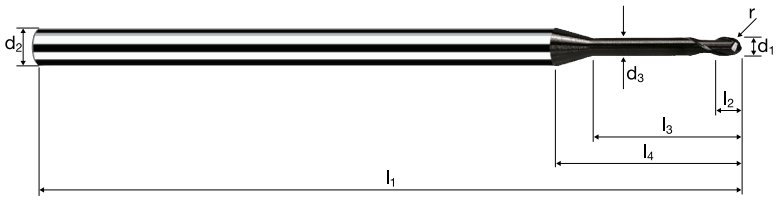
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	
050	0.50	3.00	0.45	40	0.60	2.50	7.65	0.250	10.1°	2	●
060	0.60	3.00	0.55	40	0.72	3.00	7.97	0.300	9.4°	2	●
070	0.70	3.00	0.65	40	0.84	3.50	8.28	0.350	8.7°	2	●
080	0.80	3.00	0.75	40	0.96	4.00	8.59	0.400	8.1°	2	●
090	0.90	3.00	0.85	40	1.08	4.50	8.91	0.450	7.4°	2	●
100	1.00	3.00	0.95	50	1.20	5.00	9.22	0.500	6.9°	2	●
108	1.20	3.00	1.10	50	1.44	6.00	9.94	0.600	5.8°	2	●
120	1.50	3.00	1.40	50	1.80	7.50	10.88	0.750	4.5°	2	●
132	1.80	3.00	1.70	50	2.16	9.00	11.82	0.900	3.3°	2	●
140	2.00	3.00	1.90	50	2.40	10.00	12.45	1.000	2.7°	2	●
152	2.30	3.00	2.10	50	2.76	11.50	13.57	1.150	1.8°	2	●
160	2.50	3.00	2.30	50	3.00	12.50	14.20	1.250	1.2°	2	●
172	2.80	3.00	2.60	50	3.36	14.00	15.14	1.400	0.5°	2	●
180	3.00	3.00	2.80	50	3.60	14.56	15.00	1.500	0.0°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.50	2	0.005	0.200	0.300	150	250	300	450
		0.60	2	0.006	0.250	0.350	180	300	360	540
		0.80	2	0.008	0.300	0.500	240	400	480	720
		1.00	2	0.009	0.400	0.600	270	450	540	810
		1.20	2	0.011	0.500	0.700	330	550	660	990
		1.50	2	0.014	0.600	0.900	420	700	840	1260
		2.00	2	0.019	0.800	1.200	570	950	1140	1710
		2.50	2	0.024	1.000	1.500	720	1200	1440	2160
		3.00	2	0.028	1.200	1.800	840	1400	1680	2520
	Graphite B	0.50	2	0.004	0.200	0.500	120	200	240	360
		0.60	2	0.004	0.250	0.600	120	200	240	360
		0.80	2	0.006	0.300	0.800	180	300	360	540
		1.00	2	0.007	0.400	1.000	210	350	420	630
		1.20	2	0.009	0.500	1.200	270	450	540	810
		1.50	2	0.011	0.600	1.500	330	550	660	990
		2.00	2	0.015	0.800	2.000	450	750	900	1350
		2.50	2	0.018	1.000	2.500	540	900	1080	1620
		3.00	2	0.022	1.200	3.000	660	1100	1320	1980
	Graphite B	0.50	2	0.005	0.060	0.090	150	250	300	450
		0.60	2	0.006	0.070	0.110	180	300	360	540
		0.80	2	0.009	0.100	0.140	270	450	540	810
		1.00	2	0.011	0.120	0.180	330	550	660	990
		1.20	2	0.013	0.140	0.220	390	650	780	1170
		1.50	2	0.016	0.180	0.270	480	800	960	1440
		2.00	2	0.021	0.240	0.360	630	1050	1260	1890
		2.50	2	0.027	0.300	0.450	810	1350	1620	2430
		3.00	2	0.032	0.360	0.540	960	1600	1920	2880
	Graphite B	0.50	2	0.005	0.080	0.080	150	250	300	450
		0.60	2	0.006	0.100	0.100	180	300	360	540
		0.80	2	0.009	0.130	0.130	270	450	540	810
		1.00	2	0.011	0.160	0.160	330	550	660	990
		1.20	2	0.013	0.190	0.190	390	650	780	1170
		1.50	2	0.016	0.240	0.240	480	800	960	1440
		2.00	2	0.021	0.320	0.320	630	1050	1260	1890
		2.50	2	0.027	0.400	0.400	810	1350	1620	2430
		3.00	2	0.032	0.480	0.480	960	1600	1920	2880

Ball nose end mills Microcut-B8

Shank ø 3mm, cylindrical neck, 8xd

HM MG10	λ 30° γ 5°



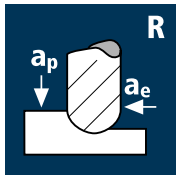
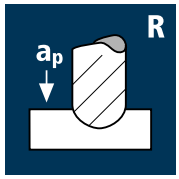
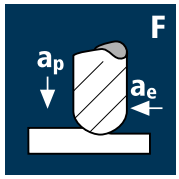
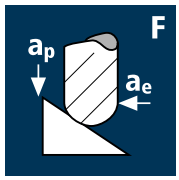
C Graphite

CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **5786** ø-Code **050**

DIAMANT **B5786**

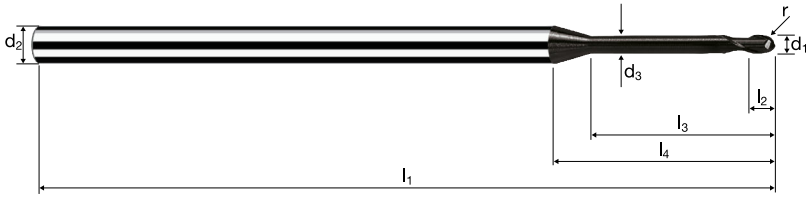
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	
050	0.50	3.00	0.45	40	0.60	4.00	9.15	0.250	8.4°	2	●
060	0.60	3.00	0.55	40	0.72	4.80	9.77	0.300	7.6°	2	●
080	0.80	3.00	0.75	40	0.96	6.40	10.99	0.400	6.2°	2	●
100	1.00	3.00	0.95	50	1.20	8.00	12.22	0.500	5.1°	2	●
108	1.20	3.00	1.10	50	1.44	9.60	13.54	0.600	4.2°	2	●
120	1.50	3.00	1.40	60	1.80	12.00	15.38	0.750	3.1°	2	●
140	2.00	3.00	1.90	60	2.40	16.00	18.45	1.000	1.7°	2	●
160	2.50	3.00	2.30	60	3.00	20.00	21.70	1.250	0.8°	2	●
180	3.00	3.00	2.80	60	3.60	23.56	24.00	1.500	0.0°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.50	2	0.005	0.200	0.200	150	250	300	450
		0.60	2	0.006	0.250	0.250	180	300	360	540
		0.80	2	0.008	0.300	0.300	240	400	480	720
		1.00	2	0.009	0.400	0.400	270	450	540	810
		1.20	2	0.011	0.500	0.500	330	550	660	990
		1.50	2	0.014	0.600	0.600	420	700	840	1260
		2.00	2	0.019	0.800	0.800	570	950	1140	1710
		2.50	2	0.024	1.000	1.000	720	1200	1440	2160
		3.00	2	0.028	1.200	1.200	840	1400	1680	2520
	Graphite B	0.50	2	0.003	0.150	0.500	90	150	180	270
		0.60	2	0.003	0.200	0.600	90	150	180	270
		0.80	2	0.004	0.250	0.800	120	200	240	360
		1.00	2	0.005	0.300	1.000	150	250	300	450
		1.20	2	0.007	0.350	1.200	210	350	420	630
		1.50	2	0.008	0.450	1.500	240	400	480	720
		2.00	2	0.011	0.600	2.000	330	550	660	990
		2.50	2	0.014	0.750	2.500	420	700	840	1260
		3.00	2	0.016	0.900	3.000	480	800	960	1440
	Graphite B	0.50	2	0.005	0.050	0.080	150	250	300	450
		0.60	2	0.006	0.060	0.100	180	300	360	540
		0.80	2	0.009	0.080	0.130	270	450	540	810
		1.00	2	0.011	0.100	0.160	330	550	660	990
		1.20	2	0.013	0.120	0.190	390	650	780	1170
		1.50	2	0.016	0.150	0.240	480	800	960	1440
		2.00	2	0.021	0.200	0.320	630	1050	1260	1890
		2.50	2	0.027	0.250	0.400	810	1350	1620	2430
		3.00	2	0.032	0.300	0.480	960	1600	1920	2880
	Graphite B	0.50	2	0.005	0.070	0.070	150	250	300	450
		0.60	2	0.006	0.080	0.080	180	300	360	540
		0.80	2	0.009	0.110	0.110	270	450	540	810
		1.00	2	0.011	0.140	0.140	330	550	660	990
		1.20	2	0.013	0.170	0.170	390	650	780	1170
		1.50	2	0.016	0.210	0.210	480	800	960	1440
		2.00	2	0.021	0.280	0.280	630	1050	1260	1890
		2.50	2	0.027	0.350	0.350	810	1350	1620	2430
		3.00	2	0.032	0.420	0.420	960	1600	1920	2880

Ball nose end mills Microcut-B10

Shank ø 3mm, cylindrical neck, 10xd

HM MG10	λ 30° γ 5°



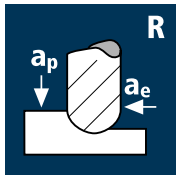
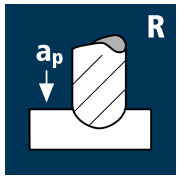
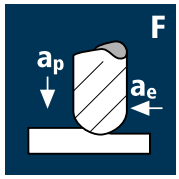
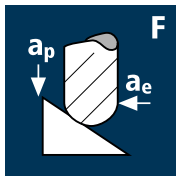
C Graphite

CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **5787** ø-Code **050**

DIAMANT **B5787**

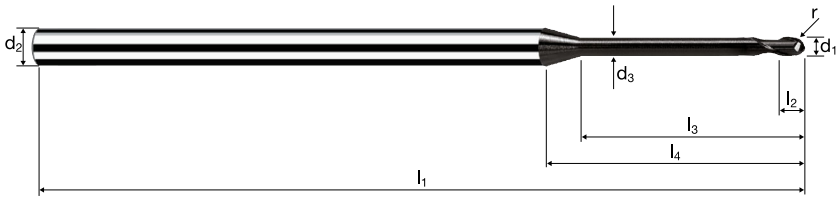
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	
050	0.50	3.00	0.45	40	0.60	5.00	10.15	0.250	7.5°	2	●
060	0.60	3.00	0.55	40	0.72	6.00	10.97	0.300	6.7°	2	●
080	0.80	3.00	0.75	40	0.96	8.00	12.59	0.400	5.4°	2	●
100	1.00	3.00	0.95	50	1.20	10.00	14.22	0.500	4.3°	2	●
108	1.20	3.00	1.10	50	1.44	12.00	15.94	0.600	3.5°	2	●
120	1.50	3.00	1.40	60	1.80	15.00	18.38	0.750	2.6°	2	●
140	2.00	3.00	1.90	60	2.40	20.00	22.45	1.000	1.4°	2	●
160	2.50	3.00	2.30	60	3.00	25.00	26.70	1.250	0.6°	2	●
180	3.00	3.00	2.80	60	3.60	29.56	30.00	1.500	0.0°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	1.00	2	0.007	0.300	0.400	210	350	420	630
		1.20	2	0.008	0.350	0.500	240	400	480	720
		1.50	2	0.011	0.450	0.600	330	550	660	990
		2.00	2	0.014	0.600	0.800	420	700	840	1260
		2.50	2	0.018	0.750	1.000	540	900	1080	1620
		3.00	2	0.021	0.900	1.200	630	1050	1260	1890
	Graphite B	1.00	2	0.005	0.200	1.000	150	250	300	450
		1.20	2	0.007	0.250	1.200	210	350	420	630
		1.50	2	0.008	0.300	1.500	240	400	480	720
		2.00	2	0.011	0.400	2.000	330	550	660	990
		2.50	2	0.014	0.500	2.500	420	700	840	1260
		3.00	2	0.016	0.600	3.000	480	800	960	1440
	Graphite B	1.00	2	0.008	0.100	0.140	240	400	480	720
		1.20	2	0.010	0.120	0.170	300	500	600	900
		1.50	2	0.012	0.150	0.210	360	600	720	1080
		2.00	2	0.016	0.200	0.280	480	800	960	1440
		2.50	2	0.020	0.250	0.350	600	1000	1200	1800
		3.00	2	0.024	0.300	0.420	720	1200	1440	2160
	Graphite B	1.00	2	0.008	0.100	0.100	240	400	480	720
		1.20	2	0.010	0.120	0.120	300	500	600	900
		1.50	2	0.012	0.150	0.150	360	600	720	1080
		2.00	2	0.016	0.200	0.200	480	800	960	1440
		2.50	2	0.020	0.250	0.250	600	1000	1200	1800
		3.00	2	0.024	0.300	0.300	720	1200	1440	2160

Ball nose end mills Microcut-B12

Shank ø 3mm, cylindrical neck, 12xd

HM MG10	λ 30° γ 5°



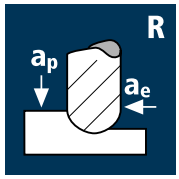
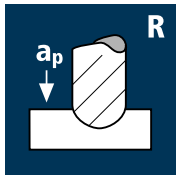
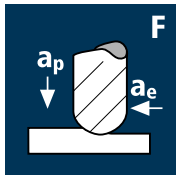
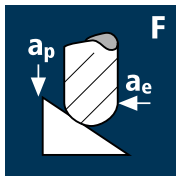
C Graphite

CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **5791** ø-Code **100**

DIAMANT **B5791**

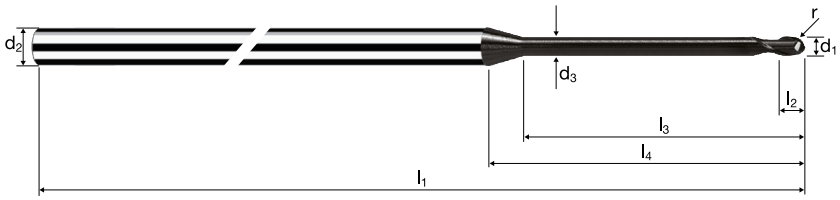
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	
100	1.00	3.00	0.95	50	1.20	12.00	16.22	0.500	3.8°	2	●
108	1.20	3.00	1.10	60	1.44	14.40	18.34	0.600	3.0°	2	●
120	1.50	3.00	1.40	60	1.80	18.00	21.38	0.750	2.2°	2	●
140	2.00	3.00	1.90	60	2.40	24.00	26.45	1.000	1.2°	2	●
160	2.50	3.00	2.30	70	3.00	30.00	31.70	1.250	0.5°	2	●
180	3.00	3.00	2.80	70	3.60	35.56	36.00	1.500	0.0°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	1.00	2	0.007	0.200	0.300	210	350	420	630
		1.20	2	0.008	0.250	0.350	240	400	480	720
		1.50	2	0.011	0.300	0.450	330	550	660	990
		2.00	2	0.014	0.400	0.600	420	700	840	1260
		2.50	2	0.018	0.500	0.750	540	900	1080	1620
		3.00	2	0.021	0.600	0.900	630	1050	1260	1890
	Graphite B	1.00	2	0.005	0.100	1.000	150	250	300	450
		1.20	2	0.007	0.100	1.200	210	350	420	630
		1.50	2	0.008	0.150	1.500	240	400	480	720
		2.00	2	0.011	0.200	2.000	330	550	660	990
		2.50	2	0.014	0.250	2.500	420	700	840	1260
		3.00	2	0.016	0.300	3.000	480	800	960	1440
	Graphite B	1.00	2	0.008	0.080	0.100	240	400	480	720
		1.20	2	0.010	0.100	0.120	300	500	600	900
		1.50	2	0.012	0.120	0.150	360	600	720	1080
		2.00	2	0.016	0.160	0.200	480	800	960	1440
		2.50	2	0.020	0.200	0.250	600	1000	1200	1800
		3.00	2	0.024	0.240	0.300	720	1200	1440	2160
	Graphite B	1.00	2	0.008	0.080	0.080	240	400	480	720
		1.20	2	0.010	0.100	0.100	300	500	600	900
		1.50	2	0.012	0.120	0.120	360	600	720	1080
		2.00	2	0.016	0.160	0.160	480	800	960	1440
		2.50	2	0.020	0.200	0.200	600	1000	1200	1800
		3.00	2	0.024	0.240	0.240	720	1200	1440	2160

Ball nose end mills Microcut-B15

Shank ø 3mm, cylindrical neck, 15xd

HM MG10	λ 30° γ 5°

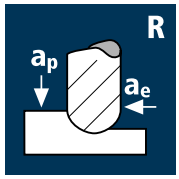
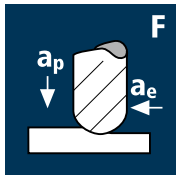
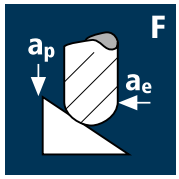


C Graphite

CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **5793** ø-Code **100**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	DIAMANT B5793
100	1.00	3.00	0.95	60	1.20	15.00	19.22	0.500	3.2°	2	●
108	1.20	3.00	1.10	60	1.44	18.00	21.94	0.600	2.5°	2	●
120	1.50	3.00	1.40	70	1.80	22.50	25.88	0.750	1.8°	2	●
140	2.00	3.00	1.90	70	2.40	30.00	32.45	1.000	1.0°	2	●
160	2.50	3.00	2.30	70	3.00	37.50	39.20	1.250	0.4°	2	●
180	3.00	3.00	2.80	80	3.60	44.56	45.00	1.500	0.0°	2	●

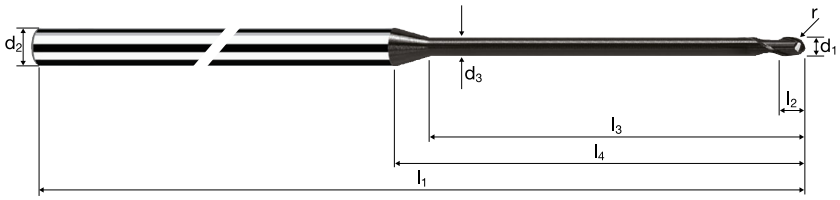
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	1.00	2	0.007	0.150	0.200	210	350	420	630
		1.20	2	0.008	0.200	0.250	240	400	480	720
		1.50	2	0.011	0.250	0.300	330	550	660	990
		2.00	2	0.014	0.300	0.400	420	700	840	1260
		2.50	2	0.018	0.400	0.500	540	900	1080	1620
		3.00	2	0.021	0.450	0.600	630	1050	1260	1890
	Graphite B	1.00	2	0.008	0.060	0.080	240	400	480	720
		1.20	2	0.010	0.070	0.100	300	500	600	900
		1.50	2	0.012	0.090	0.120	360	600	720	1080
		2.00	2	0.016	0.120	0.160	480	800	960	1440
		2.50	2	0.020	0.150	0.200	600	1000	1200	1800
		3.00	2	0.024	0.180	0.240	720	1200	1440	2160
	Graphite B	1.00	2	0.008	0.060	0.060	240	400	480	720
		1.20	2	0.010	0.070	0.070	300	500	600	900
		1.50	2	0.012	0.090	0.090	360	600	720	1080
		2.00	2	0.016	0.120	0.120	480	800	960	1440
		2.50	2	0.020	0.150	0.150	600	1000	1200	1800
		3.00	2	0.024	0.180	0.180	720	1200	1440	2160

Ball nose end mills Microcut-B20

Shank ø 3mm, cylindrical neck, 20xd

HM MG10

λ 30°
γ 5°

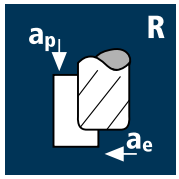
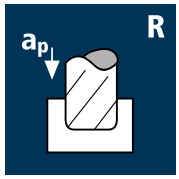
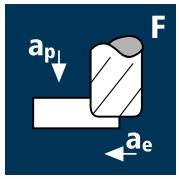
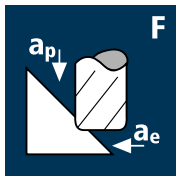


C Graphite

CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **15795** ø-Code **100**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	DIAMANT B15795
100	1.00	3.00	0.95	60	1.20	20.00	24.22	0.500	2.5°	2	●
108	1.20	3.00	1.10	60	1.44	24.00	27.94	0.600	2.0°	2	●
120	1.50	3.00	1.40	70	1.80	30.00	33.38	0.750	1.4°	2	●
140	2.00	3.00	1.90	80	2.40	40.00	42.45	1.000	0.8°	2	●
160	2.50	3.00	2.30	80	3.00	50.00	51.70	1.250	0.3°	2	●
180	3.00	3.00	2.80	90	3.60	59.56	60.00	1.500	0.0°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite	1.50	2	0.018	0.750	0.900	540	900	1080	1620
		2.00	2	0.024	1.000	1.200	720	1200	1440	2160
		3.00	2	0.035	1.500	1.800	1050	1750	2100	3150
		4.00	2	0.047	2.000	2.400	1410	2350	2820	4230
		5.00	2	0.059	2.500	3.000	1770	2950	3540	5310
		6.00	2	0.071	3.000	3.600	2130	3550	4260	6390
	Graphite	1.50	2	0.014	0.750	1.500	420	700	840	1260
		2.00	2	0.018	1.000	2.000	540	900	1080	1620
		3.00	2	0.027	1.500	3.000	810	1350	1620	2430
		4.00	2	0.036	2.000	4.000	1080	1800	2160	3240
		5.00	2	0.045	2.500	5.000	1350	2250	2700	4050
		6.00	2	0.055	3.000	6.000	1650	2750	3300	4950
	Graphite	1.50	2	0.020	0.230	0.300	600	1000	1200	1800
		2.00	2	0.027	0.300	0.400	810	1350	1620	2430
		3.00	2	0.040	0.450	0.600	1200	2000	2400	3600
		4.00	2	0.053	0.600	0.800	1590	2650	3180	4770
		5.00	2	0.067	0.750	1.000	2010	3350	4020	6030
		6.00	2	0.080	0.900	1.200	2400	4000	4800	7200
	Graphite	1.50	2	0.020	0.300	0.300	600	1000	1200	1800
		2.00	2	0.027	0.400	0.400	810	1350	1620	2430
		3.00	2	0.040	0.600	0.600	1200	2000	2400	3600
		4.00	2	0.053	0.800	0.800	1590	2650	3180	4770
		5.00	2	0.067	1.000	1.000	2010	3350	4020	6030
		6.00	2	0.080	1.200	1.200	2400	4000	4800	7200

Corner radius end mills MicrotoroXG

Shank ø 6mm, cylindrical neck, 3xd

X-Generation X

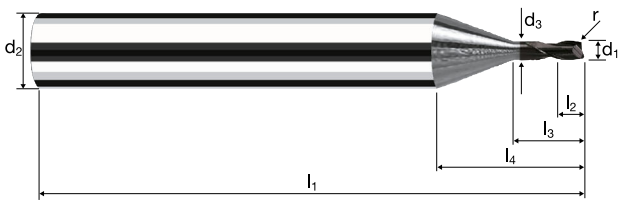
HM
XA

λ 30°
γ 15°

h5

d1

r



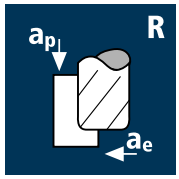
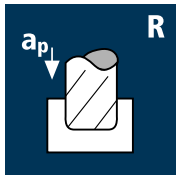
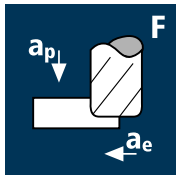
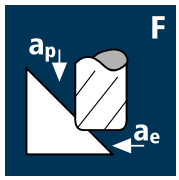
IV

C
Graphite

CF / GF
Fiber Reinforced
Plastics

Example:
Order-N°. Coating **B** Article-Nr. **6032** ø-Code **120**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6032
120	1.50	6.00	1.40	57	1.50	4.50	13.74	0.200	10.0°	2	●
140	2.00	6.00	1.90	57	2.00	6.00	14.31	0.200	8.6°	2	●
180	3.00	6.00	2.80	57	3.00	9.00	15.63	0.200	6.0°	2	●
215	4.00	6.00	3.70	57	4.00	12.00	16.95	0.200	3.7°	2	●
255	5.00	6.00	4.60	57	5.00	15.00	18.27	0.200	1.8°	2	●
295	6.00	6.00	5.50	57	6.00	17.34	18.00	0.200	0.0°	2	●
220	4.00	6.00	3.70	57	4.00	12.00	16.95	0.500	3.7°	2	●
260	5.00	6.00	4.60	57	5.00	15.00	18.27	0.500	2.0°	2	●
300	6.00	6.00	5.50	57	6.00	17.34	18.00	0.500	0.0°	2	●

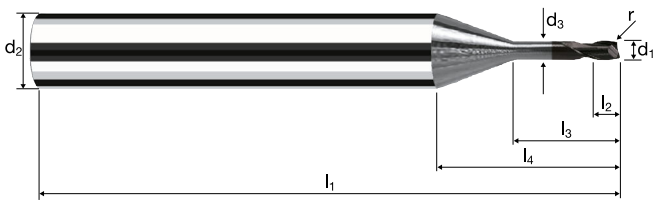
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.20	2	0.002	0.100	0.100	60	100	120	180
		0.30	2	0.004	0.150	0.200	120	200	240	360
		0.40	2	0.005	0.200	0.250	150	250	300	450
		0.50	2	0.006	0.250	0.300	180	300	360	540
		0.60	2	0.007	0.250	0.350	210	350	420	630
		0.80	2	0.009	0.350	0.500	270	450	540	810
		1.00	2	0.012	0.450	0.600	360	600	720	1080
		2.00	2	0.024	0.900	1.200	720	1200	1440	2160
	Graphite B	0.20	2	0.002	0.100	0.200	60	100	120	180
		0.30	2	0.003	0.150	0.300	90	150	180	270
		0.40	2	0.004	0.200	0.400	120	200	240	360
		0.50	2	0.005	0.250	0.500	150	250	300	450
		0.60	2	0.005	0.250	0.600	150	250	300	450
		0.80	2	0.007	0.350	0.800	210	350	420	630
		1.00	2	0.009	0.450	1.000	270	450	540	810
		2.00	2	0.018	0.900	2.000	540	900	1080	1620
	Graphite B	0.20	2	0.003	0.030	0.040	90	150	180	270
		0.30	2	0.004	0.040	0.060	120	200	240	360
		0.40	2	0.005	0.060	0.080	150	250	300	450
		0.50	2	0.007	0.070	0.100	210	350	420	630
		0.60	2	0.008	0.080	0.120	240	400	480	720
		0.80	2	0.011	0.110	0.160	330	550	660	990
		1.00	2	0.013	0.140	0.200	390	650	780	1170
		2.00	2	0.027	0.280	0.400	810	1350	1620	2430
	Graphite B	0.20	2	0.003	0.040	0.040	90	150	180	270
		0.30	2	0.004	0.050	0.050	120	200	240	360
		0.40	2	0.005	0.070	0.070	150	250	300	450
		0.50	2	0.007	0.090	0.090	210	350	420	630
		0.60	2	0.008	0.110	0.110	240	400	480	720
		0.80	2	0.011	0.140	0.140	330	550	660	990
		1.00	2	0.013	0.180	0.180	390	650	780	1170
		2.00	2	0.027	0.360	0.360	810	1350	1620	2430

Corner radius end mills MicrotoroXG

Shank ø 6mm, cylindrical neck, 5xd

X-Generation X

HM XA	λ 30° γ 15°

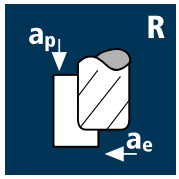
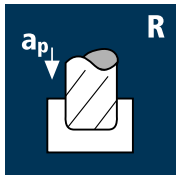
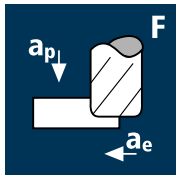
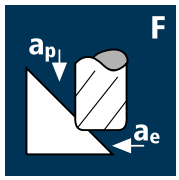


IV

				C Graphite					CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **6034** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6034
020	0.20	6.00	0.18	57	0.20	1.00	17.94	-	13.8°	2	●
030	0.30	6.00	0.25	57	0.30	1.50	18.24	-	13.2°	2	●
018	0.20	6.00	0.18	57	0.20	1.00	17.94	0.050	13.8°	2	●
028	0.30	6.00	0.25	57	0.30	1.50	18.24	0.050	13.2°	2	●
040	0.40	6.00	0.35	57	0.40	2.00	18.46	0.050	12.7°	2	●
048	0.50	6.00	0.45	57	0.50	2.50	13.51	0.050	12.2°	2	●
058	0.60	6.00	0.55	57	0.60	3.00	13.83	0.050	11.7°	2	●
078	0.80	6.00	0.75	57	0.80	4.00	14.45	0.050	10.8°	2	●
096	1.00	6.00	0.95	57	1.00	5.00	15.08	0.050	9.9°	2	●
050	0.50	6.00	0.45	57	0.50	2.50	13.51	0.100	12.2°	2	●
060	0.60	6.00	0.55	57	0.60	3.00	13.83	0.100	11.7°	2	●
080	0.80	6.00	0.75	57	0.80	4.00	14.45	0.100	10.8°	2	●
098	1.00	6.00	0.95	57	1.00	5.00	15.08	0.100	9.9°	2	●
138	2.00	6.00	1.90	57	2.00	10.00	18.31	0.100	6.5°	2	●

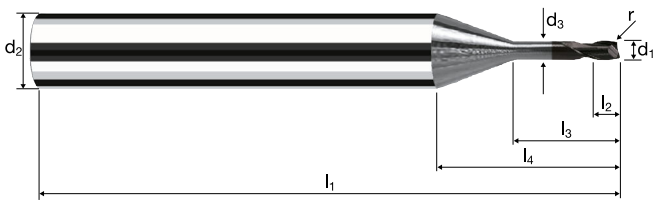
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.80	2	0.009	0.350	0.500	270	450	540	810
		1.00	2	0.012	0.450	0.600	360	600	720	1080
		1.50	2	0.018	0.700	0.900	540	900	1080	1620
		2.00	2	0.024	0.900	1.200	720	1200	1440	2160
		3.00	2	0.035	1.350	1.800	1050	1750	2100	3150
		4.00	2	0.047	1.800	2.400	1410	2350	2820	4230
		5.00	2	0.059	2.250	3.000	1770	2950	3540	5310
		6.00	2	0.071	2.700	3.600	2130	3550	4260	6390
	Graphite B	0.80	2	0.007	0.350	0.800	210	350	420	630
		1.00	2	0.009	0.450	1.000	270	450	540	810
		1.50	2	0.014	0.700	1.500	420	700	840	1260
		2.00	2	0.018	0.900	2.000	540	900	1080	1620
		3.00	2	0.027	1.350	3.000	810	1350	1620	2430
		4.00	2	0.036	1.800	4.000	1080	1800	2160	3240
		5.00	2	0.045	2.250	5.000	1350	2250	2700	4050
		6.00	2	0.055	2.700	6.000	1650	2750	3300	4950
	Graphite B	0.80	2	0.011	0.110	0.160	330	550	660	990
		1.00	2	0.013	0.140	0.200	390	650	780	1170
		1.50	2	0.020	0.210	0.300	600	1000	1200	1800
		2.00	2	0.027	0.280	0.400	810	1350	1620	2430
		3.00	2	0.040	0.420	0.600	1200	2000	2400	3600
		4.00	2	0.053	0.560	0.800	1590	2650	3180	4770
		5.00	2	0.067	0.700	1.000	2010	3350	4020	6030
		6.00	2	0.080	0.840	1.200	2400	4000	4800	7200
	Graphite B	0.80	2	0.011	0.140	0.140	330	550	660	990
		1.00	2	0.013	0.180	0.180	390	650	780	1170
		1.50	2	0.020	0.270	0.270	600	1000	1200	1800
		2.00	2	0.027	0.360	0.360	810	1350	1620	2430
		3.00	2	0.040	0.540	0.540	1200	2000	2400	3600
		4.00	2	0.053	0.720	0.720	1590	2650	3180	4770
		5.00	2	0.067	0.900	0.900	2010	3350	4020	6030
		6.00	2	0.080	1.080	1.080	2400	4000	4800	7200

Corner radius end mills MicrotoroXG

Shank ø 6mm, cylindrical neck, 5xd

X-Generation X

HM XA	λ 30° γ 15°



IV

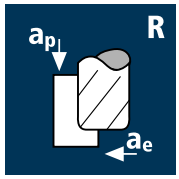
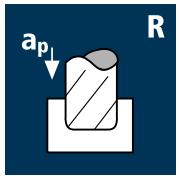
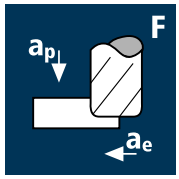
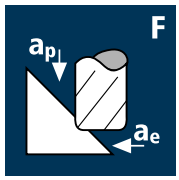
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **6034** ø-Code **082**

DIAPLUS **B6034**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	
082	0.80	6.00	0.75	57	0.80	4.00	14.45	0.200	10.9°	2	●
100	1.00	6.00	0.95	57	1.00	5.00	15.08	0.200	9.9°	2	●
120	1.50	6.00	1.40	57	1.50	7.50	16.74	0.200	8.1°	2	●
140	2.00	6.00	1.90	57	2.00	10.00	18.31	0.200	6.6°	2	●
180	3.00	6.00	2.80	57	3.00	15.00	21.63	0.200	4.2°	2	●
182	3.00	6.00	2.80	61	3.00	18.00	24.63	0.200	3.7°	2	●
215	4.00	6.00	3.70	61	4.00	20.00	24.95	0.200	2.5°	2	●
217	4.00	6.00	3.70	66	4.00	25.00	29.95	0.200	2.0°	2	●
255	5.00	6.00	4.60	66	5.00	25.00	28.27	0.200	1.1°	2	●
295	6.00	6.00	5.50	69	6.00	29.34	30.00	0.200	0.0°	2	●
185	3.00	6.00	2.80	61	3.00	15.00	21.63	0.500	4.2°	2	●
220	4.00	6.00	3.70	61	4.00	20.00	24.95	0.500	2.6°	2	●
222	4.00	6.00	3.70	66	4.00	25.00	29.95	0.500	2.1°	2	●
260	5.00	6.00	4.60	66	5.00	25.00	28.27	0.500	1.1°	2	●
300	6.00	6.00	5.50	69	6.00	29.34	30.00	0.500	0.0°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.20	2	0.002	0.100	0.100	60	100	120	180
		0.30	2	0.004	0.100	0.200	120	200	240	360
		0.40	2	0.005	0.150	0.250	150	250	300	450
		0.50	2	0.006	0.200	0.300	180	300	360	540
		0.60	2	0.007	0.250	0.350	210	350	420	630
		0.80	2	0.009	0.300	0.500	270	450	540	810
		1.00	2	0.012	0.400	0.600	360	600	720	1080
		2.00	2	0.024	0.800	1.200	720	1200	1440	2160
	Graphite B	0.20	2	0.002	0.100	0.200	60	100	120	180
		0.30	2	0.003	0.100	0.300	90	150	180	270
		0.40	2	0.004	0.150	0.400	120	200	240	360
		0.50	2	0.005	0.200	0.500	150	250	300	450
		0.60	2	0.005	0.250	0.600	150	250	300	450
		0.80	2	0.007	0.300	0.800	210	350	420	630
		1.00	2	0.009	0.400	1.000	270	450	540	810
		2.00	2	0.018	0.800	2.000	540	900	1080	1620
	Graphite B	0.20	2	0.003	0.020	0.040	90	150	180	270
		0.30	2	0.004	0.040	0.050	120	200	240	360
		0.40	2	0.005	0.050	0.070	150	250	300	450
		0.50	2	0.007	0.060	0.090	210	350	420	630
		0.60	2	0.008	0.070	0.110	240	400	480	720
		0.80	2	0.011	0.100	0.140	330	550	660	990
		1.00	2	0.013	0.120	0.180	390	650	780	1170
		2.00	2	0.027	0.240	0.360	810	1350	1620	2430
	Graphite B	0.20	2	0.003	0.030	0.030	90	150	180	270
		0.30	2	0.004	0.050	0.050	120	200	240	360
		0.40	2	0.005	0.060	0.060	150	250	300	450
		0.50	2	0.007	0.080	0.080	210	350	420	630
		0.60	2	0.008	0.100	0.100	240	400	480	720
		0.80	2	0.011	0.130	0.130	330	550	660	990
		1.00	2	0.013	0.160	0.160	390	650	780	1170
		2.00	2	0.027	0.320	0.320	810	1350	1620	2430

Corner radius end mills MicrotoroXG

Shank ø 6mm, cylindrical neck, 8xd

X-Generation X

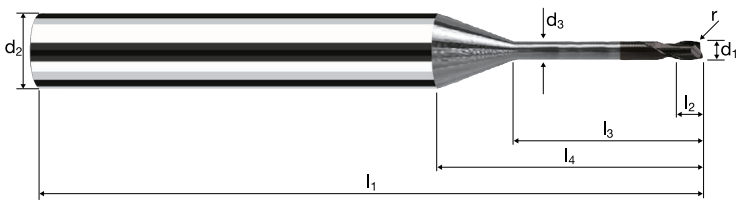
HM
XA

λ 30°
γ 15°

h5

d1

r



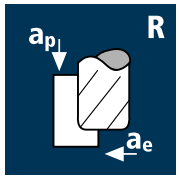
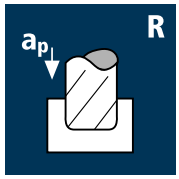
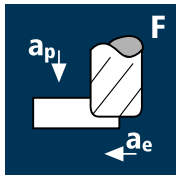
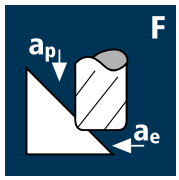
IV

C
Graphite

CF / GF
Fiber Reinforced
Plastics

Example:
Order-N°. Coating **B** Article-Nr. **6036** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6036
020	0.20	6.00	0.18	57	0.20	1.60	18.54	-	13.2°	2	●
030	0.30	6.00	0.25	57	0.30	2.40	19.14	-	12.5°	2	●
018	0.20	6.00	0.18	57	0.20	1.60	18.54	0.050	13.2°	2	●
028	0.30	6.00	0.25	57	0.30	2.40	19.14	0.050	12.3°	2	●
040	0.40	6.00	0.35	57	0.40	3.20	19.66	0.050	11.6°	2	●
048	0.50	6.00	0.45	57	0.50	4.00	15.01	0.050	11.0°	2	●
058	0.60	6.00	0.55	57	0.60	4.80	15.63	0.050	10.3°	2	●
078	0.80	6.00	0.75	57	0.80	6.40	16.85	0.050	9.2°	2	●
096	1.00	6.00	0.95	57	1.00	8.00	18.08	0.050	8.2°	2	●
050	0.50	6.00	0.45	57	0.50	4.00	15.01	0.100	11.0°	2	●
060	0.60	6.00	0.55	57	0.60	4.80	15.63	0.100	10.3°	2	●
080	0.80	6.00	0.75	57	0.80	6.40	16.85	0.100	9.2°	2	●
098	1.00	6.00	0.95	57	1.00	8.00	18.08	0.100	8.2°	2	●
138	2.00	6.00	1.90	61	2.00	16.00	24.31	0.100	4.9°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite B	0.80	2	0.009	0.300	0.500	270	450	540	810
		1.00	2	0.012	0.400	0.600	360	600	720	1080
		1.50	2	0.018	0.600	0.900	540	900	1080	1620
		2.00	2	0.024	0.800	1.200	720	1200	1440	2160
		3.00	2	0.035	1.200	1.800	1050	1750	2100	3150
		4.00	2	0.047	1.600	2.400	1410	2350	2820	4230
		5.00	2	0.059	2.000	3.000	1770	2950	3540	5310
		6.00	2	0.071	2.400	3.600	2130	3550	4260	6390
	Graphite B	0.80	2	0.007	0.300	0.800	210	350	420	630
		1.00	2	0.009	0.400	1.000	270	450	540	810
		1.50	2	0.014	0.600	1.500	420	700	840	1260
		2.00	2	0.018	0.800	2.000	540	900	1080	1620
		3.00	2	0.027	1.200	3.000	810	1350	1620	2430
		4.00	2	0.036	1.600	4.000	1080	1800	2160	3240
		5.00	2	0.045	2.000	5.000	1350	2250	2700	4050
		6.00	2	0.055	2.400	6.000	1650	2750	3300	4950
	Graphite B	0.80	2	0.011	0.100	0.140	330	550	660	990
		1.00	2	0.013	0.120	0.180	390	650	780	1170
		1.50	2	0.020	0.180	0.270	600	1000	1200	1800
		2.00	2	0.027	0.240	0.360	810	1350	1620	2430
		3.00	2	0.040	0.360	0.540	1200	2000	2400	3600
		4.00	2	0.053	0.480	0.720	1590	2650	3180	4770
		5.00	2	0.067	0.600	0.900	2010	3350	4020	6030
		6.00	2	0.080	0.720	1.080	2400	4000	4800	7200
	Graphite B	0.80	2	0.011	0.130	0.130	330	550	660	990
		1.00	2	0.013	0.160	0.160	390	650	780	1170
		1.50	2	0.020	0.240	0.240	600	1000	1200	1800
		2.00	2	0.027	0.320	0.320	810	1350	1620	2430
		3.00	2	0.040	0.480	0.480	1200	2000	2400	3600
		4.00	2	0.053	0.640	0.640	1590	2650	3180	4770
		5.00	2	0.067	0.800	0.800	2010	3350	4020	6030
		6.00	2	0.080	0.960	0.960	2400	4000	4800	7200

