

crazy about new tools

STAINLESS MATERIALS

6 NEW CUTTING TOOLS FOR
DRILLING AND MILLING



crazy about cool tools



NEW SOLUTIONS FOR STAINLESS STEELS AND SUPER ALLOYS

Small dimensions are our speciality and difficult-to-machine materials are our challenge.

We are crazy about cool tools when drilling or milling in the diameter range of 0.3 mm to 8.0 mm (.012" to .315").

Our goal is to machine stainless steels accurately, quickly and reliably!

With new geometries and unique cooling technologies.

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	Drilling depth 6 or 10 x d, Ø 1.0 mm - 6.0 mm .039" – .236"	
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	Drilling depth 3 x d + 90° countersink, Ø 0.3 mm - 2.0 mm .012" – .079"	

High performance in stainless steel and super alloys

THE CHALLENGE

Difficult-to-machine metals are a broad field and comprise the widest variety of machining difficulties. Long tough chips, poor heat transfer and work hardening are often a headache for tool manufacturers and machine operators.

These metals are readily used in high tech industries, that is, wherever the material is exposed to extreme conditions. This is therefore about qualities such as heat resistance, corrosion and acid resistance, bio-compatibility, good formability or even high degree of hardness.

THE FEATURES

- **Stainless steel:** Corrosion-resistant and acid-resistant. High degree of toughness, low thermal conductivity. Good formability.
- **Heat Resistant alloys (super alloys = HRSA = Heat Resistant Super Alloys):** High degree of stability and hardness even at high temperatures. Corrosion-resistant, acid-resistant and heat-resistant. Low thermal conductivity.
- **Cr-Co alloys:** Biocompatible. Minor heat expansion. Corrosion-resistant, acid-resistant and heat-resistant. High degree of hardness.

THE SOLUTION

To be able to offer a solution to machining in small diameters that earns the title of "ideally suited for difficult-to-machine materials", Mikron Tool has incorporated various factors during tool development:

- Geometry
- Cooling technology
- Solid carbide
- Coating



APPLICATION DOMAINS	COMPONENTS EXAMPLES	MATERIALS GROUPS	EXAMPLES		
			Mat. no.	DIN	AISI / ASTM / UNS
Dental	Dental crown mounting	Group M Stainless steel	1.4105	X6CrMoS17	430F
Aerospace industry	Engine parts		1.4112	X90CrMoV18	440B
Medical technology	Component for endoscope		1.4542	X5CrNiCuNb 16-4	630
Automotive industry	Components for direct injection		1.4305	X8CrNiS 18-9	303
Mechanical engineering	Locking bolt		1.4435	X2CrNiMo 18-14-3	316L
Watches	Watch housing	Group S1 Super alloys	2.4856		INCONEL 625
			2.4665	NiCr22Fe18Mo	HASTELLOY X
Hydraulics / Pneumatics	Hydraulic valve	Group S3 CrCo alloys	2.4964	CoCr20W15Ni	HAYNES 25

NEW

CrazyMill Cool Ball



AN HSPC MILLING TOOL FOR DIFFICULT-TO-MACHINE MATERIALS



What's new: CrazyMill Cool Ball is an innovative ball endmill from Mikron Tool developed for the roughing and finishing of stainless steels, pure titanium and titanium alloys, Cr-Co alloys and super alloys. With a very efficient integrated coolant supply it reaches the highest cutting speeds and guarantees a high chip removal rate.

The features: The new cutting geometry is especially designed to improve speed and surface quality in a manner that produces little oscillation and vibration. The extended cutting depths facilitate machining on the radius and on the cylindrical part, and make the milling cutter into a versatile tool.

CrazyMill Cool Ball combines HSC (high-speed cutting) and HPC (high-performance cutting), thus becoming an HSPC (high-speed performance cutting) ball endmill.

Diameter range: 0.3 mm to 8.0 mm (.012" to .315")

Milling depth: Type A – 2 x d; Type B – 3 x d; Type C – 5 x d

Coating: eXedur RIP

PATENTED

Maximum performance and surface quality

BALL ENDMILL WITH COOLANT THROUGH THE SHANK FOR ROUGHING AND FINISHING

With CrazyMill Cool Ball, Mikron Tool expands its range of milling tools for difficult-to-machine materials. Three versions of two fluted ball endmill with coolant through the shank are available in the diameter range of 0.3 mm to 8 mm (.012" to .315") and a maximum milling depth up to 5 x d.

- CrazyMill Cool Ball, Type A - milling depth 2 x d, through shank coolant, Z = 2
- CrazyMill Cool Ball, Type B - milling depth 3 x d, through shank coolant, Z = 2
- CrazyMill Cool Ball, Type C - milling depth 5 x d, through shank coolant, Z = 2

Geared towards copy milling, side milling and face milling, this tool exhibits its strengths with the high cutting speeds and depths, removal rates, tool life and the attainable surface quality.

THE ADVANTAGES*

- | | |
|--------------------------------------|--------------------------------------|
| ■ SHORT MACHINING TIME | Up to 2 times faster |
| ■ LONG TOOL LIFE | Due to efficient coolant |
| ■ HIGH DEGREE OF PROCESS RELIABILITY | Due to through shank coolant |
| ■ HIGH SURFACE QUALITY | Due to anti-vibration geometry |
| ■ LOW PRODUCTION COSTS | Roughing and finishing with one tool |

* The comparison applies to good-quality milling tools with external coolant supply and cutting parameters as recommended by manufacturers.

2 x d	3 x d	5 x d
■ With integrated cooling	■ With integrated cooling	■ With integrated cooling
		
		
CrazyMill Cool Ball Type A	CrazyMill Cool Ball Type B	CrazyMill Cool Ball Type C

NEW

1 | SHANK

The robust solid carbide shank guarantees stable and vibration-free milling. A high degree of precision and excellent surface quality are achieved.

2 | INTEGRATED COOLING - PATENTED

The integrated cooling channels guarantee constant and maximal cooling of the cutting edges and optimal chip removal. The result is higher cutting speed and depth as well as improved surface quality.

3 | CARBIDE

The specially developed micro-grain solid carbide with a high degree of toughness meets all requirements in terms of mechanical properties.

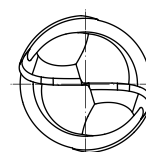
4 | COATING

The high-performance RIP coating is heat-resistant and wear-resistant, prevents build up edges and guarantees optimum chip flushing. The result is long tool life.

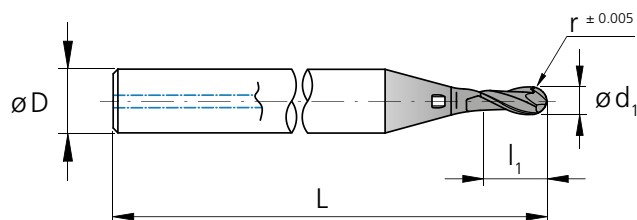
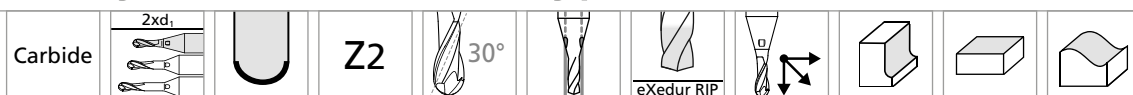
5 | CUTTING GEOMETRY

Developed for the machining of difficult-to-machine materials such as stainless steels, titanium, titanium alloys and heat-resistant alloys. Ensures roughing and finishing with high surface quality. Due to its highly smooth running, it will work with no vibration.

Mill tip



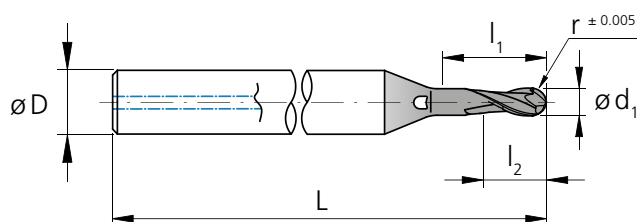
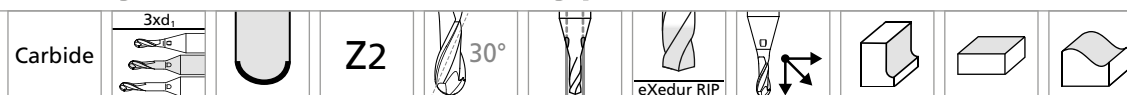
CrazyMill Cool Ball - Type A - 2 x d



from stock	Item number	d_1 ± 0.01 [mm]	d_1 ± 0.004 [inch]	r [mm]	l_1 [mm]	l_1 [inch]	D (h6) [mm]	L [mm]	L [inch]	Z [teeth]
■	2.CMC30.A5Z2.030.1	0.3	.012	0.15	0.6	.024	3	38	1.50	2
■	2.CMC30.A5Z2.040.1	0.4	.016	0.20	0.8	.031	3	38	1.50	2
■	2.CMC30.A5Z2.050.1	0.5	.020	0.25	1.0	.039	3	38	1.50	2
■	2.CMC30.A5Z2.060.1	0.6	.024	0.30	1.2	.047	3	38	1.50	2
■	2.CMC30.A5Z2.080.1	0.8	.031	0.40	1.6	.063	3	38	1.50	2
■	2.CMC30.A5Z2.100.1	1.0	.039	0.50	2.0	.079	4	40	1.57	2
■	2.CMC30.A5Z2.120.1	1.2	.047	0.60	2.4	.094	4	40	1.57	2
■	2.CMC30.A5Z2.150.1	1.5	.059	0.75	3.0	.118	4	40	1.57	2
■	2.CMC30.A5Z2.180.1	1.8	.071	0.90	3.6	.142	4	40	1.57	2
■	2.CMC30.A5Z2.200.1	2.0	.079	1.00	4.0	.157	4	40	1.57	2
■	2.CMC30.A5Z2.250.1	2.5	.098	1.25	5.0	.197	6	40	1.57	2
■	2.CMC30.A5Z2.300.1	3.0	.118	1.50	6.0	.236	6	50	1.97	2
■	2.CMC30.A5Z2.400.1	4.0	.157	2.00	8.0	.315	6	50	1.97	2
■	2.CMC30.A5Z2.600.1	6.0	.236	3.00	12.0	.472	10	60	2.36	2
■	2.CMC30.A5Z2.800.1	8.0	.315	4.00	16.0	.630	12	70	2.76	2

Cutting process: It is available on www.mikrontool.com

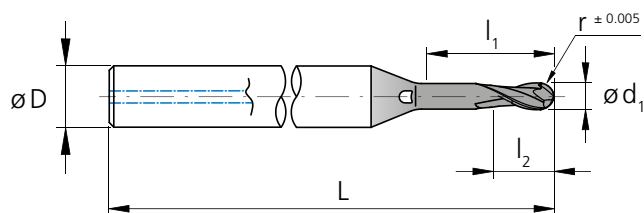
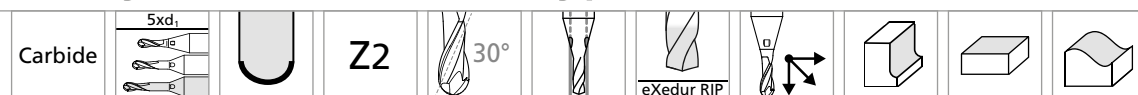
CrazyMill Cool Ball - Type B - 3 x d



from stock	Item number	d ₁ ±0.01 [mm]	d ₁ ±.0004 [inch]	r [mm]	l ₁ [mm]	l ₁ [inch]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]	Z [teeth]
■	2.CMC30.B5Z2.030.1	0.3	.012	0.15	0.9	.035	0.6	3	38	1.50	2
■	2.CMC30.B5Z2.040.1	0.4	.016	0.20	1.2	.047	0.8	3	38	1.50	2
■	2.CMC30.B5Z2.050.1	0.5	.020	0.25	1.5	.059	1.0	3	38	1.50	2
■	2.CMC30.B5Z2.060.1	0.6	.024	0.30	1.8	.071	1.2	3	38	1.50	2
■	2.CMC30.B5Z2.080.1	0.8	.031	0.40	2.4	.094	1.6	3	38	1.50	2
■	2.CMC30.B5Z2.100.1	1.0	.039	0.50	3.0	.118	2.0	4	40	1.57	2
■	2.CMC30.B5Z2.120.1	1.2	.047	0.60	3.6	.142	2.4	4	40	1.57	2
■	2.CMC30.B5Z2.150.1	1.5	.059	0.75	4.5	.177	3.0	4	40	1.57	2
■	2.CMC30.B5Z2.180.1	1.8	.071	0.90	5.4	.213	3.6	4	40	1.57	2
■	2.CMC30.B5Z2.200.1	2.0	.079	1.00	6.0	.236	4.0	4	40	1.57	2
■	2.CMC30.B5Z2.250.1	2.5	.098	1.25	7.5	.295	5.0	6	40	1.57	2
■	2.CMC30.B5Z2.300.1	3.0	.118	1.50	9.0	.354	6.0	6	50	1.97	2
■	2.CMC30.B5Z2.400.1	4.0	.157	2.00	12.0	.472	8.0	6	55	2.17	2
■	2.CMC30.B5Z2.600.1	6.0	.236	3.00	18.0	.709	12.0	10	65	2.56	2
■	2.CMC30.B5Z2.800.1	8.0	.315	4.00	24.0	.945	16.0	12	80	3.15	2

Cutting process: It is available on www.mikrontool.com

CrazyMill Cool Ball - Type C - 5 x d



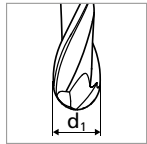
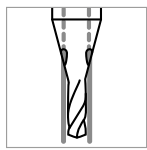
from stock	Item number	d ₁ ±0.01 [mm]	d ₁ ±0.004 [inch]	r [mm]	l ₁ [mm]	l ₁ [inch]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]	Z [teeth]
■	2.CMC30.C5Z2.030.1	0.3	.012	0.15	1.5	.059	0.6	3	38	1.50	2
■	2.CMC30.C5Z2.040.1	0.4	.016	0.20	2.0	.079	0.8	3	38	1.50	2
■	2.CMC30.C5Z2.050.1	0.5	.020	0.25	2.5	.098	1.0	3	38	1.50	2
■	2.CMC30.C5Z2.060.1	0.6	.024	0.30	3.0	.118	1.2	3	38	1.50	2
■	2.CMC30.C5Z2.080.1	0.8	.031	0.40	4.0	.157	1.6	3	38	1.50	2
■	2.CMC30.C5Z2.100.1	1.0	.039	0.50	5.0	.197	2.0	4	40	1.57	2
■	2.CMC30.C5Z2.120.1	1.2	.047	0.60	6.0	.236	2.4	4	40	1.57	2
■	2.CMC30.C5Z2.150.1	1.5	.059	0.75	7.5	.295	3.0	4	40	1.57	2
■	2.CMC30.C5Z2.180.1	1.8	.071	0.90	9.0	.354	3.6	4	40	1.57	2
■	2.CMC30.C5Z2.200.1	2.0	.079	1.00	10.0	.394	4.0	4	40	1.57	2
■	2.CMC30.C5Z2.250.1	2.5	.098	1.25	12.5	.492	5.0	6	40	1.57	2
■	2.CMC30.C5Z2.300.1	3.0	.118	1.50	15.0	.591	6.0	6	50	1.97	2
■	2.CMC30.C5Z2.400.1	4.0	.157	2.00	20.0	.787	8.0	6	55	2.17	2
■	2.CMC30.C5Z2.600.1	6.0	.236	3.00	30.0	1.18	12.0	10	65	2.56	2
■	2.CMC30.C5Z2.800.1	8.0	.315	4.00	40.0	1.57	16.0	12	80	3.15	2

Cutting process: It is available on www.mikrontool.com

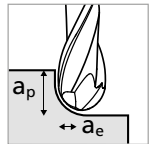


CrazyMill Cool Ball - Type A - Roughing

MILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW



Roughing



■ $a_p = 0.5 \times d_1$
($\varnothing d_1 \leq 0.5 \text{ mm}$ | .020")

■ $a_p = 1 \times d_1$
($\varnothing d_1 > 0.5 \text{ mm}$ | .020")

■ $a_e = 0.3 \times d_1$

Machining angle = 0°

Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	Ød1 0.3–0.4 mm .012"–.016"	
					v_c	f_z
P	Unalloyed carbon steel Rm < 800 N/mm²	1.0301	C10	AISI 1010	60 197	0.005–0.007 .00020–.00028
		1.0401	C15	AISI 1015		
		1.1191	C45E/CK45	AISI 1045		
		1.0044	S275JR	AISI 1020		
		1.0715	11SMn30	AISI 1215		
	Low alloyed steel Rm > 900 N/mm²	1.5752	15NiCr13	ASTM 3415 / AISI 3310	60 197	0.004–0.006 .00016–.00024
		1.7131	16MnCr5	AISI 5115		
		1.3505	100Cr6	AISI 52100		
		1.7225	42CrMo4	AISI 4140		
		1.2842	90MnCrV8	AISI O2		
	High alloyed tool steel Rm < 1200 N/mm²	1.2379	X153CrMoV12	AISI D2	60 197	0.004–0.006 .00016–.00024
		1.2436	X210CrW12	AISI D4/D6		
		1.3343	HS6-5-2C	AISI M2 / UNS T11302		
		1.3355	HS18-0-1	AISI T1 / UNS T12001		
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430 / UNS S43000	60 197	0.005–0.007 .00020–.00028
		1.4105	X6CrMoS17	AISI 430F		
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	60 197	0.004–0.006 .00016–.00024
		1.4112	X90CrMoV18	AISI 440B		
	Stainless steel martensitic – PH	1.4542	X5CrNiCuNb 16-4	AISI 630 / ASTM 17-4 PH	60 197	0.004–0.006 .00016–.00024
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH		
	Stainless steel austenitic	1.4301	X5CrNi 18-10	AISI 304	60 197	0.004–0.006 .00016–.00024
		1.4435	X2CrNiMo 18-14-3	AISI 316L		
		1.4441	X2CrNiMo 18-14-3	AISI 316LM		
K	Cast iron	1.4539	X1NiCrMoCu 25-20-5	AISI 904L		
		0.6020	GG20	ASTM 30	60 197	0.003–0.005 .00012–.00020
		0.6030	GG30	ASTM 40B		
		0.7040	GGG40	ASTM 60-40-18		
		0.7060	GGG60	ASTM 80-60-03		
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351	60 197	0.006–0.008 .00024–.00031
		3.4365	AlZnMgCu1.5	ASTM 7075		
	Aluminium alloy cast	3.2163	GD-AlSi9Cu3	ASTM A380	60 197	0.006–0.008 .00024–.00031
		3.2381	GD-AlSi10Mg	UNS A03590		
	Copper	2.004	Cu-OF / CW008A	UNS C10100	60 197	0.006–0.008 .00024–.00031
		2.0065	Cu-ETP / CW004A	UNS C11000		
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400	60 197	0.006–0.008 .00024–.00031
		2.036	CuZn40 CW509L	UNS C28000		
	Brass, Bronze Rm < 400 N/mm²	2.0401	CuZn39Pb3 / CW614N	UNS C38500	60 197	0.006–0.008 .00024–.00031
		2.102	CuSn6	UNS C51900		
	Bronze Rm < 600 N/mm²	2.0966	CuAl10Ni5Fe4	UNS C63000	60 197	0.006–0.008 .00024–.00031
		2.096	CuAl9Mn2	UNS C63200		
S ₁	Super alloys	2.4856		Inconel 625	60 197	0.003–0.004 .00012–.00016
		2.4668		Inconel 718		
		2.4617	NiMo28	Hastelloy B-2		
		2.4665	NiCr22Fe18Mo	Hastelloy X		
S ₂	Titanium pure	3.7035	Gr.2	ASTM B348 / F67	60 197	0.004–0.006 .00016–.00024
		3.7065	Gr.4	ASTM B348 / F68		
	Titanium alloys	3.7165	TiAl6V4	ASTM B348 / F136	60 197	0.004–0.006 .00016–.00024
		9.9367	TiAl6Nb7	ASTM F1295		
S ₃	Cr-Co alloys	2.4964	CoCr20W15Ni	Haynes 25	60 197	0.003–0.004 .00012–.00016
			CrCoMo28	ASTM F1537		
H ₁	Hardened steel < 55 HRC	1.2510	100MnCrMoW4	AISI O1	60 197	0.004–0.006 .00016–.00024
H ₂	Hardened steel ≥ 55 HRC	1.2379	X153CrMoV12	AISI D2		

V_c [m/min] | [**SFM**]
f_z [mm] | [**IPT**]

RECOMMENDATION FOR USE

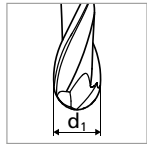
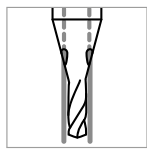
● Excellent | ○ Good | ○ Acceptable | ☒ Not recommended



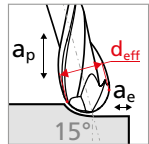
Ød1 0.5–0.8 mm .020"–.031"		Ød1 1.0–1.2 mm .039"–.047"		Ød1 1.5–1.8 mm .059"–.071"		Ød1 2.0–2.5 mm .079"–.098"		Ød1 3.0 mm .118"		Ød1 4.0–6.0 mm .157"–.236"		Ød1 8.0 mm .315"	
V _c	f _z	V _c	f _z	V _c	f _z	V _c	f _z	V _c	f _z	V _c	f _z	V _c	f _z
100 328	0.010–0.014 .00039–.00055	140 459	0.015–0.017 .00059–.00067	200 656	0.024–0.026 .00094–.00102	220 722	0.034–0.036 .00134–.00142	240 787	0.048 .00189	280 919	0.050 .00197	280 919	0.050 .00197
100 328	0.009–0.012 .00035–.00047	140 459	0.014–0.016 .00055–.00063	200 656	0.022–0.024 .00087–.00094	220 722	0.032–0.034 .00126–.00134	240 787	0.046 .00181	280 919	0.048 .00189	280 919	0.048 .00189
100 328	0.008–0.011 .00031–.00043	140 459	0.011–0.013 .00043–.00051	200 656	0.020–0.022 .00079–.00087	220 722	0.030–0.032 .00118–.00126	240 787	0.042 .00165	280 919	0.044 .00173	280 919	0.044 .00173
100 328	0.010–0.014 .00039–.00055	140 459	0.016–0.018 .00063–.00071	200 656	0.024–0.026 .00094–.00102	220 722	0.034–0.036 .00134–.00142	240 787	0.046 .00181	280 919	0.048 .00189	280 919	0.048 .00189
100 328	0.009–0.012 .00035–.00047	140 459	0.015–0.017 .00059–.00067	200 656	0.022–0.024 .00087–.00094	220 722	0.032–0.034 .00126–.00134	240 787	0.044 .00173	280 919	0.046 .00181	280 919	0.046 .00181
100 328	0.009–0.012 .00035–.00047	140 459	0.015–0.017 .00059–.00067	200 656	0.022–0.024 .00087–.00094	220 722	0.032–0.034 .00126–.00134	240 787	0.044 .00173	280 919	0.046 .00181	280 919	0.046 .00181
100 328	0.008–0.011 .00031–.00043	140 459	0.012–0.014 .00047–.00055	200 656	0.016–0.018 .00063–.00071	220 722	0.030–0.032 .00118–.00126	240 787	0.042 .00165	280 919	0.044 .00173	280 919	0.044 .00173
100 328	0.006–0.009 .00024–.00035	120 394	0.011–0.022 .00043–.00087	140 459	0.024–0.026 .00094–.00102	160 525	0.028–0.036 .00110–.00142	180 591	0.042–0.048 .00165–.00189	200 656	0.052–0.057 .00205–.00224	200 656	0.052–0.057 .00205–.00224
100 328	0.012–0.016 .00047–.00063	140 459	0.018–0.020 .00071–.00079	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.060 .00236	280 919	0.060 .00236
100 328	0.012–0.016 .00047–.00063	140 459	0.018–0.020 .00071–.00079	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.060 .00236	280 919	0.060 .00236
100 328	0.014–0.018 .00055–.00071	140 459	0.020–0.022 .00079–.00087	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.060 .00236	280 919	0.060 .00236
100 328	0.014–0.018 .00055–.00071	140 459	0.020–0.022 .00079–.00087	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.060 .00236	280 919	0.060 .00236
100 328	0.014–0.018 .00055–.00071	140 459	0.020–0.022 .00079–.00087	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.060 .00236	280 919	0.060 .00236
100 328	0.012–0.016 .00047–.00063	140 459	0.018–0.020 .00071–.00079	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.060 .00236	280 919	0.060 .00236
100 328	0.004–0.006 .00016–.00024	120 394	0.007–0.008 .00028–.00031	130 427	0.009–0.010 .00035–.00039	140 459	0.010–0.012 .000639–.00047	150 492	0.015 .00059	170 558	0.020 .00079	170 558	0.020 .00079
100 328	0.008–0.011 .00031–.00043	120 394	0.016–0.018 .00063–.00071	130 427	0.020–0.022 .00079–.00087	140 459	0.028–0.030 .00110–.00118	150 492	0.042 .00165	170 558	0.044 .00173	170 558	0.044 .00173
100 328	0.008–0.011 .00031–.00043	120 394	0.016–0.018 .00063–.00071	130 427	0.020–0.022 .00079–.00087	140 459	0.028–0.030 .00110–.00118	150 492	0.042 .00165	170 558	0.044 .00173	170 558	0.044 .00173
100 328	0.004–0.006 .00016–.00024	140 459	0.007–0.008 .00028–.00031	180 591	0.009–0.010 .00035–.00039	200 656	0.010–0.012 .000639–.00047	220 722	0.015 .00059	240 787	0.020 .00079	240 787	0.020 .00079
80 262	0.007–0.009 .00028–.00035	100 328	0.010–0.012 .000639–.00047	140 459	0.014–0.018 .00055–.00071	180 591	0.020–0.026 .00079–.00102	200 656	0.035 .00138	240 787	0.040 .00157	240 787	0.040 .00157

CrazyMill Cool Ball - Type A - Semi-finishing

MILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW



Semi-finishing



■ $a_p = 0.25 \times d_1$
($\varnothing d_1 \leq 0.5 \text{ mm} | .020''$)

■ $a_p = 0.5 \times d_1$
($\varnothing d_1 > 0.5 \text{ mm} | .020''$)

■ $a_e = 0.1 \times d_1$

Machining angle = 15°

Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	Ød1 0.3 mm .012"			Ød1 0.4 mm .016"			Ød1 0.5 mm .020"			Ød1 0.6 mm .024"		
					v_c	d_{eff}	f_z	v_c	d_{eff}	f_z	v_c	d_{eff}	f_z	v_c	d_{eff}	f_z
P	Unalloyed carbon steel Rm < 800 N/mm²	1.0301	C10	AISI 1010												
		1.0401	C15	AISI 1015												
		1.1191	C45E/CK45	AISI 1045	55	0.29	0.005	73	0.39	0.007	92	0.48	0.010	100	0.60	0.012
		1.0044	S275JR	AISI 1020	180	.011	.00020	240	.015	.00028	302	.019	.00039	328	.024	.00047
		1.0715	11SMn30	AISI 1215												
	Low alloyed steel Rm > 900 N/mm²	1.5752	15NiCr13	ASTM 3415												
		1.7131	16MnCr5	AISI 5115												
		1.3505	100Cr6	AISI 52100	55	0.29	0.004	73	0.39	0.006	92	0.48	0.009	100	0.60	0.011
		1.7225	42CrMo4	AISI 4140	180	.011	.00016	240	.015	.00024	302	.019	.00035	328	.024	.00043
		1.2842	90MnCrV8	AISI O2												
	High alloyed tool steel Rm < 1200 N/mm²	1.2379	X153CrMoV12	AISI D2												
		1.2436	X210CrW12	AISI D4/D6	55	0.29	0.004	73	0.39	0.006	92	0.48	0.008	100	0.60	0.009
		1.3343	H56-5-2C	AISI M2	180	.011	.00016	240	.015	.00024	302	.019	.00031	328	.024	.00035
		1.3355	HS18-0-1	AISI T1												
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430	55	0.29	0.005	73	0.39	0.007	92	0.48	0.010	100	0.60	0.012
		1.4105	X6CrMoS17	AISI 430F	180	.011	.00020	240	.015	.00028	302	.019	.00039	328	.024	.00047
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	55	0.29	0.004	73	0.39	0.006	92	0.48	0.009	100	0.60	0.010
		1.4112	X90CrMoV18	AISI 440B	180	.011	.00016	240	.015	.00024	302	.019	.00035	328	.024	.00039
	Stainless steel martensitic – PH	1.4542	X5CrNiCuNb 16-4	AISI 630	55	0.29	0.004	73	0.39	0.006	92	0.48	0.009	100	0.60	0.010
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH	180	.011	.00016	240	.015	.00024	302	.019	.00035	328	.024	.00039
	Stainless steel austenitic	1.4301	X5CrNi 18-10	AISI 304												
		1.4435	X2CrNiMo 18-14-3	AISI 316L	55	0.29	0.004	73	0.39	0.006	92	0.48	0.008	100	0.60	0.010
		1.4441	X2CrNiMo 18-14-3	AISI 316LM	180	.011	.00016	240	.015	.00024	302	.019	.00031	328	.024	.00039
		1.4539	X1NiCrMoCu 25-20-5	AISI 904L												
K	Cast iron	0.6020	GG20	ASTM 30												
		0.6030	GG30	ASTM 40B	55	0.29	0.003	73	0.39	0.005	92	0.48	0.006	100	0.60	0.008
		0.7040	GGG40	ASTM 60-40-18	180	.011	.00012	240	.015	.00020	302	.019	.00024	328	.024	.00030
		0.7060	GGG60	ASTM 80-60-03												
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351	55	0.29	0.006	73	0.39	0.008	92	0.48	0.012	100	0.60	0.014
		3.4365	AlZnMgCu1.5	ASTM 7075	180	.011	.00024	240	.015	.00031	302	.019	.00047	328	.024	.00055
	Aluminium alloy cast	3.2163	GD-AlSi9Cu3	ASTM A380	55	0.29	0.006	73	0.39	0.008	92	0.48	0.012	100	0.60	0.014
		3.2381	GD-AlSi10Mg	UNS A03590	180	.011	.00024	240	.015	.00031	302	.019	.00047	328	.024	.00055
	Copper	2.004	Cu-OF / CW008A	UNS C10100	55	0.29	0.006	73	0.39	0.008	92	0.48	0.014	100	0.60	0.016
		2.0065	Cu-ETP / CW004A	UNS C11000	180	.011	.00024	240	.015	.00031	302	.019	.00055	328	.024	.00063
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400	55	0.29	0.006	73	0.39	0.008	92	0.48	0.014	100	0.60	0.016
		2.036	CuZn40 CW509L	UNS C28000	180	.011	.00024	240	.015	.00031	302	.019	.00055	328	.024	.00063
	Brass, Bronze Rm < 400 N/mm²	2.0401	CuZn39Pb3 / CW614N	UNS C38500	55	0.29	0.006	73	0.39	0.008	92	0.48	0.014	100	0.60	0.016
		2.102	CuSn6	UNS C51900	180	.011	.00024	240	.015	.00031	302	.019	.00055	328	.024	.00063
	Bronze Rm < 600 N/mm²	2.0966	CuAl10Ni5Fe4	UNS C63000	55	0.29	0.006	73	0.39	0.008	92	0.48	0.012	100	0.60	0.014
		2.096	CuAl9Mn2	UNS C63200	180	.011	.00024	240	.015	.00031	302	.019	.00047	328	.024	.00055
S ₁	Super alloys	2.4856		Inconel 625												
		2.4668		Inconel 718												
		2.4617	NiMo28	Hastelloy B-2	55	0.29	0.003	73	0.39	0.004	92	0.48	0.004	100	0.60	0.005
		2.4665	NiCr22Fe18Mo	Hastelloy X	180	.011	.00012	240	.015	.00016	302	.019	.00016	328	.024	.00020
S ₂	Titanium pure	3.7035	Gr.2	ASTM B348	55	0.29	0.004	73	0.39	0.004	92	0.48	0.008	100	0.60	0.009
		3.7065	Gr.4	ASTM B348	180	.011	.00016	240	.015	.00016	302	.019	.00031	328	.024	.00035
S ₃	Titanium alloys	3.7165	TiAl6V4	ASTM B348	55	0.29	0.004	73	0.39	0.004	92	0.48	0.008	100	0.60	0.009
		9.9367	TiAl6Nb7	ASTM F1295	180	.011	.00016	240	.015	.00016	302	.019	.00031	328	.024	.00035
H ₁	Hardened steel < 55 HRC	2.4964	CoCr20W15Ni	Haynes 25	55	0.29	0.003	73	0.39	0.003	92	0.48	0.005	100	0.60	0.005
			CrCoMo28	ASTM F1537	180	.011	.00012	240	.015	.00012	302	.019	.00020	328	.024	.00020
H ₂	Hardened steel ≥ 55 HRC	1.2510	100MnCrMoW4	AISI O1	55	0.29	0.004	73	0.39	0.006	92	0.48	0.007	80	0.60	0.008
		1.2379	X153CrMoV12	AISI D2	180	.011	.00016	240	.015	.00024	302	.019	.00028	262	.024	.00031

v_c [m/min] | [SFM]

f_z [mm] | [IPT]

d_{eff} [mm] | [inch]

RECOMMENDATION FOR USE

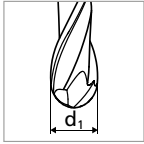
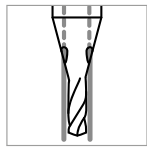
● Excellent | ○ Good | ○ Acceptable | ✗ Not recommended



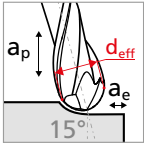
	Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1		
	0.8mm .032"			1.0mm .039"			1.2mm .047"			1.5 .059"			1.8mm .071"			2.0mm .079"			2.5mm .098"			3.0mm .118"			4.0mm .158"			6.0mm .236"			8.0mm .315"								
	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z			
	100	0.80	0.014	140	1.00	0.015	140	1.20	0.017	200	1.50	0.024	200	1.80	0.026	220	2.00	0.034	220	2.50	0.036	240	3.00	0.048	260	4.00	0.050	260	6.00	0.050	260	8.00	0.050						
	328	.032	.00055	459	.039	.00059	459	.047	.00067	656	.059	.00094	656	.071	.00102	722	.079	.00134	722	.098	.00142	787	.118	.00189	853	.158	.00197	853	.236	.00197	853	.315	.00197						
	100	0.80	0.012	140	1.00	0.014	140	1.20	0.016	200	1.50	0.022	200	1.80	0.024	220	2.00	0.032	220	2.50	0.034	240	3.00	0.046	260	4.00	0.048	260	6.00	0.048	260	8.00	0.048						
	328	.032	.00047	459	.039	.00055	459	.047	.00063	656	.059	.00087	656	.071	.00094	722	.079	.00126	722	.098	.00134	787	.118	.00181	853	.158	.00189	853	.236	.00189	853	.315	.00189						
	100	0.80	0.011	140	1.00	0.011	140	1.20	0.013	200	1.50	0.020	200	1.80	0.022	220	2.00	0.030	220	2.50	0.032	240	3.00	0.042	260	4.00	0.044	260	6.00	0.044	260	8.00	0.044						
	328	.032	.00043	459	.039	.00043	459	.047	.00051	656	.059	.00079	656	.071	.00087	722	.079	.00118	722	.098	.00126	787	.118	.00165	853	.158	.00173	853	.236	.00173	853	.315	.00173						
	100	0.80	0.014	140	1.00	0.016	140	1.20	0.018	200	1.50	0.024	200	1.80	0.026	220	2.00	0.034	220	2.50	0.036	240	3.00	0.046	260	4.00	0.048	260	6.00	0.048	260	8.00	0.048						
	328	.032	.00055	459	.039	.00063	459	.047	.00071	656	.059	.00094	656	.071	.00102	722	.079	.00134	722	.098	.00142	787	.118	.00181	853	.158	.00189	853	.236	.00189	853	.315	.00189						
	100	0.80	0.012	140	1.00	0.015	140	1.20	0.017	200	1.50	0.022	200	1.80	0.024	220	2.00	0.032	220	2.50	0.034	240	3.00	0.044	260	4.00	0.046	260	6.00	0.046	260	8.00	0.046						
	328	.032	.00047	459	.039	.00059	459	.047	.00067	656	.059	.00087	656	.071	.00094	722	.079	.00126	722	.098	.00134	787	.118	.00173	853	.158	.00181	853	.236	.00181	853	.315	.00181						
	100	0.80	0.012	140	1.00	0.015	140	1.20	0.017	200	1.50	0.022	200	1.80	0.024	220	2.00	0.032	220	2.50	0.034	240	3.00	0.044	260	4.00	0.046	260	6.00	0.046	260	8.00	0.046						
328	.032	.00047	459	.039	.00059	459	.047	.00067	656	.059	.00087	656	.071	.00094	722	.079	.00126	722	.098	.00134	787	.118	.00173	853	.158	.00181	853	.236	.00181	853	.315	.00181							
	100	0.80	0.011	140	1.00	0.012	140	1.20	0.014	200	1.50	0.016	200	1.80	0.018	220	2.00	0.030	220	2.50	0.032	240	3.00	0.042	260	4.00	0.044	260	6.00	0.044	260	8.00	0.044						
	328	.032	.00043	459	.039	.00047	459	.047	.00055	656	.059	.00063	656	.071	.00071	722	.079	.00118	722	.098	.00126	787	.118	.00165	853	.158	.00173	853	.236	.00173	853	.315	.00173						
	100	0.80	0.009	120	1.00	0.011	120	1.20	0.022	140	1.50	0.024	140	1.80	0.026	160	2.00	0.028	160	2.50	0.036	180	3.00	0.044	200	4.00	0.055	200	6.00	0.055	200	8.00	0.055						
	328	.032	.00035	394	.039	.00043	394	.047	.00087	459	.059	.00094	459	.071	.00102	525	.079	.00110	525	.098	.00142	591	.118	.00173	656	.158	.00217	656	.236	.00217	656	.315	.00217						
	100	0.80	0.016	140	1.00	0.018	140	1.20	0.020	200	1.50	0.026	200	1.80	0.028	220	2.00	0.036	220	2.50	0.040	240	3.00	0.058	260	4.00	0.060	260	6.00	0.060	260	8.00	0.060						
	328	.032	.00063	459	.039	.00071	459	.047	.00079	656	.059	.00102	656	.071	.00110	722	.079	.00142	722	.098	.00157	787	.118	.00228	853	.158	.00236	853	.236	.00236	853	.315	.00236						
	100	0.80	0.016	140	1.00	0.018	140	1.20	0.020	200	1.50	0.026	200	1.80	0.028	220	2.00	0.036	220	2.50	0.040	240	3.00	0.058	260	4.00	0.060	260	6.00	0.060	260	8.00	0.060						
	328	.032	.00063	459	.039	.00071	459	.047	.00079	656	.059	.00102	656	.071	.00110	722	.079	.00142	722	.098	.00157	787	.118	.00228	853	.158	.00236	853	.236	.00236	853	.315	.00236						
	100	0.80	0.018	140	1.00	0.020	140	1.20	0.022	200	1.50	0.026	200	1.80	0.028	220	2.00	0.036	220	2.50	0.040	240	3.00	0.058	260	4.00	0.060	260	6.00	0.060	260	8.00	0.060						
	328	.032	.00071	459	.039	.00079	459	.047	.00087	656	.059	.00102	656	.071	.00110	722	.079	.00142	722	.098	.00157	787	.118	.00228	853	.158	.00236	853	.236	.00236	853	.315	.00236						
	100	0.80	0.018	140	1.00	0.020	140	1.20	0.022	200	1.50	0.026	200	1.80	0.028	220	2.00	0.036	220	2.50	0.040	240	3.00	0.058	260	4.00	0.060	260	6.00	0.060	260	8.00	0.060						
328	.032	.00071	459	.039	.00079	459	.047	.00087	656	.059	.00102	656	.071	.00110	722	.079	.00142	722	.098	.00157	787	.118	.00228	853	.158	.00236	853	.236	.00236	853	.315	.00236							
	100	0.80	0.016	140	1.00	0.018	140	1.20	0.020	200	1.50	0.026	200	1.80	0.028	220	2.00	0.036	220	2.50	0.040	240	3.00	0.058	260	4.00	0.060	260	6.00	0.060	260	8.00	0.060						
	328	.032	.00063	459	.039	.00071	459	.047	.00079	656	.059	.00102	656	.071	.00110	722	.079	.00142	722	.098	.00157	787	.118	.00228	853	.158	.00236	853	.236	.00236	853	.315	.00236						
	100	0.80	0.006	120	1.00	0.007	120	1.20	0.008	130	1.50	0.009	130	1.80	0.010	140	2.00	0.010	140	2.50	0.012	150	3.00	0.015	170	4.00	0.020	170	6.00	0.020	170	8.00	0.020						
	328	.032	.00024	394	.039	.00028	394	.047	.00031	427	.059	.00035	427	.071	.00039	459	.079	.00039	459	.098	.00047	492	.118	.00059	558	.158	.00079	558	.236	.00079	558	.315	.00079						
	100	0.80	0.011	120	1.00	0.016	120	1.20	0.018	130	1.50	0.020	130	1.80	0.022	140	2.00	0.028	140	2.50	0.030	150	3.00	0.042	170	4.00	0.044	170	6.00	0.044	170	8.00	0.044						
	328	.032	.00043	394	.039	.00063	394	.047	.00071	427	.059	.00079	427	.071	.00087	459	.079	.00110	459	.098	.00118	492	.118	.00165	558	.158	.00173	558	.236	.00173	558	.315	.00173						
	100	0.80	0.011	120	1.00	0.016	12																																

CrazyMill Cool Ball - Type A - Finishing

MILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW



Finishing



■ $a_p = 0.1 \times d_1$

■ $a_e = 0.05 \times d_1$

Machining angle = 15°

$n_{max} = 60'000 \text{ rpm}$

Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	Ød1 0.3 mm .012"			Ød1 0.4 mm .016"			Ød1 0.5 mm .020"			Ød1 0.6 mm .024"			
					v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	
P	Unalloyed carbon steel Rm < 800 N/mm²	1.0301	C10	AISI 1010	45 148	0.24 .009	0.006 .00024	59 194	0.31 .012	0.008 .00033	74 243	0.39 .015	0.012 .00047	89 292	0.47 .019	0.014 .00057	
		1.0401	C15	AISI 1015													
		1.1191	C45E/CK45	AISI 1045													
		1.0044	S275JR	AISI 1020													
		1.0715	11SMn30	AISI 1215													
	Low alloyed steel Rm > 900 N/mm²	1.5752	15NiCr13	ASTM 3415	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.011 .00043	89 292	0.47 .019	0.013 .00052	
		1.7131	16MnCr5	AISI 5115													
		1.3505	100Cr6	AISI 52100													
		1.7225	42CrMo4	AISI 4140													
		1.2842	90MnCrV8	AISI O2													
	High alloyed tool steel Rm < 1200 N/mm²	1.2379	X153CrMoV12	AISI D2	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.010 .00038	89 292	0.47 .019	0.011 .00043	
		1.2436	X210CrW12	AISI D4/D6													
		1.3343	H56-5-2C	AISI M2													
1.3355		HS18-0-1	AISI T1														
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430	45 148	0.24 .009	0.006 .00024	59 194	0.31 .012	0.008 .00033	74 243	0.39 .015	0.012 .00047	89 292	0.47 .019	0.014 .00057	
		1.4105	X6CrMoS17	AISI 430F													
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.011 .00043	89 292	0.47 .019	0.012 .00047	
		1.4112	X90CrMoV18	AISI 440B													
	Stainless steel martensitic – PH	1.4542	X5CrNiCuNb 16-4	AISI 630	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.011 .00043	89 292	0.47 .019	0.012 .00047	
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH													
	Stainless steel austenitic	1.4301	X5CrNi 18-10	AISI 304	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.010 .00038	89 292	0.47 .019	0.012 .00047	
		1.4435	X2CrNiMo 18-14-3	AISI 316L													
		1.4441	X2CrNiMo 18-14-3	AISI 316LM													
1.4539		X1NiCrMoCu 25-20-5	AISI 904L														
K	Cast iron	0.6020	GG20	ASTM 30	45 148	0.24 .009	0.004 .00014	59 194	0.31 .012	0.006 .00024	74 243	0.39 .015	0.007 .00028	89 292	0.47 .019	0.009 .00035	
		0.6030	GG30	ASTM 40B													
		0.7040	GGG40	ASTM 60-40-18													
		0.7060	GGG60	ASTM 80-60-03													
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.014 .00057	89 292	0.47 .019	0.017 .00066	
		3.4365	AlZnMgCu1.5	ASTM 7075													
	Aluminium alloy cast	3.2163	GD-AlSi9Cu3	ASTM A380	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.014 .00057	89 292	0.47 .019	0.017 .00066	
		3.2381	GD-AlSi10Mg	UNS A03590													
	Copper	2.004	Cu-OF / CW008A	UNS C10100	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.017 .00066	89 292	0.47 .019	0.019 .00076	
		2.0065	Cu-ETP / CW004A	UNS C11000													
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.017 .00066	89 292	0.47 .019	0.019 .00076	
		2.036	CuZn40 CW509L	UNS C28000													
	Brass, Bronze Rm < 400 N/mm²	2.0401	CuZn39Pb3 / CW614N	UNS C38500	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.017 .00066	89 292	0.47 .019	0.019 .00076	
		2.102	CuSn6	UNS C51900													
	Bronze Rm < 600 N/mm²	2.0966	CuAl10Ni5Fe4	UNS C63000	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.014 .00057	89 292	0.47 .019	0.017 .00066	
2.096		CuAl9Mn2	UNS C63200														
S ₁	Super alloys	2.4856		Inconel 625	45 148	0.24 .009	0.004 .00014	59 194	0.31 .012	0.005 .00020	74 243	0.39 .015	0.005 .00020	89 292	0.47 .019	0.006 .00024	
		2.4668		Inconel 718													
		2.4617	NiMo28	Hastelloy B-2													
		2.4665	NiCr22Fe18Mo	Hastelloy X													
S ₂	Titanium pure	3.7035	Gr.2	ASTM B348	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.005 .00020	74 243	0.39 .015	0.010 .00038	100 328	0.47 .019	0.011 .00043	
		3.7065	Gr.4	ASTM B348													
S ₃	Titanium alloys	3.7165	TiAl6V4	ASTM B348	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.005 .00020	74 243	0.39 .015	0.010 .00038	89 292	0.47 .019	0.011 .00043	
		9.9367	TiAl6Nb7	ASTM F1295													
S ₃	Cr-Co alloys	2.4964	CoCr20W15Ni	Haynes 25	45 148	0.24 .009	0.004 .00014	59 194	0.31 .012	0.004 .00014	74 243	0.39 .015	0.006 .00024	89 292	0.47 .019	0.006 .00024	
			CrCoMo28	ASTM F1537													
H ₁ H ₂	Hardened steel < 55 HRC	1.2510	100MnCrMoW4	AISI O1	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.008 .00033	80 262	0.47 .019	0.010 .00038	
	Hardened steel ≥ 55 HRC	1.2379	X153CrMoV12	AISI D2													

v_c [m/min] | [SFM]

f_z [mm] | [IPT]

d_{eff} [mm] | [inch]