Corner radius end mills MicrotoroXG

Shank ø 6mm, cylindrical neck, 8xd

X-Generation X

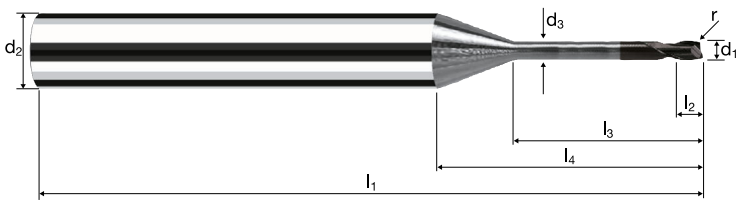
HM
XA

λ 30°
γ 15°

h5

d_1

r



IV

C
Graphite

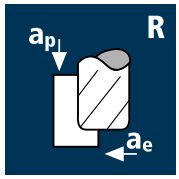
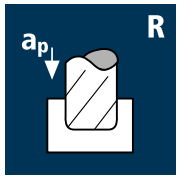
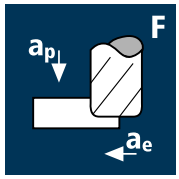
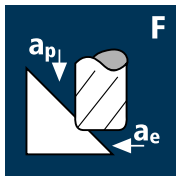
CF/GF
Fiber Reinforced
Plastics

Example:
Order-N°. Coating **B** Article-Nr. **6036** ø-Code **082**

DIAPLUS

B6036

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	
082	0.80	6.00	0.75	57	0.80	6.40	16.85	0.200	9.3°	2	●
100	1.00	6.00	0.95	57	1.00	8.00	18.08	0.200	8.3°	2	●
120	1.50	6.00	1.40	57	1.50	12.00	21.24	0.200	6.4°	2	●
140	2.00	6.00	1.90	61	2.00	16.00	24.31	0.200	4.9°	2	●
180	3.00	6.00	2.80	66	3.00	24.00	30.63	0.200	2.9°	2	●
215	4.00	6.00	3.70	75	4.00	32.00	36.95	0.200	1.7°	2	●
255	5.00	6.00	4.60	80	5.00	40.00	43.27	0.200	0.7°	2	●
295	6.00	6.00	5.50	87	6.00	47.34	48.00	0.200	0.0°	2	●
185	3.00	6.00	2.80	69	3.00	24.00	30.63	0.500	3.0°	2	●
220	4.00	6.00	3.70	75	4.00	32.00	36.95	0.500	1.7°	2	●
260	5.00	6.00	4.60	80	5.00	40.00	43.27	0.500	0.7°	2	●
300	6.00	6.00	5.50	87	6.00	47.34	48.00	0.500	0.0°	2	●

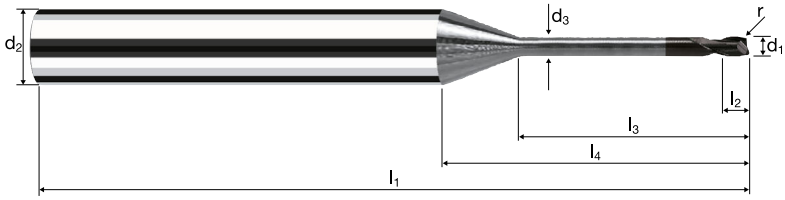
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.20	2	0.002	0.100	0.100	60	100	120	180
		0.30	2	0.004	0.100	0.100	120	200	240	360
		0.40	2	0.005	0.150	0.150	150	250	300	450
		0.50	2	0.006	0.200	0.200	180	300	360	540
		0.60	2	0.007	0.250	0.250	210	350	420	630
		0.80	2	0.009	0.300	0.300	270	450	540	810
		1.00	2	0.012	0.400	0.400	360	600	720	1080
		2.00	2	0.024	0.800	0.800	720	1200	1440	2160
	Graphite B	0.20	2	0.002	0.050	0.200	60	100	120	180
		0.30	2	0.003	0.100	0.300	90	150	180	270
		0.40	2	0.004	0.100	0.400	120	200	240	360
		0.50	2	0.005	0.150	0.500	150	250	300	450
		0.60	2	0.005	0.200	0.600	150	250	300	450
		0.80	2	0.007	0.250	0.800	210	350	420	630
		1.00	2	0.009	0.300	1.000	270	450	540	810
		2.00	2	0.018	0.600	2.000	540	900	1080	1620
	Graphite B	0.20	2	0.003	0.020	0.030	90	150	180	270
		0.30	2	0.004	0.030	0.050	120	200	240	360
		0.40	2	0.005	0.040	0.060	150	250	300	450
		0.50	2	0.007	0.050	0.080	210	350	420	630
		0.60	2	0.008	0.060	0.100	240	400	480	720
		0.80	2	0.011	0.080	0.130	330	550	660	990
		1.00	2	0.013	0.100	0.160	390	650	780	1170
		2.00	2	0.027	0.200	0.320	810	1350	1620	2430
	Graphite B	0.20	2	0.003	0.030	0.030	90	150	180	270
		0.30	2	0.004	0.040	0.040	120	200	240	360
		0.40	2	0.005	0.060	0.060	150	250	300	450
		0.50	2	0.007	0.070	0.070	210	350	420	630
		0.60	2	0.008	0.080	0.080	240	400	480	720
		0.80	2	0.011	0.110	0.110	330	550	660	990
		1.00	2	0.013	0.140	0.140	390	650	780	1170
		2.00	2	0.027	0.280	0.280	810	1350	1620	2430

Corner radius end mills MicrotoroXG

Shank ø 6mm, cylindrical neck, 10xd

X-Generation X

HM XA	λ 30° γ 15°



h5

d1

r

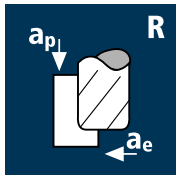
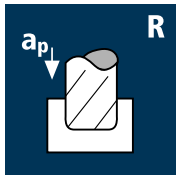
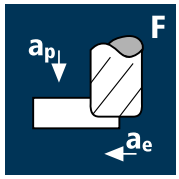
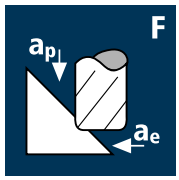
IV

C Graphite

CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **6038** ø-Code **018**

Ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	l4	r ±0.005	α	z	DIAPLUS B6038
018	0.20	6.00	0.18	57	0.20	2.00	18.94	0.050	12.8°	2	●
028	0.30	6.00	0.25	57	0.30	3.00	19.74	0.050	11.8°	2	●
040	0.40	6.00	0.35	57	0.40	4.00	20.46	0.050	11.0°	2	●
048	0.50	6.00	0.45	57	0.50	5.00	16.01	0.050	10.3°	2	●
058	0.60	6.00	0.55	57	0.60	6.00	16.83	0.050	9.6°	2	●
078	0.80	6.00	0.75	57	0.80	8.00	18.45	0.050	8.4°	2	●
096	1.00	6.00	0.95	57	1.00	10.00	20.08	0.050	7.4°	2	●
050	0.50	6.00	0.45	57	0.50	5.00	16.01	0.100	10.4°	2	●
060	0.60	6.00	0.55	57	0.60	6.00	16.83	0.100	9.6°	2	●
080	0.80	6.00	0.75	57	0.80	8.00	18.45	0.100	8.4°	2	●
098	1.00	6.00	0.95	57	1.00	10.00	20.08	0.100	7.4°	2	●
138	2.00	6.00	1.90	66	2.00	20.00	28.31	0.100	4.2°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.80	2	0.009	0.300	0.300	270	450	540	810
		1.00	2	0.012	0.400	0.400	360	600	720	1080
		1.50	2	0.018	0.600	0.600	540	900	1080	1620
		2.00	2	0.024	0.800	0.800	720	1200	1440	2160
		3.00	2	0.035	1.200	1.200	1050	1750	2100	3150
		4.00	2	0.047	1.600	1.600	1410	2350	2820	4230
		5.00	2	0.059	2.000	2.000	1770	2950	3540	5310
		6.00	2	0.071	2.400	2.400	2130	3550	4260	6390
	Graphite B	0.80	2	0.007	0.250	0.800	210	350	420	630
		1.00	2	0.009	0.300	1.000	270	450	540	810
		1.50	2	0.014	0.450	1.500	420	700	840	1260
		2.00	2	0.018	0.600	2.000	540	900	1080	1620
		3.00	2	0.027	0.900	3.000	810	1350	1620	2430
		4.00	2	0.036	1.200	4.000	1080	1800	2160	3240
		5.00	2	0.045	1.500	5.000	1350	2250	2700	4050
		6.00	2	0.055	1.800	6.000	1650	2750	3300	4950
	Graphite B	0.80	2	0.011	0.080	0.130	330	550	660	990
		1.00	2	0.013	0.100	0.160	390	650	780	1170
		1.50	2	0.020	0.150	0.240	600	1000	1200	1800
		2.00	2	0.027	0.200	0.320	810	1350	1620	2430
		3.00	2	0.040	0.300	0.480	1200	2000	2400	3600
		4.00	2	0.053	0.400	0.640	1590	2650	3180	4770
		5.00	2	0.067	0.500	0.800	2010	3350	4020	6030
		6.00	2	0.080	0.600	0.960	2400	4000	4800	7200
	Graphite B	0.80	2	0.011	0.110	0.110	330	550	660	990
		1.00	2	0.013	0.140	0.140	390	650	780	1170
		1.50	2	0.020	0.210	0.210	600	1000	1200	1800
		2.00	2	0.027	0.280	0.280	810	1350	1620	2430
		3.00	2	0.040	0.420	0.420	1200	2000	2400	3600
		4.00	2	0.053	0.560	0.560	1590	2650	3180	4770
		5.00	2	0.067	0.700	0.700	2010	3350	4020	6030
		6.00	2	0.080	0.840	0.840	2400	4000	4800	7200

Corner radius end mills MicrotoroXG

Shank ø 6mm, cylindrical neck, 10xd

X-Generation X

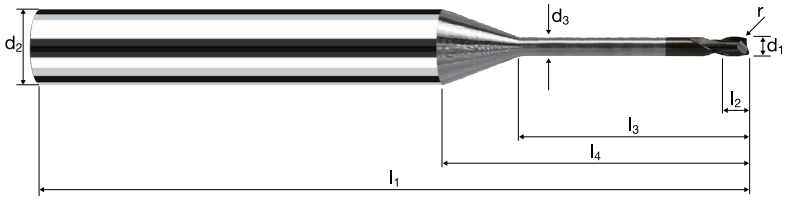
HM
XA

λ 30°
γ 15°

h5

d1

r



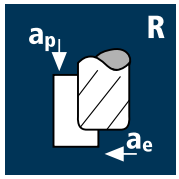
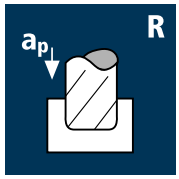
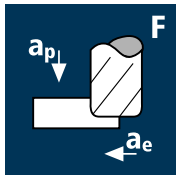
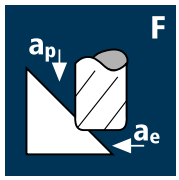
IV

C
Graphite

CF/GF
Fiber Reinforced
Plastics

Example:
Order-N°. Coating **B** Article-Nr. **6038** ø-Code **082**

Ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	l4	r ±0.005	α	z	DIAPLUS B6038
082	0.80	6.00	0.75	57	0.80	8.00	18.45	0.200	8.4°	2	●
100	1.00	6.00	0.95	57	1.00	10.00	20.08	0.200	7.4°	2	●
120	1.50	6.00	1.40	61	1.50	15.00	24.24	0.200	5.5°	2	●
140	2.00	6.00	1.90	66	2.00	20.00	28.31	0.200	4.2°	2	●
180	3.00	6.00	2.80	75	3.00	30.00	36.63	0.200	2.5°	2	●
215	4.00	6.00	3.70	80	4.00	40.00	44.95	0.200	1.4°	2	●
255	5.00	6.00	4.60	100	5.00	50.00	53.27	0.200	0.6°	2	●
295	6.00	6.00	5.50	100	6.00	59.34	60.00	0.200	0.0°	2	●
185	3.00	6.00	2.80	75	3.00	30.00	36.63	0.500	2.5°	2	●
220	4.00	6.00	3.70	80	4.00	40.00	44.95	0.500	1.4°	2	●
260	5.00	6.00	4.60	100	5.00	50.00	53.27	0.500	0.6°	2	●
300	6.00	6.00	5.50	100	6.00	59.34	60.00	0.500	0.0°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.30	2	0.003	0.100	0.100	90	150	180	270
		0.40	2	0.004	0.100	0.150	120	200	240	360
		0.50	2	0.005	0.150	0.200	150	250	300	450
		0.60	2	0.006	0.200	0.250	180	300	360	540
		0.80	2	0.008	0.250	0.300	240	400	480	720
		1.00	2	0.009	0.300	0.400	270	450	540	810
		1.50	2	0.014	0.450	0.600	420	700	840	1260
		2.00	2	0.019	0.600	0.800	570	950	1140	1710
		3.00	2	0.028	0.900	1.200	840	1400	1680	2520
	Graphite B	0.30	2	0.002	0.050	0.300	60	100	120	180
		0.40	2	0.003	0.100	0.400	90	150	180	270
		0.50	2	0.004	0.100	0.500	120	200	240	360
		0.60	2	0.004	0.100	0.600	120	200	240	360
		0.80	2	0.006	0.150	0.800	180	300	360	540
		1.00	2	0.007	0.200	1.000	210	350	420	630
		1.50	2	0.011	0.300	1.500	330	550	660	990
		2.00	2	0.015	0.400	2.000	450	750	900	1350
		3.00	2	0.022	0.600	3.000	660	1100	1320	1980
	Graphite B	0.30	2	0.003	0.030	0.040	90	150	180	270
		0.40	2	0.004	0.040	0.060	120	200	240	360
		0.50	2	0.005	0.050	0.070	150	250	300	450
		0.60	2	0.006	0.060	0.080	180	300	360	540
		0.80	2	0.009	0.080	0.110	270	450	540	810
		1.00	2	0.011	0.100	0.140	330	550	660	990
		1.50	2	0.016	0.150	0.210	480	800	960	1440
		2.00	2	0.021	0.200	0.280	630	1050	1260	1890
		3.00	2	0.032	0.300	0.420	960	1600	1920	2880
	Graphite B	0.30	2	0.003	0.030	0.030	90	150	180	270
		0.40	2	0.004	0.040	0.040	120	200	240	360
		0.50	2	0.005	0.050	0.050	150	250	300	450
		0.60	2	0.006	0.060	0.060	180	300	360	540
		0.80	2	0.009	0.080	0.080	270	450	540	810
		1.00	2	0.011	0.100	0.100	330	550	660	990
		1.50	2	0.016	0.150	0.150	480	800	960	1440
		2.00	2	0.021	0.200	0.200	630	1050	1260	1890
		3.00	2	0.032	0.300	0.300	960	1600	1920	2880

Corner radius end mills MicrotoroXG

Shank ø 6mm, cylindrical neck, 12xd

X-Generation

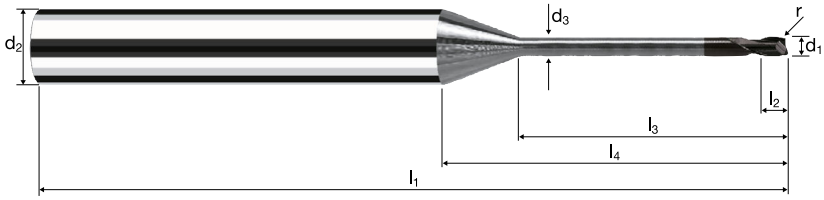
HM
XA

λ 30°
γ 15°

h5

d1

r



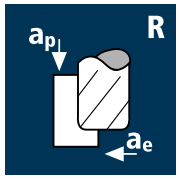
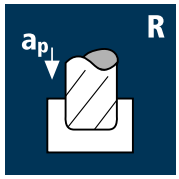
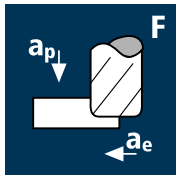
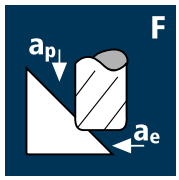
IV

C
Graphite

CF/GF
Fiber Reinforced
Plastics

Example:
Order-N°. Coating **B** Article-Nr. **6040** ø-Code **028**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6040
028	0.30	6.00	0.25	57	0.30	3.60	20.34	0.050	11.3°	2	●
040	0.40	6.00	0.35	57	0.40	4.80	21.26	0.050	7.8°	2	●
048	0.50	6.00	0.45	57	0.50	6.00	17.01	0.050	9.6°	2	●
058	0.60	6.00	0.55	57	0.60	7.20	18.03	0.050	8.9°	2	●
078	0.80	6.00	0.75	57	0.80	9.60	20.05	0.050	7.7°	2	●
096	1.00	6.00	0.95	61	1.00	12.00	22.08	0.050	6.7°	2	●
050	0.50	6.00	0.45	57	0.50	6.00	17.01	0.100	9.7°	2	●
060	0.60	6.00	0.55	57	0.60	7.20	18.03	0.100	8.9°	2	●
080	0.80	6.00	0.75	57	0.80	9.60	20.05	0.100	7.7°	2	●
098	1.00	6.00	0.95	61	1.00	12.00	22.08	0.100	6.7°	2	●
138	2.00	6.00	1.90	69	2.00	24.00	32.31	0.100	3.7°	2	●
082	0.80	6.00	0.75	57	0.80	9.60	20.05	0.200	7.8°	2	●
100	1.00	6.00	0.95	61	1.00	12.00	22.08	0.200	6.7°	2	●
120	1.50	6.00	1.40	66	1.50	18.00	27.24	0.200	4.9°	2	●
140	2.00	6.00	1.90	69	2.00	24.00	32.31	0.200	3.7°	2	●
180	3.00	6.00	2.80	80	3.00	36.00	42.63	0.200	2.1°	2	●
185	3.00	6.00	2.80	80	3.00	36.00	42.63	0.500	2.1°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.40	2	0.003	0.080	0.100	90	150	180	270
		0.50	2	0.004	0.100	0.150	120	200	240	360
		0.60	2	0.005	0.100	0.200	150	250	300	450
		0.80	2	0.007	0.150	0.250	210	350	420	630
		1.00	2	0.008	0.200	0.300	240	400	480	720
		1.50	2	0.012	0.300	0.450	360	600	720	1080
		2.00	2	0.016	0.400	0.600	480	800	960	1440
		3.00	2	0.025	0.600	0.900	750	1250	1500	2250
	Graphite B	0.40	2	0.003	0.040	0.400	90	150	180	270
		0.50	2	0.003	0.050	0.500	90	150	180	270
		0.60	2	0.004	0.060	0.600	120	200	240	360
		0.80	2	0.005	0.080	0.800	150	250	300	450
		1.00	2	0.006	0.100	1.000	180	300	360	540
		1.50	2	0.010	0.150	1.500	300	500	600	900
		2.00	2	0.013	0.200	2.000	390	650	780	1170
		3.00	2	0.019	0.300	3.000	570	950	1140	1710
	Graphite B	0.40	2	0.004	0.030	0.040	120	200	240	360
		0.50	2	0.005	0.040	0.050	150	250	300	450
		0.60	2	0.006	0.050	0.060	180	300	360	540
		0.80	2	0.007	0.060	0.080	210	350	420	630
		1.00	2	0.009	0.080	0.100	270	450	540	810
		1.50	2	0.014	0.120	0.150	420	700	840	1260
		2.00	2	0.019	0.160	0.200	570	950	1140	1710
		3.00	2	0.028	0.240	0.300	840	1400	1680	2520
	Graphite B	0.40	2	0.004	0.030	0.030	120	200	240	360
		0.50	2	0.005	0.040	0.040	150	250	300	450
		0.60	2	0.006	0.050	0.050	180	300	360	540
		0.80	2	0.007	0.060	0.060	210	350	420	630
		1.00	2	0.009	0.080	0.080	270	450	540	810
		1.50	2	0.014	0.120	0.120	420	700	840	1260
		2.00	2	0.019	0.160	0.160	570	950	1140	1710
		3.00	2	0.028	0.240	0.240	840	1400	1680	2520

Corner radius end mills MicrotoroXG

Shank ø 6mm, cylindrical neck, 15xd

X-Generation X

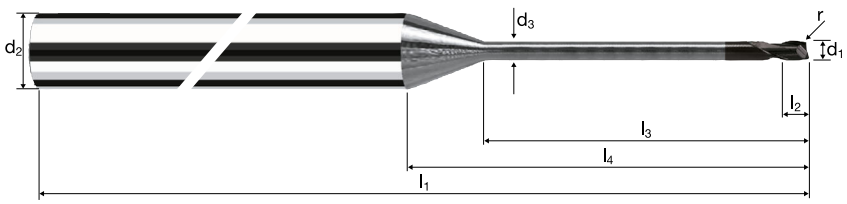
HM
XA

λ 30°
γ 15°

h5

d1

r



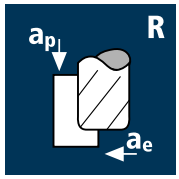
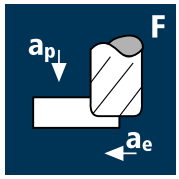
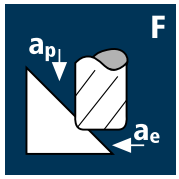
IV

C
Graphite

CF/GF
Fiber Reinforced
Plastics

Example:
Order-N°. Coating **B** Article-Nr. **6042** ø-Code **040**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6042
040	0.40	6.00	0.35	61	0.40	6.00	22.46	0.050	9.7°	2	●
048	0.50	6.00	0.45	57	0.50	7.50	18.51	0.050	8.8°	2	●
058	0.60	6.00	0.55	57	0.60	9.00	19.83	0.050	8.1°	2	●
078	0.80	6.00	0.75	61	0.80	12.00	22.45	0.050	6.9°	2	●
096	1.00	6.00	0.95	66	1.00	15.00	25.08	0.050	5.9°	2	●
050	0.50	6.00	0.45	57	0.50	7.50	18.51	0.100	8.8°	2	●
060	0.60	6.00	0.55	57	0.60	9.00	19.83	0.100	8.1°	2	●
080	0.80	6.00	0.75	61	0.80	12.00	22.45	0.100	6.9°	2	●
098	1.00	6.00	0.95	66	1.00	15.00	25.08	0.100	5.9°	2	●
138	2.00	6.00	1.90	75	2.00	30.00	38.31	0.100	3.1°	2	●
082	0.80	6.00	0.75	61	0.80	12.00	22.45	0.200	6.9°	2	●
100	1.00	6.00	0.95	66	1.00	15.00	25.08	0.200	5.9°	2	●
120	1.50	6.00	1.40	69	1.50	22.50	31.74	0.200	4.2°	2	●
140	2.00	6.00	1.90	75	2.00	30.00	38.31	0.200	3.1°	2	●
180	3.00	6.00	2.80	100	3.00	45.00	51.63	0.200	1.7°	2	●
185	3.00	6.00	2.80	100	3.00	45.00	51.63	0.500	1.7°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.40	2	0.003	0.060	0.100	90	150	180	270
		0.50	2	0.004	0.080	0.100	120	200	240	360
		0.60	2	0.005	0.100	0.100	150	250	300	450
		0.80	2	0.007	0.100	0.150	210	350	420	630
		1.00	2	0.008	0.150	0.200	240	400	480	720
		1.50	2	0.012	0.250	0.300	360	600	720	1080
		2.00	2	0.016	0.300	0.400	480	800	960	1440
		3.00	2	0.025	0.450	0.600	750	1250	1500	2250
	Graphite B	0.40	2	0.004	0.020	0.030	120	200	240	360
		0.50	2	0.005	0.030	0.040	150	250	300	450
		0.60	2	0.006	0.040	0.050	180	300	360	540
		0.80	2	0.007	0.050	0.060	210	350	420	630
		1.00	2	0.009	0.060	0.080	270	450	540	810
		1.50	2	0.014	0.090	0.120	420	700	840	1260
		2.00	2	0.019	0.120	0.160	570	950	1140	1710
		3.00	2	0.028	0.180	0.240	840	1400	1680	2520
	Graphite B	0.40	2	0.004	0.020	0.020	120	200	240	360
		0.50	2	0.005	0.030	0.030	150	250	300	450
		0.60	2	0.006	0.040	0.040	180	300	360	540
		0.80	2	0.007	0.050	0.050	210	350	420	630
		1.00	2	0.009	0.060	0.060	270	450	540	810
		1.50	2	0.014	0.090	0.090	420	700	840	1260
		2.00	2	0.019	0.120	0.120	570	950	1140	1710
		3.00	2	0.028	0.180	0.180	840	1400	1680	2520

Corner radius end mills MicrotoroXG

Shank ø 6mm, cylindrical neck, 20xd

X-Generation X

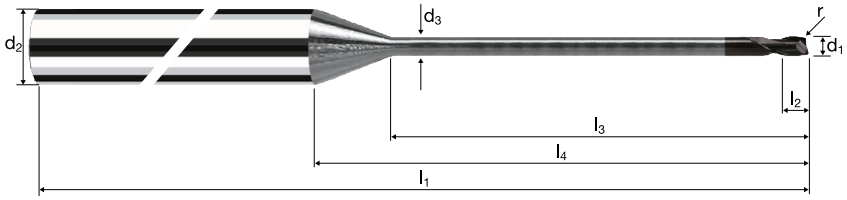
HM
XA

λ 30°
γ 15°

h5

d_1

r



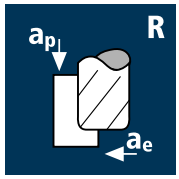
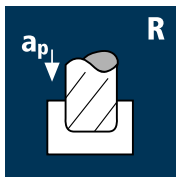
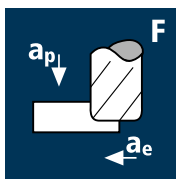
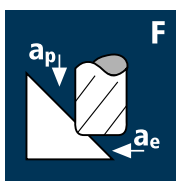
IV

C
Graphite

CF/GF
Fiber Reinforced
Plastics

Example:
Order-N°. Coating **B** Article-Nr. **6044** ø-Code **040**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6044
040	0.40	6.00	0.35	61	0.40	8.00	19.20	0.050	8.7°	2	●
048	0.50	6.00	0.45	61	0.50	10.00	21.01	0.050	7.8°	2	●
058	0.60	6.00	0.55	61	0.60	12.00	22.83	0.050	7.0°	2	●
078	0.80	6.00	0.75	66	0.80	16.00	26.45	0.050	5.8°	2	●
096	1.00	6.00	0.95	69	1.00	20.00	30.08	0.050	4.9°	2	●
050	0.50	6.00	0.45	61	0.50	10.00	21.01	0.100	7.8°	2	●
060	0.60	6.00	0.55	61	0.60	12.00	22.83	0.100	7.0°	2	●
080	0.80	6.00	0.75	66	0.80	16.00	26.45	0.100	5.8°	2	●
098	1.00	6.00	0.95	69	1.00	20.00	30.08	0.100	4.9°	2	●
138	2.00	6.00	1.90	87	2.00	40.00	48.31	0.100	2.5°	2	●
082	0.80	6.00	0.75	66	0.80	16.00	26.45	0.200	5.8°	2	●
100	1.00	6.00	0.95	69	1.00	20.00	30.08	0.200	4.9°	2	●
120	1.50	6.00	1.40	80	1.50	30.00	39.24	0.200	3.4°	2	●
140	2.00	6.00	1.90	87	2.00	40.00	48.31	0.200	2.5°	2	●
180	3.00	6.00	2.80	105	3.00	60.00	66.63	0.200	1.4°	2	●
185	3.00	6.00	2.80	105	3.00	60.00	66.63	0.500	1.4°	2	●

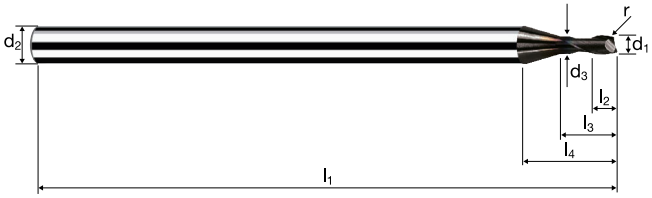
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	1.00	2	0.009	0.500	0.600	270	450	540	810
		1.20	2	0.011	0.600	0.700	330	550	660	990
		1.50	2	0.014	0.750	0.900	420	700	840	1260
		2.00	2	0.019	1.000	1.200	570	950	1140	1710
		2.50	2	0.024	1.250	1.500	720	1200	1440	2160
		3.00	2	0.028	1.500	1.800	840	1400	1680	2520
	Graphite B	1.00	2	0.007	0.500	1.000	210	350	420	630
		1.20	2	0.009	0.600	1.200	270	450	540	810
		1.50	2	0.011	0.750	1.500	330	550	660	990
		2.00	2	0.015	1.000	2.000	450	750	900	1350
		2.50	2	0.018	1.250	2.500	540	900	1080	1620
		3.00	2	0.022	1.500	3.000	660	1100	1320	1980
	Graphite B	1.00	2	0.011	0.150	0.200	330	550	660	990
		1.20	2	0.013	0.180	0.240	390	650	780	1170
		1.50	2	0.016	0.230	0.300	480	800	960	1440
		2.00	2	0.021	0.300	0.400	630	1050	1260	1890
		2.50	2	0.027	0.380	0.500	810	1350	1620	2430
		3.00	2	0.032	0.450	0.600	960	1600	1920	2880
	Graphite B	1.00	2	0.011	0.200	0.200	330	550	660	990
		1.20	2	0.013	0.240	0.240	390	650	780	1170
		1.50	2	0.016	0.300	0.300	480	800	960	1440
		2.00	2	0.021	0.400	0.400	630	1050	1260	1890
		2.50	2	0.027	0.500	0.500	810	1350	1620	2430
		3.00	2	0.032	0.600	0.600	960	1600	1920	2880

Corner radius end mills Microcut-T3

Shank ø 3mm, cylindrical neck, 3xd

HM MG10

λ 25°
γ 6°

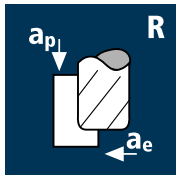
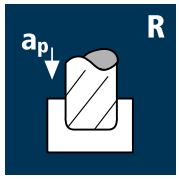
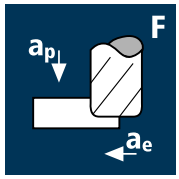
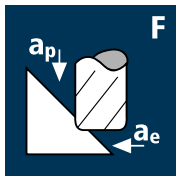


C Graphite

CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **5752** ø-Code **100**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	DIAMANT B5752
100	1.00	3.00	0.95	50	1.20	3.00	7.22	0.200	8.5°	2	●
108	1.20	3.00	1.10	50	1.44	3.60	7.54	0.200	7.4°	2	●
120	1.50	3.00	1.40	50	1.80	4.50	7.88	0.200	5.9°	2	●
140	2.00	3.00	1.90	50	2.40	6.00	8.45	0.200	3.7°	2	●
160	2.50	3.00	2.30	50	3.00	7.50	9.20	0.200	1.7°	2	●
180	3.00	3.00	2.80	50	3.60	8.56	9.00	0.200	0.0°	2	●

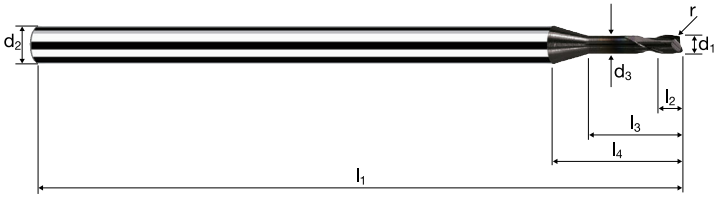
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	1.00	2	0.009	0.450	0.600	270	450	540	810
		1.20	2	0.011	0.550	0.700	330	550	660	990
		1.50	2	0.014	0.700	0.900	420	700	840	1260
		2.00	2	0.019	0.900	1.200	570	950	1140	1710
		2.50	2	0.024	1.150	1.500	720	1200	1440	2160
		3.00	2	0.028	1.350	1.800	840	1400	1680	2520
	Graphite B	1.00	2	0.007	0.450	1.000	210	350	420	630
		1.20	2	0.009	0.550	1.200	270	450	540	810
		1.50	2	0.011	0.700	1.500	330	550	660	990
		2.00	2	0.015	0.900	2.000	450	750	900	1350
		2.50	2	0.018	1.150	2.500	540	900	1080	1620
		3.00	2	0.022	1.350	3.000	660	1100	1320	1980
	Graphite B	1.00	2	0.011	0.140	0.200	330	550	660	990
		1.20	2	0.013	0.170	0.240	390	650	780	1170
		1.50	2	0.016	0.210	0.300	480	800	960	1440
		2.00	2	0.021	0.280	0.400	630	1050	1260	1890
		2.50	2	0.027	0.350	0.500	810	1350	1620	2430
		3.00	2	0.032	0.420	0.600	960	1600	1920	2880
	Graphite B	1.00	2	0.011	0.180	0.180	330	550	660	990
		1.20	2	0.013	0.220	0.220	390	650	780	1170
		1.50	2	0.016	0.270	0.270	480	800	960	1440
		2.00	2	0.021	0.360	0.360	630	1050	1260	1890
		2.50	2	0.027	0.450	0.450	810	1350	1620	2430
		3.00	2	0.032	0.540	0.540	960	1600	1920	2880

Corner radius end mills Microcut-T5

Shank ø 3mm, cylindrical neck, 5xd

Base-X **B**

HM MG10	λ 25° γ 6°

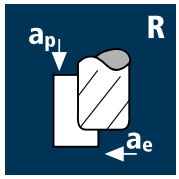
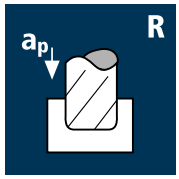
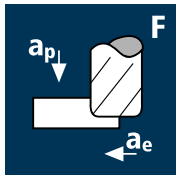
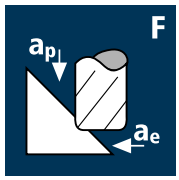


IV

				C Graphite					CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **5754** ø-Code **100**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	DIAMANT B5754
100	1.00	3.00	0.95	50	1.20	5.00	9.22	0.200	6.6°	2	●
108	1.20	3.00	1.10	50	1.44	6.00	9.94	0.200	5.5°	2	●
120	1.50	3.00	1.40	50	1.80	7.50	10.88	0.200	4.2°	2	●
140	2.00	3.00	1.90	50	2.40	10.00	12.45	0.200	2.5°	2	●
160	2.50	3.00	2.30	50	3.00	12.50	14.20	0.200	1.1°	2	●
180	3.00	3.00	2.80	50	3.60	14.56	15.00	0.200	0.0°	2	●

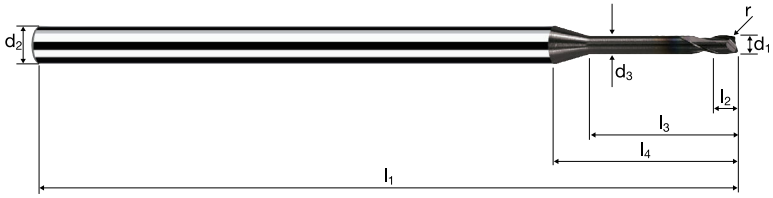
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	1.00	2	0.009	0.400	0.600	270	450	540	810
		1.20	2	0.011	0.500	0.700	330	550	660	990
		1.50	2	0.014	0.600	0.900	420	700	840	1260
		2.00	2	0.019	0.800	1.200	570	950	1140	1710
		2.50	2	0.024	1.000	1.500	720	1200	1440	2160
		3.00	2	0.028	1.200	1.800	840	1400	1680	2520
	Graphite B	1.00	2	0.007	0.400	1.000	210	350	420	630
		1.20	2	0.009	0.500	1.200	270	450	540	810
		1.50	2	0.011	0.600	1.500	330	550	660	990
		2.00	2	0.015	0.800	2.000	450	750	900	1350
		2.50	2	0.018	1.000	2.500	540	900	1080	1620
		3.00	2	0.022	1.200	3.000	660	1100	1320	1980
	Graphite B	1.00	2	0.011	0.120	0.180	330	550	660	990
		1.20	2	0.013	0.140	0.220	390	650	780	1170
		1.50	2	0.016	0.180	0.270	480	800	960	1440
		2.00	2	0.021	0.240	0.360	630	1050	1260	1890
		2.50	2	0.027	0.300	0.450	810	1350	1620	2430
		3.00	2	0.032	0.360	0.540	960	1600	1920	2880
	Graphite B	1.00	2	0.011	0.160	0.160	330	550	660	990
		1.20	2	0.013	0.190	0.190	390	650	780	1170
		1.50	2	0.016	0.240	0.240	480	800	960	1440
		2.00	2	0.021	0.320	0.320	630	1050	1260	1890
		2.50	2	0.027	0.400	0.400	810	1350	1620	2430
		3.00	2	0.032	0.480	0.480	960	1600	1920	2880

Corner radius end mills Microcut-T8

Shank ø 3mm, cylindrical neck, 8xd

HM MG10

λ 25°
γ 6°

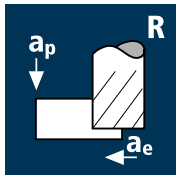
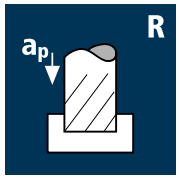
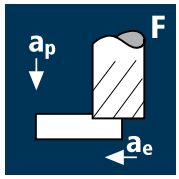
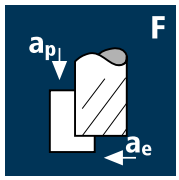


C Graphite

CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **5756** ø-Code **100**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	DIAMANT B5756
100	1.00	3.00	0.95	50	1.20	8.00	12.22	0.200	4.9°	2	●
108	1.20	3.00	1.10	50	1.44	9.60	13.54	0.200	4.0°	2	●
120	1.50	3.00	1.40	60	1.80	12.00	15.38	0.200	3.0°	2	●
140	2.00	3.00	1.90	60	2.40	16.00	18.45	0.200	1.7°	2	●
160	2.50	3.00	2.30	60	3.00	20.00	21.70	0.200	0.7°	2	●
180	3.00	3.00	2.80	60	3.60	23.56	24.00	0.200	0.0°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.20	2	0.002	0.100	0.100	60	100	120	180
		0.50	2	0.005	0.250	0.300	150	250	300	450
		0.80	2	0.008	0.350	0.500	240	400	480	720
		1.00	2	0.009	0.450	0.600	270	450	540	810
		1.20	2	0.011	0.550	0.700	330	550	660	990
		1.50	2	0.014	0.700	0.900	420	700	840	1260
		2.00	2	0.019	0.900	1.200	570	950	1140	1710
		2.50	2	0.024	1.150	1.500	720	1200	1440	2160
		3.00	2	0.028	1.350	1.800	840	1400	1680	2520
	Graphite B	0.20	2	0.001	0.100	0.200	30	50	60	90
		0.50	2	0.004	0.250	0.500	120	200	240	360
		0.80	2	0.006	0.350	0.800	180	300	360	540
		1.00	2	0.007	0.450	1.000	210	350	420	630
		1.20	2	0.009	0.550	1.200	270	450	540	810
		1.50	2	0.011	0.700	1.500	330	550	660	990
		2.00	2	0.015	0.900	2.000	450	750	900	1350
		2.50	2	0.018	1.150	2.500	540	900	1080	1620
		3.00	2	0.022	1.350	3.000	660	1100	1320	1980
	Graphite B	0.20	2	0.002	0.030	0.040	60	100	120	180
		0.50	2	0.005	0.070	0.100	150	250	300	450
		0.80	2	0.009	0.110	0.160	270	450	540	810
		1.00	2	0.011	0.140	0.200	330	550	660	990
		1.20	2	0.013	0.170	0.240	390	650	780	1170
		1.50	2	0.016	0.210	0.300	480	800	960	1440
		2.00	2	0.021	0.280	0.400	630	1050	1260	1890
		2.50	2	0.027	0.350	0.500	810	1350	1620	2430
		3.00	2	0.032	0.420	0.600	960	1600	1920	2880
	Graphite B	0.20	2	0.002	0.040	0.040	60	100	120	180
		0.50	2	0.005	0.090	0.090	150	250	300	450
		0.80	2	0.009	0.140	0.140	270	450	540	810
		1.00	2	0.011	0.180	0.180	330	550	660	990
		1.20	2	0.013	0.220	0.220	390	650	780	1170
		1.50	2	0.016	0.270	0.270	480	800	960	1440
		2.00	2	0.021	0.360	0.360	630	1050	1260	1890
		2.50	2	0.027	0.450	0.450	810	1350	1620	2430
		3.00	2	0.032	0.540	0.540	960	1600	1920	2880

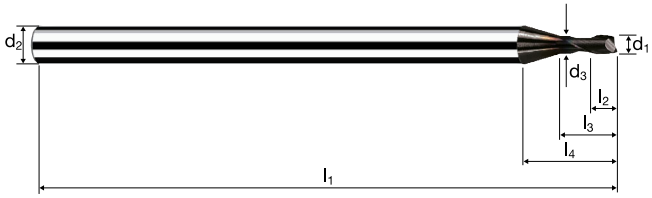
Cylindrical end mills Microcut-C3

Shank ø 3mm, cylindrical neck, 3xd

HM MG10

λ 25°
γ 6°

45°

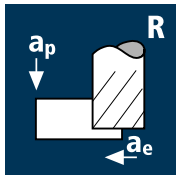
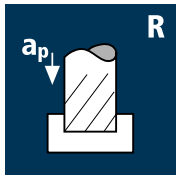
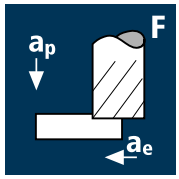
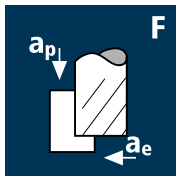


C Graphite

CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **5712** ø-Code **020**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	DIAMANT B5712
020	0.20	3.00	0.18	40	0.24	0.60	8.86	-	9.4°	2	●
030	0.30	3.00	0.25	40	0.36	0.90	8.96	-	9.0°	2	●
040	0.40	3.00	0.35	40	0.48	1.20	8.98	-	8.5°	2	●
050	0.50	3.00	0.45	40	0.60	1.50	6.65	-	11.5°	2	●
060	0.60	3.00	0.55	40	0.72	1.80	6.77	-	11.9°	2	●
080	0.80	3.00	0.75	40	0.96	2.40	6.99	-	9.6°	2	●
100	1.00	3.00	0.95	50	1.20	3.00	7.22	0.07	8.5°	2	●
108	1.20	3.00	1.10	50	1.44	3.60	7.54	0.07	7.4°	2	●
120	1.50	3.00	1.40	50	1.80	4.50	7.88	0.07	5.9°	2	●
140	2.00	3.00	1.90	50	2.40	6.00	8.45	0.10	3.7°	2	●
160	2.50	3.00	2.30	50	3.00	7.50	9.20	0.10	1.7°	2	●
180	3.00	3.00	2.80	50	3.60	8.56	9.00	0.10	0.0°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.50	2	0.005	0.250	0.300	150	250	300	450
		0.60	2	0.006	0.250	0.350	180	300	360	540
		0.80	2	0.008	0.350	0.500	240	400	480	720
		1.00	2	0.009	0.450	0.600	270	450	540	810
		1.20	2	0.011	0.550	0.700	330	550	660	990
		1.50	2	0.014	0.700	0.900	420	700	840	1260
		2.00	2	0.019	0.900	1.200	570	950	1140	1710
		2.50	2	0.024	1.150	1.500	720	1200	1440	2160
		3.00	2	0.028	1.350	1.800	840	1400	1680	2520
	Graphite B	0.50	2	0.004	0.250	0.500	120	200	240	360
		0.60	2	0.004	0.250	0.600	120	200	240	360
		0.80	2	0.006	0.350	0.800	180	300	360	540
		1.00	2	0.007	0.450	1.000	210	350	420	630
		1.20	2	0.009	0.550	1.200	270	450	540	810
		1.50	2	0.011	0.700	1.500	330	550	660	990
		2.00	2	0.015	0.900	2.000	450	750	900	1350
		2.50	2	0.018	1.150	2.500	540	900	1080	1620
		3.00	2	0.022	1.350	3.000	660	1100	1320	1980
	Graphite B	0.50	2	0.005	0.070	0.100	150	250	300	450
		0.60	2	0.006	0.080	0.120	180	300	360	540
		0.80	2	0.009	0.110	0.160	270	450	540	810
		1.00	2	0.011	0.140	0.200	330	550	660	990
		1.20	2	0.013	0.170	0.240	390	650	780	1170
		1.50	2	0.016	0.210	0.300	480	800	960	1440
		2.00	2	0.021	0.280	0.400	630	1050	1260	1890
		2.50	2	0.027	0.350	0.500	810	1350	1620	2430
		3.00	2	0.032	0.420	0.600	960	1600	1920	2880
	Graphite B	0.50	2	0.005	0.090	0.090	150	250	300	450
		0.60	2	0.006	0.110	0.110	180	300	360	540
		0.80	2	0.009	0.140	0.140	270	450	540	810
		1.00	2	0.011	0.180	0.180	330	550	660	990
		1.20	2	0.013	0.220	0.220	390	650	780	1170
		1.50	2	0.016	0.270	0.270	480	800	960	1440
		2.00	2	0.021	0.360	0.360	630	1050	1260	1890
		2.50	2	0.027	0.450	0.450	810	1350	1620	2430
		3.00	2	0.032	0.540	0.540	960	1600	1920	2880

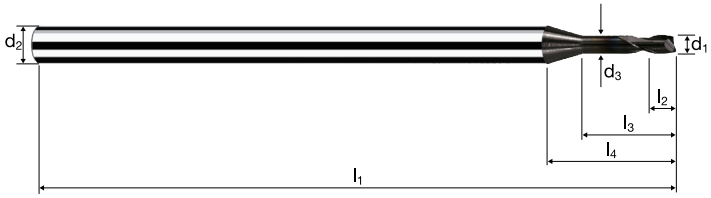
Cylindrical end mills Microcut-C5

Shank ø 3mm, cylindrical neck, 5xd

HM MG10

λ 25°
γ 6°

45°

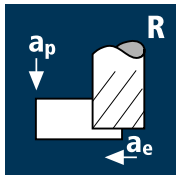
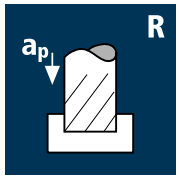
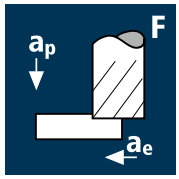
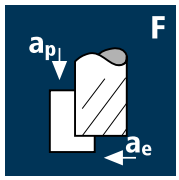


C Graphite

CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **5714** ø-Code **050**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	DIAMANT B5714
050	0.50	3.00	0.45	40	0.60	2.50	7.65	-	9.9°	2	●
060	0.60	3.00	0.55	40	0.72	3.00	7.97	-	9.2°	2	●
070	0.70	3.00	0.65	40	0.84	3.50	8.28	-	8.4°	2	●
080	0.80	3.00	0.75	40	0.96	4.00	8.59	-	7.8°	2	●
090	0.90	3.00	0.85	40	1.08	4.50	8.91	-	7.2°	2	●
100	1.00	3.00	0.95	50	1.20	5.00	9.22	0.07	6.6°	2	●
108	1.20	3.00	1.10	50	1.44	6.00	9.94	0.07	5.5°	2	●
120	1.50	3.00	1.40	50	1.80	7.50	10.88	0.07	4.2°	2	●
132	1.80	3.00	1.70	50	2.16	9.00	11.82	0.07	3.1°	2	●
140	2.00	3.00	1.90	50	2.40	10.00	12.45	0.10	2.4°	2	●
152	2.30	3.00	2.10	50	2.76	11.50	13.57	0.10	1.6°	2	●
160	2.50	3.00	2.30	50	3.00	12.50	14.20	0.10	1.1°	2	●
172	2.80	3.00	2.60	50	3.36	14.00	15.14	0.10	0.5°	2	●
180	3.00	3.00	2.80	50	3.60	14.56	15.00	0.10	0.0°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.50	2	0.005	0.200	0.300	150	250	300	450
		0.60	2	0.006	0.250	0.350	180	300	360	540
		0.80	2	0.008	0.300	0.500	240	400	480	720
		1.00	2	0.009	0.400	0.600	270	450	540	810
		1.20	2	0.011	0.500	0.700	330	550	660	990
		1.50	2	0.014	0.600	0.900	420	700	840	1260
		2.00	2	0.019	0.800	1.200	570	950	1140	1710
		2.50	2	0.024	1.000	1.500	720	1200	1440	2160
		3.00	2	0.028	1.200	1.800	840	1400	1680	2520
	Graphite B	0.50	2	0.004	0.200	0.500	120	200	240	360
		0.60	2	0.004	0.250	0.600	120	200	240	360
		0.80	2	0.006	0.300	0.800	180	300	360	540
		1.00	2	0.007	0.400	1.000	210	350	420	630
		1.20	2	0.009	0.500	1.200	270	450	540	810
		1.50	2	0.011	0.600	1.500	330	550	660	990
		2.00	2	0.015	0.800	2.000	450	750	900	1350
		2.50	2	0.018	1.000	2.500	540	900	1080	1620
		3.00	2	0.022	1.200	3.000	660	1100	1320	1980
	Graphite B	0.50	2	0.005	0.060	0.090	150	250	300	450
		0.60	2	0.006	0.070	0.110	180	300	360	540
		0.80	2	0.009	0.100	0.140	270	450	540	810
		1.00	2	0.011	0.120	0.180	330	550	660	990
		1.20	2	0.013	0.140	0.220	390	650	780	1170
		1.50	2	0.016	0.180	0.270	480	800	960	1440
		2.00	2	0.021	0.240	0.360	630	1050	1260	1890
		2.50	2	0.027	0.300	0.450	810	1350	1620	2430
		3.00	2	0.032	0.360	0.540	960	1600	1920	2880
	Graphite B	0.50	2	0.005	0.080	0.080	150	250	300	450
		0.60	2	0.006	0.100	0.100	180	300	360	540
		0.80	2	0.009	0.130	0.130	270	450	540	810
		1.00	2	0.011	0.160	0.160	330	550	660	990
		1.20	2	0.013	0.190	0.190	390	650	780	1170
		1.50	2	0.016	0.240	0.240	480	800	960	1440
		2.00	2	0.021	0.320	0.320	630	1050	1260	1890
		2.50	2	0.027	0.400	0.400	810	1350	1620	2430
		3.00	2	0.032	0.480	0.480	960	1600	1920	2880

Cylindrical end mills Microcut-C8

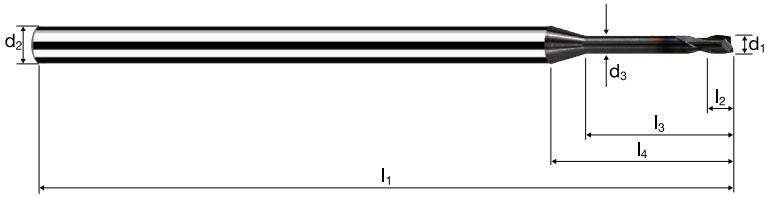
Shank ø 3mm, cylindrical neck, 8xd

Base-X **B**

HM MG10

λ 25°
γ 6°

45°



IV

C Graphite

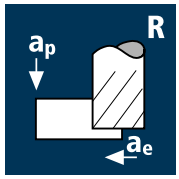
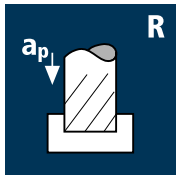
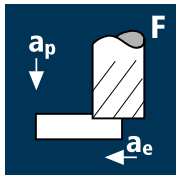
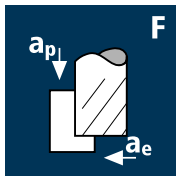
CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **5716** ø-Code **050**

DIAMANT

B5716

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	
050	0.50	3.00	0.45	40	0.60	4.00	9.15	-	8.3°	2	●
060	0.60	3.00	0.55	40	0.72	4.80	9.77	-	7.4°	2	●
080	0.80	3.00	0.75	40	0.96	6.40	10.99	-	6.0°	2	●
100	1.00	3.00	0.95	50	1.20	8.00	12.22	0.07	4.9°	2	●
108	1.20	3.00	1.10	50	1.44	9.60	13.54	0.07	4.0°	2	●
120	1.50	3.00	1.40	60	1.80	12.00	15.38	0.07	3.0°	2	●
140	2.00	3.00	1.90	60	2.40	16.00	18.45	0.10	1.7°	2	●
160	2.50	3.00	2.30	60	3.00	20.00	21.70	0.10	0.7°	2	●
180	3.00	3.00	2.80	60	3.60	23.56	24.00	0.10	0.0°	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.50	2	0.005	0.200	0.200	150	250	300	450
		0.60	2	0.006	0.250	0.250	180	300	360	540
		0.80	2	0.008	0.300	0.300	240	400	480	720
		1.00	2	0.009	0.400	0.400	270	450	540	810
		1.20	2	0.011	0.500	0.500	330	550	660	990
		1.50	2	0.014	0.600	0.600	420	700	840	1260
		2.00	2	0.019	0.800	0.800	570	950	1140	1710
		2.50	2	0.024	1.000	1.000	720	1200	1440	2160
		3.00	2	0.028	1.200	1.200	840	1400	1680	2520
	Graphite B	0.50	2	0.003	0.150	0.500	90	150	180	270
		0.60	2	0.003	0.200	0.600	90	150	180	270
		0.80	2	0.004	0.250	0.800	120	200	240	360
		1.00	2	0.005	0.300	1.000	150	250	300	450
		1.20	2	0.007	0.350	1.200	210	350	420	630
		1.50	2	0.008	0.450	1.500	240	400	480	720
		2.00	2	0.011	0.600	2.000	330	550	660	990
		2.50	2	0.014	0.750	2.500	420	700	840	1260
		3.00	2	0.016	0.900	3.000	480	800	960	1440
	Graphite B	0.50	2	0.005	0.050	0.080	150	250	300	450
		0.60	2	0.006	0.060	0.090	180	300	360	540
		0.80	2	0.009	0.080	0.120	270	450	540	810
		1.00	2	0.011	0.100	0.150	330	550	660	990
		1.20	2	0.013	0.120	0.180	390	650	780	1170
		1.50	2	0.016	0.150	0.230	480	800	960	1440
		2.00	2	0.021	0.200	0.300	630	1050	1260	1890
		2.50	2	0.027	0.250	0.380	810	1350	1620	2430
		3.00	2	0.032	0.300	0.450	960	1600	1920	2880
	Graphite B	0.50	2	0.005	0.070	0.070	150	250	300	450
		0.60	2	0.006	0.080	0.080	180	300	360	540
		0.80	2	0.009	0.110	0.110	270	450	540	810
		1.00	2	0.011	0.140	0.140	330	550	660	990
		1.20	2	0.013	0.170	0.170	390	650	780	1170
		1.50	2	0.016	0.210	0.210	480	800	960	1440
		2.00	2	0.021	0.280	0.280	630	1050	1260	1890
		2.50	2	0.027	0.350	0.350	810	1350	1620	2430
		3.00	2	0.032	0.420	0.420	960	1600	1920	2880

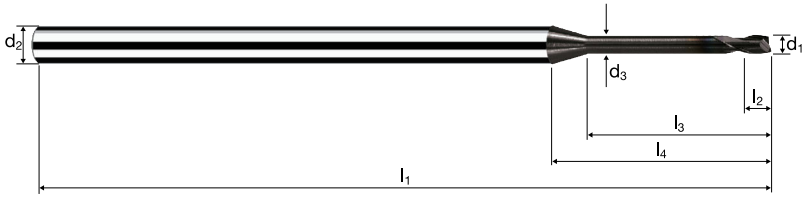
Cylindrical end mills Microcut-C10

Shank ø 3mm, cylindrical neck, 10xd

HM MG10

λ 25°
γ 6°

45°

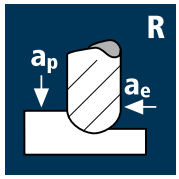
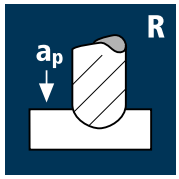
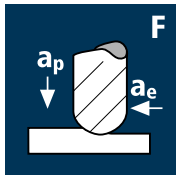
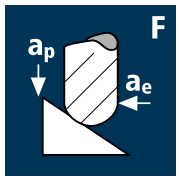


C Graphite

CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **5717** ø-Code **050**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	DIAMANT B5717
050	0.50	3.00	0.45	40	0.60	5.00	10.15	-	7.4°	2	●
060	0.60	3.00	0.55	40	0.72	6.00	10.97	-	6.6°	2	●
080	0.80	3.00	0.75	40	0.96	8.00	12.59	-	5.2°	2	●
100	1.00	3.00	0.95	50	1.20	10.00	14.22	0.07	4.2°	2	●
108	1.20	3.00	1.10	50	1.44	12.00	15.94	0.07	3.4°	2	●
120	1.50	3.00	1.40	60	1.80	15.00	18.38	0.07	2.5°	2	●
140	2.00	3.00	1.90	60	2.40	20.00	22.45	0.10	1.4°	2	●
160	2.50	3.00	2.30	60	3.00	25.00	26.70	0.10	0.6°	2	●
180	3.00	3.00	2.80	60	3.60	29.56	30.00	0.10	0.0°	2	●

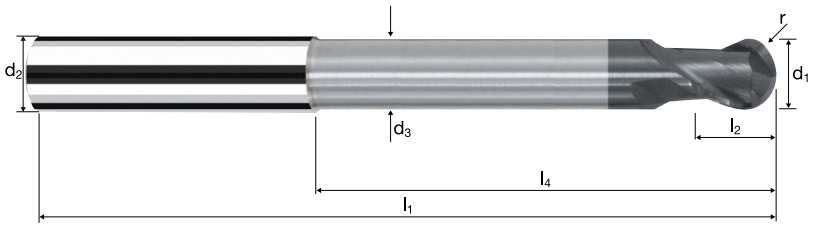
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Graphite B	6.00	2	0.071	2.700	3.600	1420	2130	2840	4260
		8.00	2	0.094	3.600	4.800	1880	2820	3760	5640
		10.00	2	0.118	4.500	6.000	2360	3540	4720	7080
		12.00	2	0.141	5.400	7.200	2820	4230	5640	8460
	Graphite B	6.00	2	0.055	2.700	6.000	1100	1650	2200	3300
		8.00	2	0.073	3.600	8.000	1460	2190	2920	4380
		10.00	2	0.091	4.500	10.000	1820	2730	3640	5460
		12.00	2	0.109	5.400	12.000	2180	3270	4360	6540
	Graphite B	6.00	2	0.080	0.850	1.200	1600	2400	3200	4800
		8.00	2	0.107	1.100	1.600	2140	3210	4280	6420
		10.00	2	0.133	1.400	2.000	2660	3990	5320	7980
		12.00	2	0.160	1.700	2.400	3200	4800	6400	9600
	Graphite B	6.00	2	0.080	1.100	0.350	1600	2400	3200	4800
		8.00	2	0.107	1.450	0.350	2140	3210	4280	6420
		10.00	2	0.133	1.800	0.350	2660	3990	5320	7980
		12.00	2	0.160	2.150	0.350	3200	4800	6400	9600

Ball nose end mills SpheroXG

Tolerance r ±0.005, 6xd

X-Generation

HM XA	λ 30° γ 15°
h5	
d_1	r

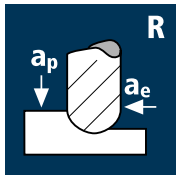
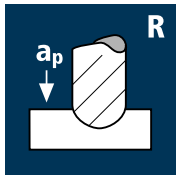
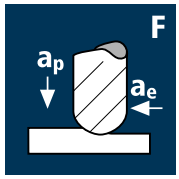
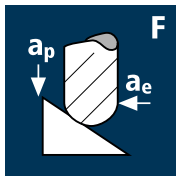


IV

				C Graphite					CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **7484** ø-Code **300**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	z	DIAPLUS B7484
300	6.00	6.00	5.50	80	7.00	42.34	43.00	3.000	2	●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	4.000	2	●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	5.000	2	●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	6.000	2	●

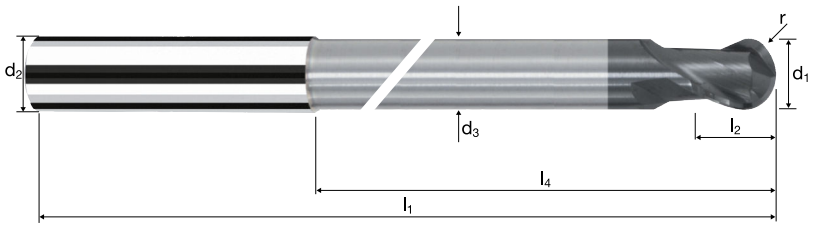
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Graphite B	6.00	2	0.071	2.400	2.400	1420	2130	2840	4260
		8.00	2	0.094	3.200	3.200	1880	2820	3760	5640
		10.00	2	0.118	4.000	4.000	2360	3540	4720	7080
		12.00	2	0.141	4.800	4.800	2820	4230	5640	8460
	Graphite B	6.00	2	0.044	1.800	6.000	880	1320	1760	2640
		8.00	2	0.058	2.400	8.000	1160	1740	2320	3480
		10.00	2	0.073	3.000	10.000	1460	2190	2920	4380
		12.00	2	0.087	3.600	12.000	1740	2610	3480	5220
	Graphite B	6.00	2	0.080	0.600	0.950	1600	2400	3200	4800
		8.00	2	0.107	0.800	1.300	2140	3210	4280	6420
		10.00	2	0.133	1.000	1.600	2660	3990	5320	7980
		12.00	2	0.160	1.200	1.900	3200	4800	6400	9600
	Graphite B	6.00	2	0.080	0.850	0.300	1600	2400	3200	4800
		8.00	2	0.107	1.100	0.300	2140	3210	4280	6420
		10.00	2	0.133	1.400	0.300	2660	3990	5320	7980
		12.00	2	0.160	1.700	0.300	3200	4800	6400	9600

Ball nose end mills SpheroXG

Tolerance r ±0.005, 9xd

X-Generation

HM XA	λ 30° γ 15°
h5	
d_1	r



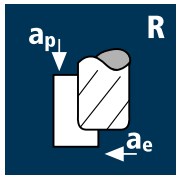
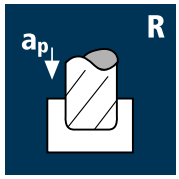
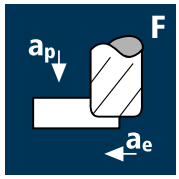
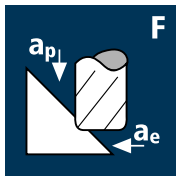
IV

C Graphite

CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **7488** ø-Code **300**

Ø Code	d_1	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	z	DIAPLUS B7488
300	6.00	6.00	5.50	100	7.00	62.34	63.00	3.000	2	●
391	8.00	8.00	7.40	120	9.00	82.29	83.00	4.000	2	●
450	10.00	10.00	9.20	135	11.00	93.20	94.00	5.000	2	●
501	12.00	12.00	11.00	160	13.00	113.13	114.00	6.000	2	●

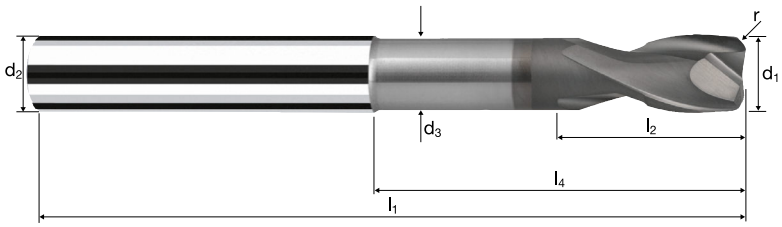
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Graphite B	6.00	2	0.056	4.800	2.400	1120	1680	2240	3360
		8.00	2	0.075	6.400	3.200	1500	2250	3000	4500
		10.00	2	0.094	8.000	4.000	1880	2820	3760	5640
		12.00	2	0.113	9.600	4.800	2260	3390	4520	6780
	Graphite B	6.00	2	0.044	3.000	6.000	880	1320	1760	2640
		8.00	2	0.058	4.000	8.000	1160	1740	2320	3480
		10.00	2	0.073	5.000	10.000	1460	2190	2920	4380
		12.00	2	0.087	6.000	12.000	1740	2610	3480	5220
	Graphite B	6.00	2	0.080	0.480	2.700	1600	2400	3200	4800
		8.00	2	0.107	0.640	3.600	2140	3210	4280	6420
		10.00	2	0.133	0.800	4.500	2660	3990	5320	7980
		12.00	2	0.160	0.960	5.400	3200	4800	6400	9600
	Graphite B	6.00	2	0.080	0.900	0.900	1600	2400	3200	4800
		8.00	2	0.107	1.200	1.200	2140	3210	4280	6420
		10.00	2	0.133	1.500	1.500	2660	3990	5320	7980
		12.00	2	0.160	1.800	1.800	3200	4800	6400	9600

Corner radius end mills ToroXG

Tolerance r ±0.005, 6xd

X-Generation

HM XA	λ 30° γ 15°

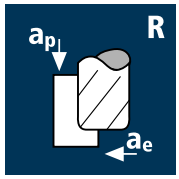
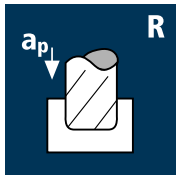
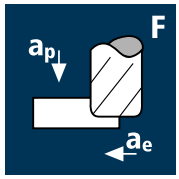
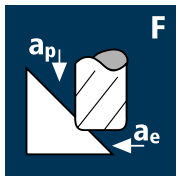


IV

				C Graphite					CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **7284** ø-Code **300**

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	z	DIAPLUS B7284
300	6.00	6.00	5.50	80	7.00	42.34	43.00	0.500	2	●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	0.500	2	●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	0.500	2	●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	0.500	2	●
297	6.00	6.00	5.50	80	7.00	42.34	43.00	1.000	2	●
388	8.00	8.00	7.40	90	9.00	52.29	53.00	1.000	2	●
445	10.00	10.00	9.20	105	11.00	63.20	64.00	1.000	2	●
496	12.00	12.00	11.00	120	13.00	73.13	74.00	1.000	2	●

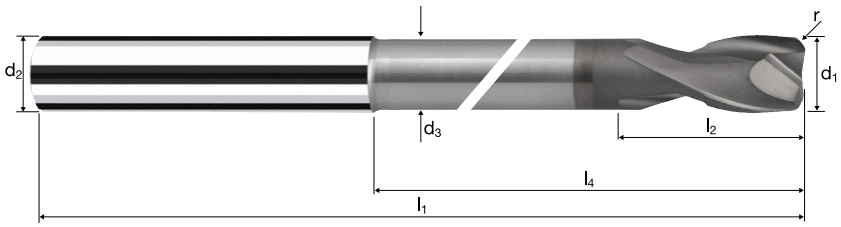
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Graphite B	6.00	2	0.056	4.800	1.200	1120	1680	2240	3360
		8.00	2	0.075	6.400	1.600	1500	2250	3000	4500
		10.00	2	0.094	8.000	2.000	1880	2820	3760	5640
		12.00	2	0.113	9.600	2.400	2260	3390	4520	6780
	Graphite B	6.00	2	0.044	2.100	6.000	880	1320	1760	2640
		8.00	2	0.058	2.800	8.000	1160	1740	2320	3480
		10.00	2	0.073	3.500	10.000	1460	2190	2920	4380
		12.00	2	0.087	4.200	12.000	1740	2610	3480	5220
	Graphite B	6.00	2	0.080	0.360	1.500	1600	2400	3200	4800
		8.00	2	0.107	0.480	2.000	2140	3210	4280	6420
		10.00	2	0.133	0.600	2.500	2660	3990	5320	7980
		12.00	2	0.160	0.720	3.000	3200	4800	6400	9600
	Graphite B	6.00	2	0.080	0.840	0.840	1600	2400	3200	4800
		8.00	2	0.107	1.120	1.120	2140	3210	4280	6420
		10.00	2	0.133	1.400	1.400	2660	3990	5320	7980
		12.00	2	0.160	1.680	1.680	3200	4800	6400	9600

Corner radius end mills ToroXG

Tolerance r ±0.005, 9xd

X-Generation

HM XA	λ 30° γ 15°



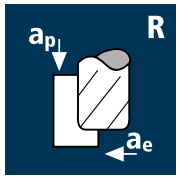
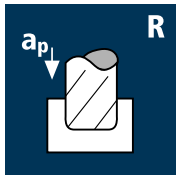
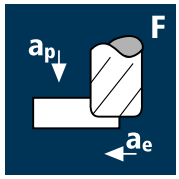
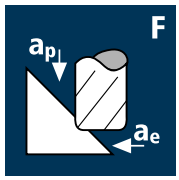
IV

C Graphite

CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **7288** ø-Code **300**

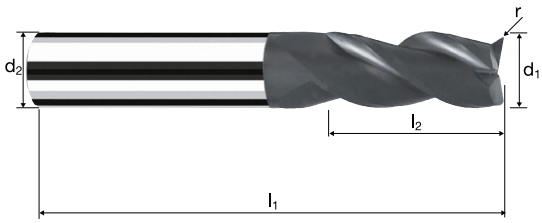
Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r ±0.005	z	DIAPLUS B7288
300	6.00	6.00	5.50	100	7.00	62.34	63.00	0.500	2	●
391	8.00	8.00	7.40	120	9.00	82.29	83.00	0.500	2	●
450	10.00	10.00	9.20	135	11.00	93.20	94.00	0.500	2	●
501	12.00	12.00	11.00	160	13.00	113.13	114.00	0.500	2	●
297	6.00	6.00	5.50	100	7.00	62.34	63.00	1.000	2	●
388	8.00	8.00	7.40	120	9.00	82.29	83.00	1.000	2	●
445	10.00	10.00	9.20	135	11.00	93.20	94.00	1.000	2	●
496	12.00	12.00	11.00	160	13.00	113.13	114.00	1.000	2	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Graphite B	2.00	3	0.024	4.000	0.500	720	1080	1440	2160
		3.00	3	0.035	6.000	0.750	1050	1575	2100	3150
		4.00	3	0.047	8.000	1.000	1410	2115	2820	4230
		5.00	3	0.059	10.000	1.250	1770	2655	3540	5310
		6.00	3	0.071	12.000	1.500	2130	3195	4260	6390
		8.00	3	0.094	16.000	2.000	2820	4230	5640	8460
		10.00	3	0.118	20.000	2.500	3540	5310	7080	10620
		12.00	3	0.141	24.000	3.000	4230	6345	8460	12690
	Graphite B	2.00	3	0.018	0.600	2.000	540	810	1080	1620
		3.00	3	0.027	0.900	3.000	810	1215	1620	2430
		4.00	3	0.036	1.200	4.000	1080	1620	2160	3240
		5.00	3	0.045	1.500	5.000	1350	2025	2700	4050
		6.00	3	0.055	1.800	6.000	1650	2475	3300	4950
		8.00	3	0.073	2.400	8.000	2190	3285	4380	6570
		10.00	3	0.091	3.000	10.000	2730	4095	5460	8190
		12.00	3	0.109	3.600	12.000	3270	4905	6540	9810
	Graphite B	2.00	3	0.027	0.200	0.800	810	1215	1620	2430
		3.00	3	0.040	0.300	1.200	1200	1800	2400	3600
		4.00	3	0.053	0.400	1.600	1590	2385	3180	4770
		5.00	3	0.067	0.500	2.000	2010	3015	4020	6030
		6.00	3	0.080	0.600	2.400	2400	3600	4800	7200
		8.00	3	0.107	0.800	3.200	3210	4815	6420	9630
		10.00	3	0.133	1.000	4.000	3990	5985	7980	11970
		12.00	3	0.160	1.200	4.800	4800	7200	9600	14400
	Graphite B	2.00	3	0.027	4.000	0.300	810	1215	1620	2430
		3.00	3	0.040	6.000	0.450	1200	1800	2400	3600
		4.00	3	0.053	8.000	0.600	1590	2385	3180	4770
		5.00	3	0.067	10.000	0.750	2010	3015	4020	6030
		6.00	3	0.080	12.000	0.900	2400	3600	4800	7200
		8.00	3	0.107	16.000	1.200	3210	4815	6420	9630
		10.00	3	0.133	20.000	1.500	3990	5985	7980	11970
		12.00	3	0.160	24.000	1.800	4800	7200	9600	14400

Corner radius end mills

Tolerance r 0/+0.03

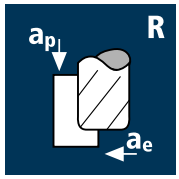
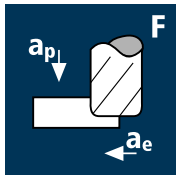
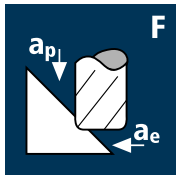
HM XA	λ 40° γ 15°



C Graphite	CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **5640** ø-Code **140**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r 0/+0.03	α	z	DIAMANT B5640
140	2.00	3.00	40	6.00	9.06	0.150	3.4°	3	●
180	3.00	3.00	40	12.00	-	0.150	0.0°	3	●
220	4.00	4.00	50	14.00	-	0.200	0.0°	3	●
260	5.00	5.00	50	16.00	-	0.300	0.0°	3	●
300	6.00	6.00	63	19.00	-	0.300	0.0°	3	●
391	8.00	8.00	63	19.00	-	0.500	0.0°	3	●
450	10.00	10.00	72	22.00	-	0.500	0.0°	3	●
501	12.00	12.00	75	25.00	-	0.500	0.0°	3	●

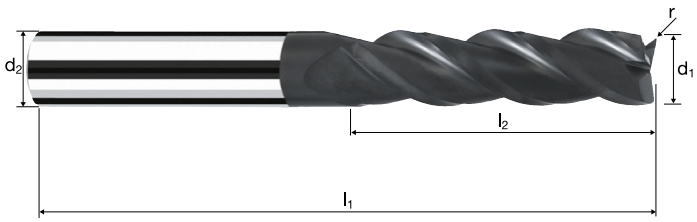
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Graphite B	2.00	3	0.019	6.000	0.400	570	855	1140	1710
		3.00	3	0.028	9.000	0.600	840	1260	1680	2520
		4.00	3	0.038	12.000	0.800	1140	1710	2280	3420
		5.00	3	0.047	15.000	1.000	1410	2115	2820	4230
		6.00	3	0.056	18.000	1.200	1680	2520	3360	5040
		8.00	3	0.075	24.000	1.600	2250	3375	4500	6750
		10.00	3	0.094	30.000	2.000	2820	4230	5640	8460
		12.00	3	0.113	36.000	2.400	3390	5085	6780	10170
	Graphite B	2.00	3	0.021	0.200	0.700	630	945	1260	1890
		3.00	3	0.032	0.300	1.050	960	1440	1920	2880
		4.00	3	0.043	0.400	1.400	1290	1935	2580	3870
		5.00	3	0.053	0.500	1.750	1590	2385	3180	4770
		6.00	3	0.064	0.600	2.100	1920	2880	3840	5760
		8.00	3	0.085	0.800	2.800	2550	3825	5100	7650
		10.00	3	0.107	1.000	3.500	3210	4815	6420	9630
		12.00	3	0.128	1.200	4.200	3840	5760	7680	11520
	Graphite B	2.00	3	0.021	6.000	0.300	630	945	1260	1890
		3.00	3	0.032	9.000	0.450	960	1440	1920	2880
		4.00	3	0.043	12.000	0.600	1290	1935	2580	3870
		5.00	3	0.053	15.000	0.750	1590	2385	3180	4770
		6.00	3	0.064	18.000	0.900	1920	2880	3840	5760
		8.00	3	0.085	24.000	1.200	2550	3825	5100	7650
		10.00	3	0.107	30.000	1.500	3210	4815	6420	9630
		12.00	3	0.128	36.000	1.800	3840	5760	7680	11520

Corner radius end mills

Tolerance r 0/+0.03

HM
XA

λ 40°
γ 15°

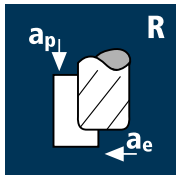
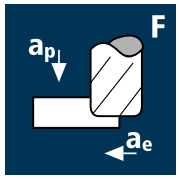
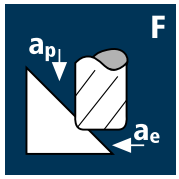


C
Graphite

CF / GF
Fiber Reinforced
Plastics

Example:
Order-N°. Coating **B** Article-Nr. **5645** ø-Code **140**

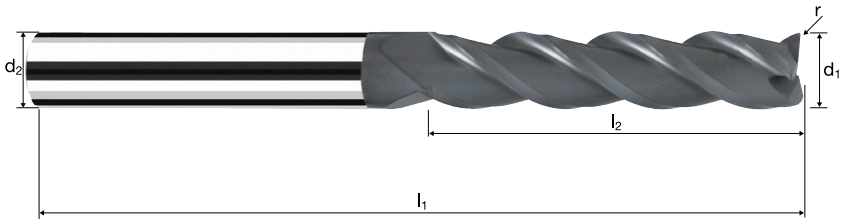
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r 0/+0.03	α	z	DIAMANT B5645
140	2.00	3.00	60	9.00	12.06	0.150	2.5°	3	●
180	3.00	3.00	60	30.00	-	0.150	0.0°	3	●
220	4.00	4.00	60	30.00	-	0.200	0.0°	3	●
260	5.00	5.00	70	35.00	-	0.300	0.0°	3	●
300	6.00	6.00	100	40.00	-	0.300	0.0°	3	●
391	8.00	8.00	100	40.00	-	0.500	0.0°	3	●
450	10.00	10.00	100	40.00	-	0.500	0.0°	3	●
501	12.00	12.00	97	42.00	-	0.500	0.0°	3	●

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Graphite B	10.00	3	0.071	40.000	1.500	2130	3195	4260	6390
		12.00	3	0.085	48.000	1.800	2550	3825	5100	7650
	Graphite B	10.00	3	0.080	1.000	3.000	2400	3600	4800	7200
		12.00	3	0.096	1.200	3.600	2880	4320	5760	8640
	Graphite B	10.00	3	0.080	40.000	1.000	2400	3600	4800	7200
		12.00	3	0.096	48.000	1.200	2880	4320	5760	8640

Corner radius end mills

Tolerance r 0/+0.03

HM XA	λ 40° γ 15°



C Graphite

CF / GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-Nr. **5650** ø-Code **450**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	r 0/+0.03	z	DIAMANT B5650
450	10.00	10.00	125	55.00	0.500	3	●
501	12.00	12.00	125	55.00	0.500	3	●

passion
for precision
fraisa

End milling tools for CFC

Cylindrical CVD

N° 25000

N° 25004

N° 25010

X-Generation | Wear resistance | d_1 4 – 12 | 45° | CFK GFK I | CFK GFK II | CFK III | 769

X-Generation | Wear resistance | d_1 2 – 12 | 45° | CFK GFK I | CFK GFK II | CFK III | 771

X-Generation | Wear resistance | d_1 8 – 12 | 45° | CFK GFK I | CFK GFK II | CFK III | 773

Cylindrical carbide

N° 20020

N° 20025

N° 20030

Base-X | Wear resistance | d_1 4 – 12 | 45° | CFK GFK I | CFK GFK II | 775

Base-X | Wear resistance | d_1 4 – 12 | 45° | CFK GFK I | CFK GFK II | 777

Base-X | Wear resistance | d_1 4 – 12 | 45° | CFK GFK I | CFK GFK II | 779

Corner radius CVD

N° 25404

X-Generation | Wear resistance | r 0.2, 0.5, 1.0 | CFK GFK I | CFK GFK II | CFK III | 781

Ball nose CVD

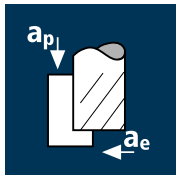
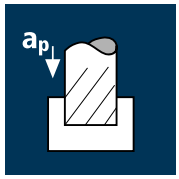
N° 25704

N° 25700

X-Generation | Wear resistance | d_1 2 – 12 | CFK GFK I | CFK GFK II | CFK III | 783

X-Generation | Wear resistance | d_1 2 – 12 | CFK GFK I | CFK GFK II | CFK III | 785

V

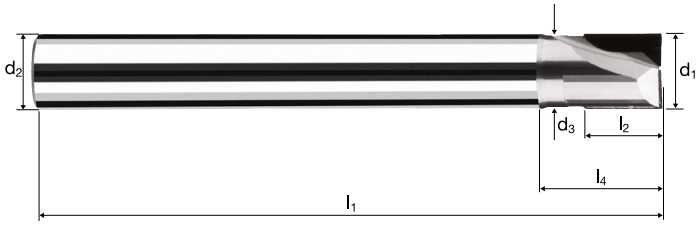
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	CFC	4.00	2	0.045	6.000	1.000	900	1350	1800	2700
		6.00	2	0.070	8.000	1.500	1400	2100	2800	4200
		8.00	2	0.095	9.000	2.000	1900	2850	3800	5700
		10.00	2	0.120	9.000	2.500	2400	3600	4800	7200
		12.00	2	0.135	9.000	3.000	2700	4050	5400	8100
	GRP	4.00	2	0.040	6.000	1.000	800	1200	1600	2400
		6.00	2	0.060	8.000	1.500	1200	1800	2400	3600
		8.00	2	0.080	9.000	2.000	1600	2400	3200	4800
		10.00	2	0.100	9.000	2.500	2000	3000	4000	6000
		12.00	2	0.115	9.000	3.000	2300	3450	4600	6900
	Aluminium Si > 6%	4.00	2	0.035	4.000	1.000	700	1050	1400	2100
		6.00	2	0.055	6.000	1.500	1100	1650	2200	3300
		8.00	2	0.070	7.000	2.000	1400	2100	2800	4200
		10.00	2	0.090	7.000	2.500	1800	2700	3600	5400
		12.00	2	0.105	7.000	3.000	2100	3150	4200	6300
	Graphite	4.00	2	0.040	6.000	1.000	800	1200	1600	2400
		6.00	2	0.060	8.000	1.500	1200	1800	2400	3600
		8.00	2	0.080	9.000	2.000	1600	2400	3200	4800
		10.00	2	0.100	9.000	2.500	2000	3000	4000	6000
		12.00	2	0.115	9.000	3.000	2300	3450	4600	6900
	CFC	4.00	2	0.035	2.400	4.000	700	1050	1400	2100
		6.00	2	0.055	3.600	6.000	1100	1650	2200	3300
		8.00	2	0.075	4.800	8.000	1500	2250	3000	4500
		10.00	2	0.095	6.000	10.000	1900	2850	3800	5700
		12.00	2	0.110	7.200	12.000	2200	3300	4400	6600
	GRP	4.00	2	0.030	2.400	4.000	600	900	1200	1800
		6.00	2	0.050	3.600	6.000	1000	1500	2000	3000
		8.00	2	0.065	4.800	8.000	1300	1950	2600	3900
		10.00	2	0.080	6.000	10.000	1600	2400	3200	4800
		12.00	2	0.090	7.200	12.000	1800	2700	3600	5400
	Aluminium Si > 6%	4.00	2	0.030	2.000	4.000	600	900	1200	1800
		6.00	2	0.045	3.000	6.000	900	1350	1800	2700
		8.00	2	0.055	4.000	8.000	1100	1650	2200	3300
		10.00	2	0.070	5.000	10.000	1400	2100	2800	4200
		12.00	2	0.085	6.000	12.000	1700	2550	3400	5100
	Graphite	4.00	2	0.030	2.400	4.000	600	900	1200	1800
		6.00	2	0.050	3.600	6.000	1000	1500	2000	3000
		8.00	2	0.065	4.800	8.000	1300	1950	2600	3900
		10.00	2	0.080	6.000	10.000	1600	2400	3200	4800
		12.00	2	0.090	7.200	12.000	1800	2700	3600	5400

Cylindrical end mills CVD

Medium-length version with short neck, straight cutting edge

X-Generation

CVD	λ 0° γ 0°



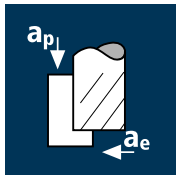
Wear resistance

Al Aluminium Cast	Cu Copper	CuZn Brass		C Graphite	CFK GFK I	CFK GFK II	CFK GFK II	CFK/AL	