RECOMMENDATION FOR USE

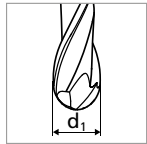
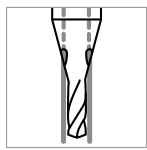
● Excellent | ○ Good | ○ Acceptable | ✗ Not recommended



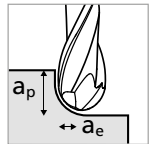
	Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1		
	0.8mm .032"			1.0mm .039"			1.2mm .047"			1.5 .059"			1.8mm .071"			2.0mm .079"			2.5mm .098"			3.0mm .118"			4.0mm .158"			6.0mm .236"			8.0mm .315"					
	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z			
	100	0.63	0.017	140	0.79	0.018	140	0.94	0.020	200	1.18	0.029	200	1.42	0.031	220	1.57	0.041	220	1.97	0.043	240	2.36	0.058	260	3.15	0.060	260	4.72	0.060	260	6.29	0.060			
	328	.025	.00066	459	.031	.00071	459	.037	.00080	656	.046	.00113	656	.056	.00123	722	.062	.00161	722	.077	.00170	787	.093	.00227	853	.124	.00236	853	.186	.00236	853	.248	.00236			
	100	0.63	0.014	140	0.79	0.017	140	0.94	0.019	200	1.18	0.026	200	1.42	0.029	220	1.57	0.038	220	1.97	0.041	240	2.36	0.055	260	3.15	0.058	260	4.72	0.058	260	6.29	0.058			
	328	.025	.00057	459	.031	.00066	459	.037	.00076	656	.046	.00104	656	.056	.00113	722	.062	.00151	722	.077	.00161	787	.093	.00217	853	.124	.00227	853	.186	.00227	853	.248	.00227			
	100	0.63	0.013	140	0.79	0.013	140	0.94	0.016	200	1.18	0.024	200	1.42	0.026	220	1.57	0.036	220	1.97	0.038	240	2.36	0.050	260	3.15	0.053	260	4.72	0.053	260	6.29	0.053			
	328	.025	.00052	459	.031	.00052	459	.037	.00061	656	.046	.00094	656	.056	.00104	722	.062	.00142	722	.077	.00151	787	.093	.00198	853	.124	.00208	853	.186	.00208	853	.248	.00208			
	100	0.63	0.014	140	0.79	0.019	140	0.94	0.022	200	1.18	0.029	200	1.42	0.031	220	1.57	0.041	220	1.97	0.043	240	2.36	0.055	260	3.15	0.058	260	4.72	0.058	260	6.29	0.058			
	328	.025	.00057	459	.031	.00076	459	.037	.00085	656	.046	.00113	656	.056	.00123	722	.062	.00161	722	.077	.00170	787	.093	.00217	853	.124	.00227	853	.186	.00227	853	.248	.00227			
	100	0.63	0.014	140	0.79	0.018	140	0.94	0.020	200	1.18	0.026	200	1.42	0.029	220	1.57	0.038	220	1.97	0.041	240	2.36	0.053	260	3.15	0.055	260	4.72	0.055	260	6.29	0.055			
	328	.025	.00057	459	.031	.00071	459	.037	.00080	656	.046	.00104	656	.056	.00113	722	.062	.00151	722	.077	.00161	787	.093	.00208	853	.124	.00217	853	.186	.00217	853	.248	.00217			
	100	0.63	0.013	140	0.79	0.018	140	0.94	0.020	200	1.18	0.026	200	1.42	0.029	220	1.57	0.038	220	1.97	0.041	240	2.36	0.053	260	3.15	0.055	260	4.72	0.055	260	6.29	0.055			
	328	.025	.00052	459	.031	.00071	459	.037	.00080	656	.046	.00104	656	.056	.00113	722	.062	.00151	722	.077	.00161	787	.093	.00208	853	.124	.00217	853	.186	.00217	853	.248	.00217			
	100	0.63	0.011	140	0.79	0.014	140	0.94	0.017	200	1.18	0.019	200	1.42	0.022	220	1.57	0.036	220	1.97	0.038	240	2.36	0.050	260	3.15	0.053	260	4.72	0.053	260	6.29	0.053			
	328	.025	.00043	459	.031	.00057	459	.037	.00066	656	.046	.00076	656	.056	.00085	722	.062	.00142	722	.077	.00151	787	.093	.00198	853	.124	.00208	853	.186	.00208	853	.248	.00208			
	100	0.63	0.011	120	0.79	0.013	120	0.94	0.026	140	1.18	0.029	140	1.42	0.031	160	1.57	0.034	160	1.97	0.043	180	2.36	0.053	200	3.15	0.066	200	4.72	0.066	200	6.29	0.066			
	328	.025	.00048	394	.031	.00052	394	.037	.00104	459	.046	.00113	459	.056	.00123	525	.062	.00132	525	.077	.00170	591	.093	.00208	656	.124	.00260	656	.186	.00260	656	.248	.00260			
	100	0.63	0.019	140	0.79	0.022	140	0.94	0.024	200	1.18	0.031	200	1.42	0.034	220	1.57	0.043	220	1.97	0.048	240	2.36	0.070	260	3.15	0.072	260	4.72	0.072	260	6.29	0.072			
	328	.025	.00076	459	.031	.00085	459	.037	.00094	656	.046	.00123	656	.056	.00132	722	.062	.00170	722	.077	.00189	787	.093	.00274	853	.124	.00283	853	.186	.00283	853	.248	.00283			
	100	0.63	0.019	140	0.79	0.022	140	0.94	0.024	200	1.18	0.031	200	1.42	0.034	220	1.57	0.043	220	1.97	0.048	240	2.36	0.070	260	3.15	0.072	260	4.72	0.072	260	6.29	0.072			
	328	.025	.00076	459	.031	.00085	459	.037	.00094	656	.046	.00123	656	.056	.00132	722	.062	.00170	722	.077	.00189	787	.093	.00274	853	.124	.00283	853	.186	.00283	853	.248	.00283			
	100	0.63	0.022	140	0.79	0.024	140	0.94	0.026	200	1.18	0.031	200	1.42	0.034	220	1.57	0.043	220	1.97	0.048	240	2.36	0.070	260	3.15	0.072	260	4.72	0.072	260	6.29	0.072			
	328	.025	.00085	459	.031	.00094	459	.037	.00104	656	.046	.00123	656	.056	.00132	722	.062	.00170	722	.077	.00189	787	.093	.00274	853	.124	.00283	853	.186	.00283	853	.248	.00283			
	100	0.63	0.022	140	0.79	0.024	140	0.94	0.026	200	1.18	0.031	200	1.42	0.034	220	1.57	0.043	220	1.97	0.048	240	2.36	0.070	260	3.15	0.072	260	4.72	0.072	260	6.29	0.072			
	328	.025	.00085	459	.031	.00094	459	.037	.00104	656	.046	.00123	656	.056	.00132	722	.062	.00170	722	.077	.00189	787	.093	.00274	853	.124	.00283	853	.186	.00283	853	.248	.00283			
	100	0.63	0.019	140	0.79	0.022	140	0.94	0.024	200	1.18	0.031	200	1.42	0.034	220	1.57	0.043	220	1.97	0.048	240	2.36	0.070	260	3.15	0.072	260	4.72	0.072	260	6.29	0.072			
	328	.025	.00076	459	.031	.00085	459	.037	.00094	656	.046	.00123	656	.056	.00132	722	.062	.00170	722	.077	.00189	787	.093	.00274	853	.124	.00283	853	.186	.00283	853	.248	.00283			
	100	0.63	0.007	120	0.79	0.008	120	0.94	0.010	130	1.18	0.011	130	1.42	0.012	140	1.57	0.012	140	1.97	0.014	150	2.36	0.018	170	3.15	0.024	170	4.72	0.024	170	6.29	0.024			
	328	.025	.00028	394	.031	.00033	394	.037	.00038	427	.046	.00043	427	.056	.00047	459	.062	.00047	459	.077	.00057	492	.093	.00071	558	.124	.00094	558	.186	.00094	558	.248	.00094			
	100	0.63	0.013	120	0.79	0.019	120	0.94	0.022	130	1.18	0.024	130	1.42	0.026	140	1.57	0.034	140	1.97	0.036	150	2.36	0.050	170	3.15	0.053	170	4.72	0.053	170	6.29	0.053			
	328	.025	.00052	394	.031	.00076	394	.037	.00085	427	.046	.00094	427	.056	.00104	459	.062	.00132	459	.077	.00142	492	.093	.00198	558	.124	.00208	558	.186	.00208	558	.248	.00208			
	100	0.63	0.013																																	

CrazyMill Cool Ball - Type B - Roughing

MILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW



Roughing



■ $a_p = 0.5 \times d_1$
($\varnothing d_1 \leq 0.5 \text{ mm}$ | .020")

■ $a_p = 1 \times d_1$
($\varnothing d_1 > 0.5 \text{ mm}$ | .020")

■ $a_e = 0.3 \times d_1$

Machining angle = 0°

Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	Ød1 0.3–0.4 mm .012"–.016"	
					v_c	f_z
P	Unalloyed carbon steel Rm < 800 N/mm²	1.0301	C10	AISI 1010	60 197	0.005–0.007 .00020–.00028
		1.0401	C15	AISI 1015		
		1.1191	C45E/CK45	AISI 1045		
		1.0044	S275JR	AISI 1020		
		1.0715	11SMn30	AISI 1215		
	Low alloyed steel Rm > 900 N/mm²	1.5752	15NiCr13	ASTM 3415 / AISI 3310	60 197	0.004–0.006 .00016–.00024
		1.7131	16MnCr5	AISI 5115		
		1.3505	100Cr6	AISI 52100		
		1.7225	42CrMo4	AISI 4140		
		1.2842	90MnCrV8	AISI O2		
	High alloyed tool steel Rm < 1200 N/mm²	1.2379	X153CrMoV12	AISI D2	60 197	0.004–0.006 .00016–.00024
		1.2436	X210CrW12	AISI D4/D6		
		1.3343	HS6-5-2C	AISI M2 / UNS T11302		
		1.3355	HS18-0-1	AISI T1 / UNS T12001		
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430 / UNS S43000	60 197	0.005–0.007 .00020–.00028
		1.4105	X6CrMoS17	AISI 430F		
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	60 197	0.004–0.006 .00016–.00024
		1.4112	X90CrMoV18	AISI 440B		
	Stainless steel martensitic – PH	1.4542	X5CrNiCuNb 16-4	AISI 630 / ASTM 17-4 PH	60 197	0.004–0.006 .00016–.00024
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH		
	Stainless steel austenitic	1.4301	X5CrNi 18-10	AISI 304	60 197	0.004–0.006 .00016–.00024
		1.4435	X2CrNiMo 18-14-3	AISI 316L		
		1.4441	X2CrNiMo 18-14-3	AISI 316LM		
K	Cast iron	0.6020	GG20	ASTM 30	60 197	0.003–0.005 .00012–.00020
		0.6030	GG30	ASTM 40B		
		0.7040	GGG40	ASTM 60-40-18		
		0.7060	GGG60	ASTM 80-60-03		
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351	60 197	0.006–0.008 .00024–.00031
		3.4365	AlZnMgCu1.5	ASTM 7075		
	Aluminium alloy cast	3.2163	GD-AlSi9Cu3	ASTM A380	60 197	0.006–0.008 .00024–.00031
		3.2381	GD-AlSi10Mg	UNS A03590		
	Copper	2.004	Cu-OF / CW008A	UNS C10100	60 197	0.006–0.008 .00024–.00031
		2.0065	Cu-ETP / CW004A	UNS C11000		
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400	60 197	0.006–0.008 .00024–.00031
		2.036	CuZn40 CW509L	UNS C28000		
	Brass, Bronze Rm < 400 N/mm²	2.0401	CuZn39Pb3 / CW614N	UNS C38500	60 197	0.006–0.008 .00024–.00031
		2.102	CuSn6	UNS C51900		
	Bronze Rm < 600 N/mm²	2.0966	CuAl10Ni5Fe4	UNS C63000	60 197	0.006–0.008 .00024–.00031
		2.096	CuAl9Mn2	UNS C63200		
S₁	Super alloys	2.4856		Inconel 625	60 197	0.003–0.004 .00012–.00016
		2.4668		Inconel 718		
		2.4617	NiMo28	Hastelloy B-2		
		2.4665	NiCr22Fe18Mo	Hastelloy X		
S₂	Titanium pure	3.7035	Gr.2	ASTM B348 / F67	60 197	0.004–0.006 .00016–.00024
		3.7065	Gr.4	ASTM B348 / F68		
	Titanium alloys	3.7165	TiAl6V4	ASTM B348 / F136	60 197	0.004–0.006 .00016–.00024
		9.9367	TiAl6Nb7	ASTM F1295		
S₃	Cr-Co alloys	2.4964	CoCr20W15Ni	Haynes 25	60 197	0.003–0.004 .00012–.00016
			CrCoMo28	ASTM F1537		
H₁	Hardened steel < 55 HRC	1.2510	100MnCrMoW4	AISI O1	60 197	0.004–0.006 .00016–.00024
H₂	Hardened steel ≥ 55 HRC	1.2379	X153CrMoV12	AISI D2		

V_c [m/min] | **[SFM]**
f_z [mm] | **[IPT]**

RECOMMENDATION FOR USE

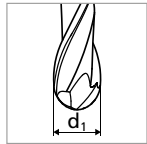
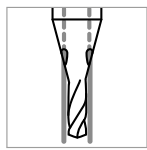
● Excellent | ○ Good | ○ Acceptable | ☒ Not recommended



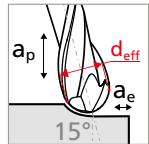
Ød1 0.5–0.8 mm .020"–.031"		Ød1 1.0–1.2 mm .039"–.047"		Ød1 1.5–1.8 mm .059"–.071"		Ød1 2.0–2.5 mm .079"–.098"		Ød1 3.0 mm .118"		Ød1 4.0–6.0 mm .157"–.236"		Ød1 8.0 mm .315"	
V _c	f _z	V _c	f _z	V _c	f _z	V _c	f _z	V _c	f _z	V _c	f _z	V _c	f _z
100 328	0.010–0.014 .00039–.00055	140 459	0.015–0.017 .00059–.00067	200 656	0.024–0.026 .00094–.00102	220 722	0.034–0.036 .00134–.00142	240 787	0.046 .00181	280 919	0.050 .00197	280 919	0.050 .00197
100 328	0.009–0.012 .00035–.00047	140 459	0.014–0.016 .00055–.00063	200 656	0.022–0.024 .00087–.00094	220 722	0.032–0.034 .00126–.00134	240 787	0.044 .00173	280 919	0.048 .00189	280 919	0.048 .00189
100 328	0.008–0.011 .00031–.00043	140 459	0.011–0.013 .00043–.00051	200 656	0.020–0.022 .00079–.00087	220 722	0.030–0.032 .00118–.00126	240 787	0.040 .00157	280 919	0.042 .00165	280 919	0.042 .00165
100 328	0.010–0.014 .00039–.00055	140 459	0.016–0.018 .00063–.00071	200 656	0.024–0.026 .00094–.00102	220 722	0.034–0.036 .00134–.00142	240 787	0.044 .00173	280 919	0.048 .00189	280 919	0.048 .00189
100 328	0.009–0.012 .00035–.00047	140 459	0.015–0.017 .00059–.00067	200 656	0.022–0.024 .00087–.00094	220 722	0.032–0.034 .00126–.00134	240 787	0.044 .00173	280 919	0.046 .00181	280 919	0.046 .00181
100 328	0.009–0.012 .00035–.00047	140 459	0.015–0.017 .00059–.00067	200 656	0.022–0.024 .00087–.00094	220 722	0.032–0.034 .00126–.00134	240 787	0.044 .00173	280 919	0.046 .00181	280 919	0.046 .00181
100 328	0.008–0.011 .00031–.00043	140 459	0.012–0.014 .00047–.00055	200 656	0.016–0.018 .00063–.00071	220 722	0.030–0.032 .00118–.00126	240 787	0.040 .00157	280 919	0.044 .00173	280 919	0.044 .00173
100 328	0.006–0.009 .00024–.00035	120 394	0.011–0.022 .00043–.00087	140 459	0.024–0.026 .00094–.00102	160 525	0.028–0.036 .00110–.00142	180 591	0.040–0.047 .00157–.00185	200 656	0.050–0.054 .00197–.00213	200 656	0.050–0.054 .00197–.00213
100 328	0.012–0.016 .00047–.00063	140 459	0.018–0.020 .00071–.00079	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.060 .00236	280 919	0.060 .00236
100 328	0.012–0.016 .00047–.00063	140 459	0.018–0.020 .00071–.00079	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.060 .00236	280 919	0.060 .00236
100 328	0.014–0.018 .00055–.00071	140 459	0.020–0.022 .00079–.00087	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.060 .00236	280 919	0.060 .00236
100 328	0.014–0.018 .00055–.00071	140 459	0.020–0.022 .00079–.00087	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.060 .00236	280 919	0.060 .00236
100 328	0.014–0.018 .00055–.00071	140 459	0.020–0.022 .00079–.00087	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.060 .00236	280 919	0.060 .00236
100 328	0.012–0.016 .00047–.00063	140 459	0.018–0.020 .00071–.00079	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.060 .00236	280 919	0.060 .00236
100 328	0.004–0.006 .00016–.00024	120 394	0.007–0.008 .00028–.00031	130 427	0.009–0.010 .00035–.00039	140 459	0.010–0.012 .000639–.00047	150 492	0.015 .00059	170 558	0.020 .00079	170 558	0.020 .00079
100 328	0.008–0.011 .00031–.00043	120 394	0.016–0.018 .00063–.00071	130 427	0.020–0.022 .00079–.00087	140 459	0.028–0.030 .00110–.00118	150 492	0.040 .00157	170 558	0.044 .00173	170 558	0.044 .00173
100 328	0.008–0.011 .00031–.00043	120 394	0.016–0.018 .00063–.00071	130 427	0.020–0.022 .00079–.00087	140 459	0.028–0.030 .00110–.00118	150 492	0.040 .00157	170 558	0.044 .00173	170 558	0.044 .00173
100 328	0.004–0.006 .00016–.00024	140 459	0.007–0.008 .00028–.00031	180 591	0.009–0.010 .00035–.00039	200 656	0.010–0.012 .000639–.00047	220 722	0.015 .00059	240 787	0.020 .00079	240 787	0.020 .00079
80 262	0.007–0.009 .00028–.00035	100 328	0.010–0.012 .000639–.00047	140 459	0.014–0.018 .00055–.00071	180 591	0.020–0.026 .00079–.00102	200 656	0.033 .00130	240 787	0.040 .00157	240 787	0.040 .00157

CrazyMill Cool Ball - Type B - Semi-finishing

MILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW



Semi-finishing



■ $a_p = 0.25 \times d_1$
($\varnothing d_1 \leq 0.5 \text{ mm} | .020''$)

■ $a_p = 0.5 \times d_1$
($\varnothing d_1 > 0.5 \text{ mm} | .020''$)

■ $a_e = 0.1 \times d_1$

Machining angle = 15°

Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	Ød1 0.3 mm .012"			Ød1 0.4 mm .016"			Ød1 0.5 mm .020"			Ød1 0.6 mm .024"		
					v_c	d_{eff}	f_z	v_c	d_{eff}	f_z	v_c	d_{eff}	f_z	v_c	d_{eff}	f_z
P	Unalloyed carbon steel $R_m < 800 \text{ N/mm}^2$	1.0301	C10	AISI 1010	55 180	0.29 .011	0.005 .00020	73 240	0.39 .015	0.007 .00028	92 302	0.48 .019	0.010 .00039	100 328	0.60 .024	0.012 .00047
		1.0401	C15	AISI 1015												
		1.1191	C45E/CK45	AISI 1045												
		1.0044	S275JR	AISI 1020												
		1.0715	11SMn30	AISI 1215												
	Low alloyed steel $R_m > 900 \text{ N/mm}^2$	1.5752	15NiCr13	ASTM 3415	55 180	0.29 .011	0.004 .00016	73 240	0.39 .015	0.006 .00024	92 302	0.48 .019	0.009 .00035	100 328	0.60 .024	0.011 .00043
		1.7131	16MnCr5	AISI 5115												
		1.3505	100Cr6	AISI 52100												
		1.7225	42CrMo4	AISI 4140												
		1.2842	90MnCrV8	AISI O2												
	High alloyed tool steel $R_m < 1200 \text{ N/mm}^2$	1.2379	X153CrMoV12	AISI D2	55 180	0.29 .011	0.004 .00016	73 240	0.39 .015	0.006 .00024	92 302	0.48 .019	0.008 .00031	100 328	0.60 .024	0.009 .00035
		1.2436	X210CrW12	AISI D4/D6												
		1.3343	H56-5-2C	AISI M2												
		1.3355	HS18-0-1	AISI T1												
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430	55	0.29	0.005	73	0.39	0.007	92	0.48	0.010	100	0.60	0.012
		1.4105	X6CrMoS17	AISI 430F	180	.011	.00020	240	.015	.00028	302	.019	.00039	328	.024	.00047
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	55	0.29	0.004	73	0.39	0.006	92	0.48	0.009	100	0.60	0.010
		1.4112	X90CrMoV18	AISI 440B	180	.011	.00016	240	.015	.00024	302	.019	.00035	328	.024	.00039
	Stainless steel martensitic – PH	1.4542	X5CrNiCuNb 16-4	AISI 630	55	0.29	0.004	73	0.39	0.006	92	0.48	0.009	100	0.60	0.010
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH	180	.011	.00016	240	.015	.00024	302	.019	.00035	328	.024	.00039
	Stainless steel austenitic	1.4301	X5CrNi 18-10	AISI 304	55 180	0.29 .011	0.004 .00016	73 240	0.39 .015	0.006 .00024	92 302	0.48 .019	0.008 .00031	100 328	0.60 .024	0.010 .00039
K	Cast iron	1.4435	X2CrNiMo 18-14-3	AISI 316L												
		1.4441	X2CrNiMo 18-14-3	AISI 316LM												
		1.4539	X1NiCrMoCu 25-20-5	AISI 904L												
		0.6020	GG20	ASTM 30	55 180	0.29 .011	0.003 .00012	73 240	0.39 .015	0.005 .00020	92 302	0.48 .019	0.006 .00024	100 328	0.60 .024	0.008 .00030
N	Aluminium alloy wrought	0.6030	GG30	ASTM 40B												
		0.7040	GGG40	ASTM 60-40-18												
		0.7060	GGG60	ASTM 80-60-03												
	Aluminium alloy cast	3.2315	AlMgSi1	ASTM 6351	55	0.29	0.006	73	0.39	0.008	92	0.48	0.012	100	0.60	0.014
		3.4365	AlZnMgCu1.5	ASTM 7075	180	.011	.00024	240	.015	.00031	302	.019	.00047	328	.024	.00055
	Copper	3.2163	GD-AlSi9Cu3	ASTM A380	55	0.29	0.006	73	0.39	0.008	92	0.48	0.012	100	0.60	0.014
		3.2381	GD-AlSi10Mg	UNS A03590	180	.011	.00024	240	.015	.00031	302	.019	.00047	328	.024	.00055
	Brass lead free	2.004	Cu-OF / CW008A	UNS C10100	55	0.29	0.006	73	0.39	0.008	92	0.48	0.014	100	0.60	0.016
		2.0065	Cu-ETP / CW004A	UNS C11000	180	.011	.00024	240	.015	.00031	302	.019	.00055	328	.024	.00063
	Brass, Bronze $R_m < 400 \text{ N/mm}^2$	2.0321	CuZn37 CW508L	UNS C27400	55	0.29	0.006	73	0.39	0.008	92	0.48	0.014	100	0.60	0.016
		2.036	CuZn40 CW509L	UNS C28000	180	.011	.00024	240	.015	.00031	302	.019	.00055	328	.024	.00063
	Bronze $R_m < 600 \text{ N/mm}^2$	2.0401	CuZn39Pb3 / CW614N	UNS C38500	55	0.29	0.006	73	0.39	0.008	92	0.48	0.014	100	0.60	0.016
		2.102	CuSn6	UNS C51900	180	.011	.00024	240	.015	.00031	302	.019	.00055	328	.024	.00063
		2.0966	CuAl10Ni5Fe4	UNS C63000	55	0.29	0.006	73	0.39	0.008	92	0.48	0.012	100	0.60	0.014
		2.096	CuAl9Mn2	UNS C63200	180	.011	.00024	240	.015	.00031	302	.019	.00047	328	.024	.00055
S ₁	Super alloys	2.4856		Inconel 625	55 180	0.29 .011	0.003 .00012	73 240	0.39 .015	0.004 .00016	92 302	0.48 .019	0.004 .00016	100 328	0.60 .024	0.005 .00020
		2.4668		Inconel 718												
		2.4617	NiMo28	Hastelloy B-2												
		2.4665	NiCr22Fe18Mo	Hastelloy X												
S ₂	Titanium pure	3.7035	Gr.2	ASTM B348	55	0.29	0.004	73	0.39	0.004	92	0.48	0.008	100	0.60	0.009
		3.7065	Gr.4	ASTM B348	180	.011	.00016	240	.015	.00016	302	.019	.00031	328	.024	.00035
S ₃	Titanium alloys	3.7165	TiAl6V4	ASTM B348	55	0.29	0.004	73	0.39	0.004	92	0.48	0.008	100	0.60	0.009
		9.9367	TiAl6Nb7	ASTM F1295	180	.011	.00016	240	.015	.00016	302	.019	.00031	328	.024	.00035
H ₁	Hardened steel $< 55 \text{ HRC}$	2.4964	CoCr20W15Ni	Haynes 25	55	0.29	0.003	73	0.39	0.003	92	0.48	0.005	100	0.60	0.005
			CrCoMo28	ASTM F1537	180	.011	.00012	240	.015	.00012	302	.019	.00020	328	.024	.00020
H ₂	Hardened steel $\geq 55 \text{ HRC}$	1.2510	100MnCrMoW4	AISI O1	55	0.29	0.004	73	0.39	0.006	92	0.48	0.007	80	0.60	0.008
		1.2379	X153CrMoV12	AISI D2	180	.011	.00016	240	.015	.00024	302	.019	.00028	262	.024	.00031

v_c [m/min] | [SFM]

f_z [mm] | [IPT]

d_{eff} [mm] | [inch]

RECOMMENDATION FOR USE

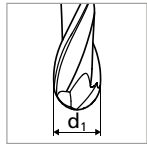
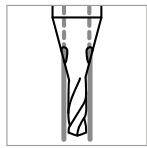
● Excellent | ○ Good | ○ Acceptable | ☒ Not recommended



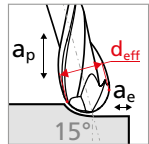
	Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1		
	0.8mm .032"			1.0mm .039"			1.2mm .047"			1.5 .059"			1.8mm .071"			2.0mm .079"			2.5mm .098"			3.0mm .118"			4.0mm .158"			6.0mm .236"			8.0mm .315"					
	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z			
	100	0.80	0.014	140	1.00	0.015	140	1.20	0.017	200	1.50	0.024	200	1.80	0.026	220	2.00	0.034	220	2.50	0.036	240	3.00	0.046	260	4.00	0.050	260	6.00	0.050	260	8.00	0.050			
	328	.032	.00055	459	.039	.00059	459	.047	.00067	656	.059	.00094	656	.071	.00102	722	.079	.00134	722	.098	.00142	787	.118	.00181	853	.158	.00197	853	.236	.00197	853	.315	.00197			
	100	0.80	0.012	140	1.00	0.014	140	1.20	0.016	200	1.50	0.022	200	1.80	0.024	220	2.00	0.032	220	2.50	0.034	240	3.00	0.044	260	4.00	0.048	260	6.00	0.048	260	8.00	0.048			
	328	.032	.00047	459	.039	.00055	459	.047	.00063	656	.059	.00087	656	.071	.00094	722	.079	.00126	722	.098	.00134	787	.118	.00173	853	.158	.00189	853	.236	.00189	853	.315	.00189			
	100	0.80	0.011	140	1.00	0.011	140	1.20	0.013	200	1.50	0.020	200	1.80	0.022	220	2.00	0.030	220	2.50	0.032	240	3.00	0.040	260	4.00	0.042	260	6.00	0.042	260	8.00	0.042			
	328	.032	.00043	459	.039	.00043	459	.047	.00051	656	.059	.00079	656	.071	.00087	722	.079	.00118	722	.098	.00126	787	.118	.00157	853	.158	.00165	853	.236	.00165	853	.315	.00165			
	100	0.80	0.014	140	1.00	0.016	140	1.20	0.018	200	1.50	0.024	200	1.80	0.026	220	2.00	0.034	220	2.50	0.036	240	3.00	0.044	260	4.00	0.048	260	6.00	0.048	260	8.00	0.048			
	328	.032	.00055	459	.039	.00063	459	.047	.00071	656	.059	.00094	656	.071	.00102	722	.079	.00134	722	.098	.00142	787	.118	.00173	853	.158	.00189	853	.236	.00189	853	.315	.00189			
	100	0.80	0.012	140	1.00	0.015	140	1.20	0.017	200	1.50	0.022	200	1.80	0.024	220	2.00	0.032	220	2.50	0.034	240	3.00	0.044	260	4.00	0.046	260	6.00	0.046	260	8.00	0.046			
	328	.032	.00047	459	.039	.00059	459	.047	.00067	656	.059	.00087	656	.071	.00094	722	.079	.00126	722	.098	.00134	787	.118	.00173	853	.158	.00181	853	.236	.00181	853	.315	.00181			
	100	0.80	0.011	140	1.00	0.012	140	1.20	0.014	200	1.50	0.016	200	1.80	0.018	220	2.00	0.030	220	2.50	0.032	240	3.00	0.040	260	4.00	0.044	260	6.00	0.044	260	8.00	0.044			
	328	.032	.00043	459	.039	.00047	459	.047	.00055	656	.059	.00063	656	.071	.00071	722	.079	.00118	722	.098	.00126	787	.118	.00157	853	.158	.00173	853	.236	.00173	853	.315	.00173			
	100	0.80	0.009	120	1.00	0.011	120	1.20	0.022	140	1.50	0.024	140	1.80	0.026	160	2.00	0.028	160	2.50	0.036	180	3.00	0.043	200	4.00	0.050	200	6.00	0.052	200	8.00	0.052			
	328	.032	.00035	394	.039	.00043	394	.047	.00087	459	.059	.00094	459	.071	.00102	525	.079	.00110	525	.098	.00142	591	.118	.00169	656	.158	.00197	656	.236	.00205	656	.315	.00205			
	100	0.80	0.016	140	1.00	0.018	140	1.20	0.020	200	1.50	0.026	200	1.80	0.028	220	2.00	0.036	220	2.50	0.040	240	3.00	0.058	260	4.00	0.060	260	6.00	0.060	260	8.00	0.060			
	328	.032	.00063	459	.039	.00071	459	.047	.00079	656	.059	.00102	656	.071	.00110	722	.079	.00142	722	.098	.00157	787	.118	.00228	853	.158	.00236	853	.236	.00236	853	.315	.00236			
	100	0.80	0.016	140	1.00	0.018	140	1.20	0.020	200	1.50	0.026	200	1.80	0.028	220	2.00	0.036	220	2.50	0.040	240	3.00	0.058	260	4.00	0.060	260	6.00	0.060	260	8.00	0.060			
	328	.032	.00063	459	.039	.00071	459	.047	.00079	656	.059	.00102	656	.071	.00110	722	.079	.00142	722	.098	.00157	787	.118	.00228	853	.158	.00236	853	.236	.00236	853	.315	.00236			
	100	0.80	0.018	140	1.00	0.020	140	1.20	0.022	200	1.50	0.026	200	1.80	0.028	220	2.00	0.036	220	2.50	0.040	240	3.00	0.058	260	4.00	0.060	260	6.00	0.060	260	8.00	0.060			
	328	.032	.00071	459	.039	.00079	459	.047	.00087	656	.059	.00102	656	.071	.00110	722	.079	.00142	722	.098	.00157	787	.118	.00228	853	.158	.00236	853	.236	.00236	853	.315	.00236			
	100	0.80	0.018	140	1.00	0.020	140	1.20	0.022	200	1.50	0.026	200	1.80	0.028	220	2.00	0.036	220	2.50	0.040	240	3.00	0.058	260	4.00	0.060	260	6.00	0.060	260	8.00	0.060			
	328	.032	.00071	459	.039	.00079	459	.047	.00087	656	.059	.00102	656	.071	.00110	722	.079	.00142	722	.098	.00157	787	.118	.00228	853	.158	.00236	853	.236	.00236	853	.315	.00236			
	100	0.80	0.016	140	1.00	0.018	140	1.20	0.020	200	1.50	0.026	200	1.80	0.028	220	2.00	0.036	220	2.50	0.040	240	3.00	0.058	260	4.00	0.060	260	6.00	0.060	260	8.00	0.060			
	328	.032	.00063	459	.039	.00071	459	.047	.00079	656	.059	.00102	656	.071	.00110	722	.079	.00142	722	.098	.00157	787	.118	.00228	853	.158	.00236	853	.236	.00236	853	.315	.00236			
	100	0.80	0.006	120	1.00	0.007	120	1.20	0.008	130	1.50	0.009	130	1.80	0.010	140	2.00	0.010	140	2.50	0.012	150	3.00	0.015	170	4.00	0.020	170	6.00	0.020	170	8.00	0.020			
	328	.032	.00024	394	.039	.00028	394	.047	.00031	427	.059	.00035	427	.071	.00039	459	.079	.00039	459	.098	.00047	492	.118	.00059	558	.158	.00079	558	.236	.00079	558	.315	.00079			
	100	0.80	0.011	120	1.00	0.016	120	1.20	0.018	130	1.50	0.020	130	1.80	0.022	140	2.00	0.028	140	2.50	0.030	150	3.00	0.040	170	4.00	0.044	170	6							

CrazyMill Cool Ball - Type B - Finishing

MILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW



Finishing



■ $a_p = 0.1 \times d_1$

■ $a_e = 0.05 \times d_1$

Machining angle = 15°

$n_{max} = 60'000 \text{ rpm}$

Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	Ød1 0.3 mm .012"			Ød1 0.4 mm .016"			Ød1 0.5 mm .020"			Ød1 0.6 mm .024"		
					v_c	d_{eff}	f_z	v_c	d_{eff}	f_z	v_c	d_{eff}	f_z	v_c	d_{eff}	f_z
P	Unalloyed carbon steel $R_m < 800 \text{ N/mm}^2$	1.0301	C10	AISI 1010	45 148	0.24 .009	0.006 .00024	59 194	0.31 .012	0.008 .00033	74 243	0.39 .015	0.012 .00047	89 292	0.47 .019	0.014 .00057
		1.0401	C15	AISI 1015												
		1.1191	C45E/CK45	AISI 1045												
		1.0044	S275JR	AISI 1020												
		1.0715	11SMn30	AISI 1215												
	Low alloyed steel $R_m > 900 \text{ N/mm}^2$	1.5752	15NiCr13	ASTM 3415	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.011 .00043	89 292	0.47 .019	0.013 .00052
		1.7131	16MnCr5	AISI 5115												
		1.3505	100Cr6	AISI 52100												
		1.7225	42CrMo4	AISI 4140												
		1.2842	90MnCrV8	AISI O2												
	High alloyed tool steel $R_m < 1200 \text{ N/mm}^2$	1.2379	X153CrMoV12	AISI D2	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.010 .00038	89 292	0.47 .019	0.011 .00043
		1.2436	X210CrW12	AISI D4/D6												
		1.3343	H56-5-2C	AISI M2												
		1.3355	HS18-0-1	AISI T1												
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430	45 148	0.24 .009	0.006 .00024	59 194	0.31 .012	0.008 .00033	74 243	0.39 .015	0.012 .00047	89 292	0.47 .019	0.014 .00057
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.011 .00043	89 292	0.47 .019	0.012 .00047
	Stainless steel martensitic – PH	1.4542	X5CrNiCuNb 16-4	AISI 630	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.011 .00043	89 292	0.47 .019	0.012 .00047
	Stainless steel austenitic	1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.010 .00038	89 292	0.47 .019	0.012 .00047
		1.4301	X5CrNi 18-10	AISI 304												
		1.4435	X2CrNiMo 18-14-3	AISI 316L												
		1.4441	X2CrNiMo 18-14-3	AISI 316LM												
K	Cast iron	0.6020	GG20	ASTM 30	45 148	0.24 .009	0.004 .00014	59 194	0.31 .012	0.006 .00024	74 243	0.39 .015	0.007 .00028	89 292	0.47 .019	0.009 .00035
		0.6030	GG30	ASTM 40B												
		0.7040	GGG40	ASTM 60-40-18												
		0.7060	GGG60	ASTM 80-60-03												
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.014 .00057	89 292	0.47 .019	0.017 .00066
	Aluminium alloy cast	3.4365	AlZnMgCu1.5	ASTM 7075	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.014 .00057	89 292	0.47 .019	0.017 .00066
		3.2163	GD-AlSi9Cu3	ASTM A380												
	Copper	3.2381	GD-AlSi10Mg	UNS A03590	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.017 .00066	89 292	0.47 .019	0.019 .00076
		2.004	Cu-OF / CW008A	UNS C10100												
	Brass lead free	2.0065	Cu-ETP / CW004A	UNS C11000	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.017 .00066	89 292	0.47 .019	0.019 .00076
		2.0321	CuZn37 CW508L	UNS C27400												
	Brass, Bronze $R_m < 400 \text{ N/mm}^2$	2.036	CuZn40 CW509L	UNS C28000	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.017 .00066	89 292	0.47 .019	0.019 .00076
		2.0401	CuZn39Pb3 / CW614N	UNS C38500												
	Bronze $R_m < 600 \text{ N/mm}^2$	2.102	CuSn6	UNS C51900	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.017 .00066	89 292	0.47 .019	0.019 .00076
		2.0966	CuAl10Ni5Fe4	UNS C63000												
S ₁	Super alloys	2.096	CuAl9Mn2	UNS C63200	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.014 .00057	89 292	0.47 .019	0.017 .00066
		2.4856		Inconel 625	45 148	0.24 .009	0.004 .00014	59 194	0.31 .012	0.005 .00020	74 243	0.39 .015	0.005 .00020	89 292	0.47 .019	0.006 .00024
		2.4668		Inconel 718												
S ₂	Titanium pure	2.4617	NiMo28	Hastelloy B-2												
		2.4665	NiCr22Fe18Mo	Hastelloy X	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.005 .00020	74 243	0.39 .015	0.010 .00038	100 328	0.47 .019	0.011 .00043
		3.7035	Gr.2	ASTM B348												
S ₃	Titanium alloys	3.7065	Gr.4	ASTM B348												
		3.7165	TiAl6V4	ASTM B348	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.005 .00020	74 243	0.39 .015	0.010 .00038	89 292	0.47 .019	0.011 .00043
		9.9367	TiAl6Nb7	ASTM F1295												
H ₁	Hardened steel $< 55 \text{ HRC}$	2.4964	CoCr20W15Ni	Haynes 25	45 148	0.24 .009	0.004 .00014	59 194	0.31 .012	0.004 .00014	74 243	0.39 .015	0.006 .00024	89 292	0.47 .019	0.006 .00024
			CrCoMo28	ASTM F1537												
H ₂	Hardened steel $\geq 55 \text{ HRC}$	1.2510	100MnCrMoW4	AISI O1	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.008 .00033	80 262	0.47 .019	0.010 .00038
		1.2379	X153CrMoV12	AISI D2												

v_c [m/min] | [SFM]

f_z [mm] | [IPT]

d_{eff} [mm] | [inch]

RECOMMENDATION FOR USE

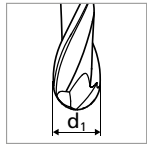
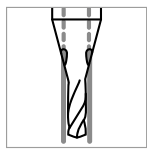
● Excellent | ○ Good | ○ Acceptable | ☒ Not recommended



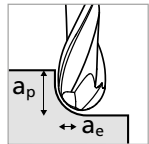
	Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1		
	0.8mm .032"			1.0mm .039"			1.2mm .047"			1.5 .059"			1.8mm .071"			2.0mm .079"			2.5mm .098"			3.0mm .118"			4.0mm .158"			6.0mm .236"			8.0mm .315"					
	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z			
	100	0.63	0.017	140	0.79	0.018	140	0.94	0.020	200	1.18	0.029	200	1.42	0.031	220	1.57	0.041	220	1.97	0.043	240	2.36	0.055	260	3.15	0.060	260	4.72	0.060	260	6.29	0.060			
	328	.025	.00066	459	.031	.00071	459	.037	.00080	656	.046	.00113	656	.056	.00123	722	.062	.00161	722	.077	.00170	787	.093	.00217	853	.124	.00236	853	.186	.00236	853	.248	.00236			
	100	0.63	0.014	140	0.79	0.017	140	0.94	0.019	200	1.18	0.026	200	1.42	0.029	220	1.57	0.038	220	1.97	0.041	240	2.36	0.053	260	3.15	0.058	260	4.72	0.058	260	6.29	0.058			
	328	.025	.00057	459	.031	.00066	459	.037	.00076	656	.046	.00104	656	.056	.00113	722	.062	.00151	722	.077	.00161	787	.093	.00208	853	.124	.00227	853	.186	.00227	853	.248	.00227			
	100	0.63	0.013	140	0.79	0.013	140	0.94	0.016	200	1.18	0.024	200	1.42	0.026	220	1.57	0.036	220	1.97	0.038	240	2.36	0.048	260	3.15	0.050	260	4.72	0.050	260	6.29	0.050			
	328	.025	.00052	459	.031	.00052	459	.037	.00061	656	.046	.00094	656	.056	.00104	722	.062	.00142	722	.077	.00151	787	.093	.00189	853	.124	.00198	853	.186	.00198	853	.248	.00198			
	100	0.63	0.014	140	0.79	0.019	140	0.94	0.022	200	1.18	0.029	200	1.42	0.031	220	1.57	0.041	220	1.97	0.043	240	2.36	0.053	260	3.15	0.058	260	4.72	0.058	260	6.29	0.058			
	328	.025	.00057	459	.031	.00076	459	.037	.00085	656	.046	.00113	656	.056	.00123	722	.062	.00161	722	.077	.00170	787	.093	.00208	853	.124	.00227	853	.186	.00227	853	.248	.00227			
	100	0.63	0.014	140	0.79	0.018	140	0.94	0.020	200	1.18	0.026	200	1.42	0.029	220	1.57	0.038	220	1.97	0.041	240	2.36	0.053	260	3.15	0.055	260	4.72	0.055	260	6.29	0.055			
	328	.025	.00057	459	.031	.00071	459	.037	.00080	656	.046	.00104	656	.056	.00113	722	.062	.00151	722	.077	.00161	787	.093	.00208	853	.124	.00217	853	.186	.00217	853	.248	.00217			
	100	0.63	0.013	140	0.79	0.018	140	0.94	0.020	200	1.18	0.026	200	1.42	0.029	220	1.57	0.038	220	1.97	0.041	240	2.36	0.053	260	3.15	0.055	260	4.72	0.055	260	6.29	0.055			
	328	.025	.00052	459	.031	.00071	459	.037	.00080	656	.046	.00104	656	.056	.00113	722	.062	.00151	722	.077	.00161	787	.093	.00208	853	.124	.00217	853	.186	.00217	853	.248	.00217			
	100	0.63	0.011	140	0.79	0.014	140	0.94	0.017	200	1.18	0.019	200	1.42	0.022	220	1.57	0.036	220	1.97	0.038	240	2.36	0.048	260	3.15	0.053	260	4.72	0.053	260	6.29	0.053			
	328	.025	.00043	459	.031	.00057	459	.037	.00066	656	.046	.00076	656	.056	.00085	722	.062	.00142	722	.077	.00151	787	.093	.00189	853	.124	.00208	853	.186	.00208	853	.248	.00208			
	100	0.63	0.011	120	0.79	0.013	120	0.94	0.026	140	1.18	0.029	140	1.42	0.031	160	1.57	0.034	160	1.97	0.043	180	2.36	0.052	200	3.15	0.060	200	4.72	0.060	200	6.29	0.060			
	328	.025	.00048	394	.031	.00052	394	.037	.00104	459	.046	.00113	459	.056	.00123	525	.062	.00132	525	.077	.00170	591	.093	.00203	656	.124	.00236	656	.186	.00236	656	.248	.00236			
	100	0.63	0.019	140	0.79	0.022	140	0.94	0.024	200	1.18	0.031	200	1.42	0.034	220	1.57	0.043	220	1.97	0.048	240	2.36	0.070	260	3.15	0.072	260	4.72	0.072	260	6.29	0.072			
	328	.025	.00076	459	.031	.00085	459	.037	.00094	656	.046	.00123	656	.056	.00132	722	.062	.00170	722	.077	.00189	787	.093	.00274	853	.124	.00283	853	.186	.00283	853	.248	.00283			
	100	0.63	0.019	140	0.79	0.022	140	0.94	0.024	200	1.18	0.031	200	1.42	0.034	220	1.57	0.043	220	1.97	0.048	240	2.36	0.070	260	3.15	0.072	260	4.72	0.072	260	6.29	0.072			
	328	.025	.00076	459	.031	.00085	459	.037	.00094	656	.046	.00123	656	.056	.00132	722	.062	.00170	722	.077	.00189	787	.093	.00274	853	.124	.00283	853	.186	.00283	853	.248	.00283			
	100	0.63	0.022	140	0.79	0.024	140	0.94	0.026	200	1.18	0.031	200	1.42	0.034	220	1.57	0.043	220	1.97	0.048	240	2.36	0.070	260	3.15	0.072	260	4.72	0.072	260	6.29	0.072			
	328	.025	.00085	459	.031	.00094	459	.037	.00104	656	.046	.00123	656	.056	.00132	722	.062	.00170	722	.077	.00189	787	.093	.00274	853	.124	.00283	853	.186	.00283	853	.248	.00283			
	100	0.63	0.022	140	0.79	0.024	140	0.94	0.026	200	1.18	0.031	200	1.42	0.034	220	1.57	0.043	220	1.97	0.048	240	2.36	0.070	260	3.15	0.072	260	4.72	0.072	260	6.29	0.072			
	328	.025	.00085	459	.031	.00094	459	.037	.00104	656	.046	.00123	656	.056	.00132	722	.062	.00170	722	.077	.00189	787	.093	.00274	853	.124	.00283	853	.186	.00283	853	.248	.00283			
	100	0.63	0.019	140	0.79	0.022	140	0.94	0.024	200	1.18	0.031	200	1.42	0.034	220	1.57	0.043	220	1.97	0.048	240	2.36	0.070	260	3.15	0.072	260	4.72	0.072	260	6.29	0.072			
	328	.025	.00076	459	.031	.00085	459	.037	.00094	656	.046	.00123	656	.056	.00132	722	.062	.00170	722	.077	.00189	787	.093	.00274	853	.124	.00283	853	.186	.00283	853	.248	.00283			
	100	0.63	0.007	120	0.79	0.008	120	0.94	0.010	130	1.18	0.011	130	1.42	0.012	140	1.57	0.012	140	1.97	0.014	150	2.36	0.018	170	3.15	0.024	170	4.72	0.024	170	6.29	0.024			
	328	.025	.00028	394	.031	.00033	394	.037	.00038	427	.046	.00043	427	.056	.00047	459	.062	.00047	459	.077	.00057	492	.093	.00071	558	.124	.00094	558	.186	.00094	558	.248	.00094			
	100	0.63	0.013	120	0.79	0.019	120	0.94	0.022	130	1.18	0.024	130	1.42	0.026	140	1.57	0.034	140	1.97	0.036	150	2.36	0.048	170	3.15	0.053	170	4.72	0.053	170	6.29	0.053			
	328	.025	.00052	394	.031	.00076	394	.037	.00085	427	.046	.00094	427	.056	.00104	459	.062	.00132	459	.077	.00142	492	.093	.00189	558	.124	.00208	558	.186	.00208	558	.248	.00208			
	100	0.63	0.013	120	0.79	0.019	120	0.94	0.022	130	1.18	0.024	130	1.42	0.026	140	1.57	0.034	140</																	