Example: **Order-N°.** Coating **25000** Article-N°. ø-Code **220**

Ø Code	d_1 h7	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	25000
220	4.00	6.00	3.80	60	8.00	10.00	13.20	0.10	4.1°	2	●
222	4.00	6.00	3.80	60	15.00	20.00	23.20	0.10	2.4°	2	●
300	6.00	6.00	5.80	65	10.00	15.00	15.50	0.10	0.0°	2	●
304	6.00	6.00	5.80	65	20.00	25.00	25.50	0.10	0.0°	2	●
391	8.00	8.00	7.60	70	10.00	15.00	15.90	0.10	0.0°	2	●
395	8.00	8.00	7.60	70	20.00	30.00	30.90	0.10	0.0°	2	●
450	10.00	10.00	9.60	85	10.00	15.00	15.90	0.10	0.0°	2	●
455	10.00	10.00	9.60	85	20.00	30.00	30.90	0.10	0.0°	2	●
501	12.00	12.00	11.60	92	10.00	15.00	15.90	0.10	0.0°	2	●
505	12.00	12.00	11.60	92	20.00	30.00	30.90	0.10	0.0°	2	●

V

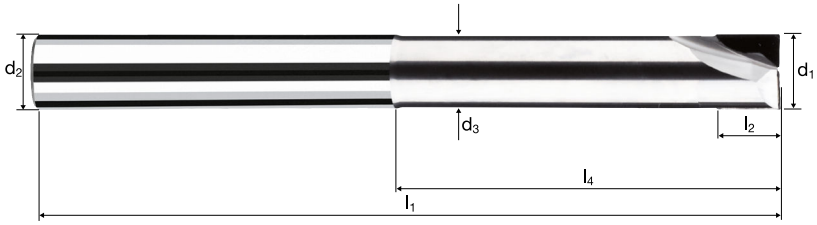
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	CFC	2.00	2	0.020	1.200	1.000	400	600	800	1200
		3.00	2	0.030	1.800	1.500	600	900	1200	1800
		4.00	2	0.040	2.400	2.000	800	1200	1600	2400
		6.00	2	0.065	3.600	3.000	1300	1950	2600	3900
		8.00	2	0.085	4.800	4.000	1700	2550	3400	5100
		10.00	2	0.105	6.000	5.000	2100	3150	4200	6300
		12.00	2	0.120	7.200	6.000	2400	3600	4800	7200
	GRP	2.00	2	0.015	1.200	1.000	300	450	600	900
		3.00	2	0.025	1.800	1.500	500	750	1000	1500
		4.00	2	0.035	2.400	2.000	700	1050	1400	2100
		6.00	2	0.055	3.600	3.000	1100	1650	2200	3300
		8.00	2	0.070	4.800	4.000	1400	2100	2800	4200
		10.00	2	0.090	6.000	5.000	1800	2700	3600	5400
		12.00	2	0.100	7.200	6.000	2000	3000	4000	6000
	Aluminium Si > 6%	2.00	2	0.015	1.000	1.000	300	450	600	900
		3.00	2	0.025	1.500	1.500	500	750	1000	1500
		4.00	2	0.030	2.000	2.000	600	900	1200	1800
		6.00	2	0.050	3.000	3.000	1000	1500	2000	3000
		8.00	2	0.065	4.000	4.000	1300	1950	2600	3900
		10.00	2	0.080	5.000	5.000	1600	2400	3200	4800
		12.00	2	0.090	6.000	6.000	1800	2700	3600	5400
	Graphite	2.00	2	0.015	1.200	1.000	300	450	600	900
		3.00	2	0.025	1.800	1.500	500	750	1000	1500
		4.00	2	0.035	2.400	2.000	700	1050	1400	2100
		6.00	2	0.055	3.600	3.000	1100	1650	2200	3300
		8.00	2	0.070	4.800	4.000	1400	2100	2800	4200
		10.00	2	0.090	6.000	5.000	1800	2700	3600	5400
		12.00	2	0.100	7.200	6.000	2000	3000	4000	6000
	CFC	2.00	2	0.015	1.000	2.000	300	450	600	900
		3.00	2	0.020	1.500	3.000	400	600	800	1200
		4.00	2	0.030	2.000	4.000	600	900	1200	1800
		6.00	2	0.045	3.000	6.000	900	1350	1800	2700
		8.00	2	0.060	4.000	8.000	1200	1800	2400	3600
		10.00	2	0.075	5.000	10.000	1500	2250	3000	4500
		12.00	2	0.085	6.000	12.000	1700	2550	3400	5100
	GRP	2.00	2	0.010	1.000	2.000	200	300	400	600
		3.00	2	0.020	1.500	3.000	400	600	800	1200
		4.00	2	0.025	2.000	4.000	500	750	1000	1500
		6.00	2	0.040	3.000	6.000	800	1200	1600	2400
		8.00	2	0.050	4.000	8.000	1000	1500	2000	3000
		10.00	2	0.065	5.000	10.000	1300	1950	2600	3900
		12.00	2	0.070	6.000	12.000	1400	2100	2800	4200
	Aluminium Si > 6%	2.00	2	0.010	0.800	2.000	200	300	400	600
		3.00	2	0.020	1.200	3.000	400	600	800	1200
		4.00	2	0.020	1.600	4.000	400	600	800	1200
		6.00	2	0.035	2.400	6.000	700	1050	1400	2100
		8.00	2	0.045	3.200	8.000	900	1350	1800	2700
		10.00	2	0.055	4.000	10.000	1100	1650	2200	3300
		12.00	2	0.065	4.800	12.000	1300	1950	2600	3900
	Graphite	2.00	2	0.010	1.000	2.000	200	300	400	600
		3.00	2	0.020	1.500	3.000	400	600	800	1200
		4.00	2	0.025	2.000	4.000	500	750	1000	1500
		6.00	2	0.040	3.000	6.000	800	1200	1600	2400
		8.00	2	0.050	4.000	8.000	1000	1500	2000	3000
		10.00	2	0.065	5.000	10.000	1300	1950	2600	3900
		12.00	2	0.070	6.000	12.000	1400	2100	2800	4200

Cylindrical end mills CVD

Long version with neck, straight cutting edge

X-Generation

CVD	λ 0° γ 0°



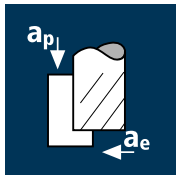
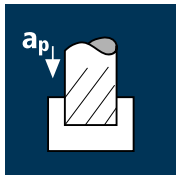
Wear resistance

Al Aluminium Cast	Cu Copper	CuZn Brass		C Graphite	CFK GFK I	CFK GFK II	CFK GFK II	CFK/AL	

Example: **Order-N°.** Coating: **25004** ø-Code: **140**

Ø Code	d_1 h7	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	25004
140	2.00	6.00	1.90	55	2.50	10.00	17.80	0.10	6.5°	2	●
180	3.00	6.00	2.80	75	2.50	20.00	26.10	0.10	3.3°	2	●
220	4.00	6.00	3.80	75	2.50	30.00	34.20	0.10	1.7°	2	●
300	6.00	6.00	5.60	100	6.00	40.00	40.90	0.10	0.0°	2	●
391	8.00	8.00	7.40	100	7.00	40.00	40.90	0.10	0.0°	2	●
450	10.00	10.00	9.60	100	8.00	50.00	50.90	0.10	0.0°	2	●
501	12.00	12.00	11.60	105	9.00	60.00	60.90	0.10	0.0°	2	●

V

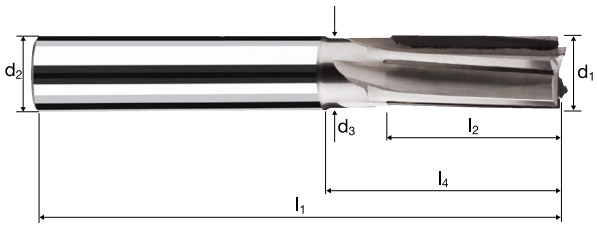
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	CFC	8.00	5	0.075	8.000	4.000	3750	5625	7500	11250
		10.00	5	0.095	10.000	5.000	4750	7125	9500	14250
		12.00	7	0.110	12.000	6.000	7700	11550	15400	23100
	GRP	8.00	5	0.065	8.000	4.000	3250	4875	6500	9750
		10.00	5	0.080	10.000	5.000	4000	6000	8000	12000
		12.00	7	0.095	12.000	6.000	6650	9975	13300	19950
	Aluminium Si > 6%	8.00	5	0.060	6.400	4.000	3000	4500	6000	9000
		10.00	5	0.070	8.000	5.000	3500	5250	7000	10500
		12.00	7	0.085	9.600	6.000	5950	8925	11900	17850
	Graphite	8.00	5	0.065	8.000	4.000	3250	4875	6500	9750
		10.00	5	0.080	10.000	5.000	4000	6000	8000	12000
		12.00	7	0.095	12.000	6.000	6650	9975	13300	19950
	CFC	8.00	5	0.045	8.000	8.000	2250	3375	4500	6750
		10.00	5	0.055	10.000	10.000	2750	4125	5500	8250
		12.00	7	0.065	12.000	12.000	4550	6825	9100	13650
	GRP	8.00	5	0.040	8.000	8.000	2000	3000	4000	6000
		10.00	5	0.050	10.000	10.000	2500	3750	5000	7500
		12.00	7	0.055	12.000	12.000	3850	5775	7700	11550
	Aluminium Si > 6%	8.00	5	0.035	6.400	8.000	1750	2625	3500	5250
		10.00	5	0.040	8.000	10.000	2000	3000	4000	6000
		12.00	7	0.050	9.600	12.000	3500	5250	7000	10500
	Graphite	8.00	5	0.040	8.000	8.000	2000	3000	4000	6000
		10.00	5	0.050	10.000	10.000	2500	3750	5000	7500
		12.00	7	0.055	12.000	12.000	3850	5775	7700	11550

Cylindrical end mills CVD

Normal version with short neck, straight cutting edge

X-Generation

CVD	λ 4° γ 0°
45°	



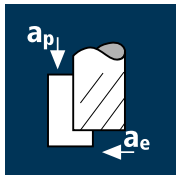
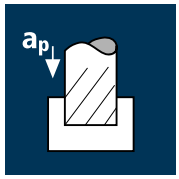
Wear resistance

Al Aluminium Cast	Cu Copper	CuZn Brass		C Graphite	CFK GFK I	CFK GFK II	CFK GFK II	CFK/AL	

Example: **Order-N°.** Coating: — Article-N°.: **25010** ø-Code: **391**

Ø Code	d_1 h8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	z	25010	
391	8.00	8.00	7.40	55	10.00	18.00	19.00	0.10	5	●	
395	8.00	8.00	7.40	65	20.00	28.00	29.00	0.10	5	●	
450	10.00	10.00	9.40	62	12.00	21.00	22.00	0.10	5	●	
455	10.00	10.00	9.40	72	22.00	31.00	32.00	0.10	5	●	
501	12.00	12.00	11.40	70	15.00	24.00	25.00	0.10	7	●	
505	12.00	12.00	11.40	80	24.00	34.00	35.00	0.10	7	●	

V

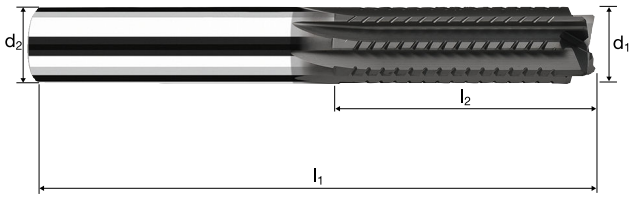
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	CFC	4.00	8	200	0.025	7.200	1.600	15915	3185
		5.00	8	200	0.030	9.000	2.000	12730	3055
		6.00	8	200	0.040	10.800	2.400	10610	3395
		8.00	8	200	0.045	14.400	3.200	7960	2865
		10.00	8	200	0.050	18.000	4.000	6365	2545
		12.00	8	200	0.060	21.600	4.800	5305	2545
	GRP	4.00	8	150	0.030	7.200	1.600	11935	2865
		5.00	8	150	0.035	9.000	2.000	9550	2675
		6.00	8	150	0.040	10.800	2.400	7960	2545
		8.00	8	150	0.050	14.400	3.200	5970	2385
		10.00	8	150	0.055	18.000	4.000	4775	2100
		12.00	8	150	0.065	21.600	4.800	3980	2070
	CFC	4.00	8	150	0.020	3.200	4.000	11935	1910
		5.00	8	150	0.025	4.000	5.000	9550	1910
		6.00	8	150	0.030	4.800	6.000	7960	1910
		8.00	8	150	0.035	6.400	8.000	5970	1670
		10.00	8	150	0.040	8.000	10.000	4775	1530
		12.00	8	150	0.050	9.600	12.000	3980	1590
	GRP	4.00	8	100	0.025	3.200	4.000	7960	1590
		5.00	8	100	0.030	4.000	5.000	6365	1530
		6.00	8	100	0.030	4.800	6.000	5305	1275
		8.00	8	100	0.040	6.400	8.000	3980	1275
		10.00	8	100	0.045	8.000	10.000	3185	1145
		12.00	8	100	0.050	9.600	12.000	2655	1060

Cylindrical end mills

Normal version, straight cutting edge

HM MG6	λ 0° γ 18°

45°

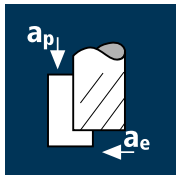
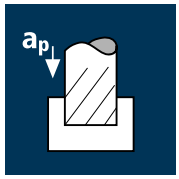


Wear resistance

CFK GFK I | CFK GFK II

Example: **Order-N°.** Coating **B** Article-N°. **20020** ø-Code **220**

Ø Code	d_1 h10	d_2 h6	l_1	l_2	l_4	45°	α	z	DIAMANT B20020
220	4.00	6.00	60	16.00	24.00	0.10	2.9°	8	●
260	5.00	6.00	60	18.00	24.00	0.10	1.4°	8	●
300	6.00	6.00	60	20.00	24.00	0.10	0.0°	8	●
302	6.00	6.00	65	25.00	29.00	0.10	0.0°	8	●
304	6.00	6.00	75	28.00	39.00	0.10	0.0°	8	●
391	8.00	8.00	63	22.00	27.00	0.20	0.0°	8	●
393	8.00	8.00	75	32.00	39.00	0.20	0.0°	8	●
450	10.00	10.00	72	32.00	32.00	0.20	0.0°	8	●
501	12.00	12.00	83	32.00	38.00	0.20	0.0°	8	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	CFC	4.00	8	200	0.025	7.200	1.600	15915	3185
		5.00	8	200	0.030	9.000	2.000	12730	3055
		6.00	8	200	0.040	10.800	2.400	10610	3395
		8.00	8	200	0.045	14.400	3.200	7960	2865
		10.00	8	200	0.050	18.000	4.000	6365	2545
		12.00	8	200	0.060	21.600	4.800	5305	2545
	GRP	4.00	8	150	0.030	7.200	1.600	11935	2865
		5.00	8	150	0.035	9.000	2.000	9550	2675
		6.00	8	150	0.040	10.800	2.400	7960	2545
		8.00	8	150	0.050	14.400	3.200	5970	2385
		10.00	8	150	0.055	18.000	4.000	4775	2100
		12.00	8	150	0.065	21.600	4.800	3980	2070
	CFC	4.00	8	150	0.020	3.200	4.000	11935	1910
		5.00	8	150	0.025	4.000	5.000	9550	1910
		6.00	8	150	0.030	4.800	6.000	7960	1910
		8.00	8	150	0.035	6.400	8.000	5970	1670
		10.00	8	150	0.040	8.000	10.000	4775	1530
		12.00	8	150	0.050	9.600	12.000	3980	1590
	GRP	4.00	8	100	0.025	3.200	4.000	7960	1590
		5.00	8	100	0.030	4.000	5.000	6365	1530
		6.00	8	100	0.030	4.800	6.000	5305	1275
		8.00	8	100	0.040	6.400	8.000	3980	1275
		10.00	8	100	0.045	8.000	10.000	3185	1145
		12.00	8	100	0.050	9.600	12.000	2655	1060

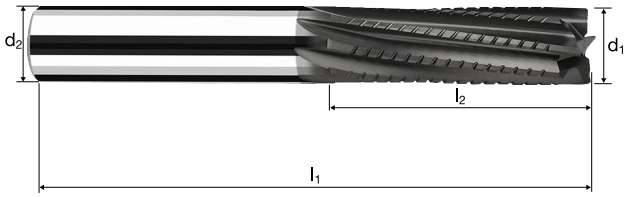
Cylindrical end mills

Normal version, pulling cutting edge

HM
MG6

λ 8°
γ 18°

45°

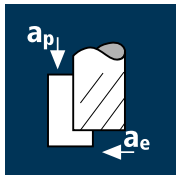
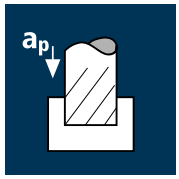


Wear resistance

CFK GFK I **CFK GFK II**

Example: **Order-N°.** Coating **B** Article-N°. **20025** ø-Code **220**

Ø Code	d_1 h10	d_2 h6	l_1	l_2	l_4	45°	α	z	DIAMANT B20025
220	4.00	6.00	60	16.00	24.00	0.10	2.9°	8	●
260	5.00	6.00	60	18.00	24.00	0.10	1.4°	8	●
300	6.00	6.00	60	20.00	24.00	0.10	0.0°	8	●
302	6.00	6.00	65	25.00	29.00	0.10	0.0°	8	●
304	6.00	6.00	75	28.00	39.00	0.10	0.0°	8	●
391	8.00	8.00	63	22.00	27.00	0.20	0.0°	8	●
393	8.00	8.00	75	32.00	39.00	0.20	0.0°	8	●
450	10.00	10.00	72	32.00	32.00	0.20	0.0°	8	●
501	12.00	12.00	83	32.00	38.00	0.20	0.0°	8	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	CFC	4.00	8	200	0.025	7.200	1.600	15915	3185
		5.00	8	200	0.030	9.000	2.000	12730	3055
		6.00	8	200	0.040	10.800	2.400	10610	3395
		8.00	8	200	0.045	14.400	3.200	7960	2865
		10.00	8	200	0.050	18.000	4.000	6365	2545
		12.00	8	200	0.060	21.600	4.800	5305	2545
	GRP	4.00	8	150	0.030	7.200	1.600	11935	2865
		5.00	8	150	0.035	9.000	2.000	9550	2675
		6.00	8	150	0.040	10.800	2.400	7960	2545
		8.00	8	150	0.050	14.400	3.200	5970	2385
		10.00	8	150	0.055	18.000	4.000	4775	2100
		12.00	8	150	0.065	21.600	4.800	3980	2070
	CFC	4.00	8	150	0.020	3.200	4.000	11935	1910
		5.00	8	150	0.025	4.000	5.000	9550	1910
		6.00	8	150	0.030	4.800	6.000	7960	1910
		8.00	8	150	0.035	6.400	8.000	5970	1670
		10.00	8	150	0.040	8.000	10.000	4775	1530
		12.00	8	150	0.050	9.600	12.000	3980	1590
	GRP	4.00	8	100	0.025	3.200	4.000	7960	1590
		5.00	8	100	0.030	4.000	5.000	6365	1530
		6.00	8	100	0.030	4.800	6.000	5305	1275
		8.00	8	100	0.040	6.400	8.000	3980	1275
		10.00	8	100	0.045	8.000	10.000	3185	1145
		12.00	8	100	0.050	9.600	12.000	2655	1060

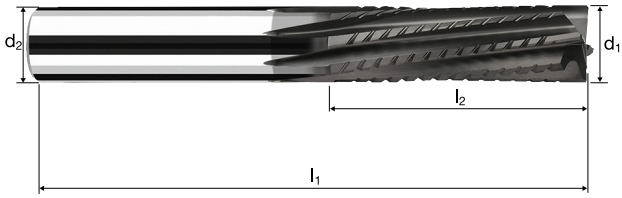
Cylindrical end mills

Normal version, pushing cutting edge

HM
MG6

λ -8°
γ 18°

45°

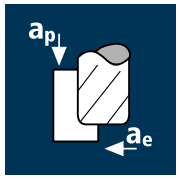
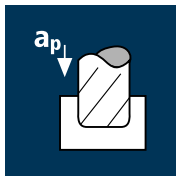


Wear resistance

CFK GFK I | CFK GFK II

Example: **Order-N°.** Coating **B** Article-N°. **20030** ø-Code **220**

Ø Code	d_1 h10	d_2 h6	l_1	l_2	l_4	45°	α	z	DIAMANT B20030
220	4.00	6.00	60	16.00	24.00	0.10	2.9°	8	●
260	5.00	6.00	60	18.00	24.00	0.10	1.4°	8	●
300	6.00	6.00	60	20.00	24.00	0.10	0.0°	8	●
302	6.00	6.00	65	25.00	29.00	0.10	0.0°	8	●
304	6.00	6.00	75	28.00	39.00	0.10	0.0°	8	●
391	8.00	8.00	63	22.00	27.00	0.20	0.0°	8	●
393	8.00	8.00	75	32.00	39.00	0.20	0.0°	8	●
450	10.00	10.00	72	32.00	32.00	0.20	0.0°	8	●
501	12.00	12.00	83	32.00	38.00	0.20	0.0°	8	●

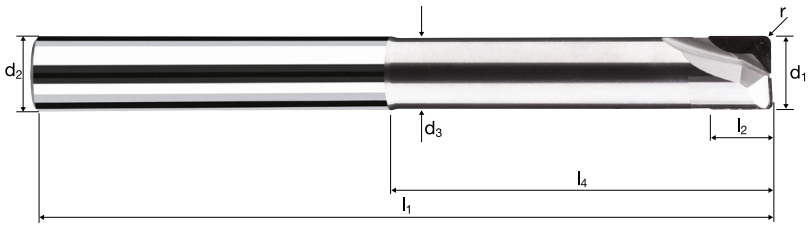
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	CFC	2.00	2	0.020	1.200	1.000	400	600	800	1200
		3.00	2	0.030	1.800	1.500	600	900	1200	1800
		4.00	2	0.040	2.400	2.000	800	1200	1600	2400
		6.00	2	0.065	3.600	3.000	1300	1950	2600	3900
		8.00	2	0.085	4.800	4.000	1700	2550	3400	5100
		10.00	2	0.105	6.000	5.000	2100	3150	4200	6300
		12.00	2	0.120	7.200	6.000	2400	3600	4800	7200
	GRP	2.00	2	0.015	1.200	1.000	300	450	600	900
		3.00	2	0.025	1.800	1.500	500	750	1000	1500
		4.00	2	0.035	2.400	2.000	700	1050	1400	2100
		6.00	2	0.055	3.600	3.000	1100	1650	2200	3300
		8.00	2	0.070	4.800	4.000	1400	2100	2800	4200
		10.00	2	0.090	6.000	5.000	1800	2700	3600	5400
		12.00	2	0.100	7.200	6.000	2000	3000	4000	6000
	Aluminium Si > 6%	2.00	2	0.015	1.000	1.000	300	450	600	900
		3.00	2	0.025	1.500	1.500	500	750	1000	1500
		4.00	2	0.030	2.000	2.000	600	900	1200	1800
		6.00	2	0.050	3.000	3.000	1000	1500	2000	3000
		8.00	2	0.065	4.000	4.000	1300	1950	2600	3900
		10.00	2	0.080	5.000	5.000	1600	2400	3200	4800
		12.00	2	0.090	6.000	6.000	1800	2700	3600	5400
	Graphite	2.00	2	0.015	1.200	1.000	300	450	600	900
		3.00	2	0.025	1.800	1.500	500	750	1000	1500
		4.00	2	0.035	2.400	2.000	700	1050	1400	2100
		6.00	2	0.055	3.600	3.000	1100	1650	2200	3300
		8.00	2	0.070	4.800	4.000	1400	2100	2800	4200
		10.00	2	0.090	6.000	5.000	1800	2700	3600	5400
		12.00	2	0.100	7.200	6.000	2000	3000	4000	6000
	CFC	2.00	2	0.015	1.200	2.000	300	450	600	900
		3.00	2	0.020	1.800	3.000	400	600	800	1200
		4.00	2	0.030	2.400	4.000	600	900	1200	1800
		6.00	2	0.045	3.600	6.000	900	1350	1800	2700
		8.00	2	0.060	4.800	8.000	1200	1800	2400	3600
		10.00	2	0.075	6.000	10.000	1500	2250	3000	4500
		12.00	2	0.085	7.200	12.000	1700	2550	3400	5100
	GRP	2.00	2	0.010	1.200	2.000	200	300	400	600
		3.00	2	0.020	1.800	3.000	400	600	800	1200
		4.00	2	0.025	2.400	4.000	500	750	1000	1500
		6.00	2	0.040	3.600	6.000	800	1200	1600	2400
		8.00	2	0.050	4.800	8.000	1000	1500	2000	3000
		10.00	2	0.065	6.000	10.000	1300	1950	2600	3900
		12.00	2	0.070	7.200	12.000	1400	2100	2800	4200
	Aluminium Si > 6%	2.00	2	0.010	1.000	2.000	200	300	400	600
		3.00	2	0.020	1.500	3.000	400	600	800	1200
		4.00	2	0.020	2.000	4.000	400	600	800	1200
		6.00	2	0.035	3.000	6.000	700	1050	1400	2100
		8.00	2	0.045	4.000	8.000	900	1350	1800	2700
		10.00	2	0.055	5.000	10.000	1100	1650	2200	3300
		12.00	2	0.065	6.000	12.000	1300	1950	2600	3900
	Graphite	2.00	2	0.010	1.200	2.000	200	300	400	600
		3.00	2	0.020	1.800	3.000	400	600	800	1200
		4.00	2	0.025	2.400	4.000	500	750	1000	1500
		6.00	2	0.040	3.600	6.000	800	1200	1600	2400
		8.00	2	0.050	4.800	8.000	1000	1500	2000	3000
		10.00	2	0.065	6.000	10.000	1300	1950	2600	3900
		12.00	2	0.070	7.200	12.000	1400	2100	2800	4200

Corner radius end mills CVD

Long version with neck, straight cutting edge

X-Generation

CVD	λ 0° γ 0°



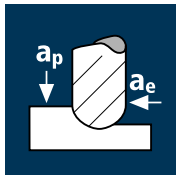
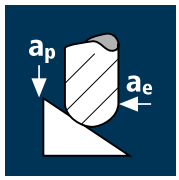
Wear resistance

Al Aluminium Cast	Cu Copper	CuZn Brass		C Graphite	CFK GFK I	CFK GFK II	CFK GFK II	CFK/AL	

Example: **Order-N°.** Coating: **25404** ø-Code: **138**

Ø Code	d_1 h7	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	25404
138	2.00	6.00	1.90	55	2.50	10.00	17.80	0.200	6.6°	2	●
178	3.00	6.00	2.80	75	2.50	20.00	26.10	0.200	3.3°	2	●
218	4.00	6.00	3.80	75	2.50	30.00	34.20	0.200	1.7°	2	●
300	6.00	6.00	5.60	100	6.00	40.00	40.90	0.500	0.0°	2	●
388	8.00	8.00	7.60	100	7.00	40.00	40.90	0.500	0.0°	2	●
448	10.00	10.00	9.60	100	8.00	50.00	50.90	0.500	0.0°	2	●
498	12.00	12.00	11.60	107	9.00	60.00	60.90	0.500	0.0°	2	●
302	6.00	6.00	5.60	100	6.00	40.00	40.90	1.000	0.0°	2	●
391	8.00	8.00	7.60	100	7.00	40.00	40.90	1.000	0.0°	2	●
450	10.00	10.00	9.60	100	8.00	50.00	50.90	1.000	0.0°	2	●
501	12.00	12.00	11.60	107	9.00	60.00	60.90	1.000	0.0°	2	●

V

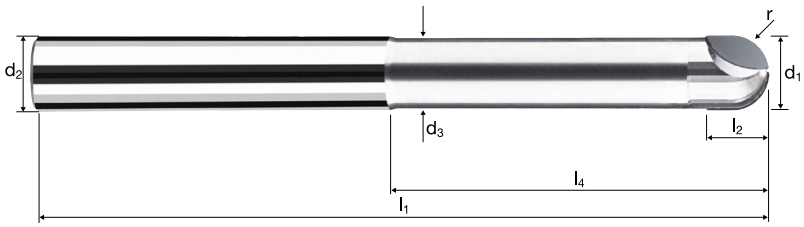
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	CFC	2.00	2	0.020	1.100	0.900	400	600	800	1200
		3.00	2	0.030	1.650	1.350	600	900	1200	1800
		4.00	2	0.040	2.200	1.800	800	1200	1600	2400
		6.00	2	0.065	3.300	2.700	1300	1950	2600	3900
		8.00	2	0.085	4.400	3.600	1700	2550	3400	5100
		10.00	2	0.105	5.500	4.500	2100	3150	4200	6300
		12.00	2	0.120	6.600	5.400	2400	3600	4800	7200
	GRP	2.00	2	0.015	1.100	0.900	300	450	600	900
		3.00	2	0.025	1.650	1.350	500	750	1000	1500
		4.00	2	0.035	2.200	1.800	700	1050	1400	2100
		6.00	2	0.055	3.300	2.700	1100	1650	2200	3300
		8.00	2	0.070	4.400	3.600	1400	2100	2800	4200
		10.00	2	0.090	5.500	4.500	1800	2700	3600	5400
		12.00	2	0.100	6.600	5.400	2000	3000	4000	6000
	Aluminium Si > 6%	2.00	2	0.015	1.100	0.900	300	450	600	900
		3.00	2	0.025	1.650	1.350	500	750	1000	1500
		4.00	2	0.030	2.200	1.800	600	900	1200	1800
		6.00	2	0.050	3.300	2.700	1000	1500	2000	3000
		8.00	2	0.065	4.400	3.600	1300	1950	2600	3900
		10.00	2	0.080	5.500	4.500	1600	2400	3200	4800
		12.00	2	0.090	6.600	5.400	1800	2700	3600	5400
	Graphite	2.00	2	0.015	1.100	0.900	300	450	600	900
		3.00	2	0.025	1.650	1.350	500	750	1000	1500
		4.00	2	0.035	2.200	1.800	700	1050	1400	2100
		6.00	2	0.055	3.300	2.700	1100	1650	2200	3300
		8.00	2	0.070	4.400	3.600	1400	2100	2800	4200
		10.00	2	0.090	5.500	4.500	1800	2700	3600	5400
		12.00	2	0.100	6.600	5.400	2000	3000	4000	6000
	CFC	2.00	2	0.020	0.200	0.200	400	600	800	1200
		3.00	2	0.030	0.300	0.300	600	900	1200	1800
		4.00	2	0.040	0.400	0.400	800	1200	1600	2400
		6.00	2	0.065	0.600	0.600	1300	1950	2600	3900
		8.00	2	0.085	0.800	0.800	1700	2550	3400	5100
		10.00	2	0.105	1.000	1.000	2100	3150	4200	6300
		12.00	2	0.120	1.200	1.200	2400	3600	4800	7200
	GRP	2.00	2	0.015	0.200	0.200	300	450	600	900
		3.00	2	0.025	0.300	0.300	500	750	1000	1500
		4.00	2	0.035	0.400	0.400	700	1050	1400	2100
		6.00	2	0.055	0.600	0.600	1100	1650	2200	3300
		8.00	2	0.070	0.800	0.800	1400	2100	2800	4200
		10.00	2	0.090	1.000	1.000	1800	2700	3600	5400
		12.00	2	0.100	1.200	1.200	2000	3000	4000	6000
	Aluminium Si > 6%	2.00	2	0.015	0.200	0.200	300	450	600	900
		3.00	2	0.025	0.300	0.300	500	750	1000	1500
		4.00	2	0.030	0.400	0.400	600	900	1200	1800
		6.00	2	0.050	0.600	0.600	1000	1500	2000	3000
		8.00	2	0.065	0.800	0.800	1300	1950	2600	3900
		10.00	2	0.080	1.000	1.000	1600	2400	3200	4800
		12.00	2	0.090	1.200	1.200	1800	2700	3600	5400
	Graphite	2.00	2	0.015	0.200	0.200	300	450	600	900
		3.00	2	0.025	0.300	0.300	500	750	1000	1500
		4.00	2	0.035	0.400	0.400	700	1050	1400	2100
		6.00	2	0.055	0.600	0.600	1100	1650	2200	3300
		8.00	2	0.070	0.800	0.800	1400	2100	2800	4200
		10.00	2	0.090	1.000	1.000	1800	2700	3600	5400
		12.00	2	0.100	1.200	1.200	2000	3000	4000	6000

Ball nose end mills CVD

Long version, straight cutting edge

X-Generation

CVD	λ 0° γ 0°
	r



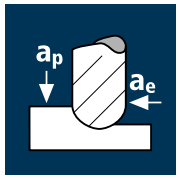
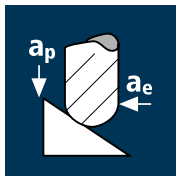
Wear resistance

Al Aluminium Cast	Cu Copper	CuZn Brass		C Graphite	CFK GFK I	CFK GFK II	CFK GFK II	CFK/AL	

Example: **Order-N°.** Coating: **25704** ø-Code: **140**

Ø Code	d_1 h7	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	25704
140	2.00	6.00	1.90	55	2.50	10.00	17.80	1.000	6.8°	2	●
180	3.00	6.00	2.80	75	2.50	20.00	26.10	1.500	3.5°	2	●
220	4.00	6.00	3.80	75	2.50	30.00	34.30	2.000	1.8°	2	●
300	6.00	6.00	5.60	100	6.00	40.00	40.90	3.000	0.0°	2	●
391	8.00	8.00	7.60	100	7.00	40.00	40.90	4.000	0.0°	2	●
450	10.00	10.00	9.60	100	8.00	50.00	50.90	5.000	0.0°	2	●
501	12.00	12.00	11.60	107	9.00	60.00	60.90	6.000	0.0°	2	●

V

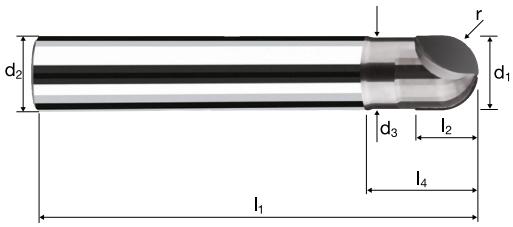
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	CFC	2.00	2	0.025	1.200	0.900	500	750	1000	1500
		3.00	2	0.035	1.800	1.350	700	1050	1400	2100
		4.00	2	0.045	2.400	1.800	900	1350	1800	2700
		6.00	2	0.070	3.600	2.700	1400	2100	2800	4200
		8.00	2	0.095	4.800	3.600	1900	2850	3800	5700
		10.00	2	0.120	6.000	4.500	2400	3600	4800	7200
		12.00	2	0.135	7.200	5.400	2700	4050	5400	8100
	GRP	2.00	2	0.020	1.200	0.900	400	600	800	1200
		3.00	2	0.030	1.800	1.350	600	900	1200	1800
		4.00	2	0.040	2.400	1.800	800	1200	1600	2400
		6.00	2	0.060	3.600	2.700	1200	1800	2400	3600
		8.00	2	0.080	4.800	3.600	1600	2400	3200	4800
		10.00	2	0.100	6.000	4.500	2000	3000	4000	6000
		12.00	2	0.115	7.200	5.400	2300	3450	4600	6900
	Aluminium Si > 6%	2.00	2	0.020	1.200	0.900	400	600	800	1200
		3.00	2	0.025	1.800	1.350	500	750	1000	1500
		4.00	2	0.035	2.400	1.800	700	1050	1400	2100
		6.00	2	0.055	3.600	2.700	1100	1650	2200	3300
		8.00	2	0.070	4.800	3.600	1400	2100	2800	4200
		10.00	2	0.090	6.000	4.500	1800	2700	3600	5400
		12.00	2	0.105	7.200	5.400	2100	3150	4200	6300
	Graphite	2.00	2	0.020	1.200	0.900	400	600	800	1200
		3.00	2	0.030	1.800	1.350	600	900	1200	1800
		4.00	2	0.040	2.400	1.800	800	1200	1600	2400
		6.00	2	0.060	3.600	2.700	1200	1800	2400	3600
		8.00	2	0.080	4.800	3.600	1600	2400	3200	4800
		10.00	2	0.100	6.000	4.500	2000	3000	4000	6000
		12.00	2	0.115	7.200	5.400	2300	3450	4600	6900
	CFC	2.00	2	0.025	0.200	0.200	500	750	1000	1500
		3.00	2	0.035	0.300	0.300	700	1050	1400	2100
		4.00	2	0.045	0.400	0.400	900	1350	1800	2700
		6.00	2	0.070	0.600	0.600	1400	2100	2800	4200
		8.00	2	0.095	0.800	0.800	1900	2850	3800	5700
		10.00	2	0.120	1.000	1.000	2400	3600	4800	7200
		12.00	2	0.135	1.200	1.200	2700	4050	5400	8100
	GRP	2.00	2	0.020	0.200	0.200	400	600	800	1200
		3.00	2	0.030	0.300	0.300	600	900	1200	1800
		4.00	2	0.040	0.400	0.400	800	1200	1600	2400
		6.00	2	0.060	0.600	0.600	1200	1800	2400	3600
		8.00	2	0.080	0.800	0.800	1600	2400	3200	4800
		10.00	2	0.100	1.000	1.000	2000	3000	4000	6000
		12.00	2	0.115	1.200	1.200	2300	3450	4600	6900
	Aluminium Si > 6%	2.00	2	0.020	0.200	0.200	400	600	800	1200
		3.00	2	0.025	0.300	0.300	500	750	1000	1500
		4.00	2	0.035	0.400	0.400	700	1050	1400	2100
		6.00	2	0.055	0.600	0.600	1100	1650	2200	3300
		8.00	2	0.070	0.800	0.800	1400	2100	2800	4200
		10.00	2	0.090	1.000	1.000	1800	2700	3600	5400
		12.00	2	0.105	1.200	1.200	2100	3150	4200	6300
	Graphite	2.00	2	0.020	0.200	0.200	400	600	800	1200
		3.00	2	0.030	0.300	0.300	600	900	1200	1800
		4.00	2	0.040	0.400	0.400	800	1200	1600	2400
		6.00	2	0.060	0.600	0.600	1200	1800	2400	3600
		8.00	2	0.080	0.800	0.800	1600	2400	3200	4800
		10.00	2	0.100	1.000	1.000	2000	3000	4000	6000
		12.00	2	0.115	1.200	1.200	2300	3450	4600	6900

Ball nose end mills CVD

Short version, straight cutting edge

X-Generation

CVD	λ 0° γ 0°



Wear resistance

Al Aluminium Cast	Cu Copper	CuZn Brass		C Graphite	CFK GFK I	CFK GFK II	CFK GFK II	CFK/AL	

Example: **Order-N°.** Coating: **25700** ø-Code: **140**

Ø Code	d_1 h7	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	25700
140	2.00	6.00	1.90	50	2.50	4.00	11.80	1.000	10.6°	2	●
180	3.00	6.00	2.80	50	2.50	4.00	10.10	1.500	9.9°	2	●
220	4.00	6.00	3.80	50	2.50	6.00	10.20	2.000	6.9°	2	●
300	6.00	6.00	5.60	50	6.00	9.00	9.90	3.000	0.0°	2	●
391	8.00	8.00	7.60	60	7.00	12.00	12.90	4.000	0.0°	2	●
450	10.00	10.00	9.60	60	8.00	14.00	14.90	5.000	0.0°	2	●
501	12.00	12.00	11.60	65	9.00	14.00	14.90	6.000	0.0°	2	●

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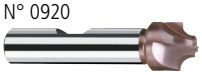
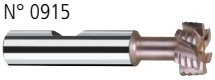
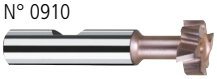
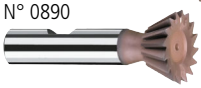
End milling tools with special forms

Forming end mills

N° 7920	Base-X B		Rm <850-1300			791
N° 0920 	HSS		Rm <850-1100			793
N° 0915 	HSS		Rm <850-1100			795
N° 0910 	HSS		Rm <850-1100			797
N° 0905	HSS		Rm <850-1100			799
N° 0890 	HSS		Rm <850-1100			803

VI

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End milling tools with special forms

Deburring end mills

N° 7930

Base-X		Rm			
B		<850-1100			805

N° 7940

Base-X		Rm			
B		<850-1100			807

N° 7942

Base-X		Rm			
B		<850-1100			809

Universal end mills

N° 7960

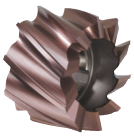
Base-X		Rm			
B		<850-1100			811

Shell end mills

N° 3490

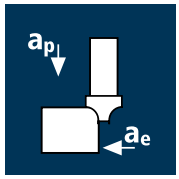
		Rm			
HSS		<850-1100			813

N° 3209



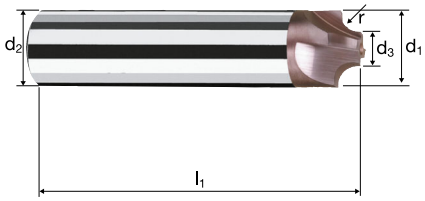
		Rm			
HSS		850-1300			815

VI

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min-1]	v_f [mm/min]
	Steel < 850 N/mm²	6.00	4	120	0.025	0.500	0.500	6365	635
	U	8.00	4	120	0.030	1.000	1.000	4775	575
		10.00	4	120	0.040	2.000	2.000	3820	610
		12.00	4	120	0.050	3.000	3.000	3185	635
	Steel 850 - 1100 N/mm²	6.00	4	100	0.020	0.500	0.500	5305	425
	U	8.00	4	100	0.025	1.000	1.000	3980	400
		10.00	4	100	0.035	2.000	2.000	3185	445
		12.00	4	100	0.040	3.000	3.000	2655	425
	Steel 1100 - 1300 N/mm²	6.00	4	60	0.015	0.500	0.500	3185	190
	U	8.00	4	60	0.025	1.000	1.000	2385	240
	U	10.00	4	60	0.030	2.000	2.000	1910	230
		12.00	4	60	0.035	3.000	3.000	1590	225
	Stainless steel [Cr-Ni/1.4301]	6.00	4	50	0.015	0.500	0.500	2655	160
	U	8.00	4	50	0.025	1.000	1.000	1990	200
		10.00	4	50	0.030	2.000	2.000	1590	190
		12.00	4	50	0.035	3.000	3.000	1325	185
	Cast iron (lamellar / spheroidal)	6.00	4	140	0.025	0.500	0.500	7425	745
	U	8.00	4	140	0.030	1.000	1.000	5570	670
	U	10.00	4	140	0.040	2.000	2.000	4455	715
		12.00	4	140	0.050	3.000	3.000	3715	745
	Unalloyed copper	6.00	4	160	0.020	0.500	0.500	8490	680
	U	8.00	4	160	0.025	1.000	1.000	6365	635
		10.00	4	160	0.035	2.000	2.000	5095	715
		12.00	4	160	0.040	3.000	3.000	4245	680
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	6.00	4	60	0.015	0.500	0.500	3185	190
	U	8.00	4	60	0.025	1.000	1.000	2385	240
		10.00	4	60	0.030	2.000	2.000	1910	230
		12.00	4	60	0.035	3.000	3.000	1590	225
	Wrought aluminium Si < 6%	6.00	4	180	0.025	0.500	0.500	9550	955
	U	8.00	4	180	0.030	1.000	1.000	7160	860
		10.00	4	180	0.040	2.000	2.000	5730	915
		12.00	4	180	0.050	3.000	3.000	4775	955

Quarter radius end mills

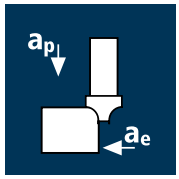
HM MG10	λ 0° γ 0°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **7920** ø-Code **300**

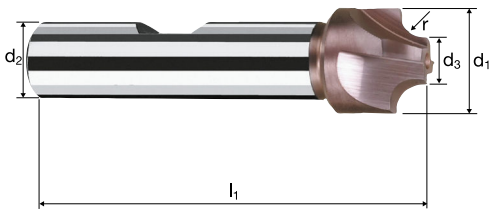
Ø Code	d_1	d_2 h6	d_3 ±0.1	l_1	r JS10	z		UNICUT-4X U7920
300	6.00	6.00	4.50	57	0.500	4		●
303	6.00	6.00	4.00	57	0.750	4		●
391	8.00	8.00	5.50	63	1.000	4		●
394	8.00	8.00	5.00	63	1.250	4		●
397	8.00	8.00	4.50	63	1.500	4		●
450	10.00	10.00	5.00	72	2.000	4		●
453	10.00	10.00	4.50	72	2.500	4		●
501	12.00	12.00	5.00	83	3.000	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	10.00	4	55	0.010	2.000	2.000	1750	70
		12.00	4	55	0.010	2.500	2.500	1460	60
		16.00	4	55	0.025	4.000	4.000	1095	110
		20.00	4	55	0.030	5.000	5.000	875	105
		22.00	4	55	0.035	6.000	6.000	795	110
		24.00	5	55	0.040	7.000	7.000	730	145
		28.00	5	55	0.045	8.000	8.000	625	140
		32.00	5	55	0.050	10.000	10.000	545	135
		38.00	6	55	0.060	12.000	12.000	460	165
	Steel 850 - 1100 N/mm²	10.00	4	45	0.010	2.000	2.000	1430	55
		12.00	4	45	0.010	2.500	2.500	1195	50
		16.00	4	45	0.025	4.000	4.000	895	90
		20.00	4	45	0.030	5.000	5.000	715	85
		22.00	4	45	0.035	6.000	6.000	650	90
		24.00	5	45	0.040	7.000	7.000	595	120
		28.00	5	45	0.045	8.000	8.000	510	115
		32.00	5	45	0.050	10.000	10.000	450	110
		38.00	6	45	0.060	12.000	12.000	375	135
	Steel 1100 - 1300 N/mm²	10.00	4	34	0.010	2.000	2.000	1080	45
		12.00	4	34	0.010	2.500	2.500	900	35
		16.00	4	34	0.025	4.000	4.000	675	70
		20.00	4	34	0.030	5.000	5.000	540	65
		22.00	4	34	0.035	6.000	6.000	490	70
		24.00	5	34	0.040	7.000	7.000	450	90
		28.00	5	34	0.045	8.000	8.000	385	85
		32.00	5	34	0.050	10.000	10.000	340	85
		38.00	6	34	0.060	12.000	12.000	285	105
	Stainless steel [Cr-Ni/1.4301]	10.00	4	21	0.010	2.000	2.000	670	25
		12.00	4	21	0.010	2.500	2.500	555	20
		16.00	4	21	0.025	4.000	4.000	420	40
		20.00	4	21	0.030	5.000	5.000	335	40
		22.00	4	21	0.035	6.000	6.000	305	45
		24.00	5	21	0.040	7.000	7.000	280	55
		28.00	5	21	0.045	8.000	8.000	240	55
		32.00	5	21	0.050	10.000	10.000	210	50
		38.00	6	21	0.060	12.000	12.000	175	65
	Cast iron (lamellar / spheroidal)	10.00	4	42	0.010	2.000	2.000	1335	55
		12.00	4	42	0.010	2.500	2.500	1115	45
		16.00	4	42	0.025	4.000	4.000	835	85
		20.00	4	42	0.030	5.000	5.000	670	80
		22.00	4	42	0.035	6.000	6.000	610	85
		24.00	5	42	0.040	7.000	7.000	555	110
		28.00	5	42	0.045	8.000	8.000	475	105
		32.00	5	42	0.050	10.000	10.000	420	105
		38.00	6	42	0.060	12.000	12.000	350	125
	Unalloyed copper	10.00	4	65	0.010	2.000	2.000	2070	85
		12.00	4	65	0.010	2.500	2.500	1725	70
		16.00	4	65	0.025	4.000	4.000	1295	130
		20.00	4	65	0.030	5.000	5.000	1035	125
		22.00	4	65	0.035	6.000	6.000	940	130
		24.00	5	65	0.040	7.000	7.000	860	170
		28.00	5	65	0.045	8.000	8.000	740	165
		32.00	5	65	0.050	10.000	10.000	645	160
		38.00	6	65	0.060	12.000	12.000	545	195
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	10.00	4	23	0.010	2.000	2.000	730	30
		12.00	4	23	0.010	2.500	2.500	610	25
		16.00	4	23	0.025	4.000	4.000	460	45
		20.00	4	23	0.030	5.000	5.000	365	45
		22.00	4	23	0.035	6.000	6.000	335	45
		24.00	5	23	0.040	7.000	7.000	305	60
		28.00	5	23	0.045	8.000	8.000	260	60
		32.00	5	23	0.050	10.000	10.000	230	55
		38.00	6	23	0.060	12.000	12.000	195	70
	Wrought aluminium Si < 6%	10.00	4	80	0.010	2.000	2.000	2545	100
		12.00	4	80	0.010	2.500	2.500	2120	85
		16.00	4	80	0.025	4.000	4.000	1590	160
		20.00	4	80	0.030	5.000	5.000	1275	155
		22.00	4	80	0.035	6.000	6.000	1155	160
		24.00	5	80	0.040	7.000	7.000	1060	210
		28.00	5	80	0.045	8.000	8.000	910	205
		32.00	5	80	0.050	10.000	10.000	795	200
		38.00	6	80	0.060	12.000	12.000	670	240

Quarter radius end mills

HSS

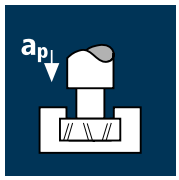
HSS-E Co8	λ 8° γ 0°



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **0920** ø-Code **080**

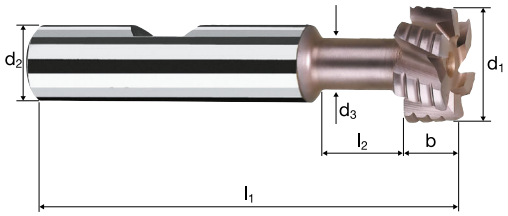
Ø Code	d_1	d_2 h6	d_3 0/+0.1	l_1	r H11	z	UNICUT-4X U0920
080	8.00	10.00	5.30	56	1.000	4	●
090	9.00	10.00	5.30	56	1.500	4	●
100	10.00	10.00	5.10	56	2.000	4	●
120	12.00	12.00	6.10	63	2.500	4	●
140	14.00	12.00	7.10	63	3.000	4	●
160	16.00	12.00	7.10	63	4.000	4	●
200	20.00	16.00	8.70	70	5.000	4	●
220	22.00	16.00	8.70	70	6.000	4	●
240	24.00	16.00	8.70	70	7.000	5	●
280	28.00	16.00	10.20	70	8.000	5	●
320	32.00	16.00	10.20	75	10.000	5	●
380	38.00	20.00	11.70	80	12.000	6	●
460	46.00	25.00	14.00	94	15.000	6	●
580	58.00	25.00	15.00	100	20.000	6	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	16.00	6	55	0.020	8.000	16.000	1095	130
		18.00	6	55	0.020	8.000	18.000	975	115
		21.00	6	55	0.030	9.000	21.000	835	150
		25.00	6	55	0.040	11.000	25.000	700	170
		28.00	6	55	0.040	12.000	28.000	625	150
		32.00	6	55	0.050	14.000	32.000	545	165
		40.00	8	55	0.060	18.000	40.000	440	210
	Steel 850 - 1100 N/mm²	16.00	6	45	0.020	8.000	16.000	895	105
		18.00	6	45	0.020	8.000	18.000	795	95
		21.00	6	45	0.030	9.000	21.000	680	125
		25.00	6	45	0.040	11.000	25.000	575	140
		28.00	6	45	0.040	12.000	28.000	510	125
		32.00	6	45	0.050	14.000	32.000	450	135
		40.00	8	45	0.060	18.000	40.000	360	170
	Steel 1100 - 1300 N/mm²	16.00	6	34	0.020	8.000	16.000	675	80
		18.00	6	34	0.020	8.000	18.000	600	70
		21.00	6	34	0.030	9.000	21.000	515	95
		25.00	6	34	0.040	11.000	25.000	435	105
		28.00	6	34	0.040	12.000	28.000	385	95
		32.00	6	34	0.050	14.000	32.000	340	100
		40.00	8	34	0.060	18.000	40.000	270	130
	Stainless steel [Cr-Ni/1.4301]	16.00	6	21	0.020	8.000	16.000	420	50
		18.00	6	21	0.020	8.000	18.000	370	45
		21.00	6	21	0.030	9.000	21.000	320	55
		25.00	6	21	0.040	11.000	25.000	265	65
		28.00	6	21	0.040	12.000	28.000	240	55
		32.00	6	21	0.050	14.000	32.000	210	65
		40.00	8	21	0.060	18.000	40.000	165	80
	Cast iron (lamellar / spheroidal)	16.00	6	42	0.020	8.000	16.000	835	100
		18.00	6	42	0.020	8.000	18.000	745	90
		21.00	6	42	0.030	9.000	21.000	635	115
		25.00	6	42	0.040	11.000	25.000	535	130
		28.00	6	42	0.040	12.000	28.000	475	115
		32.00	6	42	0.050	14.000	32.000	420	125
		40.00	8	42	0.060	18.000	40.000	335	160
	Unalloyed copper	16.00	6	65	0.020	8.000	16.000	1295	155
		18.00	6	65	0.020	8.000	18.000	1150	140
		21.00	6	65	0.030	9.000	21.000	985	175
		25.00	6	65	0.040	11.000	25.000	830	200
		28.00	6	65	0.040	12.000	28.000	740	175
		32.00	6	65	0.050	14.000	32.000	645	195
		40.00	8	65	0.060	18.000	40.000	515	250
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	16.00	6	23	0.020	8.000	16.000	460	55
		18.00	6	23	0.020	8.000	18.000	405	50
		21.00	6	23	0.030	9.000	21.000	350	65
		25.00	6	23	0.040	11.000	25.000	295	70
		28.00	6	23	0.040	12.000	28.000	260	65
		32.00	6	23	0.050	14.000	32.000	230	70
		40.00	8	23	0.060	18.000	40.000	185	90
	Wrought aluminium Si < 6%	16.00	6	80	0.020	8.000	16.000	1590	190
		18.00	6	80	0.020	8.000	18.000	1415	170
		21.00	6	80	0.030	9.000	21.000	1215	220
		25.00	6	80	0.040	11.000	25.000	1020	245
		28.00	6	80	0.040	12.000	28.000	910	220
		32.00	6	80	0.050	14.000	32.000	795	240
		40.00	8	80	0.060	18.000	40.000	635	305

T-groove end mills

HSS

HSS-E Co8	λ 7° γ 10°

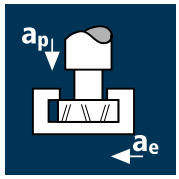


Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **0915** ø-Code **140**

Ø Code	d_1 d11	d_2 h6	d_3 h12	l_1	l_2	b d11	z	UNICUT-4X U0915
140	16.00	10.00	7.00	62	12.00	8.0	6	●
160	18.00	12.00	8.00	70	14.00	8.0	6	●
180	21.00	12.00	10.00	74	18.00	9.0	6	●
200	25.00	16.00	12.00	82	20.00	11.0	6	●
220	28.00	16.00	12.00	83	21.00	12.0	6	●
240	32.00	16.00	15.00	90	27.00	14.0	6	●
260	40.00	25.00	19.00	108	31.00	18.0	8	●

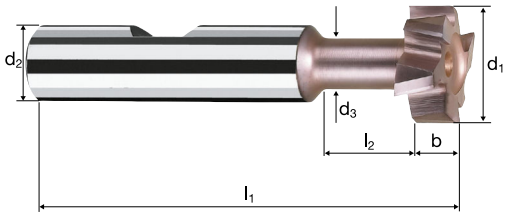
VI

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min-1]	v_f [mm/min]
	Steel < 850 N/mm²	11.00	4	55	0.010	4.000	1.100	1590	65
		12.50	4	55	0.010	6.000	1.250	1400	55
		16.00	4	55	0.025	8.000	1.600	1095	110
		18.00	6	55	0.025	8.000	1.800	975	145
		21.00	6	55	0.040	9.000	2.100	835	200
		25.00	6	55	0.045	11.000	2.500	700	190
		32.00	6	55	0.060	14.000	3.200	545	195
		40.00	8	55	0.070	18.000	4.000	440	245
		50.00	8	55	0.090	22.000	5.000	350	250
	Steel 850 - 1100 N/mm²	11.00	4	45	0.010	4.000	1.100	1300	50
		12.50	4	45	0.010	6.000	1.250	1145	45
		16.00	4	45	0.025	8.000	1.600	895	90
		18.00	6	45	0.025	8.000	1.800	795	120
		21.00	6	45	0.040	9.000	2.100	680	165
		25.00	6	45	0.045	11.000	2.500	575	155
		32.00	6	45	0.060	14.000	3.200	450	160
		40.00	8	45	0.070	18.000	4.000	360	200
		50.00	8	45	0.090	22.000	5.000	285	205
	Steel 1100 - 1300 N/mm²	11.00	4	34	0.010	4.000	1.100	985	40
		12.50	4	34	0.010	6.000	1.250	865	35
		16.00	4	34	0.025	8.000	1.600	675	70
		18.00	6	34	0.025	8.000	1.800	600	90
		21.00	6	34	0.040	9.000	2.100	515	125
		25.00	6	34	0.045	11.000	2.500	435	115
		32.00	6	34	0.060	14.000	3.200	340	120
		40.00	8	34	0.070	18.000	4.000	270	150
		50.00	8	34	0.090	22.000	5.000	215	155
	Stainless steel [Cr-Ni/1.4301]	11.00	4	21	0.010	4.000	1.100	610	25
		12.50	4	21	0.010	6.000	1.250	535	20
		16.00	4	21	0.025	8.000	1.600	420	40
		18.00	6	21	0.025	8.000	1.800	370	55
		21.00	6	21	0.040	9.000	2.100	320	75
		25.00	6	21	0.045	11.000	2.500	265	70
		32.00	6	21	0.060	14.000	3.200	210	75
		40.00	8	21	0.070	18.000	4.000	165	95
		50.00	8	21	0.090	22.000	5.000	135	95
	Cast iron (lamellar / spheroidal)	11.00	4	42	0.010	4.000	1.100	1215	50
		12.50	4	42	0.010	6.000	1.250	1070	45
		16.00	4	42	0.025	8.000	1.600	835	85
		18.00	6	42	0.025	8.000	1.800	745	110
		21.00	6	42	0.040	9.000	2.100	635	155
		25.00	6	42	0.045	11.000	2.500	535	145
		32.00	6	42	0.060	14.000	3.200	420	150
		40.00	8	42	0.070	18.000	4.000	335	185
		50.00	8	42	0.090	22.000	5.000	265	195
	Unalloyed copper	11.00	4	65	0.010	4.000	1.100	1880	75
		12.50	4	65	0.010	6.000	1.250	1655	65
		16.00	4	65	0.025	8.000	1.600	1295	130
		18.00	6	65	0.025	8.000	1.800	1150	170
		21.00	6	65	0.040	9.000	2.100	985	235
		25.00	6	65	0.045	11.000	2.500	830	225
		32.00	6	65	0.060	14.000	3.200	645	235
		40.00	8	65	0.070	18.000	4.000	515	290
		50.00	8	65	0.090	22.000	5.000	415	300
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	11.00	4	23	0.010	4.000	1.100	665	25
		12.50	4	23	0.010	6.000	1.250	585	25
		16.00	4	23	0.025	8.000	1.600	460	45
		18.00	6	23	0.025	8.000	1.800	405	60
		21.00	6	23	0.040	9.000	2.100	350	85
		25.00	6	23	0.045	11.000	2.500	295	80
		32.00	6	23	0.060	14.000	3.200	230	80
		40.00	8	23	0.070	18.000	4.000	185	100
		50.00	8	23	0.090	22.000	5.000	145	105
	Wrought aluminium Si < 6%	11.00	4	80	0.010	4.000	1.100	2315	95
		12.50	4	80	0.010	6.000	1.250	2035	80
		16.00	4	80	0.025	8.000	1.600	1590	160
		18.00	6	80	0.025	8.000	1.800	1415	210
		21.00	6	80	0.040	9.000	2.100	1215	290
		25.00	6	80	0.045	11.000	2.500	1020	275
		32.00	6	80	0.060	14.000	3.200	795	285
		40.00	8	80	0.070	18.000	4.000	635	355
		50.00	8	80	0.090	22.000	5.000	510	365

T-groove end mills

HSS

HSS-E Co8	λ 12° γ 12°



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

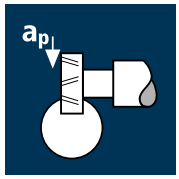
Example: **Order-N°.** Coating **U** Article-N°. **0910** ø-Code **100**

Ø Code	d_1 d11	d_2 h6	d_3	l_1	l_2	b k11	z		UNICUT-4X U0910
100	11.00	10.00	4.00	54	8.00	4.0	4		●
120	12.50	10.00	5.00	57	9.00	6.0	4		●
140	16.00	10.00	7.00	62	12.00	8.0	4		●
160	18.00	12.00	8.00	70	15.00	8.0	6		●
180	21.00	12.00	10.00	74	19.00	9.0	6		●
200	25.00	16.00	12.00	82	21.00	11.0	6		●
220	32.00	16.00	15.00	90	27.00	14.0	6		●
240	40.00	25.00	19.00	108	30.00	18.0	8		●
260	50.00	32.00	25.00	124	40.00	22.0	8		●
500*	12.00	8.00	5.00	54	14.00	2.5	8		●
520*	16.00	8.00	6.00	56	16.00	3.0	8		●
540*	20.00	10.00	8.00	62	17.00	4.0	8		●
560*	25.00	10.00	9.00	65	19.00	5.0	10		●
580*	32.00	12.00	10.00	73	21.00	6.0	12		●
600*	40.00	12.00	11.00	77	23.00	8.0	12		●
620*	50.00	16.00	14.00	84	25.00	10.0	14		●

* Conical neck

VI

Application

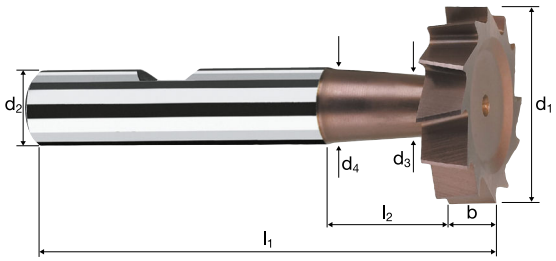


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
Steel < 850 N/mm² U	7.50	8	55	0.005	2.000	2.000	2335	95
	10.50	8	55	0.010	2.900	3.000	1665	135
	13.50	8	55	0.010	3.800	4.000	1295	105
	16.50	8	55	0.025	5.000	5.000	1060	210
	19.50	10	55	0.035	5.500	6.000	900	315
	22.50	10	55	0.040	6.600	8.000	780	310
Steel 850 - 1100 N/mm² U	7.50	8	45	0.005	2.000	2.000	1910	75
	10.50	8	45	0.010	2.900	3.000	1365	110
	13.50	8	45	0.010	3.800	4.000	1060	85
	16.50	8	45	0.025	5.000	5.000	870	175
	19.50	10	45	0.035	5.500	6.000	735	255
	22.50	10	45	0.040	6.600	8.000	635	255
Steel 1100 - 1300 N/mm² U	7.50	8	34	0.005	2.000	2.000	1445	60
	10.50	8	34	0.010	2.900	3.000	1030	80
	13.50	8	34	0.010	3.800	4.000	800	65
	16.50	8	34	0.025	5.000	5.000	655	130
	19.50	10	34	0.035	5.500	6.000	555	195
	22.50	10	34	0.040	6.600	8.000	480	190
Stainless steel [Cr-Ni/1.4301] U	7.50	8	21	0.005	2.000	2.000	890	35
	10.50	8	21	0.010	2.900	3.000	635	50
	13.50	8	21	0.010	3.800	4.000	495	40
	16.50	8	21	0.025	5.000	5.000	405	80
	19.50	10	21	0.035	5.500	6.000	345	120
	22.50	10	21	0.040	6.600	8.000	295	120
Cast iron (lamellar / spheroidal) U	7.50	8	21	0.005	2.000	2.000	890	35
	10.50	8	21	0.010	2.900	3.000	635	50
	13.50	8	21	0.010	3.800	4.000	495	40
	16.50	8	21	0.025	5.000	5.000	405	80
	19.50	10	21	0.035	5.500	6.000	345	120
	22.50	10	21	0.040	6.600	8.000	295	120
Unalloyed copper U	7.50	8	65	0.005	2.000	2.000	2760	110
	10.50	8	65	0.010	2.900	3.000	1970	160
	13.50	8	65	0.010	3.800	4.000	1535	125
	16.50	8	65	0.025	5.000	5.000	1255	250
	19.50	10	65	0.035	5.500	6.000	1060	370
	22.50	10	65	0.040	6.600	8.000	920	370
Titanium alloys up to 300 HB [Ti5Al2.5Sn] U	7.50	8	23	0.005	2.000	2.000	975	40
	10.50	8	23	0.010	2.900	3.000	695	55
	13.50	8	23	0.010	3.800	4.000	540	45
	16.50	8	23	0.025	5.000	5.000	445	90
	19.50	10	23	0.035	5.500	6.000	375	130
	22.50	10	23	0.040	6.600	8.000	325	130
Wrought aluminium Si < 6% U	7.50	8	80	0.005	2.000	2.000	3395	135
	10.50	8	80	0.010	2.900	3.000	2425	195
	13.50	8	80	0.010	3.800	4.000	1885	150
	16.50	8	80	0.025	5.000	5.000	1545	310
	19.50	10	80	0.035	5.500	6.000	1305	455
	22.50	10	80	0.040	6.600	8.000	1130	455

Slotting end mills

HSS

HSS-E Co8	λ 10° γ 8°



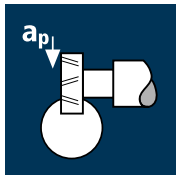
Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **0905** ø-Code **100**

Ø Code	d_1 h11	d_2 h6	d_3	d_4	l_1	l_2	b e8	z		UNICUT-4X U0905
100	4.50	6.00	1.80	5.50	50	12.00	1.0	8		●
150	7.50	6.00	2.80	5.50	50	11.00	1.5	8		●
160	7.50	6.00	3.20	5.50	50	10.00	2.0	8		●
200	10.50	6.00	4.00	5.50	50	11.00	2.0	8		●
210	10.50	6.00	4.00	5.50	50	10.00	2.5	8		●
220	10.50	6.00	4.20	5.50	50	9.00	3.0	8		●
310	13.50	10.00	4.60	9.50	56	13.00	2.5	8		●
320	13.50	10.00	4.60	9.50	56	12.00	3.0	8		●
330	13.50	10.00	4.60	9.50	56	11.00	4.0	8		●
360	16.50	10.00	4.60	9.50	56	12.00	3.0	8		●
370	16.50	10.00	4.60	9.50	56	11.00	4.0	8		●
380	16.50	10.00	5.00	9.50	56	10.00	5.0	8		●
410	19.50	10.00	5.60	9.50	63	18.00	3.0	10		●
420	19.50	10.00	5.60	9.50	63	17.00	4.0	10		●
430	19.50	10.00	6.00	9.50	63	16.00	5.0	10		●
440	19.50	10.00	6.50	9.50	63	15.00	6.0	10		●
500	22.50	10.00	6.00	9.50	63	17.00	4.0	10		●
510	22.50	10.00	6.00	9.50	63	16.00	5.0	10		●
520	22.50	10.00	6.50	9.50	63	15.00	6.0	10		●
540	22.50	10.00	6.50	9.50	63	14.00	8.0	10		●

VI

Application

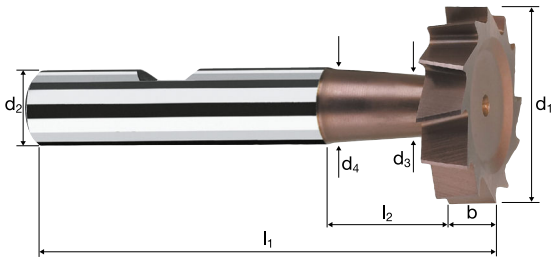


Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
Steel < 850 N/mm² U	25.50	12	55	0.045	7.000	6.000	685	370
	28.50	12	55	0.050	8.200	10.000	615	370
	32.50	12	55	0.060	9.800	10.000	540	390
	45.50	14	55	0.080	12.000	10.000	385	430
Steel 850 - 1100 N/mm² U	25.50	12	45	0.045	7.000	6.000	560	305
	28.50	12	45	0.050	8.200	10.000	505	300
	32.50	12	45	0.060	9.800	10.000	440	315
	45.50	14	45	0.080	12.000	10.000	315	355
Steel 1100 - 1300 N/mm² U	25.50	12	34	0.045	7.000	6.000	425	230
	28.50	12	34	0.050	8.200	10.000	380	230
	32.50	12	34	0.060	9.800	10.000	335	240
	45.50	14	34	0.080	12.000	10.000	240	265
Stainless steel [Cr-Ni/1.4301] U	25.50	12	21	0.045	7.000	6.000	260	140
	28.50	12	21	0.050	8.200	10.000	235	140
	32.50	12	21	0.060	9.800	10.000	205	150
	45.50	14	21	0.080	12.000	10.000	145	165
Cast iron (lamellar / spheroidal) U	25.50	12	21	0.045	7.000	6.000	260	140
	28.50	12	21	0.050	8.200	10.000	235	140
	32.50	12	21	0.060	9.800	10.000	205	150
	45.50	14	21	0.080	12.000	10.000	145	165
Unalloyed copper U	25.50	12	65	0.045	7.000	6.000	810	440
	28.50	12	65	0.050	8.200	10.000	725	435
	32.50	12	65	0.060	9.800	10.000	635	460
	45.50	14	65	0.080	12.000	10.000	455	510
Titanium alloys up to 300 HB [Ti5Al2.5Sn] U	25.50	12	23	0.045	7.000	6.000	285	155
	28.50	12	23	0.050	8.200	10.000	255	155
	32.50	12	23	0.060	9.800	10.000	225	160
	45.50	14	23	0.080	12.000	10.000	160	180
Wrought aluminium Si < 6% U	25.50	12	80	0.045	7.000	6.000	1000	540
	28.50	12	80	0.050	8.200	10.000	895	535
	32.50	12	80	0.060	9.800	10.000	785	565
	45.50	14	80	0.080	12.000	10.000	560	625

Slotting end mills

HSS

HSS-E Co8	λ 10° γ 8°

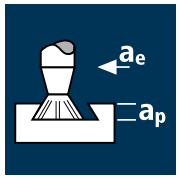


Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **0905** ø-Code **600**

Ø Code	d_1 h11	d_2 h6	d_3	d_4	l_1	l_2	b e8	z		UNICUT-4X U0905
600	25.50	10.00	7.50	9.50	63	16.00	5.0	12		●
610	25.50	10.00	7.50	9.50	63	15.00	6.0	12		●
650	28.50	10.00	8.50	9.50	63	14.00	6.0	12		●
660	28.50	10.00	8.50	9.50	63	13.00	8.0	12		●
700	28.50	12.00	9.30	11.50	71	14.00	10.0	12		●
750	32.50	12.00	8.50	11.50	71	18.00	6.0	12		●
760	32.50	12.00	8.50	11.50	71	17.00	7.0	12		●
770	32.50	12.00	8.50	11.50	71	16.00	8.0	12		●
800	32.50	12.00	9.30	11.50	71	15.00	10.0	12		●
900	45.50	12.00	11.00	11.50	71	14.00	10.0	14		●

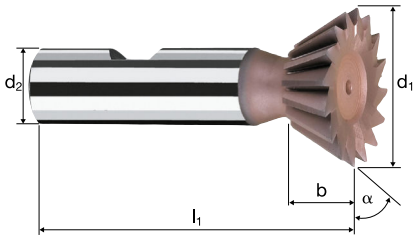
VI

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	8.00	7	55	0.005	2.500	1.500	2190	75
		12.00	8	55	0.010	3.000	2.000	1460	115
		16.00	10	55	0.015	4.000	2.200	1095	165
		20.00	12	55	0.018	6.000	2.400	875	190
		25.00	14	55	0.020	8.000	2.600	700	195
		32.00	16	55	0.025	10.000	3.000	545	220
	Steel 850 - 1100 N/mm²	8.00	7	45	0.005	2.500	1.500	1790	65
		12.00	8	45	0.010	3.000	2.000	1195	95
		16.00	10	45	0.015	4.000	2.200	895	135
		20.00	12	45	0.018	6.000	2.400	715	155
		25.00	14	45	0.020	8.000	2.600	575	160
		32.00	16	45	0.025	10.000	3.000	450	180
	Steel 1100 - 1300 N/mm²	8.00	7	34	0.005	2.500	1.500	1355	45
		12.00	8	34	0.010	3.000	2.000	900	70
		16.00	10	34	0.015	4.000	2.200	675	100
		20.00	12	34	0.018	6.000	2.400	540	115
		25.00	14	34	0.020	8.000	2.600	435	120
		32.00	16	34	0.025	10.000	3.000	340	135
	Stainless steel [Cr-Ni/1.4301]	8.00	7	21	0.005	2.500	1.500	835	30
		12.00	8	21	0.010	3.000	2.000	555	45
		16.00	10	21	0.015	4.000	2.200	420	65
		20.00	12	21	0.018	6.000	2.400	335	70
		25.00	14	21	0.020	8.000	2.600	265	75
		32.00	16	21	0.025	10.000	3.000	210	85
	Cast iron (lamellar / spheroidal)	8.00	7	42	0.005	2.500	1.500	1670	60
		12.00	8	42	0.010	3.000	2.000	1115	90
		16.00	10	42	0.015	4.000	2.200	835	125
		20.00	12	42	0.018	6.000	2.400	670	145
		25.00	14	42	0.020	8.000	2.600	535	150
		32.00	16	42	0.025	10.000	3.000	420	165
	Unalloyed copper	8.00	7	65	0.005	2.500	1.500	2585	90
		12.00	8	65	0.010	3.000	2.000	1725	140
		16.00	10	65	0.015	4.000	2.200	1295	195
		20.00	12	65	0.018	6.000	2.400	1035	225
		25.00	14	65	0.020	8.000	2.600	830	230
		32.00	16	65	0.025	10.000	3.000	645	260
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	8.00	7	23	0.005	2.500	1.500	915	30
		12.00	8	23	0.010	3.000	2.000	610	50
		16.00	10	23	0.015	4.000	2.200	460	70
		20.00	12	23	0.018	6.000	2.400	365	80
		25.00	14	23	0.020	8.000	2.600	295	80
		32.00	16	23	0.025	10.000	3.000	230	90
	Wrought aluminium Si < 6%	8.00	7	80	0.005	2.500	1.500	3185	110
		12.00	8	80	0.010	3.000	2.000	2120	170
		16.00	10	80	0.015	4.000	2.200	1590	240
		20.00	12	80	0.018	6.000	2.400	1275	275
		25.00	14	80	0.020	8.000	2.600	1020	285
		32.00	16	80	0.025	10.000	3.000	795	320

Angular end mills

HSS

HSS-E Co8	λ 0° γ 0°

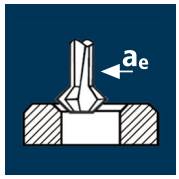


Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **0890** ø-Code **100**

Ø Code	d_1 js12	d_2 h6	l_1	b	α	z	UNICUT-4X U0890
100	12.00	10.00	54	3.0	45.0°	8	●
120	16.00	12.00	60	4.0	45.0°	10	●
140	20.00	12.00	63	5.0	45.0°	12	●
160	25.00	12.00	67	6.3	45.0°	14	●
180	32.00	16.00	71	8.0	45.0°	16	●
300	8.00	6.00	49	3.0	60.0°	7	●
320	12.00	10.00	54	4.0	60.0°	8	●
340	16.00	12.00	60	6.3	60.0°	10	●
360	20.00	12.00	63	8.0	60.0°	12	●
380	25.00	12.00	67	10.0	60.0°	14	●
400	32.00	16.00	71	12.5	60.0°	16	●

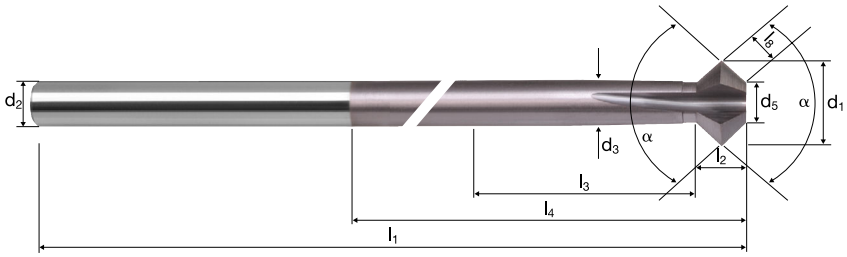
VI

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel < 850 N/mm²	3.00	4	150	0.008	0.150	15915	510
		4.00	4	150	0.012	0.200	11935	575
		5.00	4	150	0.014	0.250	9550	535
		6.00	4	150	0.018	0.250	7960	575
		8.00	4	150	0.022	0.300	5970	525
		10.00	4	150	0.028	0.400	4775	535
		12.00	4	150	0.034	0.500	3980	540
	Steel 850 - 1100 N/mm²	3.00	4	120	0.008	0.150	12730	405
		4.00	4	120	0.012	0.200	9550	460
		5.00	4	120	0.014	0.250	7640	430
		6.00	4	120	0.018	0.250	6365	460
		8.00	4	120	0.022	0.300	4775	420
		10.00	4	120	0.028	0.400	3820	430
		12.00	4	120	0.034	0.500	3185	435
	Stainless steel [Cr-Ni/1.4301]	3.00	4	50	0.008	0.150	5305	170
		4.00	4	50	0.012	0.200	3980	190
		5.00	4	50	0.014	0.250	3185	180
		6.00	4	50	0.018	0.250	2655	190
		8.00	4	50	0.022	0.300	1990	175
		10.00	4	50	0.028	0.400	1590	180
		12.00	4	50	0.034	0.500	1325	180
	Cast iron (lamellar / spheroidal)	3.00	4	180	0.008	0.150	19100	610
		4.00	4	180	0.012	0.200	14325	690
		5.00	4	180	0.014	0.250	11460	640
		6.00	4	180	0.018	0.250	9550	690
		8.00	4	180	0.022	0.300	7160	630
		10.00	4	180	0.028	0.400	5730	640
		12.00	4	180	0.034	0.500	4775	650
	Steel < 850 N/mm²	3.00	4	150	0.008	0.150	15915	510
		4.00	4	150	0.012	0.200	11935	575
		5.00	4	150	0.014	0.250	9550	535
		6.00	4	150	0.018	0.250	7960	575
		8.00	4	150	0.022	0.300	5970	525
		10.00	4	150	0.028	0.400	4775	535
		12.00	4	150	0.034	0.500	3980	540
	Steel 850 - 1100 N/mm²	3.00	4	120	0.008	0.150	12730	405
		4.00	4	120	0.012	0.200	9550	460
		5.00	4	120	0.014	0.250	7640	430
		6.00	4	120	0.018	0.250	6365	460
		8.00	4	120	0.022	0.300	4775	420
		10.00	4	120	0.028	0.400	3820	430
		12.00	4	120	0.034	0.500	3185	435
	Stainless steel [Cr-Ni/1.4301]	3.00	4	50	0.008	0.150	5305	170
		4.00	4	50	0.012	0.200	3980	190
		5.00	4	50	0.014	0.250	3185	180
		6.00	4	50	0.018	0.250	2655	190
		8.00	4	50	0.022	0.300	1990	175
		10.00	4	50	0.028	0.400	1590	180
		12.00	4	50	0.034	0.500	1325	180
	Cast iron (lamellar / spheroidal)	3.00	4	180	0.008	0.150	19100	610
		4.00	4	180	0.012	0.200	14325	690
		5.00	4	180	0.014	0.250	11460	640
		6.00	4	180	0.018	0.250	9550	690
		8.00	4	180	0.022	0.300	7160	630
		10.00	4	180	0.028	0.400	5730	640
		12.00	4	180	0.034	0.500	4775	650

Forward and reverse deburring end mills

45° - Chamfer

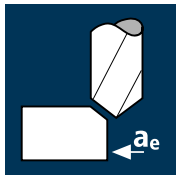
HM	λ 0° γ 8°



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **7930** ø-Code **180**

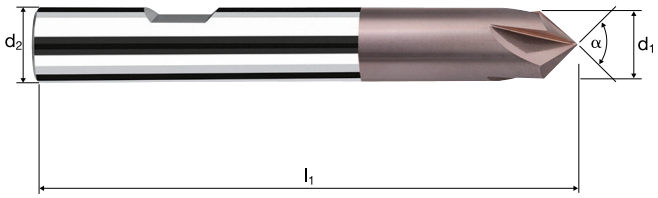
Ø Code	d_1 0/-0.05	d_2 h6	d_3	d_5	l_1	l_2	l_3	l_4	l_8	α	z	UNICUT-4X U7930
180	3.00	6.00	2.20	1.2	100	1.30	10.00	60.00	1.3	90.0°	4	●
220	4.00	6.00	2.90	1.6	100	1.75	12.00	60.00	1.7	90.0°	4	●
260	5.00	6.00	3.40	2.0	100	2.30	15.00	60.00	2.1	90.0°	4	●
300	6.00	6.00	3.80	2.4	100	2.90	18.00	60.00	2.5	90.0°	4	●
391	8.00	6.00	4.90	4.9	100	3.10	35.00	60.00	2.2	90.0°	4	●
450	10.00	6.00	5.90	5.9	100	4.10	35.00	60.00	2.9	90.0°	4	●
501	12.00	6.00	5.90	5.9	100	6.10	35.00	60.00	4.3	90.0°	4	●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min-1]	v_f [mm/min]
	Steel < 850 N/mm²	6.00	4	150	0.020	0.200	0.200	7960	635
		8.00	4	150	0.025	0.250	0.250	5970	595
		10.00	4	150	0.030	0.300	0.300	4775	575
		12.00	4	150	0.035	0.400	0.400	3980	555
	Steel 850 - 1100 N/mm²	6.00	4	120	0.020	0.200	0.200	6365	510
		8.00	4	120	0.025	0.250	0.250	4775	475
		10.00	4	120	0.030	0.300	0.300	3820	460
		12.00	4	120	0.035	0.400	0.400	3185	445
	Steel 1100 - 1300 N/mm²	6.00	4	55	0.020	0.200	0.200	2920	235
		8.00	4	55	0.025	0.250	0.250	2190	220
		10.00	4	55	0.030	0.300	0.300	1750	210
		12.00	4	55	0.035	0.400	0.400	1460	205
	Stainless steel [Cr-Ni/1.4301]	6.00	4	60	0.020	0.200	0.200	3185	255
		8.00	4	60	0.025	0.250	0.250	2385	240
		10.00	4	60	0.030	0.300	0.300	1910	230
		12.00	4	60	0.035	0.400	0.400	1590	225
	Cast iron (lamellar / spheroidal)	6.00	4	160	0.020	0.200	0.200	8490	680
		8.00	4	160	0.025	0.250	0.250	6365	635
		10.00	4	160	0.030	0.300	0.300	5095	610
		12.00	4	160	0.035	0.400	0.400	4245	595
	Unalloyed copper	6.00	4	200	0.020	0.200	0.200	10610	850
		8.00	4	200	0.025	0.250	0.250	7960	795
		10.00	4	200	0.030	0.300	0.300	6365	765
		12.00	4	200	0.035	0.400	0.400	5305	745
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	6.00	4	70	0.020	0.200	0.200	3715	295
		8.00	4	70	0.025	0.250	0.250	2785	280
		10.00	4	70	0.030	0.300	0.300	2230	265
		12.00	4	70	0.035	0.400	0.400	1855	260
	Wrought aluminium Si < 6%	6.00	4	300	0.020	0.200	0.200	15915	1275
		8.00	4	300	0.025	0.250	0.250	11935	1195
		10.00	4	300	0.030	0.300	0.300	9550	1145
		12.00	4	300	0.035	0.400	0.400	7960	1115