CrazyMill Cool Ball - Type C - Roughing

MILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW



Roughing



■ $a_p = 0.5 \times d_1$
($\varnothing d_1 \leq 0.5 \text{ mm}$ | .020")

■ $a_p = 1 \times d_1$
($\varnothing d_1 > 0.5 \text{ mm}$ | .020")

■ $a_e = 0.3 \times d_1$

Machining angle = 0°

Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	Ød1 0.3–0.4 mm .012"–.016"	
					v_c	f_z
P	Unalloyed carbon steel Rm < 800 N/mm²	1.0301	C10	AISI 1010	60 197	0.005–0.007 .00020–.00028
		1.0401	C15	AISI 1015		
		1.1191	C45E/CK45	AISI 1045		
		1.0044	S275JR	AISI 1020		
		1.0715	11SMn30	AISI 1215		
	Low alloyed steel Rm > 900 N/mm²	1.5752	15NiCr13	ASTM 3415 / AISI 3310	60 197	0.004–0.006 .00016–.00024
		1.7131	16MnCr5	AISI 5115		
		1.3505	100Cr6	AISI 52100		
		1.7225	42CrMo4	AISI 4140		
		1.2842	90MnCrV8	AISI O2		
	High alloyed tool steel Rm < 1200 N/mm²	1.2379	X153CrMoV12	AISI D2	60 197	0.004–0.006 .00016–.00024
		1.2436	X210CrW12	AISI D4/D6		
		1.3343	HS6-5-2C	AISI M2 / UNS T11302		
		1.3355	HS18-0-1	AISI T1 / UNS T12001		
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430 / UNS S43000	60 197	0.005–0.007 .00020–.00028
		1.4105	X6CrMoS17	AISI 430F		
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	60 197	0.004–0.006 .00016–.00024
		1.4112	X90CrMoV18	AISI 440B		
	Stainless steel martensitic – PH	1.4542	X5CrNiCuNb 16-4	AISI 630 / ASTM 17-4 PH	60 197	0.004–0.006 .00016–.00024
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH		
	Stainless steel austenitic	1.4301	X5CrNi 18-10	AISI 304	60 197	0.004–0.006 .00016–.00024
		1.4435	X2CrNiMo 18-14-3	AISI 316L		
		1.4441	X2CrNiMo 18-14-3	AISI 316LM		
K	Cast iron	1.4539	X1NiCrMoCu 25-20-5	AISI 904L		
		0.6020	GG20	ASTM 30	60 197	0.003–0.005 .00012–.00020
		0.6030	GG30	ASTM 40B		
		0.7040	GGG40	ASTM 60-40-18		
		0.7060	GGG60	ASTM 80-60-03		
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351	60 197	0.006–0.008 .00024–.00031
		3.4365	AlZnMgCu1.5	ASTM 7075		
	Aluminium alloy cast	3.2163	GD-AlSi9Cu3	ASTM A380	60 197	0.006–0.008 .00024–.00031
		3.2381	GD-AlSi10Mg	UNS A03590		
	Copper	2.004	Cu-OF / CW008A	UNS C10100	60 197	0.006–0.008 .00024–.00031
		2.0065	Cu-ETP / CW004A	UNS C11000		
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400	60 197	0.006–0.008 .00024–.00031
		2.036	CuZn40 CW509L	UNS C28000		
	Brass, Bronze Rm < 400 N/mm²	2.0401	CuZn39Pb3 / CW614N	UNS C38500	60 197	0.006–0.008 .00024–.00031
		2.102	CuSn6	UNS C51900		
	Bronze Rm < 600 N/mm²	2.0966	CuAl10Ni5Fe4	UNS C63000	60 197	0.006–0.008 .00024–.00031
		2.096	CuAl9Mn2	UNS C63200		
S ₁	Super alloys	2.4856		Inconel 625	60 197	0.003–0.004 .00012–.00016
		2.4668		Inconel 718		
		2.4617	NiMo28	Hastelloy B-2		
		2.4665	NiCr22Fe18Mo	Hastelloy X		
S ₂	Titanium pure	3.7035	Gr.2	ASTM B348 / F67	60 197	0.004–0.006 .00016–.00024
		3.7065	Gr.4	ASTM B348 / F68		
	Titanium alloys	3.7165	TiAl6V4	ASTM B348 / F136	60 197	0.004–0.006 .00016–.00024
		9.9367	TiAl6Nb7	ASTM F1295		
S ₃	Cr-Co alloys	2.4964	CoCr20W15Ni	Haynes 25	60 197	0.003–0.004 .00012–.00016
			CrCoMo28	ASTM F1537		
H ₁	Hardened steel < 55 HRC	1.2510	100MnCrMoW4	AISI O1	60 197	0.004–0.006 .00016–.00024
H ₂	Hardened steel ≥ 55 HRC	1.2379	X153CrMoV12	AISI D2		

V_c [m/min] | **[SFM]**
f_z [mm] | **[IPT]**

RECOMMENDATION FOR USE

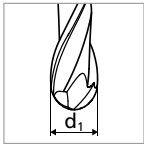
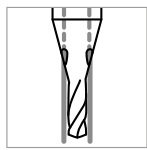
● Excellent | ○ Good | ○ Acceptable | ☒ Not recommended



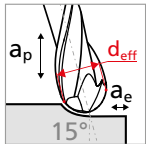
Ød1 0.5–0.8 mm .020"–.031"		Ød1 1.0–1.2 mm .039"–.047"		Ød1 1.5–1.8 mm .059"–.071"		Ød1 2.0–2.5 mm .079"–.098"		Ød1 3.0 mm .118"		Ød1 4.0–6.0 mm .157"–.236"		Ød1 8.0 mm .315"	
V _c	f _z	V _c	f _z	V _c	f _z	V _c	f _z	V _c	f _z	V _c	f _z	V _c	f _z
100 328	0.010–0.014 .00039–.00055	140 459	0.015–0.017 .00059–.00067	200 656	0.024–0.026 .00094–.00102	220 722	0.034–0.036 .00134–.00142	240 787	0.040 .00157	280 919	0.050 .00197	280 919	0.050 .00197
100 328	0.009–0.012 .00035–.00047	140 459	0.014–0.016 .00055–.00063	200 656	0.022–0.024 .00087–.00094	220 722	0.032–0.034 .00126–.00134	240 787	0.038 .00150	280 919	0.048 .00189	280 919	0.048 .00189
100 328	0.008–0.011 .00031–.00043	140 459	0.011–0.013 .00043–.00051	200 656	0.020–0.022 .00079–.00087	220 722	0.030–0.032 .00118–.00126	240 787	0.035 .00138	280 919	0.044 .00173	280 919	0.044 .00173
100 328	0.010–0.014 .00039–.00055	140 459	0.016–0.018 .00063–.00071	200 656	0.024–0.026 .00094–.00102	220 722	0.034–0.036 .00134–.00142	240 787	0.040 .00157	280 919	0.048 .00189	280 919	0.048 .00189
100 328	0.009–0.012 .00035–.00047	140 459	0.015–0.017 .00059–.00067	200 656	0.022–0.024 .00087–.00094	220 722	0.032–0.034 .00126–.00134	240 787	0.036 .00142	280 919	0.046 .00181	280 919	0.046 .00181
100 328	0.009–0.012 .00035–.00047	140 459	0.015–0.017 .00059–.00067	200 656	0.022–0.024 .00087–.00094	220 722	0.032–0.034 .00126–.00134	240 787	0.046 .00142	280 919	0.046 .00181	280 919	0.046 .00181
100 328	0.008–0.011 .00031–.00043	140 459	0.012–0.014 .00047–.00055	200 656	0.016–0.018 .00063–.00071	220 722	0.030–0.032 .00118–.00126	240 787	0.034 .00134	280 919	0.044 .00173	280 919	0.044 .00173
100 328	0.006–0.009 .00024–.00035	120 394	0.011–0.022 .00043–.00087	140 459	0.024–0.026 .00094–.00102	160 525	0.028–0.036 .00110–.00142	180 591	0.042 .00165	200 656	0.052 .00205	200 656	0.052 .00205
100 328	0.012–0.016 .00047–.00063	140 459	0.018–0.020 .00071–.00079	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.055 .00217	280 919	0.055 .00217
100 328	0.012–0.016 .00047–.00063	140 459	0.018–0.020 .00071–.00079	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.055 .00217	280 919	0.055 .00217
100 328	0.014–0.018 .00055–.00071	140 459	0.020–0.022 .00079–.00087	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.055 .00217	280 919	0.055 .00217
100 328	0.014–0.018 .00055–.00071	140 459	0.020–0.022 .00079–.00087	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.055 .00217	280 919	0.055 .00217
100 328	0.014–0.018 .00055–.00071	140 459	0.020–0.022 .00079–.00087	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.055 .00217	280 919	0.055 .00217
100 328	0.012–0.016 .00047–.00063	140 459	0.018–0.020 .00071–.00079	200 656	0.026–0.028 .00102–.00110	220 722	0.036–0.040 .00142–.00157	240 787	0.058 .00228	280 919	0.055 .00217	280 919	0.055 .00217
100 328	0.004–0.006 .00016–.00024	120 394	0.007–0.008 .00028–.00031	130 427	0.009–0.010 .00035–.00039	140 459	0.010–0.012 .000639–.00047	150 492	0.015 .00059	170 558	0.020 .00079	170 558	0.020 .00079
100 328	0.008–0.011 .00031–.00043	120 394	0.016–0.018 .00063–.00071	130 427	0.020–0.022 .00079–.00087	140 459	0.028–0.030 .00110–.00118	150 492	0.034 .00134	170 558	0.042 .00165	170 558	0.042 .00165
100 328	0.008–0.011 .00031–.00043	120 394	0.016–0.018 .00063–.00071	130 427	0.020–0.022 .00079–.00087	140 459	0.028–0.030 .00110–.00118	150 492	0.034 .00134	170 558	0.042 .00165	170 558	0.042 .00165
100 328	0.004–0.006 .00016–.00024	140 459	0.007–0.008 .00028–.00031	180 591	0.009–0.010 .00035–.00039	200 656	0.010–0.012 .000639–.00047	220 722	0.015 .00059	240 787	0.020 .00079	240 787	0.020 .00079
80 262	0.007–0.009 .00028–.00035	100 328	0.010–0.012 .000639–.00047	140 459	0.014–0.018 .00055–.00071	180 591	0.020–0.026 .00079–.00102	200 656	0.030 .00118	240 787	0.032 .00126	240 787	0.032 .00126

CrazyMill Cool Ball - Type C - Semi-finishing

MILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW



Semi-finishing



■ $a_p = 0.25 \times d_1$
($\varnothing d_1 \leq 0.5 \text{ mm} | .020''$)

■ $a_p = 0.5 \times d_1$
($\varnothing d_1 > 0.5 \text{ mm} | .020''$)

■ $a_e = 0.1 \times d_1$

Machining angle = 15°

Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	Ød1 0.3 mm .012"			Ød1 0.4 mm .016"			Ød1 0.5 mm .020"			Ød1 0.6 mm .024"		
					v_c	d_{eff}	f_z	v_c	d_{eff}	f_z	v_c	d_{eff}	f_z	v_c	d_{eff}	f_z
P	Unalloyed carbon steel Rm < 800 N/mm²	1.0301	C10	AISI 1010	55 180	0.29 .011	0.005 .00020	73 240	0.39 .015	0.007 .00028	92 302	0.48 .019	0.010 .00039	100 328	0.60 .024	0.012 .00047
		1.0401	C15	AISI 1015												
		1.1191	C45E/CK45	AISI 1045												
		1.0044	S275JR	AISI 1020												
		1.0715	11SMn30	AISI 1215												
	Low alloyed steel Rm > 900 N/mm²	1.5752	15NiCr13	ASTM 3415	55 180	0.29 .011	0.004 .00016	73 240	0.39 .015	0.006 .00024	92 302	0.48 .019	0.009 .00035	100 328	0.60 .024	0.011 .00043
		1.7131	16MnCr5	AISI 5115												
		1.3505	100Cr6	AISI 52100												
		1.7225	42CrMo4	AISI 4140												
		1.2842	90MnCrV8	AISI O2												
	High alloyed tool steel Rm < 1200 N/mm²	1.2379	X153CrMoV12	AISI D2	55 180	0.29 .011	0.004 .00016	73 240	0.39 .015	0.006 .00024	92 302	0.48 .019	0.008 .00031	100 328	0.60 .024	0.009 .00035
		1.2436	X210CrW12	AISI D4/D6												
		1.3343	H56-5-2C	AISI M2												
		1.3355	HS18-0-1	AISI T1												
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430	55 180	0.29 .011	0.005 .00020	73 240	0.39 .015	0.007 .00028	92 302	0.48 .019	0.010 .00039	100 328	0.60 .024	0.012 .00047
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	55 180	0.29 .011	0.004 .00016	73 240	0.39 .015	0.006 .00024	92 302	0.48 .019	0.009 .00035	100 328	0.60 .024	0.010 .00039
	Stainless steel martensitic – PH	1.4542	X5CrNiCuNb 16-4	AISI 630	55 180	0.29 .011	0.004 .00016	73 240	0.39 .015	0.006 .00024	92 302	0.48 .019	0.009 .00035	100 328	0.60 .024	0.010 .00039
	Stainless steel austenitic	1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH	55 180	0.29 .011	0.004 .00016	73 240	0.39 .015	0.006 .00024	92 302	0.48 .019	0.008 .00031	100 328	0.60 .024	0.010 .00039
		1.4301	X5CrNi 18-10	AISI 304												
		1.4435	X2CrNiMo 18-14-3	AISI 316L												
		1.4441	X2CrNiMo 18-14-3	AISI 316LM												
K	Cast iron	0.6020	GG20	ASTM 30	55 180	0.29 .011	0.003 .00012	73 240	0.39 .015	0.005 .00020	92 302	0.48 .019	0.006 .00024	100 328	0.60 .024	0.008 .00030
		0.6030	GG30	ASTM 40B												
		0.7040	GGG40	ASTM 60-40-18												
		0.7060	GGG60	ASTM 80-60-03												
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351	55 180	0.29 .011	0.006 .00024	73 240	0.39 .015	0.008 .00031	92 302	0.48 .019	0.012 .00047	100 328	0.60 .024	0.014 .00055
	Aluminium alloy cast	3.4365	AlZnMgCu1.5	ASTM 7075	55 180	0.29 .011	0.006 .00024	73 240	0.39 .015	0.008 .00031	92 302	0.48 .019	0.012 .00047	100 328	0.60 .024	0.014 .00055
		3.2163	GD-AlSi9Cu3	ASTM A380												
	Copper	3.2381	GD-AlSi10Mg	UNS A03590	55 180	0.29 .011	0.006 .00024	73 240	0.39 .015	0.008 .00031	92 302	0.48 .019	0.014 .00055	100 328	0.60 .024	0.016 .00063
		2.004	Cu-OF / CW008A	UNS C10100												
	Brass lead free	2.0065	Cu-ETP / CW004A	UNS C11000	55 180	0.29 .011	0.006 .00024	73 240	0.39 .015	0.008 .00031	92 302	0.48 .019	0.014 .00055	100 328	0.60 .024	0.016 .00063
		2.0321	CuZn37 CW508L	UNS C27400												
	Brass, Bronze Rm < 400 N/mm²	2.036	CuZn40 CW509L	UNS C28000	55 180	0.29 .011	0.006 .00024	73 240	0.39 .015	0.008 .00031	92 302	0.48 .019	0.014 .00055	100 328	0.60 .024	0.016 .00063
		2.0401	CuZn39Pb3 / CW614N	UNS C38500												
	Bronze Rm < 600 N/mm²	2.102	CuSn6	UNS C51900	55 180	0.29 .011	0.006 .00024	73 240	0.39 .015	0.008 .00031	92 302	0.48 .019	0.012 .00055	100 328	0.60 .024	0.014 .00063
		2.0966	CuAl10Ni5Fe4	UNS C63000												
S ₁	Super alloys	2.096	CuAl9Mn2	UNS C63200	55 180	0.29 .011	0.006 .00024	73 240	0.39 .015	0.008 .00031	92 302	0.48 .019	0.012 .00047	100 328	0.60 .024	0.014 .00055
		2.4856		Inconel 625	55 180	0.29 .011	0.003 .00012	73 240	0.39 .015	0.004 .00016	92 302	0.48 .019	0.004 .00016	100 328	0.60 .024	0.005 .00020
		2.4668		Inconel 718												
		2.4617	NiMo28	Hastelloy B-2												
S ₂	Titanium pure	2.4665	NiCr22Fe18Mo	Hastelloy X	55 180	0.29 .011	0.004 .00016	73 240	0.39 .015	0.004 .00016	92 302	0.48 .019	0.008 .00031	100 328	0.60 .024	0.009 .00035
		3.7035	Gr.2	ASTM B348												
	Titanium alloys	3.7065	Gr.4	ASTM B348												
		3.7165	TiAl6V4	ASTM B348												
S ₃	Cr-Co alloys	9.9367	TiAl6Nb7	ASTM F1295	55 180	0.29 .011	0.004 .00016	73 240	0.39 .015	0.004 .00016	92 302	0.48 .019	0.008 .00031	100 328	0.60 .024	0.009 .00035
		2.4964	CoCr20W15Ni	Haynes 25	55 180	0.29 .011	0.003 .00012	73 240	0.39 .015	0.003 .00012	92 302	0.48 .019	0.005 .00020	100 328	0.60 .024	0.005 .00020
H ₁ H ₂	Hardened steel < 55 HRC		CrCoMo28	ASTM F1537												
	Hardened steel ≥ 55 HRC	1.2510	100MnCrMoW4	AISI O1	55 180	0.29 .011	0.004 .00016	73 240	0.39 .015	0.006 .00024	92 302	0.48 .019	0.007 .00028	80 262	0.60 .024	0.008 .00031
H ₁ H ₂	Hardened steel ≥ 55 HRC	1.2379	X153CrMoV12	AISI D2												

v_c [m/min] | [SFM]

f_z [mm] | [IPT]

d_{eff} [mm] | [inch]

RECOMMENDATION FOR USE

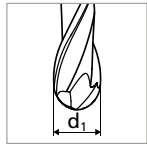
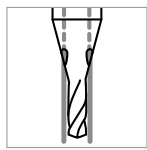
● Excellent | ○ Good | ○ Acceptable | ✗ Not recommended



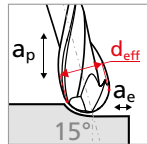
	Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1		
	0.8mm .032"			1.0mm .039"			1.2mm .047"			1.5 .059"			1.8mm .071"			2.0mm .079"			2.5mm .098"			3.0mm .118"			4.0mm .158"			6.0mm .236"			8.0mm .315"								
	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z						
	100	0.80	0.014	140	1.00	0.015	140	1.20	0.017	200	1.50	0.024	200	1.80	0.026	220	2.00	0.034	220	2.50	0.036	240	3.00	0.040	260	4.00	0.050	260	6.00	0.050	260	8.00	0.050						
	328	.032	.00055	459	.039	.00059	459	.047	.00067	656	.059	.00094	656	.071	.00102	722	.079	.00134	722	.098	.00142	787	.118	.00157	853	.158	.00197	853	.236	.00197	853	.315	.00197						
	100	0.80	0.012	140	1.00	0.014	140	1.20	0.016	200	1.50	0.022	200	1.80	0.024	220	2.00	0.032	220	2.50	0.034	240	3.00	0.038	260	4.00	0.044	260	6.00	0.048	260	8.00	0.048						
	328	.032	.00047	459	.039	.00055	459	.047	.00063	656	.059	.00087	656	.071	.00094	722	.079	.00126	722	.098	.00134	787	.118	.00150	853	.158	.00173	853	.236	.00189	853	.315	.00189						
	100	0.80	0.011	140	1.00	0.011	140	1.20	0.013	200	1.50	0.020	200	1.80	0.022	220	2.00	0.030	220	2.50	0.032	240	3.00	0.035	260	4.00	0.044	260	6.00	0.044	260	8.00	0.044						
	328	.032	.00043	459	.039	.00043	459	.047	.00051	656	.059	.00079	656	.071	.00087	722	.079	.00118	722	.098	.00126	787	.118	.00138	853	.158	.00173	853	.236	.00173	853	.315	.00173						
	100	0.80	0.014	140	1.00	0.016	140	1.20	0.018	200	1.50	0.024	200	1.80	0.026	220	2.00	0.034	220	2.50	0.036	240	3.00	0.040	260	4.00	0.048	260	6.00	0.048	260	8.00	0.048						
	328	.032	.00055	459	.039	.00063	459	.047	.00071	656	.059	.00094	656	.071	.00102	722	.079	.00134	722	.098	.00142	787	.118	.00157	853	.158	.00189	853	.236	.00189	853	.315	.00189						
	100	0.80	0.012	140	1.00	0.015	140	1.20	0.017	200	1.50	0.022	200	1.80	0.024	220	2.00	0.032	220	2.50	0.034	240	3.00	0.036	260	4.00	0.046	260	6.00	0.046	260	8.00	0.046						
	328	.032	.00047	459	.039	.00059	459	.047	.00067	656	.059	.00087	656	.071	.00094	722	.079	.00126	722	.098	.00134	787	.118	.00142	853	.158	.00181	853	.236	.00181	853	.315	.00181						
	100	0.80	0.012	140	1.00	0.015	140	1.20	0.017	200	1.50	0.022	200	1.80	0.024	220	2.00	0.032	220	2.50	0.034	240	3.00	0.036	260	4.00	0.046	260	6.00	0.046	260	8.00	0.046						
	328	.032	.00047	459	.039	.00059	459	.047	.00067	656	.059	.00087	656	.071	.00094	722	.079	.00126	722	.098	.00134	787	.118	.00142	853	.158	.00181	853	.236	.00181	853	.315	.00181						
	100	0.80	0.011	140	1.00	0.012	140	1.20	0.014	200	1.50	0.016	200	1.80	0.018	220	2.00	0.030	220	2.50	0.032	240	3.00	0.034	260	4.00	0.044	260	6.00	0.044	260	8.00	0.044						
	328	.032	.00043	459	.039	.00047	459	.047	.00055	656	.059	.00063	656	.071	.00071	722	.079	.00118	722	.098	.00126	787	.118	.00134	853	.158	.00173	853	.236	.00173	853	.315	.00173						
	100	0.80	0.009	120	1.00	0.011	120	1.20	0.022	140	1.50	0.024	140	1.80	0.026	160	2.00	0.028	160	2.50	0.036	180	3.00	0.042	200	4.00	0.052	200	6.00	0.052	200	8.00	0.052						
	328	.032	.00035	394	.039	.00043	394	.047	.00087	459	.059	.00094	459	.071	.00102	525	.079	.00110	525	.098	.00142	591	.118	.00165	656	.158	.00205	656	.236	.00205	656	.315	.00205						
	100	0.80	0.016	140	1.00	0.018	140	1.20	0.020	200	1.50	0.026	200	1.80	0.028	220	2.00	0.036	220	2.50	0.040	240	3.00	0.058	260	4.00	0.055	260	6.00	0.055	260	8.00	0.055						
	328	.032	.00063	459	.039	.00071	459	.047	.00079	656	.059	.00102	656	.071	.00110	722	.079	.00142	722	.098	.00157	787	.118	.00228	853	.158	.00217	853	.236	.00217	853	.315	.00217						
	100	0.80	0.016	140	1.00	0.018	140	1.20	0.020	200	1.50	0.026	200	1.80	0.028	220	2.00	0.036	220	2.50	0.040	240	3.00	0.058	260	4.00	0.055	260	6.00	0.055	260	8.00	0.055						
	328	.032	.00063	459	.039	.00071	459	.047	.00079	656	.059	.00102	656	.071	.00110	722	.079	.00142	722	.098	.00157	787	.118	.00228	853	.158	.00217	853	.236	.00217	853	.315	.00217						
	100	0.80	0.018	140	1.00	0.020	140	1.20	0.022	200	1.50	0.026	200	1.80	0.028	220	2.00	0.036	220	2.50	0.040	240	3.00	0.058	260	4.00	0.055	260	6.00	0.055	260	8.00	0.055						
	328	.032	.00071	459	.039	.00079	459	.047	.00087	656	.059	.00102	656	.071	.00110	722	.079	.00142	722	.098	.00157	787	.118	.00228	853	.158	.00217	853	.236	.00217	853	.315	.00217						
	100	0.80	0.018	140	1.00	0.020	140	1.20	0.022	200	1.50	0.026	200	1.80	0.028	220	2.00	0.036	220	2.50	0.040	240	3.00	0.058	260	4.00	0.055	260	6.00	0.055	260	8.00	0.055						
	328	.032	.00071	459	.039	.00079	459	.047	.00087	656	.059	.00102	656	.071	.00110	722	.079	.00142	722	.098	.00157	787	.118	.00228	853	.158	.00217	853	.236	.00217	853	.315	.00217						
	100	0.80	0.018	140	1.00	0.020	140	1.20	0.022	200	1.50	0.026	200	1.80	0.028	220	2.00	0.036	220	2.50	0.040	240	3.00	0.058	260	4.00	0.055	260	6.00	0.055	260	8.00	0.055						
	328	.032	.00071	459	.039	.00079	459	.047	.00087	656	.059	.00102	656	.071	.00110	722	.079	.00142	722	.098	.00157	787	.118	.00228	853	.158	.00217	853	.236	.00217	853	.315	.00217						
	100	0.80	0.016	140	1.00	0.018	140	1.20	0.020	200	1.50	0.026	200	1.80	0.028	220	2.00	0.036	220	2.50	0.040	240	3.00	0.058	260	4.00	0.055	260	6.00	0.055	260	8.00	0.055						
	328	.032	.00063	459	.039	.00071	459	.047	.00079	656	.059	.00102	656	.071	.00110	722	.079	.00142	722	.098	.00157	787	.118	.00228	853	.158	.00217	853	.236	.00217	853	.315	.00217						
	100	0.80	0.006	120	1.00	0.007	120	1.20	0.008	130	1.50	0.009	130	1.80	0.010	140	2.00	0.010	140	2.50	0.012	150	3.00	0.015	170	4.00	0.020	170	6.00	0.020	170	8.00	0.020						
	328	.032	.00024	394	.039	.00028	394	.047	.00031	427	.059	.00035	427	.071	.00039	459	.079	.00039	459	.098	.00047	492	.118	.00059	558	.158	.00079	558	.236	.00079	558	.315	.00079						
	100	0.80	0.011	120	1.00	0.016	120	1.20	0.018	130	1.50	0.020	130	1.80	0.022	140	2.00	0.028	140	2.50	0.030	150	3.00	0.034	170	4.00	0.042	170	6.00	0.042	170	8.00	0.042						
	328																																						

CrazyMill Cool Ball - Type C - Finishing

MILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW



Finishing



■ $a_p = 0.1 \times d_1$

■ $a_e = 0.05 \times d_1$

Machining angle = 15°

$n_{max} = 60'000 \text{ rpm}$

Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	Ød1 0.3 mm .012"			Ød1 0.4 mm .016"			Ød1 0.5 mm .020"			Ød1 0.6 mm .024"		
					v_c	d_{eff}	f_z	v_c	d_{eff}	f_z	v_c	d_{eff}	f_z	v_c	d_{eff}	f_z
P	Unalloyed carbon steel $R_m < 800 \text{ N/mm}^2$	1.0301	C10	AISI 1010	45 148	0.24 .009	0.006 .00024	59 194	0.31 .012	0.008 .00033	74 243	0.39 .015	0.012 .00047	89 292	0.47 .019	0.014 .00057
		1.0401	C15	AISI 1015												
		1.1191	C45E/CK45	AISI 1045												
		1.0044	S275JR	AISI 1020												
		1.0715	11SMn30	AISI 1215												
	Low alloyed steel $R_m > 900 \text{ N/mm}^2$	1.5752	15NiCr13	ASTM 3415	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.011 .00043	89 292	0.47 .019	0.013 .00052
		1.7131	16MnCr5	AISI 5115												
		1.3505	100Cr6	AISI 52100												
		1.7225	42CrMo4	AISI 4140												
		1.2842	90MnCrV8	AISI O2												
	High alloyed tool steel $R_m < 1200 \text{ N/mm}^2$	1.2379	X153CrMoV12	AISI D2	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.010 .00038	89 292	0.47 .019	0.011 .00043
		1.2436	X210CrW12	AISI D4/D6												
		1.3343	H56-5-2C	AISI M2												
		1.3355	HS18-0-1	AISI T1												
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430	45 148	0.24 .009	0.006 .00024	59 194	0.31 .012	0.008 .00033	74 243	0.39 .015	0.012 .00047	89 292	0.47 .019	0.014 .00057
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.011 .00043	89 292	0.47 .019	0.012 .00047
	Stainless steel martensitic – PH	1.4542	X5CrNiCuNb 16-4	AISI 630	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.011 .00043	89 292	0.47 .019	0.012 .00047
	Stainless steel austenitic	1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.011 .00043	89 292	0.47 .019	0.012 .00047
		1.4301	X5CrNi 18-10	AISI 304												
		1.4435	X2CrNiMo 18-14-3	AISI 316L												
		1.4441	X2CrNiMo 18-14-3	AISI 316LM												
K	Cast iron	0.6020	GG20	ASTM 30	45 148	0.24 .009	0.004 .00014	59 194	0.31 .012	0.006 .00024	74 243	0.39 .015	0.007 .00028	89 292	0.47 .019	0.009 .00035
		0.6030	GG30	ASTM 40B												
		0.7040	GGG40	ASTM 60-40-18												
		0.7060	GGG60	ASTM 80-60-03												
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.014 .00057	89 292	0.47 .019	0.017 .00066
	Aluminium alloy cast	3.4365	AlZnMgCu1.5	ASTM 7075	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.014 .00057	89 292	0.47 .019	0.017 .00066
		3.2163	GD-AlSi9Cu3	ASTM A380												
		3.2381	GD-AlSi10Mg	UNS A03590												
	Copper	2.004	Cu-OF / CW008A	UNS C10100	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.017 .00066	89 292	0.47 .019	0.019 .00076
		2.0065	Cu-ETP / CW004A	UNS C11000												
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.017 .00066	89 292	0.47 .019	0.019 .00076
		2.036	CuZn40 CW509L	UNS C28000												
	Brass, Bronze $R_m < 400 \text{ N/mm}^2$	2.0401	CuZn39Pb3 / CW614N	UNS C38500	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.017 .00066	89 292	0.47 .019	0.019 .00076
		2.102	CuSn6	UNS C51900												
	Bronze $R_m < 600 \text{ N/mm}^2$	2.0966	CuAl10Ni5Fe4	UNS C63000	45 148	0.24 .009	0.007 .00028	59 194	0.31 .012	0.010 .00038	74 243	0.39 .015	0.014 .00057	89 292	0.47 .019	0.017 .00066
		2.096	CuAl9Mn2	UNS C63200												
S ₁	Super alloys	2.4856		Inconel 625	45 148	0.24 .009	0.004 .00014	59 194	0.31 .012	0.005 .00020	74 243	0.39 .015	0.005 .00020	89 292	0.47 .019	0.006 .00024
		2.4668		Inconel 718												
		2.4617	NiMo28	Hastelloy B-2												
S ₂	Titanium pure	2.4665	NiCr22Fe18Mo	Hastelloy X	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.005 .00020	74 243	0.39 .015	0.010 .00038	100 328	0.47 .019	0.011 .00043
		3.7035	Gr.2	ASTM B348												
		3.7065	Gr.4	ASTM B348												
S ₃	Titanium alloys	3.7165	TiAl6V4	ASTM B348	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.005 .00020	74 243	0.39 .015	0.010 .00038	89 292	0.47 .019	0.011 .00043
		9.9367	TiAl6Nb7	ASTM F1295												
H ₁	Cr-Co alloys	2.4964	CoCr20W15Ni	Haynes 25	45 148	0.24 .009	0.004 .00014	59 194	0.31 .012	0.004 .00014	74 243	0.39 .015	0.006 .00024	89 292	0.47 .019	0.006 .00024
			CrCoMo28	ASTM F1537												
H ₂	Hardened steel $< 55 \text{ HRC}$	1.2510	100MnCrMoW4	AISI O1	45 148	0.24 .009	0.005 .00019	59 194	0.31 .012	0.007 .00028	74 243	0.39 .015	0.008 .00033	80 262	0.47 .019	0.010 .00038
	Hardened steel $\geq 55 \text{ HRC}$	1.2379	X153CrMoV12	AISI D2												

v_c [m/min] | [SFM]

f_z [mm] | [IPT]

d_{eff} [mm] | [inch]

RECOMMENDATION FOR USE

● Excellent | ○ Good | ○ Acceptable | ✗ Not recommended



	Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1			Ød1		
	0.8mm .032"			1.0mm .039"			1.2mm .047"			1.5 .059"			1.8mm .071"			2.0mm .079"			2.5mm .098"			3.0mm .118"			4.0mm .158"			6.0mm .236"			8.0mm .315"					
	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z	v _c	d _{eff}	f _z			
	100	0.63	0.017	140	0.79	0.018	140	0.94	0.020	200	1.18	0.029	200	1.42	0.031	220	1.57	0.041	220	1.97	0.043	240	2.36	0.048	260	3.15	0.060	260	4.72	0.060	260	6.29	0.060			
	328	.025	.00066	459	.031	.00071	459	.037	.00080	656	.046	.00113	656	.056	.00123	722	.062	.00161	722	.077	.00170	787	.093	.00189	853	.124	.00236	853	.186	.00236	853	.248	.00236			
	100	0.63	0.014	140	0.79	0.017	140	0.94	0.019	200	1.18	0.026	200	1.42	0.029	220	1.57	0.038	220	1.97	0.041	240	2.36	0.046	260	3.15	0.058	260	4.72	0.058	260	6.29	0.058			
	328	.025	.00057	459	.031	.00066	459	.037	.00076	656	.046	.00104	656	.056	.00113	722	.062	.00151	722	.077	.00161	787	.093	.00180	853	.124	.00227	853	.186	.00227	853	.248	.00227			
	100	0.63	0.013	140	0.79	0.013	140	0.94	0.016	200	1.18	0.024	200	1.42	0.026	220	1.57	0.036	220	1.97	0.038	240	2.36	0.042	260	3.15	0.053	260	4.72	0.053	260	6.29	0.053			
	328	.025	.00052	459	.031	.00052	459	.037	.00061	656	.046	.00094	656	.056	.00104	722	.062	.00142	722	.077	.00151	787	.093	.00165	853	.124	.00208	853	.186	.00208	853	.248	.00208			
	100	0.63	0.014	140	0.79	0.019	140	0.94	0.022	200	1.18	0.029	200	1.42	0.031	220	1.57	0.041	220	1.97	0.043	240	2.36	0.048	260	3.15	0.058	260	4.72	0.058	260	6.29	0.058			
	328	.025	.00057	459	.031	.00076	459	.037	.00085	656	.046	.00113	656	.056	.00123	722	.062	.00161	722	.077	.00170	787	.093	.00189	853	.124	.00227	853	.186	.00227	853	.248	.00227			
	100	0.63	0.014	140	0.79	0.018	140	0.94	0.020	200	1.18	0.026	200	1.42	0.029	220	1.57	0.038	220	1.97	0.041	240	2.36	0.043	260	3.15	0.055	260	4.72	0.055	260	6.29	0.055			
	328	.025	.00057	459	.031	.00071	459	.037	.00080	656	.046	.00104	656	.056	.00113	722	.062	.00151	722	.077	.00161	787	.093	.00170	853	.124	.00217	853	.186	.00217	853	.248	.00217			
	100	0.63	0.013	140	0.79	0.018	140	0.94	0.020	200	1.18	0.026	200	1.42	0.029	220	1.57	0.038	220	1.97	0.041	240	2.36	0.043	260	3.15	0.055	260	4.72	0.055	260	6.29	0.055			
	328	.025	.00052	459	.031	.00071	459	.037	.00080	656	.046	.00104	656	.056	.00113	722	.062	.00151	722	.077	.00161	787	.093	.00170	853	.124	.00217	853	.186	.00217	853	.248	.00217			
	100	0.63	0.011	140	0.79	0.014	140	0.94	0.017	200	1.18	0.019	200	1.42	0.022	220	1.57	0.036	220	1.97	0.038	240	2.36	0.041	260	3.15	0.053	260	4.72	0.053	260	6.29	0.053			
	328	.025	.00043	459	.031	.00057	459	.037	.00066	656	.046	.00076	656	.056	.00085	722	.062	.00142	722	.077	.00151	787	.093	.00161	853	.124	.00208	853	.186	.00208	853	.248	.00208			
	100	0.63	0.011	120	0.79	0.013	120	0.94	0.026	140	1.18	0.029	140	1.42	0.031	160	1.57	0.034	160	1.97	0.043	180	2.36	0.050	200	3.15	0.062	200	4.72	0.062	200	6.29	0.062			
	328	.025	.00048	394	.031	.00052	394	.037	.00104	459	.046	.00113	459	.056	.00123	525	.062	.00132	525	.077	.00170	591	.093	.00198	656	.124	.00246	656	.186	.00246	656	.248	.00246			
	100	0.63	0.019	140	0.79	0.022	140	0.94	0.024	200	1.18	0.031	200	1.42	0.034	220	1.57	0.043	220	1.97	0.048	240	2.36	0.070	260	3.15	0.066	260	4.72	0.066	260	6.29	0.066			
	328	.025	.00076	459	.031	.00085	459	.037	.00094	656	.046	.00123	656	.056	.00132	722	.062	.00170	722	.077	.00189	787	.093	.00274	853	.124	.00260	853	.186	.00260	853	.248	.00260			
	100	0.63	0.019	140	0.79	0.022	140	0.94	0.024	200	1.18	0.031	200	1.42	0.034	220	1.57	0.043	220	1.97	0.048	240	2.36	0.070	260	3.15	0.066	260	4.72	0.066	260	6.29	0.066			
	328	.025	.00076	459	.031	.00085	459	.037	.00094	656	.046	.00123	656	.056	.00132	722	.062	.00170	722	.077	.00189	787	.093	.00274	853	.124	.00260	853	.186	.00260	853	.248	.00260			
	100	0.63	0.022	140	0.79	0.024	140	0.94	0.026	200	1.18	0.031	200	1.42	0.034	220	1.57	0.043	220	1.97	0.048	240	2.36	0.070	260	3.15	0.066	260	4.72	0.066	260	6.29	0.066			
	328	.025	.00085	459	.031	.00094	459	.037	.00104	656	.046	.00123	656	.056	.00132	722	.062	.00170	722	.077	.00189	787	.093	.00274	853	.124	.00260	853	.186	.00260	853	.248	.00260			
	100	0.63	0.022	140	0.79	0.024	140	0.94	0.026	200	1.18	0.031	200	1.42	0.034	220	1.57	0.043	220	1.97	0.048	240	2.36	0.070	260	3.15	0.066	260	4.72	0.066	260	6.29	0.066			
	328	.025	.00085	459	.031	.00094	459	.037	.00104	656	.046	.00123	656	.056	.00132	722	.062	.00170	722	.077	.00189	787	.093	.00274	853	.124	.00260	853	.186	.00260	853	.248	.00260			
	100	0.63	0.019	140	0.79	0.022	140	0.94	0.024	200	1.18	0.031	200	1.42	0.034	220	1.57	0.043	220	1.97	0.048	240	2.36	0.070	260	3.15	0.066	260	4.72	0.066	260	6.29	0.066			
	328	.025	.00076	459	.031	.00085	459	.037	.00094	656	.046	.00123	656	.056	.00132	722	.062	.00170	722	.077	.00189	787	.093	.00274	853	.124	.00260	853	.186	.00260	853	.248	.00260			
	100	0.63	0.007	120	0.79	0.008	120	0.94	0.010	130	1.18	0.011	130	1.42	0.012	140	1.57	0.012	140	1.97	0.014	150	2.36	0.018	170	3.15	0.024	170	4.72	0.024	170	6.29	0.024			
	328	.025	.00028	394	.031	.00033	394	.037	.00038	427	.046	.00043	427	.056	.00047	459	.062	.00047	459	.077	.00057	492	.093	.00071	558	.124	.00094	558	.186	.00094	558	.248	.00094			
	100	0.63	0.013	120	0.79	0.019	120	0.94	0.022	130	1.18	0.024	130	1.42	0.026	140	1.57	0.034	140	1.97	0.036	150	2.36	0.041	170	3.15	0.050	170	4.72	0.050	170	6.29	0.050			
	328	.025	.00052	394	.031	.00076	394	.037	.00085	427	.046	.00094	427	.056	.00104	459	.062	.00132	459	.077	.00142	492	.093	.00161	558	.124	.00198	558	.186	.00198	558	.248	.00198			
	100	0.63	0.013	120	0.79	0.019	120	0.94	0.022	130	1.18	0.024	130	1.42	0.026	140	1.57	0.034	140	1.97	0.036	150	2.36	0.041	170	3.15	0.050	170	4.72	0.050	170	6.29	0.050			
	328	.025	.00052	394	.031	.00076	394	.037	.00085	427	.046	.00094	427	.056	.00104	459	.062	.00132	459																	





NEW

CrazyDrill Cool SST-Inox





What's new: CrazyDrill Cool SST-Inox drill (6xd and 10xd) is especially developed for stainless steels, and heat-resistant and Cr-Co alloys. Previously unattained performance is possible due to a new cutting geometry and a new cooling channel shape that guarantees substantial cooling of cutting edges. The new, copper-red coating provides low adhesion to work materials and facilitates the very efficient drilling process.

The features: The bore with up to a maximum drilling depth of 10 x d is executed in one single step. The tool thereby guarantees optimal chip breaking and outstanding chip removal due to its new cutting geometry and flute profile. In addition, the newly developed drop-shaped cooling channels afford an extremely efficient coolant supply. New superlatives in terms of cutting speed and tool life become a reality.

Diameter range: 1 mm to 6 mm (.039" to .236")

Drilling depth: 6 x d and 10 x d

Coating: eXedur SNP

Latest innovation for difficult-to-machine materials

THE REVOLUTIONARY DRILL IN TERMS OF PERFORMANCE

With CrazyDrill Cool SST-Inox, Mikron Tool introduces a drill for stainless steels, heat-resistant and Cr-Co alloys in the diameter range of 1 mm to 6 mm (.039" to .236") and for drilling depths of 6 x d and 10 x d.

- CrazyDrill Cool SST-Inox, drilling depths 6 x d or 10 x d, with through-tool cooling

The new tip and flute geometry as well as the shape of the cooling channels in conjunction with the innovative coating form the foundation for drilling in one single step up to a drilling depth of 10 x d with high performance in terms of quality, tool life and cutting speed.

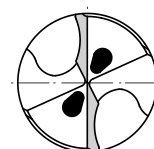
THE ADVANTAGES*

- | | |
|--------------------------------------|-----------------------------|
| ■ SHORT MACHINING TIME | Up to 2 times faster |
| ■ LONG TOOL LIFE | Up to 3 times longer |
| ■ HIGH DEGREE OF PROCESS RELIABILITY | Due to greater coolant flow |
| ■ HIGH DEGREE OF PRECISION | Due to small tolerances |

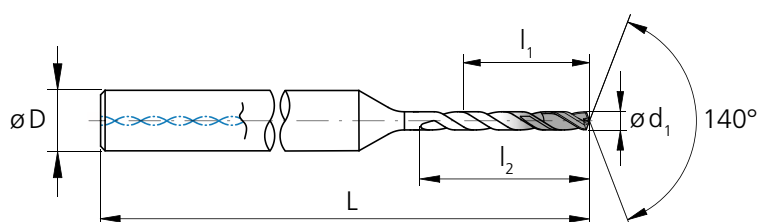
* The comparison applies to good-quality drilling tools with traditional technology and the cutting parameters as recommended by manufacturers.

6 x d	10 x d	NEW	
■ Drill with through-tool cooling	■ Drill with through-tool cooling		
		1 SHANK The reinforced solid carbide shank guarantees stability, a high degree of concentricity and hence maximum drilling precision. 2 NEW GENERATION OF COOLING CHANNELS Due to a newly designed shape of helical cooling channels, up to four times more coolant volume reaches the drill tip. The result is constant and maximal cooling of cutting edges as well as continuous and efficient chip removal. A Power-chamber additionally guarantees sufficiently strong coolant flow for smaller diameters of up to 2.95 mm (.116"). 3 CARBIDE A specially developed micro-grain solid carbide with a high degree of toughness allows machining at high speeds. 4 NEW COATING The high-performance coating eXedur SNP is heat-resistant and wear-resistant, prevents build up edges and promotes continuous chip flushing. A very long tool life is given. 5 NEW CHIP FLUTE PROFILE Divided into two areas: ■ Front chip flute area: a special chip breaker shape ensures compact, short and curved chips. ■ Rear chip flute area: an extended flute shape ensures perfect chip removal. 6 DOUBLE GUIDING MARGINS The narrow guiding margins provides the highest degree of precision (straightness) and surface quality.	
			