Deburring end mills

45° - Chamfer

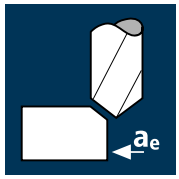
HM	λ 0° γ 0°



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **7940** ø-Code **300**

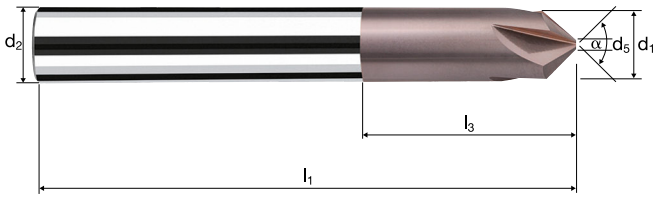
Ø Code	d_1 h6	d_2 h6	l_1	α	z		UNICUT-4X U7940
300	6.00	6.00	57	90.0°	4		●
391	8.00	8.00	63	90.0°	4		●
450	10.00	10.00	72	90.0°	4		●
501	12.00	12.00	83	90.0°	4		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	2.00	3	150	0.005	0.050	0.050	23875	360
		3.00	3	150	0.010	0.100	0.100	15915	475
		4.00	3	150	0.015	0.150	0.150	11935	535
		6.00	3	150	0.020	0.200	0.200	7960	475
	Steel 850 - 1100 N/mm²	2.00	3	120	0.005	0.050	0.050	19100	285
		3.00	3	120	0.010	0.100	0.100	12730	380
		4.00	3	120	0.015	0.150	0.150	9550	430
		6.00	3	120	0.020	0.200	0.200	6365	380
	Steel 1100 - 1300 N/mm²	2.00	3	70	0.005	0.050	0.050	11140	165
		3.00	3	70	0.010	0.100	0.100	7425	225
		4.00	3	70	0.015	0.150	0.150	5570	250
		6.00	3	70	0.020	0.200	0.200	3715	225
	Stainless steel [Cr-Ni/1.4301]	2.00	3	60	0.005	0.050	0.050	9550	145
		3.00	3	60	0.010	0.100	0.100	6365	190
		4.00	3	60	0.015	0.150	0.150	4775	215
		6.00	3	60	0.020	0.200	0.200	3185	190
	Cast iron (lamellar / spheroidal)	2.00	3	160	0.005	0.050	0.050	25465	380
		3.00	3	160	0.010	0.100	0.100	16975	510
		4.00	3	160	0.015	0.150	0.150	12730	575
		6.00	3	160	0.020	0.200	0.200	8490	510
	Unalloyed copper	2.00	3	180	0.005	0.050	0.050	28650	430
		3.00	3	180	0.010	0.100	0.100	19100	575
		4.00	3	180	0.015	0.150	0.150	14325	645
		6.00	3	180	0.020	0.200	0.200	9550	575
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.00	3	70	0.005	0.050	0.050	11140	165
		3.00	3	70	0.010	0.100	0.100	7425	225
		4.00	3	70	0.015	0.150	0.150	5570	250
		6.00	3	70	0.020	0.200	0.200	3715	225
	Wrought aluminium Si < 6%	2.00	3	200	0.005	0.050	0.050	31830	475
		3.00	3	200	0.010	0.100	0.100	21220	635
		4.00	3	200	0.015	0.150	0.150	15915	715
		6.00	3	200	0.020	0.200	0.200	10610	635

Deburring end mills

45° - Chamfer

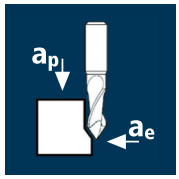
HM	λ 0° γ 0°



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **7942** ø-Code **140**

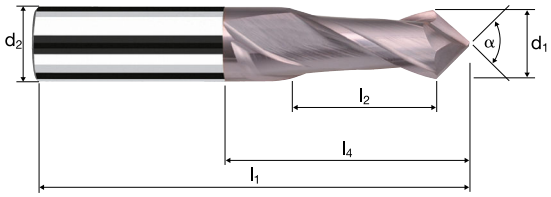
Ø Code	d_1 h6	d_2 h6	d_5 ±0.05	l_1	l_3	α	z		UNICUT-4X U7942
140	2.00	3.00	0.2	40	7.20	90.0°	3		●
180	3.00	3.00	0.3	40	-	90.0°	3		●
220	4.00	4.00	0.4	50	-	90.0°	3		●
300	6.00	6.00	0.6	57	-	90.0°	3		●

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel < 850 N/mm²	2.00	2	120	0.006	0.050	0.050	19100	230
		3.00	2	120	0.008	0.100	0.100	12730	205
		4.00	2	120	0.012	0.150	0.150	9550	230
		5.00	2	120	0.014	0.200	0.200	7640	215
		6.00	2	120	0.018	0.200	0.200	6365	230
		8.00	2	120	0.022	0.250	0.250	4775	210
		10.00	2	120	0.028	0.350	0.350	3820	215
		12.00	2	120	0.034	0.450	0.450	3185	215
		16.00	2	120	0.046	0.500	0.500	2385	220
	Steel 850 - 1100 N/mm²	2.00	2	100	0.006	0.050	0.050	15915	190
		3.00	2	100	0.008	0.100	0.100	10610	170
		4.00	2	100	0.012	0.150	0.150	7960	190
		5.00	2	100	0.014	0.200	0.200	6365	180
		6.00	2	100	0.018	0.200	0.200	5305	190
		8.00	2	100	0.022	0.250	0.250	3980	175
		10.00	2	100	0.028	0.350	0.350	3185	180
		12.00	2	100	0.034	0.450	0.450	2655	180
		16.00	2	100	0.046	0.500	0.500	1990	185
	Stainless steel [Cr-Ni/1.4301]	2.00	2	50	0.006	0.050	0.050	7960	95
		3.00	2	50	0.008	0.100	0.100	5305	85
		4.00	2	50	0.012	0.150	0.150	3980	95
		5.00	2	50	0.014	0.200	0.200	3185	90
		6.00	2	50	0.018	0.200	0.200	2655	95
		8.00	2	50	0.022	0.250	0.250	1990	90
		10.00	2	50	0.028	0.350	0.350	1590	90
		12.00	2	50	0.034	0.450	0.450	1325	90
		16.00	2	50	0.046	0.500	0.500	995	90
	Cast iron (lamellar / spheroidal)	2.00	2	140	0.006	0.050	0.050	22280	265
		3.00	2	140	0.008	0.100	0.100	14855	240
		4.00	2	140	0.012	0.150	0.150	11140	265
		5.00	2	140	0.014	0.200	0.200	8915	250
		6.00	2	140	0.018	0.200	0.200	7425	265
		8.00	2	140	0.022	0.250	0.250	5570	245
		10.00	2	140	0.028	0.350	0.350	4455	250
		12.00	2	140	0.034	0.450	0.450	3715	255
		16.00	2	140	0.046	0.500	0.500	2785	255
	Steel < 850 N/mm²	2.00	2	100	0.006	2.000	0.100	15915	190
		3.00	2	100	0.008	3.000	0.150	10610	170
		4.00	2	100	0.012	4.000	0.150	7960	190
		5.00	2	100	0.014	5.000	0.200	6365	180
		6.00	2	100	0.018	6.000	0.200	5305	190
		8.00	2	100	0.022	8.000	0.250	3980	175
		10.00	2	100	0.028	10.000	0.250	3185	180
		12.00	2	100	0.034	12.000	0.300	2655	180
		16.00	2	100	0.046	16.000	0.400	1990	185
	Steel 850 - 1100 N/mm²	2.00	2	80	0.006	2.000	0.100	12730	155
		3.00	2	80	0.008	3.000	0.150	8490	135
		4.00	2	80	0.012	4.000	0.150	6365	155
		5.00	2	80	0.014	5.000	0.200	5095	145
		6.00	2	80	0.018	6.000	0.200	4245	155
		8.00	2	80	0.022	8.000	0.250	3185	140
		10.00	2	80	0.028	10.000	0.250	2545	145
		12.00	2	80	0.034	12.000	0.300	2120	145
		16.00	2	80	0.046	16.000	0.400	1590	145
	Stainless steel [Cr-Ni/1.4301]	2.00	2	45	0.006	2.000	0.100	7160	85
		3.00	2	45	0.008	3.000	0.150	4775	75
		4.00	2	45	0.012	4.000	0.150	3580	85
		5.00	2	45	0.014	5.000	0.200	2865	80
		6.00	2	45	0.018	6.000	0.200	2385	85
		8.00	2	45	0.022	8.000	0.250	1790	80
		10.00	2	45	0.028	10.000	0.250	1430	80
		12.00	2	45	0.034	12.000	0.300	1195	80
		16.00	2	45	0.046	16.000	0.400	895	80
	Cast iron (lamellar / spheroidal)	2.00	2	120	0.006	2.000	0.100	19100	230
		3.00	2	120	0.008	3.000	0.150	12730	205
		4.00	2	120	0.012	4.000	0.150	9550	230
		5.00	2	120	0.014	5.000	0.200	7640	215
		6.00	2	120	0.018	6.000	0.200	6365	230
		8.00	2	120	0.022	8.000	0.250	4775	210
		10.00	2	120	0.028	10.000	0.250	3820	215
		12.00	2	120	0.034	12.000	0.300	3185	215
		16.00	2	120	0.046	16.000	0.400	2385	220

Universal end mills

Milling, chamfering, centering, drilling

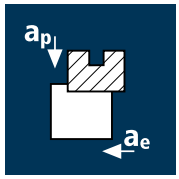
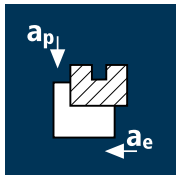
HM	λ 30° γ 12°



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **7960** ø-Code **050**

	Ø Code	d_1 h9	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U7960
new!	050	0.50	3.00	39	1.00	5.65	90.0°	2	●
new!	100	1.00	3.00	39	2.00	7.15	90.0°	2	●
new!	120	1.50	3.00	39	3.00	8.92	90.0°	2	●
new!	140	2.00	3.00	39	4.00	9.15	90.0°	2	●
new!	160	2.50	3.00	39	5.00	8.98	90.0°	2	●
	180	3.00	4.00	50	6.00	11.20	90.0°	2	●
	220	4.00	5.00	50	8.00	13.70	90.0°	2	●
	260	5.00	6.00	50	10.00	16.70	90.0°	2	●
	300	6.00	8.00	60	12.00	21.07	90.0°	2	●
	391	8.00	10.00	70	16.00	26.07	90.0°	2	●
	450	10.00	12.00	70	18.00	31.07	90.0°	2	●
	501	12.00	12.00	70	20.00	35.00	90.0°	2	●
new!	610	16.00	16.00	80	26.00	49.00	90.0°	2	●
new!	682	20.00	20.00	100	32.00	57.00	90.0°	2	●

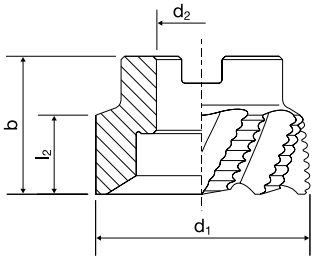
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	32.00	6	65	0.060	6.400	24.000	645	235	35.8
		40.00	8	65	0.080	8.000	30.000	515	330	79.5
		50.00	8	65	0.100	10.000	37.500	415	330	124.1
		63.00	10	65	0.120	12.600	47.250	330	395	234.6
		80.00	10	65	0.120	16.000	60.000	260	310	297.9
	Steel 850 - 1100 N/mm²	32.00	6	48	0.060	6.400	24.000	475	170	26.4
		40.00	8	48	0.080	8.000	30.000	380	245	58.7
		50.00	8	48	0.100	10.000	37.500	305	245	91.7
		63.00	10	48	0.120	12.600	47.250	245	290	173.3
		80.00	10	48	0.120	16.000	60.000	190	230	220.0
	Steel 1100 - 1300 N/mm²	32.00	6	35	0.060	6.400	24.000	350	125	19.3
		40.00	8	35	0.080	8.000	30.000	280	180	42.8
		50.00	8	35	0.100	10.000	37.500	225	180	66.8
		63.00	10	35	0.120	12.600	47.250	175	210	126.3
		80.00	10	35	0.120	16.000	60.000	140	165	160.4
	Stainless steel [Cr-Ni/1.4301]	32.00	6	26	0.060	6.400	24.000	260	95	14.3
		40.00	8	26	0.080	8.000	30.000	205	130	31.8
		50.00	8	26	0.100	10.000	37.500	165	130	49.7
		63.00	10	26	0.120	12.600	47.250	130	160	93.9
		80.00	10	26	0.120	16.000	60.000	105	125	119.2
	Steel < 850 N/mm²	32.00	6	68	0.070	6.400	9.600	675	285	17.5
		40.00	8	68	0.090	8.000	12.000	540	390	37.4
		50.00	8	68	0.110	10.000	15.000	435	380	57.1
		63.00	10	68	0.125	12.600	18.900	345	430	102.3
		80.00	10	68	0.145	16.000	24.000	270	390	150.6
	Steel 850 - 1100 N/mm²	32.00	6	55	0.070	6.400	9.600	545	230	14.1
		40.00	8	55	0.090	8.000	12.000	440	315	30.3
		50.00	8	55	0.110	10.000	15.000	350	310	46.2
		63.00	10	55	0.125	12.600	18.900	280	345	82.7
		80.00	10	55	0.145	16.000	24.000	220	315	121.8
	Steel 1100 - 1300 N/mm²	32.00	6	40	0.070	6.400	9.600	400	165	10.3
		40.00	8	40	0.090	8.000	12.000	320	230	22.0
		50.00	8	40	0.110	10.000	15.000	255	225	33.6
		63.00	10	40	0.125	12.600	18.900	200	255	60.2
		80.00	10	40	0.145	16.000	24.000	160	230	88.6
	Stainless steel [Cr-Ni/1.4301]	32.00	6	29	0.070	6.400	9.600	290	120	7.4
		40.00	8	29	0.090	8.000	12.000	230	165	16.0
		50.00	8	29	0.110	10.000	15.000	185	160	24.4
		63.00	10	29	0.125	12.600	18.900	145	185	43.6
		80.00	10	29	0.145	16.000	24.000	115	165	64.2

Cylindrical end mills

Profiled

HSS

HSS PM/F	λ 25° γ 10°
45°	

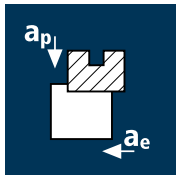
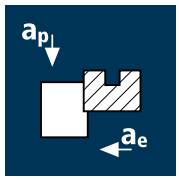


Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **3490** ø-Code **100**

Ø Code	d_1 k9	d_2 H7	l_2	b k13	45°	z	UNICUT-4X U3490
100	32.00	13.00	15.00	28.0	0.70	6	●
110	40.00	16.00	18.00	32.0	0.90	8	●
130	50.00	22.00	20.00	36.0	0.90	8	●
160	63.00	27.00	22.00	40.0	1.20	10	●
180	80.00	27.00	25.00	45.0	1.20	10	●

VI

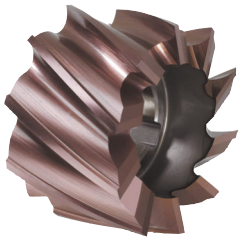
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm² U	40.00	8	45	0.065	2.000	30.000	360	185	11.2
		50.00	8	45	0.080	2.500	37.500	285	185	17.2
		63.00	10	45	0.080	3.150	47.250	225	180	27.1
		80.00	12	45	0.100	4.000	60.000	180	215	51.6
	Steel 1100 - 1300 N/mm² U	40.00	8	30	0.065	2.000	30.000	240	125	7.4
		50.00	8	30	0.080	2.500	37.500	190	120	11.5
		63.00	10	30	0.080	3.150	47.250	150	120	18.0
		80.00	12	30	0.100	4.000	60.000	120	145	34.4
	Cold work tool steel (12% Cr), high alloyed [1.2379] U	40.00	8	20	0.065	2.000	30.000	160	85	5.0
		50.00	8	20	0.080	2.500	37.500	125	80	7.6
		63.00	10	20	0.080	3.150	47.250	100	80	12.0
		80.00	12	20	0.100	4.000	60.000	80	95	22.9
	Cast iron (lamellar / spheroidal) U	40.00	8	42	0.065	2.000	30.000	335	175	10.4
		50.00	8	42	0.080	2.500	37.500	265	170	16.0
		63.00	10	42	0.080	3.150	47.250	210	170	25.3
		80.00	12	42	0.100	4.000	60.000	165	200	48.1
	Steel 850 - 1100 N/mm² U	40.00	8	50	0.065	20.000	1.000	400	205	4.1
		50.00	8	50	0.080	25.000	1.250	320	205	6.4
		63.00	10	50	0.080	31.500	1.575	255	200	10.0
		80.00	12	50	0.100	40.000	2.000	200	240	19.1
	Steel 1100 - 1300 N/mm² U	40.00	8	35	0.065	20.000	1.000	280	145	2.9
		50.00	8	35	0.080	25.000	1.250	225	145	4.5
		63.00	10	35	0.080	31.500	1.575	175	140	7.0
		80.00	12	35	0.100	40.000	2.000	140	165	13.4
	Cold work tool steel (12% Cr), high alloyed [1.2379] U	40.00	8	25	0.065	20.000	1.000	200	105	2.1
		50.00	8	25	0.080	25.000	1.250	160	100	3.2
		63.00	10	25	0.080	31.500	1.575	125	100	5.0
		80.00	12	25	0.100	40.000	2.000	100	120	9.5
	Cast iron (lamellar / spheroidal) U	40.00	8	45	0.065	20.000	1.000	360	185	3.7
		50.00	8	45	0.080	25.000	1.250	285	185	5.7
		63.00	10	45	0.080	31.500	1.575	225	180	9.0
		80.00	12	45	0.100	40.000	2.000	180	215	17.2

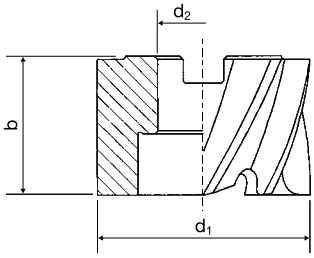
Cylindrical end mills

Smooth-edged

HSS

HSS PM/F	λ 30° γ 15°
90°	





Rm < 850	Rm 850-1100	Rm 1100-1300							GG(G)

Example: **Order-N°.** Coating **U** Article-N°. **3209** ø-Code **110**

Ø Code	d_1 k8	d_2 H7	b k13	z		UNICUT-4X U3209
110	40.00	16.00	32.0	8		●
130	50.00	22.00	36.0	8		●
160	63.00	27.00	40.0	10		●
180	80.00	27.00	45.0	12		●

VI

passion
for precision
fraisa

Round indexable insert milling tools

819 – 833

Indexable insert milling tools HFC

835 – 849

Indexable insert Face milling tools

851 – 855

Corner/slot indexable insert milling tools

857 – 867

Accessories

868 – 869

passion
for precision
fraisa

Round insert end mill for indexable inserts 10mm

N° W03140

N° W03185

NX	λ 5° γ 15°	d, 20 – 32	**Rm** 850-1500			823
SX	λ 5° γ 20°	d, 20 – 32	**Inox** Stainless	**Rm** <850		
HX	λ 5° γ -4°	d, 20 – 32	**Rm** 1300-1500	**HRC** 48-60		
ZX	λ 5° γ 14°	d, 20 – 32	**Ni** Alloys	**Inox** Stainless	**Rm** <850	
AX	λ 5° γ 21°	d, 20 – 32	**Al** Aluminium Alloy	**Al** Aluminium Cast	**Cu** Copper	

Round insert end mill for indexable inserts 12mm

N° W03150

N° W03195

NX	λ 0° γ 14°	d, 25 – 32	**Rm** 850-1500			825
SX	λ 0° γ 19°	d, 25 – 32	**Inox** Stainless	**Rm** <850		
HX	λ 0° γ -4°	d, 25 – 32	**Rm** 1300-1500	**HRC** 48-60		
ZX	λ 0° γ 13°	d, 25 – 32	**Ni** Alloys	**Inox** Stainless	**Rm** <850	
AX	λ 0° γ 20°	d, 25 – 32	**Al** Aluminium Alloy	**Al** Aluminium Cast	**Cu** Copper	

Round insert end mill for indexable inserts 10mm

N° W03410

NX	λ 5° γ 15°	d, 40 – 52	**Rm** 850-1500			827
SX	λ 5° γ 20°	d, 40 – 52	**Inox** Stainless	**Rm** <850		
HX	λ 5° γ -4°	d, 40 – 52	**Rm** 1300-1500	**HRC** 48-60		
ZX	λ 5° γ 14°	d, 40 – 52	**Ni** Alloys	**Inox** Stainless	**Rm** <850	
AX	λ 5° γ 21°	d, 40 – 52	**Al** Aluminium Alloy	**Al** Aluminium Cast	**Cu** Copper	

Round insert end mill for indexable inserts 12mm

N° W03412

NX	λ 5° γ 15°	d, 40 – 100	**Rm** 850-1500			829
SX	λ 5° γ 20°	d, 40 – 100	**Inox** Stainless	**Rm** <850		
HX	λ 5° γ -4°	d, 40 – 100	**Rm** 1300-1500	**HRC** 48-60		
ZX	λ 5° γ 14°	d, 40 – 100	**Ni** Alloys	**Inox** Stainless	**Rm** <850	
AX	λ 5° γ 21°	d, 40 – 100	**Al** Aluminium Alloy	**Al** Aluminium Cast	**Cu** Copper	

Round insert end mill for indexable inserts 10mm

N° W03210

NX	λ 5° γ 15°	d, 25 – 35	**Rm** 850-1500			831
SX	λ 5° γ 20°	d, 25 – 35	**Inox** Stainless	**Rm** <850		
HX	λ 5° γ -4°	d, 25 – 35	**Rm** 1300-1500	**HRC** 48-60		
ZX	λ 5° γ 14°	d, 25 – 35	**Ni** Alloys	**Inox** Stainless	**Rm** <850	
AX	λ 5° γ 21°	d, 25 – 35	**Al** Aluminium Alloy	**Al** Aluminium Cast	**Cu** Copper	

Round insert end mill for indexable inserts 12mm

N° W03212

NX	λ 5° γ 15°	d, 35 – 42	**Rm** 850-1500			833
SX	λ 5° γ 20°	d, 35 – 42	**Inox** Stainless	**Rm** <850		
HX	λ 5° γ -4°	d, 35 – 42	**Rm** 1300-1500	**HRC** 48-60		
ZX	λ 5° γ 14°	d, 35 – 42	**Ni** Alloys	**Inox** Stainless	**Rm** <850	
AX	λ 5° γ 21°	d, 35 – 42	**Al** Aluminium Alloy	**Al** Aluminium Cast	**Cu** Copper	

Inserts

10mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W53110010	**W53310010**	**W53210010**	**W53410010**	**W53510010**

Inserts	Delivery range: Packaging unit 10 pieces				
Order-N°.	**ISO-Norm**	**D_1**	**D**	**r**	
W53110010	RPMX 10T3MOSN	10.0	4.0	5.000	●
W53310010	RPMX 10T3MOEN	10.0	4.0	5.000	●
W53210010	RDHW 10T3MOSN	10.0	4.0	5.000	●
W53410010	RPHX 10T3MOEN	10.0	4.0	5.000	●
W53510010	RDHX 10T3MOFN	10.0	4.0	5.000	●

ToolExpert 2.0

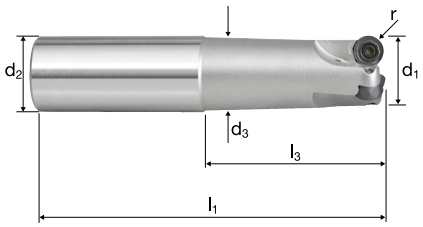
The new online cutting data tool for optimum tool use.

This way to the new cutting data calculator ToolExpert 2.0 or the FRAISA website http://www.fraisa.com/en/toolexpert

Round insert end mill

Inserts 10mm, with integral air / cooling channel

HM



Round insert end mill	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	d_1	$d_{2\ h6}$	d_3	l_1	l_3	$ap_{max.}$	z	L-Typ	
W03140202	20.00	20.00	19.00	110	57.00	1.40	2	M	●
W03185202	20.00	20.00	19.00	185	57.00	1.40	2	XL	●
W03140253	25.00	25.00	24.00	124	65.00	1.40	3	M	●
W03185253	25.00	25.00	24.00	210	65.00	1.40	3	XL	●
W03140324	32.00	32.00	31.00	144	81.00	1.40	4	M	●
W03185324	32.00	32.00	31.00	250	81.00	1.40	4	XL	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W93110010	Torque screwdriver 2.0 Nm with blade Torx TX 10	●
W93111010	Interchangeable blade for torque screwdriver Torx TX 10	●
W93100010	Screwdriver Torx TX 10	●
W93500010	Clamping screws for inserts Torx TX 10 / M 3 x 7.3	●

Inserts

12mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W53110012	W53310012	W53210012	W53410012	W53510012

Inserts	Delivery range: Packaging unit 10 pieces				
Order-N°.	ISO-Norm	D_1	D	r	
W53110012	RPMX 1204MOSN	12.0	4.8	6.000	●
W53310012	RPMX 1204MOEN	12.0	4.8	6.000	●
W53210012	RDHW 1204MOSN	12.0	4.8	6.000	●
W53410012	RPHX 1204MOEN	12.0	4.8	6.000	●
W53510012	RDHX 1204MOFN	12.0	4.8	6.000	●

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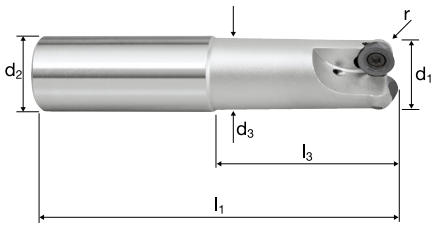
Round insert end mill

Inserts 12mm, with integral air / cooling channel

HM



Round insert end mill	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	d_1	$d_{2\ h6}$	d_3	l_1	l_3	$ap_{max.}$	z	L-Typ	
W03150252	25.00	25.00	24.00	124	65.00	1.70	2	M	●
W03195252	25.00	25.00	24.00	210	65.00	1.70	2	XL	●
W03150323	32.00	32.00	31.00	144	81.00	1.70	3	M	●
W03195323	32.00	32.00	31.00	250	81.00	1.70	3	XL	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W93110012	Torque screwdriver 4.2 Nm with blade Torx TX 15	●
W90111013	Interchangeable blade for torque screwdriver TX 15	●
W90100013	Screwdriver Torx TX 15	●
W93500012	Clamping screws for inserts Torx TX 15 / M 4 x 8.5	●

Inserts

10mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W53110010	**W53310010**	**W53210010**	**W53410010**	**W53510010**

Inserts	Delivery range: Packaging unit 10 pieces				
Order-N°.	**ISO-Norm**	**D_1**	**D**	**r**	
W53110010	RPMX 10T3MOSN	10.0	4.0	5.000	●
W53310010	RPMX 10T3MOEN	10.0	4.0	5.000	●
W53210010	RDHW 10T3MOSN	10.0	4.0	5.000	●
W53410010	RPHX 10T3MOEN	10.0	4.0	5.000	●
W53510010	RDHX 10T3MOFN	10.0	4.0	5.000	●

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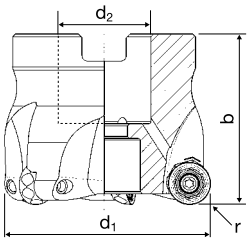
Round insert end mill

Inserts 10mm, with integral air / cooling channel

HM



Round insert end mill	Delivery range: Cutter body incl. clamping screws for inserts					
Order-N°.	**d_1**	**d_2**	**b**	**$ap_{max.}$**	**z**	
W03410404*	40.00	16.00	40.0	1.40	4	●
W03410424*	42.00	16.00	40.0	1.40	4	●
W03410505	50.00	22.00	40.0	1.40	5	●
W03410525	52.00	22.00	40.0	1.40	5	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W93110010	Torque screwdriver 2.0 Nm with blade Torx TX 10	●
W93111010	Interchangeable blade for torque screwdriver Torx TX 10	●
W93100010	Screwdriver Torx TX 10	●
W93500010	Clamping screws for inserts Torx TX 10 / M 3 x 7.3	●
W99510010*	Powerscrew M8.0 x 30.0 (Torque 15.0 Nm)	●

Inserts

12mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W53110012	**W53310012**	**W53210012**	**W53410012**	**W53510012**

Inserts	Delivery range: Packaging unit 10 pieces				
Order-N°.	**ISO-Norm**	**D_1**	**D**	**r**	
W53110012	RPMX 1204MOSN	12.0	4.8	6.000	●
W53310012	RPMX 1204MOEN	12.0	4.8	6.000	●
W53210012	RDHW 1204MOSN	12.0	4.8	6.000	●
W53410012	RPHX 1204MOEN	12.0	4.8	6.000	●
W53510012	RDHX 1204MOFN	12.0	4.8	6.000	●

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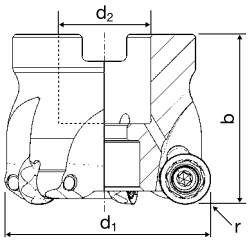
Round insert end mill

Inserts 12mm, with integral air / cooling channel

HM



Round insert end mill	Delivery range: Cutter body incl. clamping screws for inserts					
Order-N°.	d_1	d_2	b	$ap_{max.}$	z	
W03412404*	40.00	16.00	40.0	1.70	4	●
W03412424*	42.00	16.00	40.0	1.70	4	●
W03412505	50.00	22.00	40.0	1.70	5	●
W03412525	52.00	22.00	40.0	1.70	5	●
W03412636	63.00	22.00	40.0	1.70	6	●
W03412666	66.00	22.00	40.0	1.70	6	●
W03412808	80.00	27.00	50.0	1.70	8	●
W03412100	100.00	32.00	50.0	1.70	10	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W93110012	Torque screwdriver 4.2 Nm with blade Torx TX 15	●
W90111013	Interchangeable blade for torque screwdriver TX 15	●
W90100013	Screwdriver Torx TX 15	●
W93500012	Clamping screws for inserts Torx TX 15 / M 4 x 8.5	●
W99510010*	Powerscrew M8.0 x 30.0 (Torque 15.0 Nm)	●

Inserts

10mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W53110010	**W53310010**	**W53210010**	**W53410010**	**W53510010**

Inserts	Delivery range: Packaging unit 10 pieces				
Order-N°.	**ISO-Norm**	**D_1**	**D**	**r**	
W53110010	RPMX 10T3MOSN	10.0	4.0	5.000	●
W53310010	RPMX 10T3MOEN	10.0	4.0	5.000	●
W53210010	RDHW 10T3MOSN	10.0	4.0	5.000	●
W53410010	RPHX 10T3MOEN	10.0	4.0	5.000	●
W53510010	RDHX 10T3MOFN	10.0	4.0	5.000	●

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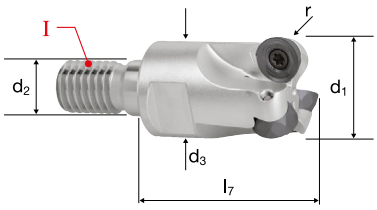
Round insert end mill

Inserts 10mm, with integral air / cooling channel

HM



Round insert end mill	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	d_1	d_2	d_3	l_7	$ap_{max.}$	z		I	
W03210253	25.00	12.50	21.00	35	1.40	3	17	M12	●
W03210354	35.00	17.00	29.00	35	1.40	4	24	M16	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W93110010	Torque screwdriver 2.0 Nm with blade Torx TX 10	●
W93111010	Interchangeable blade for torque screwdriver Torx TX 10	●
W93100010	Screwdriver Torx TX 10	●
W93500010	Clamping screws for inserts Torx TX 10 / M 3 x 7.3	●

Inserts

12mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W53110012	**W53310012**	**W53210012**	**W53410012**	**W53510012**

Inserts	Delivery range: Packaging unit 10 pieces				
Order-N°.	**ISO-Norm**	**D_1**	**D**	**r**	
W53110012	RPMX 1204MOSN	12.0	4.8	6.000	●
W53310012	RPMX 1204MOEN	12.0	4.8	6.000	●
W53210012	RDHW 1204MOSN	12.0	4.8	6.000	●
W53410012	RPHX 1204MOEN	12.0	4.8	6.000	●
W53510012	RDHX 1204MOFN	12.0	4.8	6.000	●

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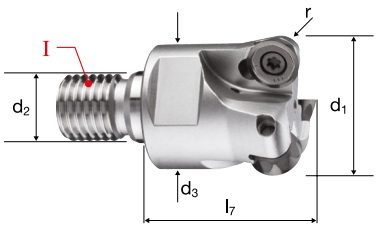
Round insert end mill

Inserts 12mm, with integral air / cooling channel

HM



Round insert end mill	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	d_1	d_2	d_3	l_7	$ap_{max.}$	z		I	
W03212353	35.00	17.00	29.00	35	1.70	3	24	M16	●
W03212424	42.00	17.00	31.00	40	1.70	4	24	M16	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W93110012	Torque screwdriver 4.2 Nm with blade Torx TX 15	●
W90111013	Interchangeable blade for torque screwdriver TX 15	●
W90100013	Screwdriver Torx TX 15	●
W93500012	Clamping screws for inserts Torx TX 15 / M 4 x 8.5	●

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High feed end mills for inserts 10mm

N° W02140

N° W02180

NX	λ 2° γ 14°	d, 25	**Rm** 850-1500			839
SX	λ 2° γ 15°	d, 25	**Inox** Stainless	**Rm** <850		
HX	λ 2° γ 2°	d, 25	**Rm** 1300-1500	**HRC** 48- >60		
ZX	λ 2° γ 15°	d, 25	**Ni** Alloys	**Inox** Stainless	**Rm** <850	

High feed end mills for inserts 13mm

N° W02150

N° W02190

NX	λ 0° γ 12°	d, 35	**Rm** 850-1500			841
SX	λ 0° γ 13°	d, 35	**Inox** Stainless	**Rm** <850		
HX	λ 0° γ 0°	d, 35	**Rm** 1300-1500	**HRC** 48- >60		
ZX	λ 0° γ 13°	d, 35	**Ni** Alloys	**Inox** Stainless	**Rm** <850	

High feed end mills for inserts 10mm

N° W02400

NX	λ 4° γ 16°	d, 40 – 63	Rm 850-1500			843
SX	λ 4° γ 17°	d, 40 – 63	Inox Stainless	Rm <850		
HX	λ 4° γ 4°	d, 40 – 63	Rm 1300-1500	HRC 48- >60		
ZX	λ 4° γ 17°	d, 40 – 63	Ni Alloys	Inox Stainless	Rm <850	

High feed end mills for inserts 13mm

N° W02410

NX	λ 4° γ 16°	d, 50 – 80	Rm 850-1500			845
SX	λ 4° γ 17°	d, 50 – 80	Inox Stainless	Rm <850		
HX	λ 4° γ 4°	d, 50 – 80	Rm 1300-1500	HRC 48- >60		
ZX	λ 4° γ 17°	d, 50 – 80	Ni Alloys	Inox Stainless	Rm <850	

High feed end mills for inserts 10mm

N° W02200

NX	λ 2° γ 14°	d, 25	**Rm** 850-1500			847
SX	λ 2° γ 15°	d, 25	**Inox** Stainless	**Rm** <850		
HX	λ 2° γ 2°	d, 25	**Rm** 1300-1500	**HRC** 48- >60		
ZX	λ 2° γ 15°	d, 25	**Ni** Alloys	**Inox** Stainless	**Rm** <850	

High feed end mills for inserts 13mm

N° W02210

NX	λ 0° γ 12°	d, 35	**Rm** 850-1500			849
SX	λ 0° γ 13°	d, 35	**Inox** Stainless	**Rm** <850		
HX	λ 0° γ 0°	d, 35	**Rm** 1300-1500	**HRC** 48- >60		
ZX	λ 0° γ 13°	d, 35	**Ni** Alloys	**Inox** Stainless	**Rm** <850	

Inserts

10mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials
W52110010	**W52310010**	**W52210010**	**W52410010**

Inserts	Delivery range: Packaging unit 10 pieces						
Order-N°.	**ISO-Norm**	**H**	**B**	**D**	**r**	**$R_{theo.}$**	
W52110010	XDLT 10T308SR	10.2	10.0	4.0	0.800	2.00	●
W52310010	XDLT 10T308ER	10.2	10.0	4.0	0.800	2.00	●
W52210010	XDLW 10T308SR	10.2	10.0	4.0	0.800	2.00	●
W52410010	XDLT 10T308ER	10.2	10.0	4.0	0.800	2.00	●

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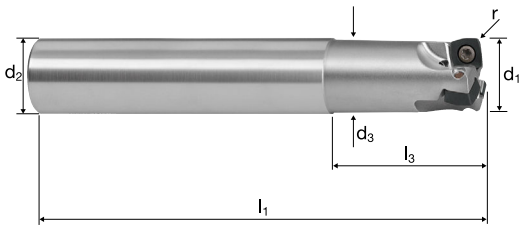
High feed end mills

Inserts 10mm, with integral air / cooling channel

HM



High feed end mills	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	**d_1**	**d_2 h6**	**d_3**	**l_1**	**l_3**	**$ap_{max.}$**	**z**	L-Typ	
W02140253*	25.00	25.00	24.00	125	65.00	1.00	3	M	●
W02180253	25.00	25.00	24.00	225	50.00	1.00	3	XL	●

* With clamping flat only

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W90110013	Torque screwdriver 3.2 Nm with blade Torx TX 15	●
W90111013	Interchangeable blade for torque screwdriver TX 15	●
W90100013	Screwdriver Torx TX 15	●
W90500013	Clamping screws for inserts Torx TX 15 / M 3.5 x 7.2	●

Inserts

13mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials
W52110013	**W52310013**	**W52210013**	**W52410013**

Inserts	Delivery range: Packaging unit 10 pieces						
Order-N°.	**ISO-Norm**	**H**	**B**	**D**	**r**	**$R_{theo.}$**	
W52110013	XOLT 130410SR	13.6	13.1	4.8	1.000	3.00	●
W52310013	XOLT 130410ER	13.6	13.1	4.8	1.000	3.00	●
W52210013	XOLW 130410SR	13.6	13.1	4.8	1.000	3.00	●
W52410013	XOLT 130410ER	13.6	13.1	4.8	1.000	3.00	●

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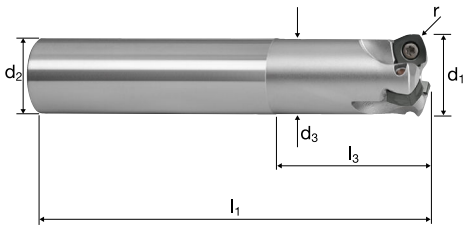
High feed end mills

Inserts 13mm, with integral air / cooling channel

HM



High feed end mills	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	d_1	$d_{2\ h6}$	d_3	l_1	l_3	$ap_{max.}$	z	L-Typ	
W02150353*	35.00	32.00	31.40	144	63.00	2.00	3	M	●
W02190353	35.00	32.00	31.40	255	63.00	2.00	3	XL	●

* With clamping flat only

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W91110013	Torque screwdriver 5.0 Nm with blade Torx TX 20	●
W91111013	Interchangeable blade for torque screwdriver TX 20	●
W91100013	Screwdriver Torx TX 20	●
W91500013	Clamping screws for inserts Torx TX 20 / M 4.5 x 10.5	●

Inserts

10mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials
W52110010	**W52310010**	**W52210010**	**W52410010**

Inserts	Delivery range: Packaging unit 10 pieces						
Order-N°.	**ISO-Norm**	**H**	**B**	**D**	**r**	**$R_{theo.}$**	
W52110010	XDLT 10T308SR	10.2	10.0	4.0	0.800	2.00	●
W52310010	XDLT 10T308ER	10.2	10.0	4.0	0.800	2.00	●
W52210010	XDLW 10T308SR	10.2	10.0	4.0	0.800	2.00	●
W52410010	XDLT 10T308ER	10.2	10.0	4.0	0.800	2.00	●

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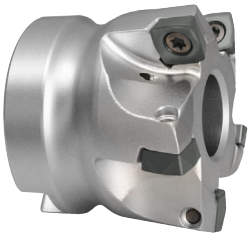
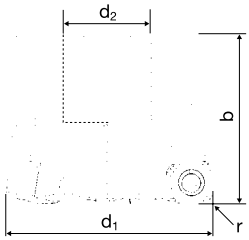
High feed end mills

Inserts 10mm, with integral air / cooling channel

HM





High feed end mills	Delivery range: Cutter body incl. clamping screws for inserts					
Order-N°.	**d_1**	**d_2**	**b**	**$ap_{max.}$**	**z**	
W02400404*	40.00	16.00	40.0	1.00	4	●
W02400505	50.00	22.00	40.0	1.00	5	●
W02400636	63.00	22.00	40.0	1.00	6	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W90110013	Torque screwdriver 3.2 Nm with blade Torx TX 15	●
W90111013	Interchangeable blade for torque screwdriver TX 15	●
W90100013	Screwdriver Torx TX 15	●
W92500010	Clamping screws for inserts Torx TX 15 / M 3.5 x 8.6	●
W99510010*	Powerscrew M8.0 x 30.0 (Torque 15.0 Nm)	●

Inserts

13mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials
W52110013	**W52310013**	**W52210013**	**W52410013**

Inserts	Delivery range: Packaging unit 10 pieces						
Order-N°.	**ISO-Norm**	**H**	**B**	**D**	**r**	**$R_{theo.}$**	
W52110013	XOLT 130410SR	13.6	13.1	4.8	1.000	3.00	●
W52310013	XOLT 130410ER	13.6	13.1	4.8	1.000	3.00	●
W52210013	XOLW 130410SR	13.6	13.1	4.8	1.000	3.00	●
W52410013	XOLT 130410ER	13.6	13.1	4.8	1.000	3.00	●

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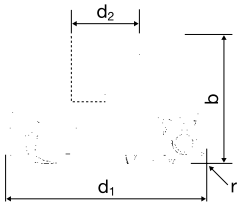
High feed end mills

Inserts 13mm, with integral air / cooling channel

HM



High feed end mills	Delivery range: Cutter body incl. clamping screws for inserts					
Order-N°.	**d_1**	**d_2**	**b**	**$ap_{max.}$**	**z**	
W02410504	50.00	22.00	40.0	2.00	4	●
W02410635	63.00	22.00	40.0	2.00	5	●
W02410807	80.00	27.00	50.0	2.00	7	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W91110013	Torque screwdriver 5.0 Nm with blade Torx TX 20	●
W91111013	Interchangeable blade for torque screwdriver TX 20	●
W91100013	Screwdriver Torx TX 20	●
W91500013	Clamping screws for inserts Torx TX 20 / M 4.5 x 10.5	●

Inserts

10mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials
W52110010	**W52310010**	**W52210010**	**W52410010**