			
CrazyDrill Cool SST-Inox 6 x d	CrazyDrill Cool SST-Inox 10 x d		

Drill tip



CrazyDrill Cool SST-Inox 6 x d



from stock	Item number	d ₁ k5 [mm]	d ₁ k5 [inch]	L ₁ [mm]	L ₁ [inch]	L ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.CD.060100.IC	1.00	.039	6.0	.236	9.0	4	55	2.17
■	2.CD.060105.IC	1.05	.041	6.3	.248	9.5	4	55	2.17
■	2.CD.060110.IC	1.10	.043	6.6	.260	9.9	4	55	2.17
■	2.CD.060115.IC	1.15	.045	6.9	.272	10.4	4	55	2.17
■	2.CD.060120.IC	1.20	.047	7.2	.283	10.8	4	57	2.24
■	2.CD.060125.IC	1.25	.049	7.5	.295	11.3	4	57	2.24
■	2.CD.060130.IC	1.30	.051	7.8	.307	11.7	4	57	2.24
■	2.CD.060135.IC	1.35	.053	8.1	.319	12.2	4	57	2.24
■	2.CD.060140.IC	1.40	.055	8.4	.331	12.6	4	57	2.24
■	2.CD.060145.IC	1.45	.057	8.7	.343	13.1	4	58	2.28
■	2.CD.060150.IC	1.50	.059	9.0	.354	13.5	4	58	2.28
■	2.CD.060155.IC	1.55	.061	9.3	.366	14.0	4	58	2.28
■	2.CD.060160.IC	1.60	.063	9.6	.378	14.4	4	58	2.28
■	2.CD.060165.IC	1.65	.065	9.9	.390	14.9	4	58	2.28
■	2.CD.060170.IC	1.70	.067	10.2	.402	15.3	4	60	2.36
■	2.CD.060175.IC	1.75	.069	10.5	.413	15.8	4	60	2.36
■	2.CD.060180.IC	1.80	.071	10.8	.425	16.2	4	60	2.36
■	2.CD.060185.IC	1.85	.073	11.1	.437	16.7	4	60	2.36
■	2.CD.060190.IC	1.90	.075	11.4	.449	17.1	4	60	2.36
■	2.CD.060195.IC	1.95	.077	11.7	.461	17.6	4	60	2.36
■	2.CD.060200.IC	2.00	.079	12.0	.472	18.0	4	63	2.48

from stock	Item number	d ₁ k5 [mm]	d ₁ k5 [inch]	L ₁ [mm]	L ₁ [inch]	L ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.CD.060205.IC	2.05	.081	12.3	.484	18.5	4	63	2.48
■	2.CD.060210.IC	2.10	.083	12.6	.496	18.9	4	63	2.48
■	2.CD.060215.IC	2.15	.085	12.9	.508	19.4	4	63	2.48
■	2.CD.060220.IC	2.20	.087	13.2	.520	19.8	4	63	2.48
■	2.CD.060225.IC	2.25	.089	13.5	.531	20.3	4	63	2.48
■	2.CD.060230.IC	2.30	.091	13.8	.543	20.7	4	65	2.56
■	2.CD.060235.IC	2.35	.093	14.1	.555	21.2	4	65	2.56
■	2.CD.060240.IC	2.40	.094	14.4	.567	21.6	4	65	2.56
■	2.CD.060245.IC	2.45	.096	14.7	.579	22.1	4	65	2.56
■	2.CD.060250.IC	2.50	.098	15.0	.591	22.5	4	65	2.56
■	2.CD.060255.IC	2.55	.100	15.3	.602	23.0	4	65	2.56
■	2.CD.060260.IC	2.60	.102	15.6	.614	23.4	4	68	2.68
■	2.CD.060265.IC	2.65	.104	15.9	.626	23.9	4	68	2.68
■	2.CD.060270.IC	2.70	.106	16.2	.638	24.3	4	68	2.68
■	2.CD.060275.IC	2.75	.108	16.5	.650	24.8	4	68	2.68
■	2.CD.060280.IC	2.80	.110	16.8	.661	25.2	4	68	2.68
■	2.CD.060285.IC	2.85	.112	17.1	.673	25.7	4	68	2.68
■	2.CD.060290.IC	2.90	.114	17.4	.685	26.1	4	68	2.68
■	2.CD.060295.IC	2.95	.116	17.7	.697	26.6	4	68	2.68
■	2.CD.060300.IC	3.00	.118	18.0	.709	27.0	6	74	2.91
■	2.CD.060305.IC	3.05	.120	18.3	.720	27.5	6	74	2.91

■ Stock available from November 15th, 2016

Cutting process: It is available on www.mikrontool.com

Carbide			Z2		
		140°			eXedur SNP

from stock	Item number	d ₁ k5 [mm]	d ₁ k5 [inch]	l ₁ [mm]	l ₁ [inch]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.CD.060310.IC	3.10	.122	18.6	.732	27.9	6	74	2.91
■	2.CD.060315.IC	3.15	.124	18.9	.744	28.4	6	74	2.91
■	2.CD.060320.IC	3.20	.126	19.2	.756	28.8	6	74	2.91
■	2.CD.060325.IC	3.25	.128	19.5	.768	29.3	6	74	2.91
■	2.CD.060330.IC	3.30	.130	19.8	.780	29.7	6	74	2.91
■	2.CD.060335.IC	3.35	.132	20.1	.791	30.2	6	74	2.91
■	2.CD.060340.IC	3.40	.134	20.4	.803	30.6	6	74	2.91
■	2.CD.060345.IC	3.45	.136	20.7	.815	31.1	6	74	2.91
■	2.CD.060350.IC	3.50	.138	21.0	.827	31.5	6	78	3.07
■	2.CD.060355.IC	3.55	.140	21.3	.839	32.0	6	78	3.07
■	2.CD.060360.IC	3.60	.142	21.6	.850	32.4	6	78	3.07
■	2.CD.060365.IC	3.65	.144	21.9	.862	32.9	6	78	3.07
■	2.CD.060370.IC	3.70	.146	22.2	.874	33.3	6	78	3.07
■	2.CD.060375.IC	3.75	.148	22.5	.886	33.8	6	78	3.07
■	2.CD.060380.IC	3.80	.150	22.8	.898	34.2	6	78	3.07
■	2.CD.060385.IC	3.85	.152	23.1	.909	34.7	6	78	3.07
■	2.CD.060390.IC	3.90	.154	23.4	.921	35.1	6	78	3.07
■	2.CD.060395.IC	3.95	.156	23.7	.933	35.6	6	78	3.07
■	2.CD.060400.IC	4.00	.157	24.0	.945	36.0	6	78	3.07
■	2.CD.060410.IC	4.10	.161	24.6	.969	36.9	6	80	3.15
■	2.CD.060420.IC	4.20	.165	25.2	.992	37.8	6	80	3.15

from stock	Item number	d ₁ k5 [mm]	d ₁ k5 [inch]	l ₁ [mm]	l ₁ [inch]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.CD.060430.IC	4.30	.169	25.8	1.02	38.7	6	80	3.15
■	2.CD.060440.IC	4.40	.173	26.4	1.04	39.6	6	80	3.15
■	2.CD.060450.IC	4.50	.177	27.0	1.06	40.5	6	80	3.15
■	2.CD.060460.IC	4.60	.181	27.6	1.09	41.4	6	80	3.15
■	2.CD.060470.IC	4.70	.185	28.2	1.11	42.3	6	84	3.31
■	2.CD.060480.IC	4.80	.189	28.8	1.13	43.2	6	84	3.31
■	2.CD.060490.IC	4.90	.193	29.4	1.16	44.1	6	84	3.31
■	2.CD.060500.IC	5.00	.197	30.0	1.18	45.0	6	84	3.31
■	2.CD.060510.IC	5.10	.201	30.6	1.20	45.9	6	84	3.31
■	2.CD.060520.IC	5.20	.205	31.2	1.23	46.8	6	84	3.31
■	2.CD.060530.IC	5.30	.209	31.8	1.25	47.7	6	84	3.31
■	2.CD.060540.IC	5.40	.213	32.4	1.28	48.6	6	88	3.46
■	2.CD.060550.IC	5.50	.217	33.0	1.30	49.5	6	88	3.46
■	2.CD.060560.IC	5.60	.220	33.6	1.32	50.4	6	88	3.46
■	2.CD.060570.IC	5.70	.224	34.2	1.35	51.3	6	88	3.46
■	2.CD.060580.IC	5.80	.228	34.8	1.37	52.2	6	88	3.46
■	2.CD.060590.IC	5.90	.232	35.4	1.39	53.1	6	88	3.46
■	2.CD.060600.IC	6.00	.236	36.0	1.42	54.0	6	88	3.46

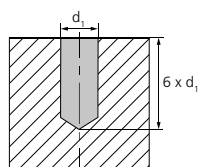
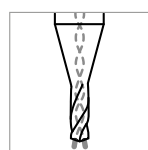
Complementary products

CrazyDrill Coolpilot

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CrazyDrill Cool SST-Inox 6 x d

DRILLING WITH THROUGH-TOOL COOLING | CUTTING DATA OVERVIEW



Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	V _c [m/min] [SFM]		
					Low	Mid	High
P	Unalloyed carbon steel Rm < 800 N/mm²	1.0301	C 10	AISI 1010			
		1.0401	C 15	AISI 1015			
		1.1191	C 45E/CK45	AISI 1045			
		1.0044	S 275JR	AISI 1020			
		1.0715	11SMn30	AISI 1215			
	Low alloyed steel Rm > 900 N/mm²	1.5752	15NiCr13	ASTM 3415 / AISI 3310			
		1.7131	16MnCr5	AISI 5115			
		1.3505	100Cr6	AISI 52100			
		1.7225	42CrMo4	AISI 4140			
		1.2842	90MnCrV8	AISI O2			
	High alloyed tool steel Rm < 1200 N/mm²	1.2379	X 153CrMoV12	AISI D2			
		1.2436	X 210CrW12	AISI D4/D6			
		1.3343	HS6-5-2C	AISI M2 / UNS T11302			
		1.3355	HS18-0-1	AISI T1 / UNS T12001			
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430 / UNS S43000	60 197	80 262	100 328
		1.4105	X6CrMoS17	AISI 430F			
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	60 197	80 262	100 328
		1.4112	X90CrMoV18	AISI 440B			
	Stainless steel martensitic – PH	1.4542	X5CrNiCuNb 16-4	AISI 630 / ASTM 17-4 PH	60 197	80 262	100 328
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH			
	Stainless steel austenitic	1.4301	X5CrNi 18-10	AISI 304	60 197	80 262	100 328
		1.4435	X2CrNiMo 18-14-3	AISI 316L			
		1.4441	X2CrNiMo 18-14-3	AISI 316LM			
K	Cast iron	0.6020	GG20	ASTM 30			
		0.6030	GG30	ASTM 40B			
		0.7040	GGG40	ASTM 60-40-18			
		0.7060	GGG60	ASTM 80-60-03			
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351			
		3.4365	AlZnMgCu1.5	ASTM 7075			
	Aluminium alloy cast	3.2163	GD-AlSi9Cu3	ASTM A380			
		3.2381	GD-AlSi10Mg	UNS A03590			
	Copper	2.004	Cu-OF / CW008A	UNS C10100			
		2.0065	Cu-ETP / CW004A	UNS C11000			
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400			
		2.036	CuZn40 CW509L	UNS C28000			
	Brass, Bronze Rm < 400 N/mm²	2.0401	CuZn39Pb3 / CW614N	UNS C38500			
		2.102	CuSn6	UNS C51900			
S₁	Super alloys	2.4856		Inconel 625	30 98	40 131	50 164
		2.4668		Inconel 718			
		2.4617	NiMo28	Hastelloy B-2			
		2.4665	NiCr22Fe18Mo	Hastelloy X			
S₂	Titanium pure	3.7035	Gr.2	ASTM B348 / F67			
		3.7065	Gr.4	ASTM B348 / F68			
	Titanium alloys	3.7165	TiAl6V4	ASTM B348 / F136			
		9.9367	TiAl6Nb7	ASTM F1295			
S₃	Cr-Co alloys	2.4964	CoCr20W15Ni	Haynes 25	50 164	70 230	90 295
			CrCoMo28	ASTM F1537			
H₁	Hardened steel < 55 HRC	1.2510	100MnCrMoW4	AISI O1			
H₂	Hardened steel ≥ 55 HRC	1.2379	X153CrMoV12	AISI D2			

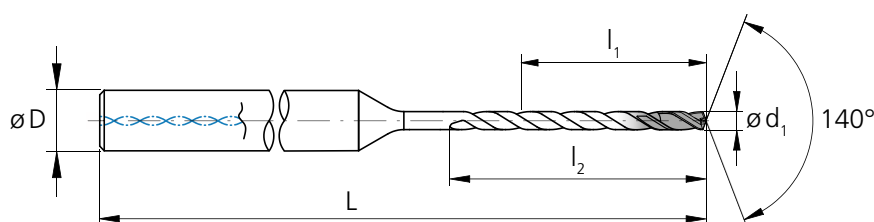
RECOMMENDATION FOR USE

● Excellent | ● Good | ○ Acceptable | ☒ Not recommended



f [mm/rev] [IPR]																										
Ød1 1.0 mm .039"			Ød1 1.25 mm .049"			Ød1 1.5 mm .059"			Ød1 2.0 mm .079"			Ød1 2.5 mm .098"			Ød1 3.0 mm .118"			Ød1 4.0 mm .157"			Ød1 5.0 mm .197"			Ød1 6.0 mm .236"		
Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High
0.010 .0004	0.020 .0008	0.030 .0012	0.013 .0005	0.025 .0010	0.038 .0015	0.015 .0006	0.030 .0012	0.045 .0018	0.020 .0008	0.040 .0016	0.060 .0024	0.025 .0010	0.050 .0020	0.075 .0030	0.030 .0012	0.060 .0024	0.090 .0035	0.040 .0016	0.080 .0031	0.120 .0047	0.050 .0020	0.100 .0039	0.150 .0059	0.060 .0024	0.120 .0047	0.180 .0071
0.030 .0012	0.040 .0016	0.050 .0020	0.038 .0015	0.050 .0020	0.063 .0025	0.045 .0018	0.060 .0024	0.075 .0030	0.060 .0024	0.080 .0031	0.100 .0039	0.075 .0030	0.100 .0039	0.125 .0049	0.090 .0035	0.120 .0047	0.150 .0059	0.120 .0047	0.160 .0063	0.200 .0079	0.150 .0059	0.200 .0079	0.250 .0098	0.180 .0071	0.240 .0094	0.300 .0118
0.020 .0008	0.030 .0012	0.040 .0016	0.025 .0010	0.038 .0015	0.050 .0020	0.030 .0012	0.045 .0018	0.060 .0024	0.040 .0016	0.060 .0024	0.080 .0031	0.050 .0020	0.075 .0030	0.100 .0039	0.060 .0024	0.090 .0035	0.120 .0047	0.080 .0031	0.120 .0047	0.160 .0063	0.100 .0039	0.150 .0059	0.200 .0079	0.120 .0047	0.180 .0071	0.240 .0094
0.020 .0008	0.030 .0012	0.040 .0016	0.025 .0010	0.038 .0015	0.050 .0020	0.030 .0012	0.045 .0018	0.060 .0024	0.040 .0016	0.060 .0024	0.080 .0031	0.050 .0020	0.075 .0030	0.100 .0039	0.060 .0024	0.090 .0035	0.120 .0047	0.080 .0031	0.120 .0047	0.160 .0063	0.100 .0039	0.150 .0059	0.200 .0079	0.120 .0047	0.180 .0071	0.240 .0094
0.010 .0004	0.015 .0006	0.020 .0008	0.013 .0005	0.019 .0007	0.025 .0010	0.015 .0006	0.023 .0009	0.030 .0012	0.020 .0008	0.030 .0012	0.040 .0016	0.025 .0010	0.038 .0015	0.050 .0020	0.030 .0012	0.045 .0018	0.060 .0024	0.040 .0016	0.060 .0024	0.080 .0031	0.050 .0020	0.075 .0030	0.100 .0039	0.060 .0024	0.090 .0035	0.120 .0047
0.020 .0008	0.030 .0012	0.040 .0016	0.025 .0010	0.038 .0015	0.050 .0020	0.030 .0012	0.045 .0018	0.060 .0024	0.040 .0016	0.060 .0024	0.080 .0031	0.050 .0020	0.075 .0030	0.100 .0039	0.060 .0024	0.090 .0035	0.120 .0047	0.080 .0031	0.120 .0047	0.160 .0063	0.100 .0039	0.150 .0059	0.200 .0079	0.120 .0047	0.180 .0071	0.240 .0094

CrazyDrill Cool SST-Inox 10 x d



from stock	Item number	d ₁ k5 [mm]	d ₁ k5 [inch]	L ₁ [mm]	L ₁ [inch]	L ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.CD.100100.IC	1.00	.039	10.0	.394	13.0	4	59	2.32
■	2.CD.100105.IC	1.05	.041	10.5	.413	13.7	4	59	2.32
■	2.CD.100110.IC	1.10	.043	11.0	.433	14.3	4	59	2.32
■	2.CD.100115.IC	1.15	.045	11.5	.453	15.0	4	59	2.32
■	2.CD.100120.IC	1.20	.047	12.0	.472	15.6	4	62	2.44
■	2.CD.100125.IC	1.25	.049	12.5	.492	16.3	4	62	2.44
■	2.CD.100130.IC	1.30	.051	13.0	.512	16.9	4	62	2.44
■	2.CD.100135.IC	1.35	.053	13.5	.531	17.6	4	62	2.44
■	2.CD.100140.IC	1.40	.055	14.0	.551	18.2	4	62	2.44
■	2.CD.100145.IC	1.45	.057	14.5	.571	18.9	4	65	2.56
■	2.CD.100150.IC	1.50	.059	15.0	.591	19.5	4	65	2.56
■	2.CD.100155.IC	1.55	.061	15.5	.610	20.2	4	65	2.56
■	2.CD.100160.IC	1.60	.063	16.0	.630	20.8	4	65	2.56
■	2.CD.100165.IC	1.65	.065	16.5	.650	21.5	4	65	2.56
■	2.CD.100170.IC	1.70	.067	17.0	.669	22.1	4	67	2.64
■	2.CD.100175.IC	1.75	.069	17.5	.689	22.8	4	67	2.64
■	2.CD.100180.IC	1.80	.071	18.0	.709	23.4	4	67	2.64
■	2.CD.100185.IC	1.85	.073	18.5	.728	24.1	4	67	2.64
■	2.CD.100190.IC	1.90	.075	19.0	.748	24.7	4	67	2.64
■	2.CD.100195.IC	1.95	.077	19.5	.768	25.4	4	67	2.64
■	2.CD.100200.IC	2.00	.079	20.0	.787	26.0	4	70	2.76

from stock	Item number	d ₁ k5 [mm]	d ₁ k5 [inch]	L ₁ [mm]	L ₁ [inch]	L ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.CD.100205.IC	2.05	.081	20.5	.807	26.7	4	70	2.76
■	2.CD.100210.IC	2.10	.083	21.0	.827	27.3	4	70	2.76
■	2.CD.100215.IC	2.15	.085	21.5	.846	28.0	4	70	2.76
■	2.CD.100220.IC	2.20	.087	22.0	.866	28.6	4	70	2.76
■	2.CD.100225.IC	2.25	.089	22.5	.886	29.3	4	70	2.76
■	2.CD.100230.IC	2.30	.091	23.0	.906	29.9	4	75	2.95
■	2.CD.100235.IC	2.35	.093	23.5	.925	30.6	4	75	2.95
■	2.CD.100240.IC	2.40	.094	24.0	.945	31.2	4	75	2.95
■	2.CD.100245.IC	2.45	.096	24.5	.965	31.9	4	75	2.95
■	2.CD.100250.IC	2.50	.098	25.0	.984	32.5	4	75	2.95
■	2.CD.100255.IC	2.55	.100	25.5	1.00	33.2	4	75	2.95
■	2.CD.100260.IC	2.60	.102	26.0	1.02	33.8	4	80	3.15
■	2.CD.100265.IC	2.65	.104	26.5	1.04	34.5	4	80	3.15
■	2.CD.100270.IC	2.70	.106	27.0	1.06	35.1	4	80	3.15
■	2.CD.100275.IC	2.75	.108	27.5	1.08	35.8	4	80	3.15
■	2.CD.100280.IC	2.80	.110	28.0	1.10	36.4	4	80	3.15
■	2.CD.100285.IC	2.85	.112	28.5	1.12	37.1	4	80	3.15
■	2.CD.100290.IC	2.90	.114	29.0	1.14	37.7	4	80	3.15
■	2.CD.100295.IC	2.95	.116	29.5	1.16	38.4	4	80	3.15
■	2.CD.100300.IC	3.00	.118	30.0	1.18	39.0	6	87	3.43
■	2.CD.100305.IC	3.05	.120	30.5	1.20	39.7	6	87	3.43

■ Stock available from November 15th, 2016

Cutting process: It is available on www.mikrontool.com

Carbide			Z2		
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from stock	Item number	d ₁ k5 [mm]	d ₁ k5 [inch]	l ₁ [mm]	l ₁ [inch]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.CD.100310.IC	3.10	.122	31.0	1.22	40.3	6	87	3.43
■	2.CD.100315.IC	3.15	.124	31.5	1.24	41.0	6	87	3.43
■	2.CD.100320.IC	3.20	.126	32.0	1.26	41.6	6	87	3.43
■	2.CD.100325.IC	3.25	.128	32.5	1.28	42.3	6	87	3.43
■	2.CD.100330.IC	3.30	.130	33.0	1.30	42.9	6	87	3.43
■	2.CD.100335.IC	3.35	.132	33.5	1.32	43.6	6	87	3.43
■	2.CD.100340.IC	3.40	.134	34.0	1.34	44.2	6	87	3.43
■	2.CD.100345.IC	3.45	.136	34.5	1.36	44.9	6	87	3.43
■	2.CD.100350.IC	3.50	.138	35.0	1.38	45.5	6	95	3.74
■	2.CD.100355.IC	3.55	.140	35.5	1.40	46.2	6	95	3.74
■	2.CD.100360.IC	3.60	.142	36.0	1.42	46.8	6	95	3.74
■	2.CD.100365.IC	3.65	.144	36.5	1.44	47.5	6	95	3.74
■	2.CD.100370.IC	3.70	.146	37.0	1.46	48.1	6	95	3.74
■	2.CD.100375.IC	3.75	.148	37.5	1.48	48.8	6	95	3.74
■	2.CD.100380.IC	3.80	.150	38.0	1.50	49.4	6	95	3.74
■	2.CD.100385.IC	3.85	.152	38.5	1.52	50.1	6	95	3.74
■	2.CD.100390.IC	3.90	.154	39.0	1.54	50.7	6	95	3.74
■	2.CD.100395.IC	3.95	.156	39.5	1.56	51.4	6	95	3.74
■	2.CD.100400.IC	4.00	.157	40.0	1.57	52.0	6	95	3.74
■	2.CD.100410.IC	4.10	.161	41.0	1.61	53.3	6	100	3.94
■	2.CD.100420.IC	4.20	.165	42.0	1.65	54.6	6	100	3.94

from stock	Item number	d ₁ k5 [mm]	d ₁ k5 [inch]	l ₁ [mm]	l ₁ [inch]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.CD.100430.IC	4.30	.169	43.0	1.69	55.9	6	100	3.94
■	2.CD.100440.IC	4.40	.173	44.0	1.73	57.2	6	100	3.94
■	2.CD.100450.IC	4.50	.177	45.0	1.77	58.5	6	100	3.94
■	2.CD.100460.IC	4.60	.181	46.0	1.81	59.8	6	100	3.94
■	2.CD.100470.IC	4.70	.185	47.0	1.85	61.1	6	105	4.13
■	2.CD.100480.IC	4.80	.189	48.0	1.89	62.4	6	105	4.13
■	2.CD.100490.IC	4.90	.193	49.0	1.93	63.7	6	105	4.13
■	2.CD.100500.IC	5.00	.197	50.0	1.97	65.0	6	105	4.13
■	2.CD.100510.IC	5.10	.201	51.0	2.01	66.3	6	105	4.13
■	2.CD.100520.IC	5.20	.205	52.0	2.05	67.6	6	105	4.13
■	2.CD.100530.IC	5.30	.209	53.0	2.09	68.9	6	105	4.13
■	2.CD.100540.IC	5.40	.213	54.0	2.13	70.2	6	112	4.41
■	2.CD.100550.IC	5.50	.217	55.0	2.17	71.5	6	112	4.41
■	2.CD.100560.IC	5.60	.220	56.0	2.20	72.8	6	112	4.41
■	2.CD.100570.IC	5.70	.224	57.0	2.24	74.1	6	112	4.41
■	2.CD.100580.IC	5.80	.228	58.0	2.28	75.4	6	112	4.41
■	2.CD.100590.IC	5.90	.232	59.0	2.32	76.7	6	112	4.41
■	2.CD.100600.IC	6.00	.236	60.0	2.36	78.0	6	112	4.41