Inserts	Delivery range: Packaging unit 10 pieces						
Order-N°.	**ISO-Norm**	**H**	**B**	**D**	**r**	**$R_{theo.}$**	
W52110010	XDLT 10T308SR	10.2	10.0	4.0	0.800	2.00	●
W52310010	XDLT 10T308ER	10.2	10.0	4.0	0.800	2.00	●
W52210010	XDLW 10T308SR	10.2	10.0	4.0	0.800	2.00	●
W52410010	XDLT 10T308ER	10.2	10.0	4.0	0.800	2.00	●

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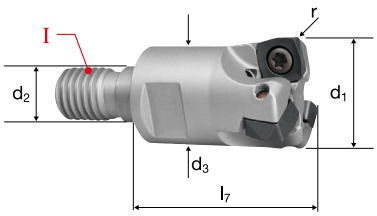
High feed end mills

Inserts 10mm, with integral air / cooling channel

HM



High feed end mills	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	d_1	d_2	d_3	l_7	$ap_{max.}$	z		I	
W02200253	25.00	12.50	21.00	35	1.00	3	17	M12	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W90110013	Torque screwdriver 3.2 Nm with blade Torx TX 15	●
W90111013	Interchangeable blade for torque screwdriver TX 15	●
W90100013	Screwdriver Torx TX 15	●
W90500013	Clamping screws for inserts Torx TX 15 / M 3.5 x 7.2	●

Inserts

13mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials
W52110013	**W52310013**	**W52210013**	**W52410013**

Inserts	Delivery range: Packaging unit 10 pieces						
Order-N°.	**ISO-Norm**	**H**	**B**	**D**	**r**	**$R_{theo.}$**	
W52110013	XOLT 130410SR	13.6	13.1	4.8	1.000	3.00	●
W52310013	XOLT 130410ER	13.6	13.1	4.8	1.000	3.00	●
W52210013	XOLW 130410SR	13.6	13.1	4.8	1.000	3.00	●
W52410013	XOLT 130410ER	13.6	13.1	4.8	1.000	3.00	●

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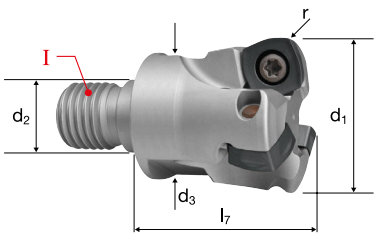
High feed end mills

Inserts 13mm, with integral air / cooling channel

HM



High feed end mills	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	d_1	d_2	d_3	l_7	$ap_{max.}$	z		I	
W02210353	35.00	17.00	29.00	35	2.00	3	24	M16	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W91110013	Torque screwdriver 5.0 Nm with blade Torx TX 20	●
W91111013	Interchangeable blade for torque screwdriver TX 20	●
W91100013	Screwdriver Torx TX 20	●
W91500013	Clamping screws for inserts Torx TX 20 / M 4.5 x 10.5	●

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Indexable insert face milling tools

Face milling cutter for inserts 9mm

N° W01400

NX	λ 12° γ -6°	d, 40 – 125	**Rm** 850-1300			853
SX	λ 12° γ -6°	d, 40 – 125	**Inox** Stainless	**Rm** <850		
ZX	λ 12° γ -6°	d, 40 – 125	**Ni-/Mn-** Alloys	**Inox** Stainless	**Rm** <850	
AX	λ 12° γ 15°	d, 40 – 125	**Al** Aluminium Alloy	**Al** Aluminium Cast	**Cu** Copper	

Face milling cutter for inserts 13mm

N° W01410

NX	λ 13° γ -6°	d, 40 – 125	**Rm** 850-1300			855
SX	λ 13° γ -6°	d, 40 – 125	**Inox** Stainless	**Rm** <850		
ZX	λ 13° γ -6°	d, 40 – 125	**Ni-/Mn-** Alloys	**Inox** Stainless	**Rm** <850	
AX	λ 13° γ 13°	d, 40 – 125	**Al** Aluminium Alloy	**Al** Aluminium Cast	**Cu** Copper	

Inserts

9mm

NX Steel	SX Stainless Steel	ZX Difficult-to-cut materials	AX Aluminium
W51110009	W51310009	W51410009	W51510009

Inserts	Delivery range: Packaging unit 10 pieces				
Order-N°.	ISO-Norm	H	B	D	
W51110009	SDLT09T3AESN	9.5	9.5	4.0	●
W51310009	SDLT09T3AESN	9.5	9.5	4.0	●
W51410009	SDLT09T3AESN	9.5	9.5	4.0	●
W51510009	SDLT09T3AEFN	9.5	9.5	4.0	●

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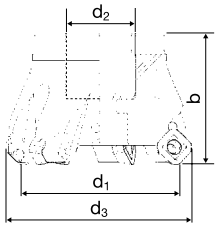
Face milling cutter 45°

Inserts 9mm, with integral air / cooling channel

HM

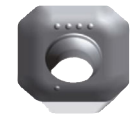


Face milling cutter 45°	Delivery range: Cutter body incl. clamping screws for inserts						
Order-N°.	d_1	d_2	d_3	b	$ap_{max.}$	z	
W01400406	40.00	16.00	48.40	40.0	4.00	6	●
W01400507	50.00	22.00	58.40	40.0	4.00	7	●
W01400638	63.00	22.00	71.40	40.0	4.00	8	●
W01400809	80.00	27.00	88.40	50.0	4.00	9	●
W01400100	100.00	32.00	108.40	50.0	4.00	11	●
W01400125	125.00	40.00	133.40	63.0	4.00	12	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W90110008	Torque screwdriver 1.2 Nm with blade Torx TX 08	●
W90111008	Interchangeable blade for torque screwdriver TX 08	●
W90100008	Screwdriver Torx TX 08	●
W91500009	Clamping screws for inserts Torx TX 08 / M 3.0 x 7.3	●

Inserts

13mm

NX Steel	SX Stainless Steel	ZX Difficult-to-cut materials	AX Aluminium
			
W51110013	W51310013	W51410013	W51510013

Inserts	Delivery range: Packaging unit 10 pieces				
Order-N°.	ISO-Norm	H	B	D	
W51110013	SDLT1304AESN	13.0	13.0	4.8	●
W51310013	SDLT1304AESN	13.0	13.0	4.8	●
W51410013	SDLT1304AESN	13.0	13.0	4.8	●
W51510013	SDLT1304AEFN	12.7	12.7	4.8	●

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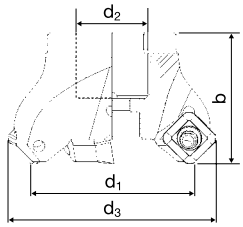
Face milling cutter 45°

Inserts 13mm, with integral air / cooling channel

HM



Face milling cutter 45°	Delivery range: Cutter body incl. clamping screws for inserts						
Order-N°.	d_1	d_2	d_3	b	$ap_{max.}$	z	
W01410403	40.00	16.00	54.00	40.0	6.00	3	●
W01410504	50.00	22.00	63.90	40.0	6.00	4	●
W01410635	63.00	22.00	76.90	40.0	6.00	5	●
W01410806	80.00	27.00	93.90	50.0	6.00	6	●
W01410100	100.00	32.00	113.90	50.0	6.00	7	●
W01410125	125.00	40.00	138.90	63.0	6.00	8	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W91110013	Torque screwdriver 5.0 Nm with blade Torx TX 20	●
W91111013	Interchangeable blade for torque screwdriver TX 20	●
W91100013	Screwdriver Torx TX 20	●
W91500013	Clamping screws for inserts Torx TX 20 / M 4.5 x 10.5	●

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Corner/Slot end mills 90° for inserts 8mm

N° W00100

N° W00140

N° W00180

NX	λ 8° γ 0°	d, 16 – 32	**Rm** 850-1300			861
SX	λ 8° γ 0°	d, 16 – 32	**Inox** Stainless	**Rm** <850		
HX	λ 8° γ -8°	d, 16 – 32	**Rm** 1300-1500	**HRC** 48-60		
ZX	λ 8° γ 0°	d, 16 – 32	**Ni-/Mn-** Alloys	**Inox** Stainless	**Rm** <850	
AX	λ 8° γ 20°	d, 16 – 32	**Al** Aluminium Alloy	**Al** Aluminium Cast	**Cu** Copper	

Corner/Slot end mills 90° for inserts 13mm

N° W00110

N° W00150

N° W00190

NX	λ 8° γ 6°	d, 25 – 32	**Rm** 850-1300			863
SX	λ 8° γ 6°	d, 25 – 32	**Inox** Stainless	**Rm** <850		
HX	λ 8° γ -10°	d, 25 – 32	**Rm** 1300-1500	**HRC** 48-60		
ZX	λ 8° γ 6°	d, 25 – 32	**Ni-/Mn-** Alloys	**Inox** Stainless	**Rm** <850	
AX	λ 8° γ 20°	d, 25 – 32	**Al** Aluminium Alloy	**Al** Aluminium Cast	**Cu** Copper	

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Corner end mills 90° for inserts 8mm

N° W00400

NX	λ 8° γ 0°	d, 40 – 80	**Rm** 850-1300			865
SX	λ 8° γ 0°	d, 40 – 80	**Inox** Stainless	**Rm** <850		
HX	λ 8° γ -8°	d, 40 – 80	**Rm** 1300-1500	**HRC** 48-60		
ZX	λ 8° γ 0°	d, 40 – 80	**Ni-/Mn-** Alloys	**Inox** Stainless	**Rm** <850	
AX	λ 8° γ 20°	d, 40 – 80	**Al** Aluminium Alloy	**Al** Aluminium Cast	**Cu** Copper	

Corner end mills 90° for inserts 13mm

N° W00410

NX	λ 8° γ 6°	d, 40 – 80	**Rm** 850-1300			867
SX	λ 8° γ 6°	d, 40 – 80	**Inox** Stainless	**Rm** <850		
HX	λ 8° γ -10°	d, 40 – 80	**Rm** 1300-1500	**HRC** 48-60		
ZX	λ 8° γ 6°	d, 40 – 80	**Ni-/Mn-** Alloys	**Inox** Stainless	**Rm** <850	
AX	λ 8° γ 20°	d, 40 – 80	**Al** Aluminium Alloy	**Al** Aluminium Cast	**Cu** Copper	

Inserts

8mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W50111008	W50311008	W50210008	W50410008	W50510008

Inserts	Delivery range: Packaging unit 10 pieces					
Order-N°.	ISO-Norm	H	B	D	r	
W50111008	APKT 0803PD SR	8.4	6.4	3.4	0.600	●
W50311008	APKT 0803PD SR	8.4	6.4	3.4	0.600	●
W50210008	APKT 0803PD SR	8.5	6.4	3.5	0.600	●
W50410008	APKT 0803PD SR	8.4	6.4	3.4	0.600	●
W50510008	APHT 0803PDFR	8.3	6.4	3.4	0.600	●

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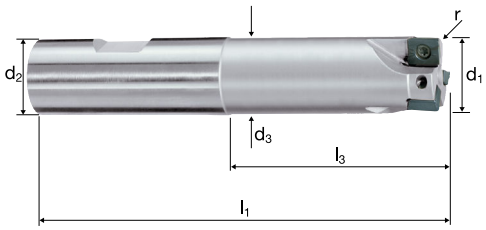
Corner/Slot end mills 90°

Inserts 8mm, with integral air / cooling channel

HM



Corner/Slot end mills 90°	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	**d_1**	**d_2** h6	**d_3**	**l_1**	**l_3**	**$ap_{max.}$**	**z**	L-Typ	
W00100162	16.00	16.00	15.40	75	25.00	7.50	2	K	●
W00100203	20.00	20.00	19.40	77	25.00	7.50	3	K	●
W00100254	25.00	25.00	24.00	90	32.00	7.50	4	K	●
W00100325	32.00	32.00	31.00	102	40.00	7.50	5	K	●
W00140162	16.00	16.00	15.00	102	51.00	7.50	2	M	●
W00140203	20.00	20.00	19.40	110	57.00	7.50	3	M	●
W00140254	25.00	25.00	24.00	124	65.00	7.50	4	M	●
W00140325	32.00	32.00	31.00	144	81.00	7.50	5	M	●
W00180162	16.00	16.00	15.00	129	78.00	7.50	2	L	●
W00180203	20.00	20.00	19.40	140	87.00	7.50	3	L	●
W00180254	25.00	25.00	24.00	158	99.00	7.50	4	L	●
W00180325	32.00	32.00	31.00	186	123.00	7.50	5	L	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W90110008	Torque screwdriver 1.2 Nm with blade Torx TX 08	●
W90111008	Interchangeable blade for torque screwdriver TX 08	●
W90100008	Screwdriver Torx TX 08	●
W90500008	Clamping screws for inserts Torx TX 08 / M 2.5 x 5.0	●

Inserts

13mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W50111013	W50311013	W50210013	W50410013	W50510013

Inserts	Delivery range: Packaging unit 10 pieces					
Order-N°.	ISO-Norm	H	B	D	r	
W50111013	APKT 1304PD SR	14.8	8.1	4.7	0.800	●
W50311013	APKT 1304PD SR	14.8	8.1	4.7	0.800	●
W50210013	APKT 1304PD SR	14.7	8.1	4.7	0.800	●
W50410013	APKT 1304PD SR	14.8	8.1	4.7	0.800	●
W50510013	APHT 1304PDFR	14.7	8.0	4.5	0.800	●

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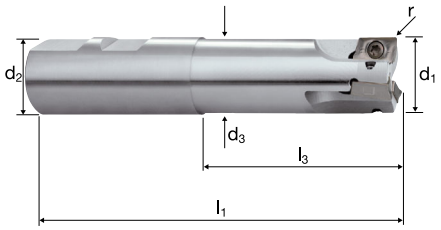
Corner/Slot end mills 90°

Inserts 13mm, with integral air / cooling channel

HM



Corner/Slot end mills 90°	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	**d_1**	**d_2 h6**	**d_3**	**l_1**	**l_3**	**$ap_{max.}$**	**z**	L-Typ	
W00110253	25.00	25.00	24.00	90	32.00	12.50	3	K	●
W00150253	25.00	25.00	24.00	124	65.00	12.50	3	M	●
W00190253	25.00	25.00	24.00	158	99.00	12.50	3	L	●
W00110324	32.00	32.00	31.00	102	40.00	12.50	4	K	●
W00150324	32.00	32.00	31.00	144	81.00	12.50	4	M	●
W00190324	32.00	32.00	31.00	189	123.00	12.50	4	L	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W90110013	Torque screwdriver 3.2 Nm with blade Torx TX 15	●
W90111013	Interchangeable blade for torque screwdriver TX 15	●
W90100013	Screwdriver Torx TX 15	●
W90500013	Clamping screws for inserts Torx TX 15 / M 3.5 x 7.2	●

Inserts

8mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W50111008	W50311008	W50210008	W50410008	W50510008

Inserts		Delivery range: Packaging unit 10 pieces				
Order-N°.	ISO-Norm	H	B	D	r	
W50111008	APKT 0803PD SR	8.4	6.4	3.4	0.600	●
W50311008	APKT 0803PD SR	8.4	6.4	3.4	0.600	●
W50210008	APKT 0803PD SR	8.5	6.4	3.5	0.600	●
W50410008	APKT 0803PD SR	8.4	6.4	3.4	0.600	●
W50510008	APHT 0803PDFR	8.3	6.4	3.4	0.600	●

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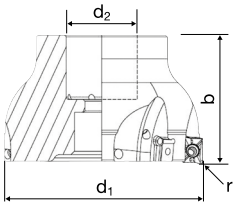
Corner end mills 90°

Inserts 8mm, with integral air / cooling channel

HM



Corner end mills 90°	Delivery range: Cutter body incl. clamping screws for inserts					
Order-N°.	**d_1**	**d_2**	**b**	**$ap_{max.}$**	**z**	
W00400405	40.00	16.00	40.0	7.50	5	●
W00400506	50.00	22.00	40.0	7.50	6	●
W00400637	63.00	22.00	40.0	7.50	7	●
W00400801	80.00	27.00	50.0	7.50	10	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W90110008	Torque screwdriver 1.2 Nm with blade Torx TX 08	●
W90111008	Interchangeable blade for torque screwdriver TX 08	●
W90100008	Screwdriver Torx TX 08	●
W90500008	Clamping screws for inserts Torx TX 08 / M 2.5 x 5.0	●

Inserts

13mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W50111013	W50311013	W50210013	W50410013	W50510013

Inserts	Delivery range: Packaging unit 10 pieces					
Order-N°.	ISO-Norm	H	B	D	r	
W50111013	APKT 1304PD SR	14.8	8.1	4.7	0.800	●
W50311013	APKT 1304PD SR	14.8	8.1	4.7	0.800	●
W50210013	APKT 1304PD SR	14.7	8.1	4.7	0.800	●
W50410013	APKT 1304PD SR	14.8	8.1	4.7	0.800	●
W50510013	APHT 1304PDFR	14.7	8.0	4.5	0.800	●

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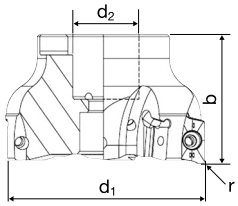
Corner end mills 90°

Inserts 13mm, with integral air / cooling channel

HM



Corner end mills 90°	Delivery range: Cutter body incl. clamping screws for inserts					
Order-N°.	**d_1**	**d_2**	**b**	**$ap_{max.}$**	**z**	
W00410404	40.00	16.00	40.0	12.50	4	●
W00410505	50.00	22.00	40.0	12.50	5	●
W00410636	63.00	22.00	40.0	12.50	6	●
W00410808	80.00	27.00	50.0	12.50	8	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W90110013	Torque screwdriver 3.2 Nm with blade Torx TX 15	●
W90111013	Interchangeable blade for torque screwdriver TX 15	●
W90100013	Screwdriver Torx TX 15	●
W90500013	Clamping screws for inserts Torx TX 15 / M 3.5 x 7.2	●

Torque screwdriver Torx with blade

Torque is pre-set according to table

Order-N°.	Torx-Dimension	Torque	
W90110008	TX 08	1.2 Nm	●
W93110010	TX 10	2.0 Nm	●
W90110013	TX 15	3.2 Nm	●
W93110012	TX 15	4.2 Nm	●
W91110013	TX 20	5.0 Nm	●

Interchangeable blade for torque screwdriver

Order-N°.	Torx-Dimension		
W90111008	TX 08		●
W93111010	TX 10		●
W90111013	TX 15		●
W91111013	TX 20		●

Screwdriver Torx

Order-N°.	Torx-Dimension		
W90100008	TX 08		●
W93100010	TX 10		●
W90100013	TX 15		●
W91100013	TX 20		●

Marking and assembly of indexable inserts

Type	Corner end mills	Face milling cutter	High feed end mills	Round insert milling*
NX Steel •	Order-N°. **W50111008** **W50111013**	Order-N°. **W51110009** **W51110013**	Order-N°. **W52110010** **W52110013**	Order-N°. **W53110010** **W53110012**
SX Stainless Steel ••	Order-N°. **W50311008** **W50311013**	Order-N°. **W51310009** **W51310013**	Order-N°. **W52310010** **W52310013**	Order-N°. **W53310010** **W53310012**
HX Hardened Steel •••	Order-N°. **W50210008** **W50210013**		Order-N°. **W52210010** **W52210013**	Order-N°. **W53210010** **W53210012**
ZX Difficult-to-cut materials ••••	Order-N°. **W50410008** **W50410013**	Order-N°. **W51410009** **W51410013**	Order-N°. **W52410010** **W52410013**	Order-N°. **W53410010** **W53410012**
AX Aluminium •••• •	Order-N°. **W50510008** **W50510013**	Order-N°. **W51510009** **W51510013**		Order-N°. **W53510010** **W53510012**

- Clean the insert seats prior to assembly
- Ensure that all insert markings have the same orientation
- Use the turning moment screw driver to tighten the screws
- Ensure an exact positioning when tightening the indexable inserts

* The indexable round inserts may be used on eight positioning surfaces. It is not necessary to remove the screw completely to turn the insert to the next surface. Ensure a precise positioning when tightening the indexable round insert to the surface in order to prevent damage to the insert seat.

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FRAISA offers you highly innovative products; products that are always state-of-the-art and right at the cutting-edge of technological development.

For this reason, we would like to use our «**ToolSchool-Recommendation**» concept to draw your attention to the latest technologies now incorporated in our product catalogue and, of course, to the advantages they bring.

Our «**ToolSchool-Recommendation**» clearly demonstrates how you can and should switch from the products you have been using until now to the new cutting-edge products from FRAISA. The ToolSchool logo has been used in this catalogue to highlight selected products that offer a particularly good opportunity to upgrade from an existing tool to the latest technology.

By switching from «old» to «new», you benefit from increased productivity, cost reductions and genuine competitive advantages in the marketplace.

With our ToolSchool concept, you can be sure you always have the very latest technology to hand. This will strengthen your position in comparison to all your competitors.

FRAISA's ToolSchool stands for longstanding, field-proven experience and expertise. ToolSchool stands for application know-how and customer value. You can count on that.

Latest FRAISA technology for:

- **Greater efficiency**
- **Lower costs**
- **Improved competitiveness**

Enclosed with this catalogue is a flyer that illustrates the ToolSchool recommendations by means of a tool compendium.

passion
for precision
fraisa

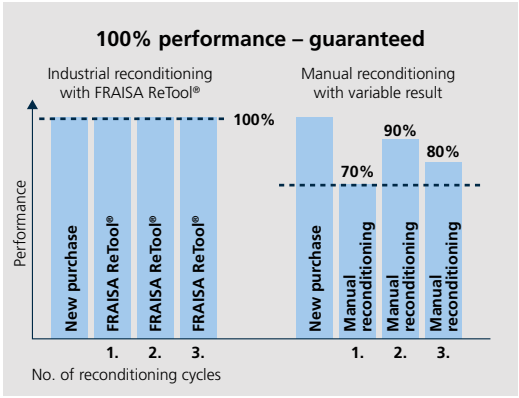
FRAISA ReTool® – Industrial tool reconditioning

FRAISA ReTool® offers an all-round service that restores your used tools to their original performance level and optimises your processes. FRAISA and third-party tools are reconditioned using the very latest technology – and in a resource-friendly way. The outcome: mint-condition tools as productive as they were the first day they were used. And to make things even better, your level of investment is lower than if you were to buy new tools, you increase your productivity and you save costs.

FRAISA ReTool® – a performance guarantee founded on integrated development of the tools and the reconditioning process

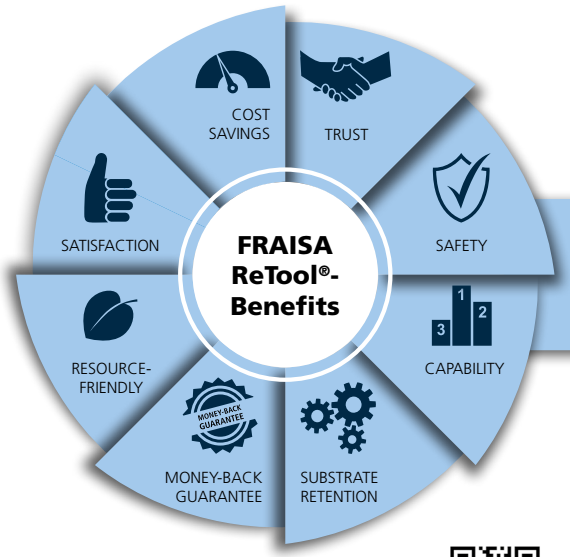
We guarantee that following their reconditioning with **FRAISA ReTool®**, your used tools will be restored to the original performance level they had when new. Our ability to provide this performance guarantee is a priority of our team of experts right from very early on in product development.

That's why the development of the reconditioning process is an integral part of the development phase, alongside the actual product tests and calculating the cutting data. Strict rules apply: the **FRAISA ReTool®** process is approved only if we are able to fulfil our performance guarantee 100%.



FRAISA ReToolBlue – recycle rather than throw away

With our **FRAISA ReToolBlue** service, we recycle the valuable carbide from tools that can no longer be reconditioned.



FRAISA ReTool® makes economic sense for you, too: After reconditioning them, we return your tools to you in mint condition. We restore them to their original performance level at a price that's more cost-effective for you than purchasing new ones or reconditioning them by hand.

Over 30 years' experience in tool reconditioning:

Our competence centre in Germany is Europe's largest service centre for carbide milling tools.

Video on our service product: FRAISA ReTool®

www.fraisa.com

Legend to the product page

Performance rating

Products that have a **high level of specialisation** for applications that go beyond (e**X**tra!) general applications and performance demands.

Products that have a **wide application area** within the scope of general applications **and high to very high performance demands**.

Products that have an **exceedingly wide application area, average performance demands** and a **favourable price-performance ratio**.

Products made from heavy-duty, high-speed steel for **basic applications** and/or performance demands limited by the machinery.

Fraisa marks all exceptional innovations with the signature **KS**.
This is in memory of the legendary Head of Production and Development, Mr Konrad Schmid, who defined the Fraisa brand from 1969 until 2000.

Performance

Roughing

Roughing HPC

Roughing HDC

Finishing

This index describes the performance of the tool in comparison to other products in the respective chapter. The more boxes that are filled, the better it is suited for each operation.

Wear resistance

This index describes the wear resistance of the tools in the CFC section. The more fields are completed, the greater is the wear resistance of the tool, which is crucial for processing abrasive composite materials.

Legend to the product page

Tool technologies

Milling tool with a variable helix angle
- Minimisation of oscillation and vibrations
- Increase in material removal rates and tool life

Milling tool with a variable helix angle
- Axial and radial vibration damping, as well as smooth and gentle cutting
- Better component surfaces and lower noise levels
- Less stress on the spindle and energy consumption, despite high metal removal volume

High-performance penetration edge
- Easy-cutting high-performance penetration edge for high penetration angles
- Higher performance, tool life and process reliability for penetration
- High functionality with cutting data from ToolExpert HelixRamp

Milling tool with scaled slot
- Extension of swarf space
- Optimised chip removal
- Highest possible axial and radial infeeds

Milling tool with chip breaker
- Shorter chip lengths at high axial infeed rates, improving chip removal from both the component and the machine
- Improved optimisation and process reliability
- High multi-functionality of the smooth-cutting tool is maintained

Milling tool with a special groove geometry
- Optimised swarf/groove geometry for improved swarf removal
- Optimised relationship between core diameter and swarf space for a high level of tool stability

Milling tool with a partially polished blade
- Reinforcement of the exposed cutting corner
- Absorption of high cutting forces

Milling tool with a special protective chamfer
- Reinforcement of the main cutting edge against chipping
- High tooth feed rates are possible in the case of smooth-edged tools
- High axial and radial infeeds are possible in the case of profiled tools

Milling tool with special edge conditioning
- Conditioning of the main cutting edge for increased stability
- Increase the mechanical and thermal load on the cutting edge
- General increase in the tool life

Front chamfer
- Tool is supported in radial and axial directions
- Reduced vibrations
- Better surface quality from both side and end faces

Supporting chamfer
- Support for the tool in the radial and axial directions
- Reduced vibrations and higher performance
- Improved surface quality as a result of increased running smoothness

Legend to the product page

Tool technologies

Milling tool with special free space design
- Significant reinforcement of the cutting edge
- Higher performance, less vibrations and improved component quality
- Longer tool life and more process safety - therefore higher degree of automation

Parabolic support face
- Support for the tool in the radial and axial directions
- Reduced vibration and higher performance

Finely balanced tools
- Finely balanced tools at least G2.5 at n=20,000 rpm or permissible residual imbalance <1gmm
- Reduction or elimination of the balancing process in the case of finely balanced clamping devices
- Improved surface quality as a result of increased running smoothness and fewer vibrations
- Increase in the service life of the machine spindle

Smooth transitions
- The shaft-neck-cutting edge transitions are fitted with smooth gradients and radii
- Improved tool rigidity and therefore less radial deflection
- Minimal step formation with several infeed depths
- Higher mechanical load and therefore improved performance

Milling tool with increased core diameter
- Improved tool rigidity and less tool deflection
- Higher performance in the area of the infeeds ap, ae and of the feed rate fz
- Better component accuracy through less tool deflection

Milling tool with shank of h4 tolerance
- High concentric and eccentric precision
- Optimal for modern precision chucks

Milling tool with shank of h5 tolerance
- High concentric and eccentric precision
- Optimal for modern precision chucks

Ball nose end mill with special edge conditioning for rough machining
- Conditioning of the main cutting edge for increased stability
- Significant increase in material removal rates compared to conventional ball nose mills
- General increase in the tool life

Ball nose end mill with special edge conditioning for finish machining
- Conditioning and smoothening of the main cutter profile
- Long term contour precision and surface quality
- General increase in the tool life

Corner radius end mill with special edge conditioning for roughing
- Conditioning of the main cutting edge for increased stability
- Significant increase of the material removal rate compared to standard corner radius end mills
- General increase in the tool life

Corner radius end mill with special edge conditioning for finishing
- Conditioning and smoothening of the main cutting edge
- Long-lasting contour accuracy and surface quality
- General increase in the tool life

Legend to the product page

Tool technologies

Ball nose end mill with high-precision diameter
- High-precision tolerance zone across 180° of the ball for high dimensional accuracy
- Cutting edge diameter is twice the effective radius of the ball

Ball nose end mill with a highly precise radius tolerance
- Specially designed bearing tolerances simplify the programming and the secure finish of the end contour
- Highly precise tolerance field for high dimensional accuracy

Corner radius end mill with a highly precise diameter tolerance
- Specially designed bearing tolerances simplify the programming and the secure finish of the end contour
- Highly precise tolerance field for high dimensional accuracy

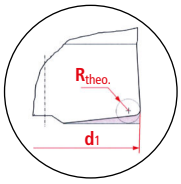
Corner radius end mill with a highly precise radius tolerance
- Specially designed tolerances simplify the programming and the secure finish of the end contour
- Highly precise tolerance field for high dimensional accuracy

Cylindrical end mill with a highly precise diameter tolerance
- Specially designed bearing tolerances simplify the programming and the secure finish of the end contour
- Highly precise tolerance field for high dimensional accuracy

Dimensional accuracy
- Dimensional accuracy of up to +/–0.005 mm guarantees high component precision

High feed cutting (HFC) tool
- Tool with a special cutting geometry for high feed cutting
- High feeds are possible due to a defined swarf cross section distribution
- Large swarf space for quick and trouble-free removal of the swarf
- High removal volume with good contour convergency as well

The HFC tool has a theoretical programming radius ($R_{theo.}$). This value is stated for each diameter in the data table on the catalogue page and, for the CNC/CAM programming, it is stated as a tool radius. However as a result of the $R_{theo.}$ difference to the effective tool contour, residual material arises in the machining.



Indexable insert
- Periphally ground, partially face polished on all sides
- Improved performance

New Safe-Center cutting edge geometry
- Counteracts chipping during the penetration process
- Good cutting-edge stability means good wear resistance and performance capability

i

Legend to the product page

Cutting tool substrate material

HM XT	Fine grain carbide. Hardness 1900 HV. Co content 9%. Characterised by a particularly high level of toughness.
HM XA	Fine grain carbide. Hardness 1950 HV. Co content 8%. Characterised by a particularly high level of abrasion resistance.
HM MG10	Fine grain carbide. Hardness 1600 HV. Co content 10%.
HM MG6	Fine grain carbide. Hardness 1800 HV. Co content 6%.
HM Plus	Ultrafine-grain carbide. Hardness 1800 HV. Co content 12%.
HM	Universal fine-grain carbide.
CVD	Pure diamond produced by chemical vapour deposition (CVD). Characterised by optimum fracture toughness on the cutting edge and high thermal conductivity.
CBN	Cubic crystallized boron nitride (CBN). Hardness 4700 HV. Characterised by a particularly high level of abrasion resistance.
HSS PM/F	High-performance substrate material, powder metallurgically produced HSS alloys.
HSS-E Co8	High-performance high speed steel.

Legend to the product page

Form of the corner of the cutting edges

The corner between the front side blade and the circumference blade has a protective chamfer of 45°. The size of the protective chamfer is stated for each diameter in the data table on the catalogue page.

The tool is furnished with a corner radius. For every diameter the size of the radius is listed in the corresponding data table of the catalogue.

The corner between front cutting edge and circumferential cutting edge is executed sharp-edged.

High Feed Cutting (HFC) tool. Tool with a special cutting geometry for high feed milling.

High Feed Cutting (HFC) tool with corner radius. Tool with special cutting edge geometry for high feed machining.

Legend to the product page

Application suitability

A blue background means that the tool is particularly suitable for this material.

A light blue background means that the tool has good to adequate suitability for this material.

Chapter: Steel, stainless steel and titanium / 3D machining of steel / special shapes

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	

Chapter: Aluminium and copper

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermo-plast	

Additional material which can be machined is stated in the additional field

Chapter: CFC

Al Aluminium Cast	Cu Copper	CuZn Brass		C Graphite	CFK GFK I	CFK GFK II	CFK III	CFK/Al	

CFK GFK I

Group I: Fibre-reinforced technical plastics and plastic composites with fibre content up to 30%

CFK GFK II

Group II: Abrasive fibre-reinforced plastic composites with fibre content up to 60%

CFK III

Group III: Very abrasive carbon fibre-reinforced high-performance plastic composites with a fibre content of over 60%

Depending on the combination of the following influencing factors, the fibre-reinforced composite materials can be assigned to the 3 metal-cutting groups (whereby the above description serves as a simplified aid):
– Matrix (binding agent)
– Fibre type (material)
– Fibre shape (short, long, endless, fabric)
– Fibre content
– Fibre structure (orientation)
– Manufacturing process

Legend to the product page

Shape of the shank / shank versions

Full carbide tools with a cylindrical shank: shank version in accordance with DIN 6535 HA

Full carbide tools with a cylindrical shank and a side clamping surface. Shank version in accordance with DIN 6535 HB

Short shank tools: In the diameter graduation and diameter tolerance, the shank corresponds to the DIN 6535 HB standard. The section behind the clamping surface is shortened.

HSS tools with a cylindrical shank and a side clamping surface: Shank version in accordance with DIN 1835 B

Shank material is made of high-quality recycled carbide (HM)

Indexable insert milling tools

shank version in accordance with DIN 1835 B

Bore receptacle with crosswise slot adherent to DIN 138

Helix angle and rake angle

Helix and rake angles are particularly important characteristics of milling tools. Due to this fact, helix angle λ and rake angle γ are specified for each tool. The exact values can vary with the tool diameter.

Crash angle α

Tools with a smaller cutting diameter than the shank diameter need specific attention during machining. A crash can surely be avoided when the limiting side surfaces are sloped with at least a minimum angle, the crash angle α, against the vertical.
The angle of collision is stated for each diameter in the data table on the catalogue page.

i

Legend to the product page

Abbreviations

d_1	Diameter of the cutting edge [mm]
d_2	Shank diameter or bore diameter [mm]
d_3	Neck diameter or external diameter (face milling cutter) [mm]
d_4	Diameter of the neck before the neck-shank intersection [mm]
d_5	End face diameter [mm]
l_1	Total length of the tool [mm]
l_2	Length of cutting edge [mm]
l_3	Distance from the front of the tool to the end of the neck [mm]
l_4	Distance from the edge of the tool to the beginning of the shank [mm]
l_5	Distance from the front of the shank to the end of the neck [mm]
l_6	Shank length [mm]
l_7	Head length [mm]
l_8	Flank length [mm]
Θ	Tightening angle «Theta» between d_3 and d_4 [° - DEG]
45°	Size of the protective chamfer between the face end blade and the circumference blade [mm]
r	Corner radius [mm]
α	Collision angle «Alpha» [° - DEG]
β	Minimum setting angle «Beta» [° - DEG]
z	Number of cutting edges
$R_{theo.}$	Theoretical programming radius ($R_{theo.}$) for HFC tools [mm] See information at Tool Technology HFC
α/2	Conical angle [° - DEG]
r_1	Cutting edge radius [mm]
r_2	Curved surface radius [mm]
r_3	Run-out radius [mm]

Legend to the product page

ap_{max}	Maximum axial infeed [mm]
ap_{lim}	Axial infeed [mm] limited by the application or tool geometry [mm]
b	Tool height of shell end mills [mm]
φ_{max}	Maximum infeed angle
H	Height of the insert
B	Width of the insert
D	Thickness of the insert
D_1	Diameter of the indexable insert
L_A	Overall length from the spindle nose
L-Typ	Version: K = short; N = normal; M = medium; L = long; XL = extra long
I	Interface: Interface parameters

2.5D machining strategies

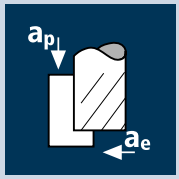
HPC High-Performance-Cutting
Characteristics of HPC:
- High machining volume with high cutting forces
- Large tool engagement angle of 66°–80°(ae) and small cutting depths (ap < 1.5 xd)
- Short tool path (tool always engaged)

HDC High-Dynamic-Cutting
Characteristics of HDC:
- Maximum machining volume with lower cutting forces
- Constant cutting forces / cutting conditions / tool engagement angle
- Small tool engagement angle of 25°–60°(ae) and large cutting depths (ap > 1.5 xd)

Applications for 2.5D machining

Cylindrical and Corner radius

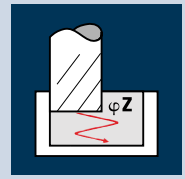
Roughing HPC



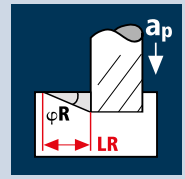
Roughing HPC, laterally (partial cut)

Roughing HPC, slots (full cut)

Penetration

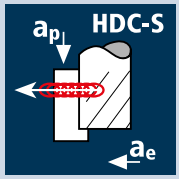


Penetration, helical interpolation

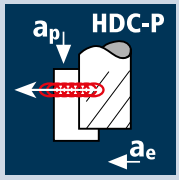


Penetration, ramping

Roughing HDC

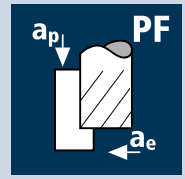


Roughing HDC-S (partial cut)

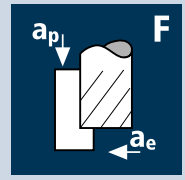


Roughing HDC-P (partial cut)

Finishing



Pre-finishing (partial cut) (Pre-Finishing PF)



Finishing (partial cut) (Finishing F)

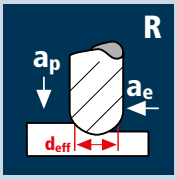
3D machining strategies

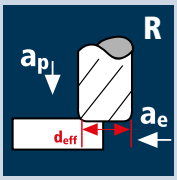
HSC High-Speed-Cutting
Characteristics of HSC:
- Machining with toric or spherical tools
- High surface quality & dimensional accuracy attainable
- Machining is performed with small depths of cut (ap & ae)
- High cutting speeds (vc)

HFC High-Feed-Cutting
Characteristics of HFC:
- Small depths of cut (ap)
- Very high feed per tooth (fz)
- High machining volume with low cutting forces
- Special cutting geometry of the tools

Application notes can be found in the chapter 3D

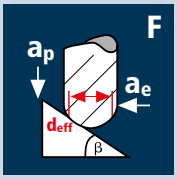
The application symbols are on the left next to the cutting data.
The letter, top right, provides information concerning strategy in relation to the stated cutting data.

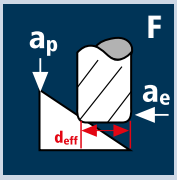




R stands for «Roughing» - a process which requires sufficient power and stability with regard to the machine and clamping.

Z-level roughing: The cutting data given in the catalogue is for layer-by-layer removal. In this case the axial machine axis is set to constant depth and does not change. Pull and push cutting are therefore not recommended!





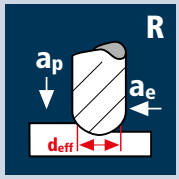
PF stands for «Pre-Finishing»
F stands for «Finishing»
SF stands for «Super-Finishing»

The cutting data given in the catalogue applies for removal from level surfaces and parallel with the shape of the workpiece. Pull and push cutting are permissible.
Push cutting is however less than ideal and will result in a reduction in tool life.

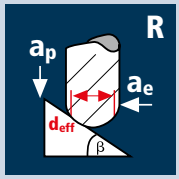
Applications for 3D machining

HSC machining

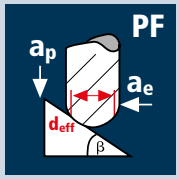
Ball nose



Z-level roughing
(Roughing R)

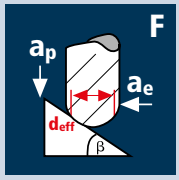


Roughing parallel
to contour
(Roughing R)



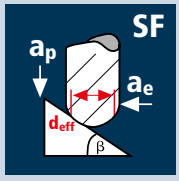
Pre-finishing
(Pre-Finishing PF)

Steep slopes



Finishing
(Finishing F)

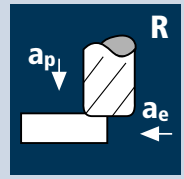
Steep slopes



Super-Finishing
(Super-Finishing SF)

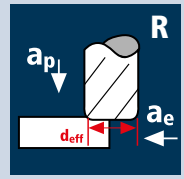
Steep slopes

Corner radius



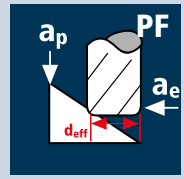
Z-level roughing
(Roughing R)

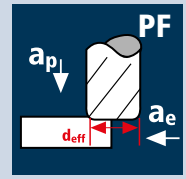
For use above the
corner radius area



Z-level roughing
(Roughing R)

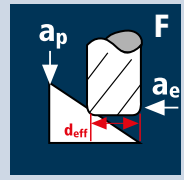
For use in the
corner radius area

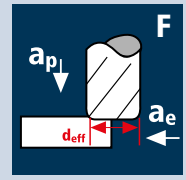




Pre-finishing
(Pre-Finishing PF)

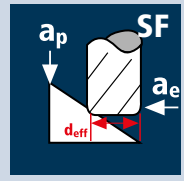
Steep slopes /
Flat surfaces

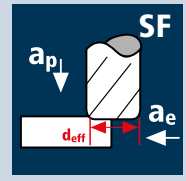




Finishing
(Finishing F)

Steep slopes /
Flat surfaces

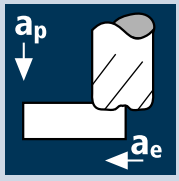




Super-Finishing
(Super-Finishing SF)

Steep slopes /
Flat surfaces

HFC machining



Rough milling (area clearance) with high-feed mills
(High-Feed-Cutting)

Machining strategies for ArCut X milling tools (circular arc milling cutters)

Finishing Planes and free-form surfaces can be pre-finished and finished highly efficiently using the ArCut X tool concept.

HSC Radius areas can be machined using a 5-axis HSC strategy.

HDC Rest material in corners can be removed using a 5-axis HDC strategy.

Applications for ArCut X milling tools (circular arc milling cutters)

Spherical / Spherical & Toric

Pre-finishing
(Pre-Finishing PF)

Steep slopes /
Flat surfaces

Finishing
(Finishing F)

Steep slopes /
Flat surfaces

Super-Finishing
(Super-Finishing SF)

Steep slopes /
Flat surfaces

Pre-finishing HSC
(Pre-Finishing PF)

Radius areas

Finishing HSC
(Finishing F)

Radius areas

Super-Finishing HSC
(Super-Finishing SF)

Radius areas

Toric / Toric integral

HDC (Rest material)
Roughing
(Roughing HDC)

Corners

Pre-finishing
(Pre-Finishing PF)

Steep slopes

Finishing
(Finishing F)

Steep slopes

Super-Finishing
(Super-Finishing SF)

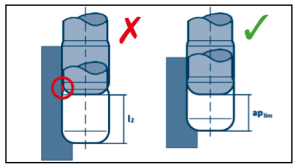
Steep slopes

Roughing HSC
(Roughing R)

Corners

i

AX-RV tools:



Clean transitions can be achieved with the AX-RV tools during finishing by means of several infeed depths. However, in this application the correct infeed depth is important. On the basis of the tool geometry with front radius, the limited axial infeed (ap_{lim}) is specified in the following table:

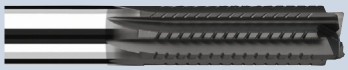
Axial infeed depth ap_{lim} for plane transition in wall for AX-RV2 and AX-RV3

d_1	l_2	Radius r	ap_{lim}	Radius r	ap_{lim}	Radius r	ap_{lim}	Radius r	ap_{lim}	Radius r	ap_{lim}	Radius r	ap_{lim}
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
3	4	0.5	2.5										
4	5	0.5	3.5										
5	6	0.5	4.5										
6	7	0.5	5.5	1.0	5.0					2.5	3.5		
8	9			1.0	7.0					2.5	5.5		
10	11			1.0	9.0	1.5	8.5			2.5	7.5	4.0	6.0
12	13			1.0	11.0	1.5	10.5			2.5	9.5	4.0	8.0
16	18			1.0	16.0	1.5	15.5	2.0	15.0	2.5	14.5	4.0	13.0
20	22			1.0	20.0	1.5	19.5	2.0	19.0	2.5	18.5	4.0	17.0
25	27			1.0	25.0	1.5	24.5			2.5	23.5	4.0	22.0

CFC/GRP processing:

Recommended processing: Counter-rotation
– Heat is led away from the component
– Improved surface quality
– Less disintegration (mechanical damage)
– Dust is led away

Cylindrical end mill DIAMOND coated:
Roughing and finishing of CFC in one operation.



Straight cutting edge for neutral use with medium clamping quality and wall thickness.

Pulling cutting edge for normal use with good clamping and dust/chip removal.

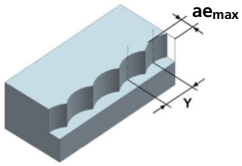
Pushing cutting edge for use in thin materials, as the material is pressed on to the substrate.

Indexable insert milling tools:

Radial infeed depth a_e for flat surfaces with HFC indexable insert milling tools

d_1	Insert size	a_e
[mm]	[mm]	[mm]
25	10	13.6
35	13	18.8
40	10	28.6
50	10	38.6
63	10	51.6
50	13	33.8
63	13	46.8
80	13	63.8

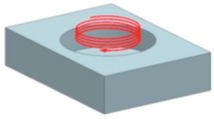
Plunge milling with HFC indexable insert milling tools



Insert size	ae_{max}	fz	Y_{max}
[mm]	[mm]	[mm]	[mm]
10	8	0.15	< 0.7 x d_1
13	10.5	0.20	< 0.7 x d_1

Bore milling/helical plunging with milling tools for HFC and round indexable inserts

Minimum and maximum bore diameters



	Indexable inserts HFC 10mm		Indexable inserts HFC 13mm	
d_1	D_{max}	D_{min}	D_{max}	D_{min}
[mm]	[mm]	[mm]	[mm]	[mm]
25	48	35	–	–
35	–	–	68	50
40	78	65	–	–
50	98	85	98	80
63	124	111	124	106
80	–	–	158	140

	Round indexable inserts 10mm		Round indexable inserts 12mm	
d_1	D_{max}	D_{min}	D_{max}	D_{min}
[mm]	[mm]	[mm]	[mm]	[mm]
20	40	24	–	–
25	50	32	–	–
32	64	46	–	–
35	70	52	70	48
40	80	62	80	58
42	84	66	84	62
50	100	82	100	78
52	104	86	104	82
63	–	–	126	104
66	–	–	132	110
80	–	–	160	138
100	–	–	200	178

Infeed angle for monoblock milling tools

Chapter: Steel, stainless steel, titanium and nickel												
Material group	**Rm** 850-1500			**HRC** 48 - 60			**Inox** Stainless			**Ti** Titanium		
Version	N	M	L	N	M	L	N	M	L	N	M	L
Feed rate vf [%]	100%			100%			80%			80%		
z = 2	2.50°	1.80°	1.00°	1.50°	1.00°	0.60°	2.50°	1.80°	1.00°	2.50°	1.80°	1.00°
z = 3	2.00°	1.20°	0.80°	1.00°	0.65°	0.40°	2.00°	1.20°	0.80°	2.00°	1.20°	0.80°
z = 4	1.00°	0.65°	0.40°	0.50°	0.35°	0.20°	1.00°	0.65°	0.40°	1.00°	0.65°	0.40°
z > 4	0.40°	0.30°	0.20°	0.20°	0.15°	0.10°	0.40°	0.30°	0.20°	0.40°	0.30°	0.20°

Chapter: 3D machining												
Material group	**Rm** 850-1500			**HRC** 48 - 60			**Inox** Stainless			**Ti** Titanium		
Version	N	M	L	N	M	L	N	M	L	N	M	L
Feed rate vf [%]	100%			100%			80%			80%		
z = 2	0.50°	0.35°	0.25°	0.25°	0.20°	0.10°	0.50°	0.35°	0.25°	0.50°	0.35°	0.25°
z = 4	0.30°	0.25°	0.15°	0.20°	0.15°	0.10°	0.30°	0.25°	0.15°	0.30°	0.25°	0.15°
z > 4	0.20°	0.15°	0.10°	0.15°	0.10°	0.10°	0.20°	0.15°	0.10°	0.20°	0.15°	0.10°
HFC	0.50°	0.35°	0.25°	0.40°	0.30°	0.20°	0.50°	0.35°	0.25°	0.50°	0.35°	0.25°

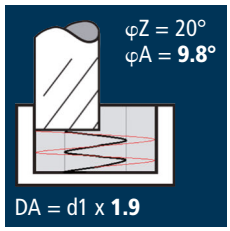
Chapter: Aluminium and copper												
Material group	**Al** Aluminium Alloy						**Cu** Copper					
Version	N	M	2xd	3xd	4xd	5xd	N	M	2xd	3xd	4xd	5xd
Feed rate vf [%]	100%						100%					
z = 2	5.00°	4.00°	6.00°	5.00°	4.00°	2.50°	4.00°	3.00°	5.00°	4.00°	3.00°	2.00°
z = 3	4.50°	3.50°	5.00°	4.50°	3.50°	2.00°	3.50°	2.50°	4.00°	3.50°	2.50°	1.50°

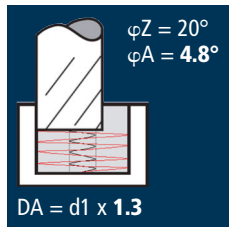
Infeed angle for indexable insert milling tools

Material group		Rm 850-1500			HRC 48 - 60			Inox Stainless / Ti Titanium			Al Aluminium Alloy		
Version		K	M	L/XL	K	M	L/XL	K	M	L/XL	K	M	L/XL
Feed rate vf [%]		100%			100%			80%			100%		
	d_1												
Corner-/Slot end mills 8mm	16	1.00°	0.80°	0.60°	0.70°	0.55°	0.40°	1.00°	0.80°	0.60°	1.30°	1.10°	0.80°
Corner-/Slot end mills 8mm	20	0.75°	0.60°	0.45°	0.55°	0.40°	0.30°	0.75°	0.60°	0.45°	1.00°	0.80°	0.60°
Corner-/Slot end mills 8mm	25	0.75°	0.60°	0.45°	0.55°	0.40°	0.30°	0.75°	0.60°	0.45°	1.00°	0.80°	0.60°
Corner-/Slot end mills 8mm	32	0.50°	0.40°	0.30°	0.35°	0.30°	0.20°	0.50°	0.40°	0.30°	0.65°	0.50°	0.40°
Corner-/Slot end mills 13mm	25	2.00°	1.60°	1.20°	1.40°	1.10°	0.85°	2.00°	1.60°	1.20°	2.50°	2.00°	1.50°
Corner-/Slot end mills 13mm	32	1.60°	1.30°	0.95°	1.10°	0.90°	0.65°	1.60°	1.30°	0.95°	2.00°	1.60°	1.20°
Corner end mills 8mm	40 ; 50	0.20°			0.20°			0.20°			0.25°		
Corner end mills 8mm	63 ; 80	0.10°			0.10°			0.10°			0.15°		
Corner end mills 13mm	40 ; 50	0.40°			0.40°			0.40°			0.45°		
Corner end mills 13mm	63 ; 80	0.20°			0.20°			0.20°			0.25°		
Face milling cutter	40 ; 50	0.15°			X			0.15°			0.20°		
Face milling cutter	63 ; 80	0.10°			X			0.10°			0.15°		
Face milling cutter	100 ; 125	X			X			X			X		
High feed end mills	25 ; 35	0.60°	0.40°	0.20°	0.50°	0.30°	0.15°	0.60°	0.40°	0.20°	X		
High feed end mills	40 ; 50	0.40°			0.30°			0.40°			X		
High feed end mills	63 ; 80	0.20°			0.15°			0.20°			X		
Round insert end mills	20 ; 25	0.60°	0.40°	0.20°	0.50°	0.30°	0.15°	0.60°	0.40°	0.20°	0.80°	0.50°	0.25°
Round insert end mills	32 ; 35	0.60°	0.40°	0.20°	0.50°	0.30°	0.15°	0.60°	0.40°	0.20°	0.80°	0.50°	0.25°
Round insert end mills	40 ; 42	0.50°			0.40°			0.50°			0.60°		
Round insert end mills	50 ; 52	0.40°			0.30°			0.40°			0.50°		
Round insert end mills	63 ; 66	0.25°			0.20°			0.25°			0.35°		
Round insert end mills	80 ; 100	0.10°			0.10°			0.10°			0.20°		

Information for cutting data

The penetration angle (Helix) for milling tools with high-performance penetration edge





Program the penetration angle φZ or φA correctly!

Conversion table φZ to φA with corresponding bore diameter											
Penetration angle φZ [°]	20°	18°	17.5°	16°	15°	13°	12°	10°	9°	8°	7°
Bore diameter DA	**Penetration angle φA [°]**										
DA = d1 x 1.3 [mm]	4.8°	4.3°	4.2°	3.8°	3.5°	3.0	2.8°	2.3°	2.1°	1.9°	1.6°
DA = d1 x 1.5 [mm]	6.9°	6.2°	6.0°	5.5°	5.1°	4.4°	4.1°	3.4°	3.0°	2.7°	2.3°
DA = d1 x 1.7 [mm]	8.5°	7.6°	7.4°	6.7°	6.3°	5.4°	5.0°	4.2°	3.7°	3.3°	2.9°
DA = d1 x 1.9 [mm]	**9.8°**	**8.7°**	**8.5°**	**7.7°**	**7.2°**	**6.2°**	**5.7°**	**4.8°**	**4.3°**	**3.8°**	**3.3°**

FRAISA recommendation

ToolExpert 2.0 – the new online cutting data tool for optimum tool use

ToolExpert is available online, so there's no longer any need to download it. What's more, it is platform-independent. All you need is an up-to-date browser. It has also been redesigned to make it even more user-friendly.

The user-friendly online tool provides you with perfectly coordinated, tool- and material- specific cutting data for your production – and the perfect basis for high-precision usage of your FRAISA tools: fast, simple and free of charge.

The three applications ToolExpert MFC, ToolExpert HelixRamp and ToolExpert HDC are now integrated into ToolExpert. This means ToolExpert can be implemented even more flexibly and in a wider range of applications.

Quick, simple, reliable: ToolExpert MFC – Knowledge of the application technology = ToolExpert MFC

The ToolExpert MFC cutting data software has been developed for the new MB-NVDS cutters designed with a central air and cooling channel. The software is easy to launch via the FRAISA website: www.fraisa.com/en/toolexpert-mfc

With just a few clicks, you select the application, material, and tool and obtain the parameters that need to be programmed for your machine control system or the CAM. ToolExpert MFC is fast, simple, and reliable to use.

ToolExpert ArCut X – Tested online application data for efficient milling with ArCut X

ArCut X milling cutters were developed for finishing processes aimed at producing excellent surface quality. A variety of applications are possible for each of the five ArCut X tool types.

The specially developed ToolExpert ArCut X is now a reliable aid for finding the perfect tool from the ArCut X family to suit the desired material and application. The clearly structured menu lets you select/read off material, application, ArCut X tool type and the option «coated» or «uncoated».

Similarly, using ToolExpert ArCut X you can also find the corresponding cutting data for the selected tool. The phenomenal range of options offered by the ArCut X can therefore be exploited to the full, thanks to the specially developed cutting data calculator.

ToolExpert AX-FPS – An innovative solution for defining cutting data

The new ToolExpert AX-FPS gives FRAISA customers an innovative solution for defining cutting data that is specially tailored to their machine environment. High-performance roughing of aluminum alloys is not limited by the tool, but by the machine spindle and the machine environment.

ToolExpert AX-FPS lets you clearly and simply describe your machine environment, making it easy to discover the most effective and reliable cutting data for your application. This new option, the only one of its kind on the market, offers our customers real added value and ensures a reduction in machining times and production costs.

The functions incorporated into ToolExpert AX-FPS have been developed by recording over a thousand measuring points and guarantee highly productive and reliable system utilisation. At the same time, capacity utilisation of the milling cutter, the machine spindle and machine environment come as close as possible to maximum utilisation.

FRAISA's service portfolio at a glance

ToolCare® 2.1:
management, procurement and information system for tools

ConcepTool:
custom-made special tools

ReTool®:
industrial tool reconditioning with performance guarantee

ToolSchool:
initial and further training

CAD data

We offer you the possibility to download 2D drawings (DXF), 3D models (STEP) and XML data for our products. Simply enter the article number of the tool and select the desired file.

Download measurement report*

As a customer, you can enter the measurement report number of your FRAISA tool and download the measurement report as a PDF file.

* Measurement reports available for the following article:
• High precision mills +/- 0,003 Sphero-XP (X7500)

https://www.fraisa.com/en/online-tools

Do you have any questions about our services or our company?
Then give us a call or send us an e-mail. We'll be happy to help you.

Scan this QR code to access more information about the FRAISA Group.

You can also use our ordering service via our E-Shop and benefit from our changing offers.

Calculation formulas for cutting data

Formulas

d_1	Diameter of the cutting edge [mm]
z	Number of cutting edges
a_p	Axial infeed depth [mm]
a_e	Radial infeed depth [mm]
v_c	Cutting speed [m/min]
f_z	Feed per tooth and revolution [mm]
n	Spindle speed [min^{-1}]
v_f	Feed rate [mm/min]
f	Feed per rotation [mm]
Q	Material removal rate [cm^3/min]
d_{eff}	Effective engagement diameter [mm]
β	Setting angle «Beta» [° - DEG]

Spindle speed

$$n = \frac{v_c \cdot 1000}{d_1 \cdot \pi} \left[\frac{1}{min}\right]$$

Cutting speed

$$v_c = \frac{d_1 \cdot n \cdot \pi}{1000} \left[\frac{m}{min}\right]$$

Feed rate

$$v_f = f_z \cdot z \cdot n \left[\frac{mm}{min}\right]$$

Feed per tooth

$$f_z = \frac{v_f}{z \cdot n} [mm]$$

Feed per rotation

$$f = f_z \cdot z [mm]$$

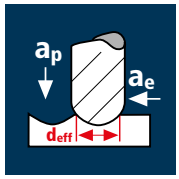
Material removal rate

$$Q = \frac{ap \cdot ae \cdot v_f}{1000} \left[\frac{cm^3}{min}\right]$$

i

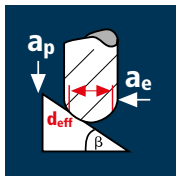
Calculation formulas for cutting data

Effective diameter for ball nose end mills at a set angle β = 0°



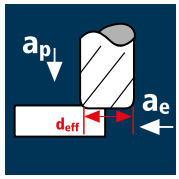
$$d_{eff} = 2 \cdot \sqrt{d_1 \cdot ap - ap^2} \quad [mm]$$

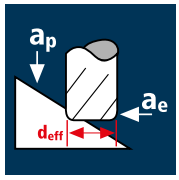
Effective diameter for ball nose end mills at a set angle 0 < β < 90°
Calculator setting in [° - DEG] ; entry of β in [°- DEG]



$$d_{eff} = d_1 \cdot \sin\left[\beta + \cos^{-1}\left(\frac{d_1 - 2 \cdot ap}{d_1}\right)\right] \quad [mm]$$

Effective diameter for corner radius end mills at a set angle 0 ≤ β < 90°
Calculator setting in [° - DEG] ; entry of β in [°- DEG]





$$d_{eff} = d_1 - 2 \cdot r + 2 \cdot r \cdot \sin\left[\beta + \cos^{-1}\left(1 - \frac{ap}{r}\right)\right] \quad [mm]$$

Calculation formulas for cutting data

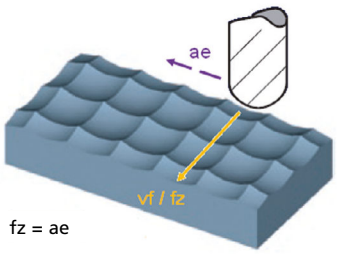
Theoretical surface roughness and surface qualities

Surface roughness in the direction of feed vf

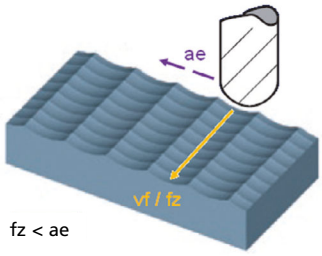
$$R_{th,vf} = \left(\frac{d_1}{2} - \sqrt{\frac{d_1^2 - f_z^2}{4}} \right) \cdot 1000 \quad [\mu m]$$

Surface roughness in the infeed direction ae

$$R_{th,ae} = \left(\frac{d_1}{2} - \sqrt{\frac{d_1^2 - ae^2}{4}} \right) \cdot 1000 \quad [\mu m]$$



fz = ae



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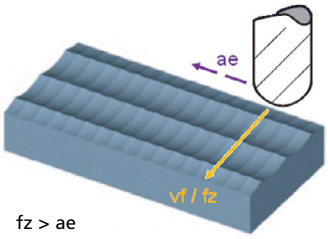
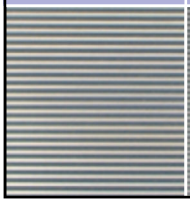
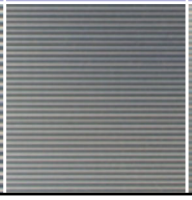
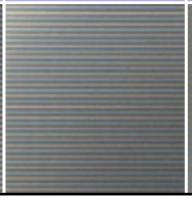
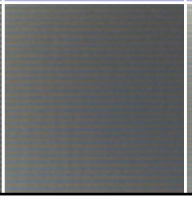
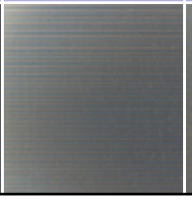


fz > ae

Surface qualities

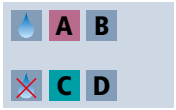
Maximum roughness values Ra in µm; 1 µm = 0.001 mm					
3.2	1.6	0.8	0.4	0.2	0.1
Roughness classes					
N8	N7	N6	N5	N4	N3
					

Hardness conversion table (R_m → HV10 → HB → HRC)

R_m [N/mm²]	HV 10	HB	HRC		R_m [N/mm²]	HV 10	HB	HRC
240	75	71			920	287	273	28
255	80	76			940	293	278	29
270	85	81			970	302	287	30
285	90	86			995	310	295	31
305	95	90			1020	317	301	32
320	100	95			1050	327	311	33
335	105	100			1080	336	319	34
350	110	105			1110	345	328	35
370	115	109			1140	355	337	36
385	120	114			1170	364	346	37
400	125	119			1200	373	354	38
415	130	124			1230	382	363	39
430	135	128			1260	392	372	40
450	140	133			1300	403	383	41
465	145	138			1330	413	393	42
480	150	143			1360	423	402	43
495	155	147			1400	434	413	44
510	160	152			1440	446	424	45
530	165	157			1480	458	435	46
545	170	162			1530	473	449	47
560	175	166			1570	484	460	48
575	180	171			1620	497	472	49
595	185	176			1680	514	488	50
610	190	181			1730	527	501	51
625	195	185			1790	544	517	52
640	200	190			1845	560	532	53
660	205	195			1910	578	549	54
675	210	199			1980	596	567	55
690	215	204			2050	615	584	56
705	220	209			2140	639	607	57
720	225	214				655	622	58
740	230	219				675		59
755	235	223				698		60
770	240	228				720		61
785	245	233				745		62
800	250	238	22			773		63
820	255	242	23			800		64
835	260	247	24			829		65
860	268	255	25			864		66
870	272	258	26			900		67
900	280	266	27			940		68

Coating suitability for milling tools

Coating suitability related to dry or wet machining conditions



A: Excellent suitability of the coating A during wet machining.
B: The suitability of the coating B during wet machining is sufficient to good.

C: Excellent suitability of the coating C during dry machining.
D: The suitability of the coating D during dry machining is sufficient to good.

Coating suitability for milling tools in the corresponding material class

1 = Ideally suited 2 = Adequate to well-suited	U UNICUT-4X		P POLYCHROM		D DURO-S		V DURO-V		H DURO-Si		X X-AL		M MICRO		C CELERO	
Material classes																
Steel < 500 N/mm²	1		1				2				1		1		1	
Steel 500 - 850 N/mm²	1		1				2				1		1			
Steel 850 - 1100 N/mm²	1		1	1			2	1			1	1	1			
Steel 1100 - 1300 N/mm²	2	2	2	1			2	1			2	1	1			
Steel 1300 - 1500 N/mm²	2	2	2	1		2	2	1			2	1	2	1		
Hardened tool steel 48-52 HRC		2		1		2		1		2		1		1		
Hardened tool steel 52-56 HRC				1		1		1		2		1		1		
Hardened tool steel 56-60 HRC				1		1		1		1		1		1		
Hardened tool steel >60 HRC				2		1		1		1		1				
Cold work tool steel (12% Cr) high alloyed [1.2379]	2	2	2	1		1	2	1			2	1				
Cold work tool steel, low alloyed [1.2067]	2	2	2	1		1	2	1			2	1				
Stainless steel ferritic/martensitic	1		1				2				1		1			
Stainless steel [Cr-Ni/1.4301]	1		1				2				1		1		2	
Stainless steel [Cr-Ni-Mo-.../1.4571]	1		1				2				1		1			
Heat resistant steel [17-4 PH]	1		1				2				2		1			
Nickel base alloys prec.-hard. [Inconel 718]	1		1				2				2		1			
Cast iron (lamellar / spheroidal)	2	2	2	1		1	2	1			2	1	2	1		
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1		1		2		2				2		1		2	
Titanium alloy > 300 HB [Ti6Al4V]	1		1		1		2				2		1			
Unalloyed aluminium															1	
Wrought aluminium Si <6%	2		2										1		1	
Unalloyed copper	2		2				2				2		1		1	
Wrought copper alloys Bronze	2	2	2	1		2	2	1			2	1	2	1		
Brass short chips [Ms58]	2	2	2	1		2	2	1			2	1	2	1		
Thermoplastics	2		2										2		2	
High speed steel hardened						1		1		1		2				

General conditions

1. General

1.1 The contract is concluded with the written confirmation (Order confirmation) of Fraisa SA or its subsidiaries (hereinafter known in short as «supplier») that it accepts the order.

1.2 Any deviation from the order in the order confirmation forms part of the contract, unless the purchaser rejects it in writing within 5 working days from the receipt date of the order confirmation. Quotations, particularly those involving price lists, brochures, etc., which contain no acceptance dates, are non-binding.

1.3 These delivery conditions shall be binding if they are declared as applicable in the quotation or order confirmation. Other conditions of the purchaser are only applicable if they have been expressly accepted by the supplier and this acceptance is in writing.

1.4 All agreements and legally relevant declarations of the parties need to be made in writing in order to be applicable.

1.5 If any provision of these delivery conditions should prove wholly or partially ineffective, the parties shall replace this provision with a new agreement which comes as close to the intended legal and economic outcome as possible.

2. Scope of the delivery and services

The supplier's deliveries and services are itemised in the order confirmation, including any appendices to it. The supplier is authorised to make changes that lead to improvements, where these do not increase the price.

3. Brochures, catalogues and technical documents

Brochures and catalogues are not binding without other agreements. Information contained in technical documents is only binding if it is explicitly assured.

4. Prices

4.1 All prices are - in the absence of any agreement - net prices, ex works, excluding packaging, in freely available Swiss Francs or the local currency of the subsidiaries, without any deductions.

4.2 All additional costs, e.g. for freight, insurance, export, import and other permits and certifications, shall be borne by the purchaser.

4.3 Likewise, the purchaser shall bear all taxes (especially VAT), levies, fees, duties (and the like) that are imposed in connection with the contract, or reimburse the supplier for them against corresponding proof, if the supplier has to pay for them.

5. Payment terms

5.1 The payments are to be made by the purchaser in accordance with agreed payment terms at the location of the supplier's office without the deduction of discounts, expenses, taxes, duties, fees, duties (and the like). The obligation to make payment is fulfilled, when at the location of the supplier's office, the arranged amount have been made freely available to the supplier. The payment deadline is 30 days from the invoice date.

5.2 The payment deadline and/or the separately agreed payment deadlines must be met even if the transport, delivery or acceptance of the delivery is delayed or prevented for reasons for which the supplier is not responsible, if non-essential items are missing from the delivery, or if subsequent machining is necessary which does not make usage of the delivery impossible.

5.3 If the purchaser does not make payment by the payment deadline and/or the separately agreed payment deadline, he must, without notice, pay interest from the date the invoice is due at an interest rate based on the rate where the purchaser has his office, however at least 4% above the discount rate of the Swiss National Bank. The right to claim further damages is reserved.

6. Retention of title

6.1 The supplier shall retain ownership of all parts of the delivery until he has received the payments in accordance with the contract.

6.2 The purchaser is obliged to participate in measures which are necessary for the protection of the supplier's property; in particular, at the expense of the purchaser, he authorizes the supplier to register or enter the title in public records, books and the like according to the relevant national laws and to comply with all relevant formalities.

6.3 The purchaser shall maintain the delivered goods at his cost for the duration of retention of title and insure them on behalf of the supplier against theft, breakage, fire, water and other risks. He shall further take all measures to ensure that the supplier's property claim is in no way compromised nor cancelled.

7. Delivery deadline

7.1 The supplier shall strive to meet the delivery deadline which is recorded in the order confirmation. The delivery deadline is met if the «ready for despatch» message is sent to the purchaser by its expiry.

7.2 The meeting of the delivery deadline presupposes full compliance with the contractual obligations by the purchaser.

7.3 The delivery deadline shall be extended by an appropriate period if hindrances occur which, despite due care, the supplier cannot avert, regardless of whether they originate from him, the purchaser or a third party. Such hindrances include epidemics, mobilisation, war, riots, major breakdowns, accidents, labour disputes, delayed delivery or mistakes in the delivery of the necessary raw materials and semi-finished products, governmental actions or omissions, and natural events.

7.4 If a specific date is agreed upon instead of a delivery deadline, this is equivalent to the last day of a delivery deadline. Points 7.1 to 7.3 apply analogously.

7.5 In the case of delay, the purchaser is not entitled to compensation or other benefits, except for the agreement cited in point 7 or an agreement stipulated in a separate agreement. This restriction does not apply to unlawful intent or gross negligence on the part of the supplier.

8. Packaging

Packaging is separately charged by the supplier and cannot be returned.

9. Transfer of benefits and risks

9.1 At the latest, benefits and risks are passed to the purchaser when the delivery leaves the factory.

9.2 If the shipment is delayed at the request of the purchaser or for other reasons which the supplier is not responsible for, the risk is passed to the purchaser for the originally scheduled date of delivery from the factory. From this point on, the supplied products are stored and insured at the purchaser's expense and risk.

10. Shipping, transportation and insurance

10.1 The supplier must be informed of special requests concerning shipping, transportation and insurance in good time. Transportation takes place at the purchaser's expense and risk.

10.2 Complaints relating to the shipping or transportation should be addressed to the last carrier by the purchaser without delay upon receipt of the delivery or the shipping documents.

10.3 Insurance against all kinds of damage is the responsibility of the purchaser.

11. Checking and acceptance of the delivery

11.1 The purchaser must check the delivery upon receipt within 8 days and notify the supplier of any defects within the same period in writing. Failing this, the supply shall be deemed approved.

11.2 The supplier shall resolve the defects which are notified to him in accordance with point 12.1 as quickly as possible, or - at his option - replace defective goods.

11.3 In the case of defects of any sort relating to the delivery, the purchaser has no rights or rights to make claims other than those specifically mentioned in points 12 and 13 (warranty, liability for defects).

12. Warranty, liability for defects

12.1 The warranty period is 6 months. It begins with the date the delivery leaves the factory. In the case of replaced or repaired products, the warranty period starts afresh and shall last for 6 months from the date the replacement goods are shipped from the supplier. The guarantee expires prematurely if the purchaser or a third party undertakes inappropriate modifications or repairs or if the purchaser, when a fault has occurred, does not immediately take all appropriate measures to mitigate the damage and does not give the supplier the opportunity to resolve the defect.

12.2 Damage is excluded from the warranty and the supplier's liability which has arisen in circumstances which cannot be proven to be due to poor materials, faulty design or poor workmanship, e.g. natural wear, improper maintenance, failure to follow operating instructions, excessive strain, unsuitable equipment, chemical or electrolytic influences as well as other reasons that the supplier cannot be held responsible for.

12.3 The purchaser shall only be entitled to the replacement or repair of defective goods. The purchaser is not entitled to further claims, especially for compensation for damage or consequential damage. In no case can claims be considered by the purchaser for compensation for damage which is not caused to the object itself, e.g. loss of production, inability to use the goods, loss of contracts, loss of profit and other direct or indirect damage. This disclaimer does not apply to unlawful intent or gross negligence on the part of the supplier. Moreover, this disclaimer does not apply in so far as any mandatory provisions oppose it.

13. Place of jurisdiction and applicable law

13.1 The place of jurisdiction for the purchaser and the supplier is the place where the supplier has its head office. The supplier is entitled to take out legal action against the purchaser at its place of residence.

13.2 The contract shall be exclusively governed by the national commercial law which applies in the supplier's country. The provisions of the CISG do not apply.

Distribution network

Sales and service locations

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4512 Bellach
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Fax: +49 2154 489 84-33
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Fax: +33 4 723 73 490
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(●) Associated companies.
To find your contact refer to **www.fraisa.com.**

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Article list

Example : Article H8604

Article-N°.: 8604
Coating: H
Page: 31

Article-N°.		Coating															
INDEX		without	P POLYCHROM	U UNICUT-4X	D DURO-S	V DURO-V	H DURO-Si	Y DURO-Al	X X-AL	M MICRO	C CELERO	T TRIBO	I TICUT	B DIAMANT	B DIAPLUS	B DIA-C
Chemical composition			TiAlCrN	TiAlCN	AlTiN	AlTiSiN	TiAlSiN	TiAlN/ AlCrN	TiAlN/ AlCrN	TiAlN	TiB2	AlTiN + MoS2	TiAlN/ TiSiN	C	C	C
Hardness [HV]			3000	3200	3600	3300	3200	3300	3300	3000	4000	3600	3800	10000	10000	10000
Max. temp. [°C]			1000	650	880	1100	1100	1100	1100	800	700	880	1100	600	600	600
0110	83			●												
0200	149			●												
0391	663										●					
0393	669										●					
0400	347			●												
0410	351			●												
0540	227		●													
0609	233			●												
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0695	235			●												
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5218	97		●													
5219	135		●													
5225	101		●													
5229	165		●													
5230	69	●	●													
5234	203		●													

Article-N°.		Coating														
INDEX		without	P POLYCHROM	U UNICUT-4X	D DURO-S	V DURO-V	H DURO-Si	Y DURO-Al	X X-AL	M MICRO	C CELERO	T TRIBO	I TICUT	B DIAMANT	B DIAPLUS	B DIA-C
5236	339											●				
5236	345	●														
5237	343											●				
5240	59		●													
5244	95				●											
5248	93		●		●											
5249	161		●		●											
5250	451		●													
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5252	457		●													
5253	211		●		●											
5255	61		●									●				
5256	213				●											
5257	215		●		●											
5259	179		●		●											
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5290	413	●									●					
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5353	211		●		●											
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5356	213				●											
5357	215		●		●											
5359	179		●		●											
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5379	217		●													
5393	151		●													
5397	661										●					
5400	169		●													
5500	625										●					
5580	473															●
5640	761													●		
5645	763													●		
5650	765													●		
5710	327	●														

Article-N°.		Coating															
INDEX		without	P POLYCHROM	U UNICUT-4X	D DURO-S	V DURO-V	H DURO-Si	Y DURO-Al	X X-AL	M MICRO	C CELERO	T TRIBO	I TICUT	B DIAMANT	B DIAPLUS	B DIA-C
5712	305									●						
5712	745													●		
5714	309									●						
5714	747													●		
5716	313									●						
5716	749													●		
5717	315									●						
5717	751													●		
5721	317									●						
5722	301				●											
5723	319									●						
5724	303				●											
5752	605									●						
5752	739													●		
5754	607									●						
5754	741													●		
5756	609									●						
5756	743													●		
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5782	547									●						
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5786	551									●						
5786	709													●		
5787	553									●						
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6066	695														●	
6068	697														●	
6070	699														●	
6072	701														●	
6074	703														●	
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6462	491							●								
6463	495							●								
6464	499							●								
6481	489							●								
6482	493							●								
6483	497							●								
6500	283								●							
6501	285								●							
6502	287								●							
6503	289								●							
6504	291								●							
6505	293								●							
6506	295								●							

Article-N°.		Coating														
INDEX		without	P POLYCHROM	U UNICUT-4X	D DURO-S	V DURO-V	H DURO-Si	Y DURO-Al	X X-AL	M MICRO	C CELERO	T TRIBO	I TICUT	B DIAMANT	B DIAPLUS	B DIA-C
6508	297								●							
6531	563								●							
6532	565								●							
6533	569								●							
6534	571								●							
6535	575								●							
6536	577								●							
6538	581								●							
6560	501								●							
6561	503								●							
6562	507								●							
6563	511								●							
6564	515								●							
6565	517								●							
6566	521								●							
6567	523								●							
6568	525								●							
6579	519								●							
6581	505								●							
6582	509								●							
6583	513								●							
6632	597								●							
6634	599								●							
6735	585								●							
6736	587								●							
6738	589								●							
6740	591								●							
6742	593								●							
6744	595								●							
6765	527								●							
6766	529								●							
6768	531								●							
6770	533								●							
6772	535								●							
6774	537								●							
7100	439								●							
7104	447								●							
7200	435								●							
7204	443								●							
7210	433						●									
7284	757														●	
7288	759														●	
7340	453		●													
7344	459		●													
7400	375								●							
7402	385								●							
7404	391								●							
7408	403								●							
7420	373								●							
7424	389								●							
7428	401								●							
7450	405								●							
7454	407								●							
7458	409								●							
7460	377								●							
7464	393								●							
7470	371					●										
7472	383					●										
7474	387					●										
7478	399					●										
7484	753														●	
7488	755														●	
7500	369								●							
7540	379		●													

Article-N°.		Coating															
INDEX		without	P POLYCHROM	U UNICUT-4X	D DURO-S	V DURO-V	H DURO-Si	Y DURO-Al	X X-AL	M MICRO	C CELERO	T TRIBO	I TiCUT	B DIAMANT	B DIAPLUS	B DIA-C
7544	395		●													
7550	381	●														
7554	397	●														
7600	463								●							
7604	467								●							
7608	471								●							
7620	465								●							
7624	469								●							
7920	791			●												
7930	805			●												
7940	807			●												
7942	809			●												
7960	811			●												
8100	49		●													
8101	43		●													
8102	45		●													
8105	47		●													
8107	195		●													
8111	107		●													
8112	109		●													
8115	111		●													
8121	155		●													
8200	49		●													
8201	43		●													
8202	45		●													
8205	47		●													
8207	195		●													
8211	107		●													
8212	109		●													
8215	111		●													
8221	155		●													
8300	55		●													
8301	261		●													
8302	219		●													
8303	63		●													
8304	51		●													
8305	57		●													
8310	117		●													
8311	269		●													
8313	123		●													
8315	121		●													
8320	157		●													
8321	281		●													
8323	159		●													
8400	55		●													
8401	261		●													
8402	219		●													
8403	63		●													
8404	51		●													
8405	57		●													
8410	117		●													
8413	123		●													
8415	121		●													
8420	157		●													
8423	159		●													
8500	33		●													
8504	31						●									
8507	175						●									
8514	103						●									
8521	279		●				●									
8530	423	●	●													
8535	425	●	●													
8540	427	●	●													
8545	429	●	●													

Article-N°.		Coating															
INDEX		without	P POLYCHROM	U UNICUT-4X	D DURO-S	V DURO-V	H DURO-Si	Y DURO-Al	X X-AL	M MICRO	C CELERO	T TRIBO	I TICUT	B DIAMANT	B DIAPLUS	B DIA-C
8550	431	●	●													
8600	33		●													
8604	31						●									
8607	175						●									
8614	103						●									
8700	37		●										●			
8705	39		●										●			
8720	187		●										●			
8800	37		●										●			
8805	39		●										●			
8820	187		●										●			
15207	53		●													
15208	115		●													
15210	113		●													
15212	193		●													
15222	35		●													
15223	105		●													
15225	137		●													
15226	199		●													
15232	335	●	●									●				
15233	65		●													
15234	67		●													
15236	221		●													
15238	239		●													
15239	249		●													
15242	91		●													
15243	119		●													
15245	145		●													
15247	153		●													
15248	253		●													
15250	259		●				●									
15251	267		●				●									
15254	275		●				●									
15257	181		●													
15259	131		●													
15260	251		●													
15268	183		●													
15294	141		●													
15297	667										●					
15298	673										●					
15299	139		●													
15307	53		●													
15308	115		●													
15310	113		●													
15312	193		●													
15322	35		●													
15323	105		●													
15325	137		●													
15326	199		●													
15333	65		●													
15334	67		●													
15336	221		●													
15338	239		●													
15339	249		●													
15342	91		●													
15343	119		●													
15345	145		●													
15347	153		●													
15348	253		●													
15357	181		●													
15359	131		●													
15360	251		●													
15368	183		●													
15394	141		●													

Article-N°.		Coating															
INDEX		without	P POLYCHROM	U UNICUT-4X	D DURO-S	V DURO-V	H DURO-Si	Y DURO-Al	X X-AL	M MICRO	C CELERO	T TRIBO	I TICUT	B DIAMANT	B DIAPLUS	B DIA-C
15397	667										●					
15398	673										●					
15399	139		●													
15500	659	●														
15502	677	●														
15505	671	●														
15506	665	●														
15507	675	●														
15520	617	●									●					
15525	619	●									●					
15530	621	●									●					
15535	623	●									●					
15550	627	●									●					
15557	629	●									●					
15559	633	●									●					
15560	631	●									●					
15561	635	●									●					
15572	637	●									●					
15573	639	●									●					
15574	643	●									●					
15575	647	●									●					
15582	649	●									●					
15583	651	●									●					
15584	655	●									●					
15585	657	●									●					
15589	681	●									●					
15590	683	●									●					
15600	659	●														
15605	671	●														
15606	665	●														
15607	675	●														
15620	617	●									●					
15625	619	●									●					
15630	621	●									●					
15635	623	●									●					
15650	627	●									●					
15657	629	●									●					
15659	633	●									●					
15660	631	●									●					
15661	635	●									●					
15711	299				●											
15725	321									●						
15752	307									●						
15754	311									●						
15781	539				●											
15795	559									●						
15795	717													●		
20020	775													●		
20025	777													●		
20030	779													●		
25000	769	●														
25004	771	●														
25010	773	●														
25404	781	●														
25700	785	●														
25704	783	●														
31410	483	●														
31420	481	●														
31700	479	●														
35400	477	●														
35700	475	●														
45217	75		●													
45219	205		●													
45222	127		●													

Article-N°.		Coating															
INDEX		without	P POLYCHROM	U UNICUT-4X	D DURO-S	V DURO-V	H DURO-Si	Y DURO-Al	X X-AL	M MICRO	C CELERO	T TRIBO	I TICUT	B DIAMANT	B DIAPLUS	B DIA-C
45223	147		●													
45233	79		●													
45234	129		●													
45255	77		●													
45260	265		●													
45262	273		●													
45298	415			●												
45317	75		●													
45319	205		●													
45322	127		●													
45323	147		●													
45333	79		●													
45334	129		●													
45336	345			●												
45355	77		●													
45360	265		●													
45362	273		●													
45371	223		●													
45372	241		●													
45709	323									●						
45710	327									●						
45713	331									●						
45785	561									●						

Notes

passion
for precision
fraisa