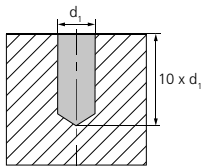
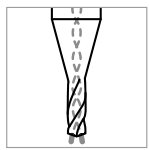
Complementary products

CrazyDrill Coolpilot

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CrazyDrill Cool SST-Inox 10 x d

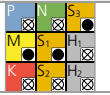
DRILLING WITH THROUGH-TOOL COOLING | CUTTING DATA OVERVIEW



Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	V _c [m/min] [SFM]			
					Low	Mid	High	
P	Unalloyed carbon steel Rm < 800 N/mm²	1.0301	C 10	AISI 1010				
		1.0401	C 15	AISI 1015				
		1.1191	C 45E/CK45	AISI 1045				
		1.0044	S275JR	AISI 1020				
		1.0715	11SMn30	AISI 1215				
	Low alloyed steel Rm > 900 N/mm²	1.5752	15NiCr13	ASTM 3415 / AISI 3310				
		1.7131	16MnCr5	AISI 5115				
		1.3505	100Cr6	AISI 52100				
		1.7225	42CrMo4	AISI 4140				
		1.2842	90MnCrV8	AISI O2				
	High alloyed tool steel Rm < 1200 N/mm²	1.2379	X153CrMoV12	AISI D2				
		1.2436	X210CrW12	AISI D4/D6				
		1.3343	HS6-5-2C	AISI M2 / UNS T11302				
		1.3355	HS18-0-1	AISI T1 / UNS T12001				
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430 / UNS S43000	60 197	80 262	100 328	
		1.4105	X6CrMoS17	AISI 430F				
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	60 197	80 262	100 328	
		1.4112	X90CrMoV18	AISI 440B				
	Stainless steel martensitic – PH	1.4542	X5CrNiCuNb 16-4	AISI 630 / ASTM 17-4 PH	60 197	80 262	100 328	
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH				
	Stainless steel austenitic	1.4301	X5CrNi 18-10	AISI 304	60 197	80 262	100 328	
		1.4435	X2CrNiMo 18-14-3	AISI 316L				
		1.4441	X2CrNiMo 18-14-3	AISI 316LM				
1.4539		X1NiCrMoCu 25-20-5	AISI 904L					
K	Cast iron	0.6020	GG20	ASTM 30				
		0.6030	GG30	ASTM 40B				
		0.7040	GGG40	ASTM 60-40-18				
		0.7060	GGG60	ASTM 80-60-03				
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351				
		3.4365	AlZnMgCu1.5	ASTM 7075				
	Aluminium alloy cast	3.2163	GD-AISI9Cu3	ASTM A380				
		3.2381	GD-AISI10Mg	UNS A03590				
	Copper	2.004	Cu-OF / CW008A	UNS C10100				
		2.0065	Cu-ETP / CW004A	UNS C11000				
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400				
		2.036	CuZn40 CW509L	UNS C28000				
	Brass, Bronze Rm < 400 N/mm²	2.0401	CuZn39Pb3 / CW614N	UNS C38500				
		2.102	CuSn6	UNS C51900				
Bronze Rm < 600 N/mm²	2.0966	CuAl10Ni5Fe4	UNS C63000					
	2.096	CuAl9Mn2	UNS C63200					
S ₁	Super alloys	2.4856		Inconel 625	30 98	40 131	50 164	
		2.4668		Inconel 718				
		2.4617	NiMo28	Hastelloy B-2				
		2.4665	NiCr22Fe18Mo	Hastelloy X				
S ₂	Titanium pure	3.7035	Gr.2	ASTM B348 / F67				
		3.7065	Gr.4	ASTM B348 / F68				
S ₃	Titanium alloys	3.7165	TiAl6V4	ASTM B348 / F136				
		9.9367	TiAl6Nb7	ASTM F1295				
		2.4964	CoCr20W15Ni	Haynes 25				
			CrCoMo28	ASTM F1537	50 164	70 230	90 295	
H ₁	Hardened steel < 55 HRC	1.2510	100MnCrMoW4	AISI O1				
H ₂	Hardened steel ≥ 55 HRC	1.2379	X153CrMoV12	AISI D2				

RECOMMENDATION FOR USE

● Excellent | ● Good | ○ Acceptable | ☒ Not recommended



f [mm/rev] [IPR]																										
Ød1 1.0 mm .039"			Ød1 1.25 mm .049"			Ød1 1.5 mm .059"			Ød1 2.0 mm .079"			Ød1 2.5 mm .098"			Ød1 3.0 mm .118"			Ød1 4.0 mm .157"			Ød1 5.0 mm .197"			Ød1 6.0 mm .236"		
Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High
0.010 .0004	0.020 .0008	0.030 .0012	0.013 .0005	0.025 .0010	0.038 .0015	0.015 .0006	0.030 .0012	0.045 .0018	0.020 .0008	0.040 .0016	0.060 .0024	0.025 .0010	0.050 .0020	0.075 .0030	0.030 .0012	0.060 .0024	0.090 .0035	0.040 .0016	0.080 .0031	0.120 .0047	0.050 .0020	0.100 .0039	0.150 .0059	0.060 .0024	0.120 .0047	0.180 .0071
0.030 .0012	0.040 .0016	0.050 .0020	0.038 .0015	0.050 .0020	0.063 .0025	0.045 .0018	0.060 .0024	0.075 .0030	0.060 .0024	0.080 .0031	0.100 .0039	0.075 .0030	0.100 .0039	0.125 .0049	0.090 .0035	0.120 .0047	0.150 .0059	0.120 .0047	0.160 .0063	0.200 .0079	0.150 .0059	0.200 .0079	0.250 .0098	0.180 .0071	0.240 .0094	0.300 .0118
0.020 .0008	0.030 .0012	0.040 .0016	0.025 .0010	0.038 .0015	0.050 .0020	0.030 .0012	0.045 .0018	0.060 .0024	0.040 .0016	0.060 .0024	0.080 .0031	0.050 .0020	0.075 .0030	0.100 .0039	0.060 .0024	0.090 .0035	0.120 .0047	0.080 .0031	0.120 .0047	0.160 .0063	0.100 .0039	0.150 .0059	0.200 .0079	0.120 .0047	0.180 .0071	0.240 .0094
0.020 .0008	0.030 .0012	0.040 .0016	0.025 .0010	0.038 .0015	0.050 .0020	0.030 .0012	0.045 .0018	0.060 .0024	0.040 .0016	0.060 .0024	0.080 .0031	0.050 .0020	0.075 .0030	0.100 .0039	0.060 .0024	0.090 .0035	0.120 .0047	0.080 .0031	0.120 .0047	0.160 .0063	0.100 .0039	0.150 .0059	0.200 .0079	0.120 .0047	0.180 .0071	0.240 .0094
0.010 .0004	0.015 .0006	0.020 .0008	0.013 .0005	0.019 .0007	0.025 .0010	0.015 .0006	0.023 .0009	0.030 .0012	0.020 .0008	0.030 .0012	0.040 .0016	0.025 .0010	0.038 .0015	0.050 .0020	0.030 .0012	0.045 .0018	0.060 .0024	0.040 .0016	0.060 .0024	0.080 .0031	0.050 .0020	0.075 .0030	0.100 .0039	0.060 .0024	0.090 .0035	0.120 .0047
0.020 .0008	0.030 .0012	0.040 .0016	0.025 .0010	0.038 .0015	0.050 .0020	0.030 .0012	0.045 .0018	0.060 .0024	0.040 .0016	0.060 .0024	0.080 .0031	0.050 .0020	0.075 .0030	0.100 .0039	0.060 .0024	0.090 .0035	0.120 .0047	0.080 .0031	0.120 .0047	0.160 .0063	0.100 .0039	0.150 .0059	0.200 .0079	0.120 .0047	0.180 .0071	0.240 .0094

NEW

CrazyDrill Coolpilot



PILOT OR SHORT DRILL WITH INNOVATIVE THROUGH-TOOL COOLING



What's new: CrazyDrill Coolpilot was developed as a pilot and short drill with an integrated cutting edge for 90° chamfer for stainless steels, heat-resistant and Cr-Co alloys. This makes it the ideal complement to CrazyDrill Cool SST-Inox. It has helical drop-shaped cooling channels up to the cutting edges as well as a chip breaker flute profile. The new, copper-red coating provides low adhesion to work materials and facilitates an efficient drilling process.

The features: Pilot drilling or short drilling up to 3 x d is executed in one step. The follow-up drill is optimally conducted through the pilot hole, thus guaranteeing a high degree of hole straightness. A 90° countersink can be added simultaneously due to the integrated cutting edge for chamfer. Reduced tool changes therefore result in shorter machining times.

Diameter range: 1 mm to 6 mm (.039" to .236")

Drilling depth: 3 x d

Countersink angle: 90°

Coating: eXedur SNP

Maximum precision even with difficult materials

EFFICIENT PILOT AND SHORT DRILLING IN STAINLESS MATERIALS

With CrazyDrill Coolpilot, Mikron Tool introduces a pilot and short drill for stainless steels, heat-resistant and Cr-Co alloys in the diameter range of 1 mm to 6 mm (.039" to .236") and for a drilling depth of up to 3 x d.

■ CrazyDrill Coolpilot, drilling depth 3 x d, with through-tool cooling, countersink 90°

The new features are the tip geometry, the shape of the cooling channels, the flute profile for perfect chip breaking and the coating. CrazyDrill Coolpilot is the perfect preparation for deep drilling with CrazyDrill Cool SST-Inox.

THE ADVANTAGES*

- | | |
|---|---|
| ■ SHORT MACHINING TIME | Drilling 3 x d + 90° countersink with one tool |
| ■ HIGH DEGREE OF PROCESS RELIABILITY | Due to greater coolant flow |
| ■ HIGH DEGREE OF PRECISION | Due to small tolerances |

* The comparison applies to good-quality drilling tools with traditional technology and the cutting parameters as recommended by manufacturers.

CrazyDrill Coolpilot

■ Drill with through-tool cooling



NEW

1 | SHANK

The reinforced solid carbide shank guarantees stability, high degree of concentricity and hence maximum drilling precision.

2 | NEW: WITH COOLING CHANNELS

Due to a newly designed shape of helical cooling channels, up to four times more coolant volume reaches the drill tip. The result is continuous and efficient chip removal as well as constant and substantial cooling of cutting edges. A Power-chamber additionally guarantees sufficiently strong coolant flow for smaller diameters of up to 2.95 mm (1/16").

3 | CARBIDE

A specially developed micro-grain solid carbide with a high degree of toughness allows machining at high speeds.

4 | NEW COATING

The high-performance coating eXedur SNP is heat-resistant and wear-resistant, prevents build up edges and promotes uniform chip flushing. The result is long tool life.

5 | 90° CHAMFER CUTTING EDGE

A 90° countersink can be placed simultaneously with the drilling.

6 | NEW CHIP FLUTE PROFILE

Divided into two areas:

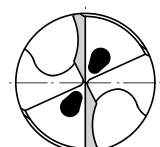
■ **Front chip flute area:** a special chip breaker shape ensures compact, short and curved chips.

■ **Rear chip flute area:** an extended flute shape ensures perfect chip removal.

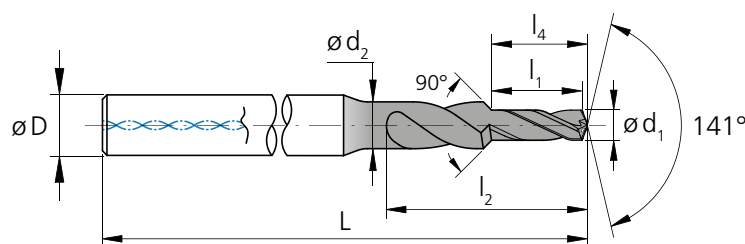
7 | DOUBLE GUIDING MARGIN

The narrow guiding chamfer ensures the highest degree of precision (straightness) and surface quality.

Drill tip



CrazyDrill Coolpilot



from stock	Item number	d ₁ m5 [mm]	d ₁ m5 [inch]	l ₁ [mm]	l ₁ [inch]	d ₂ [mm]	l ₄ [mm]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.PD.01000.090.IC	1.00	.039	3.00	.118	1.60	3.20	6.5	4	50	1.97
■	2.PD.01050.090.IC	1.05	.041	3.15	.124	1.60	3.30	6.8	4	50	1.97
■	2.PD.01100.090.IC	1.10	.043	3.30	.130	1.60	3.50	7.1	4	50	1.97
■	2.PD.01150.090.IC	1.15	.045	3.45	.136	1.60	3.60	7.5	4	50	1.97
■	2.PD.01200.090.IC	1.20	.047	3.60	.142	1.90	3.80	7.8	4	50	1.97
■	2.PD.01250.090.IC	1.25	.049	3.75	.148	1.90	4.00	8.1	4	50	1.97
■	2.PD.01300.090.IC	1.30	.051	3.90	.154	1.90	4.10	8.4	4	50	1.97
■	2.PD.01350.090.IC	1.35	.053	4.05	.159	1.90	4.30	8.8	4	50	1.97
■	2.PD.01400.090.IC	1.40	.055	4.20	.165	1.90	4.40	9.1	4	50	1.97
■	2.PD.01450.090.IC	1.45	.057	4.35	.171	2.25	4.60	10.4	4	50	1.97
■	2.PD.01500.090.IC	1.50	.059	4.50	.177	2.25	4.70	10.7	4	50	1.97
■	2.PD.01550.090.IC	1.55	.061	4.65	.183	2.25	4.90	10.9	4	50	1.97
■	2.PD.01600.090.IC	1.60	.063	4.80	.189	2.25	5.10	11.2	4	50	1.97
■	2.PD.01650.090.IC	1.65	.065	4.95	.195	2.25	5.20	11.5	4	50	1.97
■	2.PD.01700.090.IC	1.70	.067	5.10	.201	2.60	5.40	11.8	4	53	2.09
■	2.PD.01750.090.IC	1.75	.069	5.25	.207	2.60	5.50	12.1	4	53	2.09
■	2.PD.01800.090.IC	1.80	.071	5.40	.213	2.60	5.70	12.3	4	53	2.09
■	2.PD.01850.090.IC	1.85	.073	5.55	.219	2.60	5.80	12.6	4	53	2.09
■	2.PD.01900.090.IC	1.90	.075	5.70	.224	2.60	6.00	12.8	4	53	2.09
■	2.PD.01950.090.IC	1.95	.077	5.85	.230	2.60	6.20	13.1	4	53	2.09

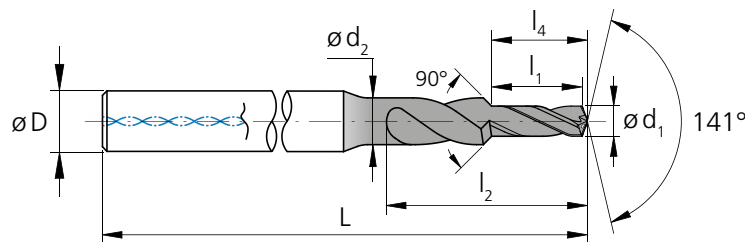
■ Stock available from November 15th, 2016

Cutting process: It is available on www.mikrontool.com

Carbide				Z2		
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from stock	Item number	d ₁ m5 [mm]	d ₁ m5 [inch]	l ₁ [mm]	l ₁ [inch]	d ₂ [mm]	l ₄ [mm]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.PD.02000.090.IC	2.00	.079	6.00	.236	3.10	6.30	13.3	4	55	2.17
■	2.PD.02050.090.IC	2.05	.081	6.15	.242	3.10	6.50	13.6	4	55	2.17
■	2.PD.02100.090.IC	2.10	.083	6.30	.248	3.10	6.60	13.9	4	55	2.17
■	2.PD.02150.090.IC	2.15	.085	6.45	.254	3.10	6.80	14.1	4	55	2.17
■	2.PD.02200.090.IC	2.20	.087	6.60	.260	3.10	7.00	14.4	4	55	2.17
■	2.PD.02250.090.IC	2.25	.089	6.75	.266	3.10	7.10	14.7	4	55	2.17
■	2.PD.02300.090.IC	2.30	.091	6.90	.272	3.50	7.30	14.9	4	57	2.24
■	2.PD.02350.090.IC	2.35	.093	7.05	.278	3.50	7.40	15.2	4	57	2.24
■	2.PD.02400.090.IC	2.40	.094	7.20	.283	3.50	7.60	15.6	4	57	2.24
■	2.PD.02450.090.IC	2.45	.096	7.35	.289	3.50	7.70	15.9	4	57	2.24
■	2.PD.02500.090.IC	2.50	.098	7.50	.295	3.50	7.90	16.2	4	57	2.24
■	2.PD.02550.090.IC	2.55	.100	7.65	.301	3.50	8.10	16.5	4	57	2.24
■	2.PD.02600.090.IC	2.60	.102	7.80	.307	4.00	8.20	16.9	4	57	2.24
■	2.PD.02650.090.IC	2.65	.104	7.95	.313	4.00	8.40	17.2	4	57	2.24
■	2.PD.02700.090.IC	2.70	.106	8.10	.319	4.00	8.50	17.5	4	57	2.24
■	2.PD.02750.090.IC	2.75	.108	8.25	.325	4.00	8.70	17.8	4	57	2.24
■	2.PD.02800.090.IC	2.80	.110	8.40	.331	4.00	8.80	18.2	4	57	2.24
■	2.PD.02850.090.IC	2.85	.112	8.55	.337	4.00	9.00	18.5	4	57	2.24
■	2.PD.02900.090.IC	2.90	.114	8.70	.343	4.00	9.20	18.8	4	57	2.24
■	2.PD.02950.090.IC	2.95	.116	8.85	.348	4.00	9.30	19.1	4	57	2.24

CrazyDrill Coolpilot



■ from stock	Item number	d ₁ m5 [mm]	d ₁ m5 [inch]	l ₁ [mm]	l ₁ [inch]	d ₂ [mm]	l ₄ [mm]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.PD.03000.090.IC	3.00	.118	9.00	.354	4.70	9.50	19.5	6	65	2.56
■	2.PD.03050.090.IC	3.05	.120	9.15	.360	4.70	9.60	19.8	6	65	2.56
■	2.PD.03100.090.IC	3.10	.122	9.30	.366	4.70	9.80	20.1	6	65	2.56
■	2.PD.03150.090.IC	3.15	.124	9.45	.372	4.70	10.00	20.4	6	65	2.56
■	2.PD.03200.090.IC	3.20	.126	9.60	.378	4.70	10.10	20.8	6	65	2.56
■	2.PD.03250.090.IC	3.25	.128	9.75	.384	4.70	10.30	21.1	6	65	2.56
■	2.PD.03300.090.IC	3.30	.130	9.90	.390	4.70	10.40	21.4	6	65	2.56
■	2.PD.03350.090.IC	3.35	.132	10.05	.396	4.70	10.60	21.7	6	65	2.56
■	2.PD.03400.090.IC	3.40	.134	10.20	.402	4.70	10.70	22.1	6	65	2.56
■	2.PD.03450.090.IC	3.45	.136	10.35	.407	4.70	10.90	22.4	6	65	2.56
■	2.PD.03500.090.IC	3.50	.138	10.50	.413	5.40	11.10	22.7	6	68	2.68
■	2.PD.03550.090.IC	3.55	.140	10.65	.419	5.40	11.20	23.0	6	68	2.68
■	2.PD.03600.090.IC	3.60	.142	10.80	.425	5.40	11.40	23.4	6	68	2.68
■	2.PD.03650.090.IC	3.65	.144	10.95	.431	5.40	11.50	23.7	6	68	2.68
■	2.PD.03700.090.IC	3.70	.146	11.10	.437	5.40	11.70	24.0	6	68	2.68
■	2.PD.03750.090.IC	3.75	.148	11.25	.443	5.40	11.80	24.3	6	68	2.68
■	2.PD.03800.090.IC	3.80	.150	11.40	.449	5.40	12.00	24.7	6	68	2.68
■	2.PD.03850.090.IC	3.85	.152	11.55	.455	5.40	12.20	25.0	6	68	2.68
■	2.PD.03900.090.IC	3.90	.154	11.70	.461	5.40	12.30	25.3	6	68	2.68
■	2.PD.03950.090.IC	3.95	.156	11.85	.467	5.40	12.50	25.6	6	68	2.68
■	2.PD.04000.090.IC	4.00	.157	12.00	.472	5.40	12.60	26.0	6	68	2.68

■ Stock available from November 15th, 2016

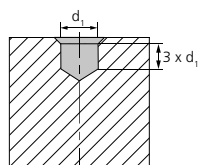
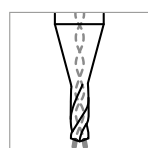
Cutting process: It is available on www.mikrontool.com

Carbide				Z2		
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from stock	Item number	d ₁ m5 [mm]	d ₁ m5 [inch]	l ₁ [mm]	l ₁ [inch]	d ₂ [mm]	l ₄ [mm]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.PD.04100.090.IC	4.10	.161	12.30	.484	6.00	12.90	26.6	6	72	2.83
■	2.PD.04200.090.IC	4.20	.165	12.60	.496	6.00	13.30	27.2	6	72	2.83
■	2.PD.04300.090.IC	4.30	.169	12.90	.508	6.00	13.60	27.9	6	72	2.83
■	2.PD.04400.090.IC	4.40	.173	13.20	.520	6.00	13.90	28.5	6	72	2.83
■	2.PD.04500.090.IC	4.50	.177	13.50	.531	6.00	14.20	29.2	6	72	2.83
■	2.PD.04600.090.IC	4.60	.181	13.80	.543	6.00	14.50	29.8	6	72	2.83
■	2.PD.04700.090.IC	4.70	.185	14.10	.555	7.00	14.80	30.5	8	75	2.95
■	2.PD.04800.090.IC	4.80	.189	14.40	.567	7.00	15.20	31.1	8	75	2.95
■	2.PD.04900.090.IC	4.90	.193	14.70	.579	7.00	15.50	31.8	8	75	2.95
■	2.PD.05000.090.IC	5.00	.197	15.00	.591	7.00	15.80	32.4	8	75	2.95
■	2.PD.05100.090.IC	5.10	.201	15.30	.602	7.50	16.10	33.1	8	75	2.95
■	2.PD.05200.090.IC	5.20	.205	15.60	.614	7.50	16.40	33.7	8	75	2.95
■	2.PD.05300.090.IC	5.30	.209	15.90	.626	7.50	16.70	34.4	8	75	2.95
■	2.PD.05400.090.IC	5.40	.213	16.20	.638	8.00	17.10	35.0	8	80	3.15
■	2.PD.05500.090.IC	5.50	.217	16.50	.650	8.00	17.40	35.7	8	80	3.15
■	2.PD.05600.090.IC	5.60	.220	16.80	.661	8.00	17.70	36.3	8	80	3.15
■	2.PD.05700.090.IC	5.70	.224	17.10	.673	8.00	18.00	37.0	8	80	3.15
■	2.PD.05800.090.IC	5.80	.228	17.40	.685	8.00	18.30	37.6	8	80	3.15
■	2.PD.05900.090.IC	5.90	.232	17.70	.697	8.00	18.60	38.3	8	80	3.15
■	2.PD.06000.090.IC	6.00	.236	18.00	.709	8.00	18.90	38.9	8	80	3.15

CrazyDrill Coolpilot

DRILLING WITH THROUGH-TOOL COOLING | CUTTING DATA OVERVIEW



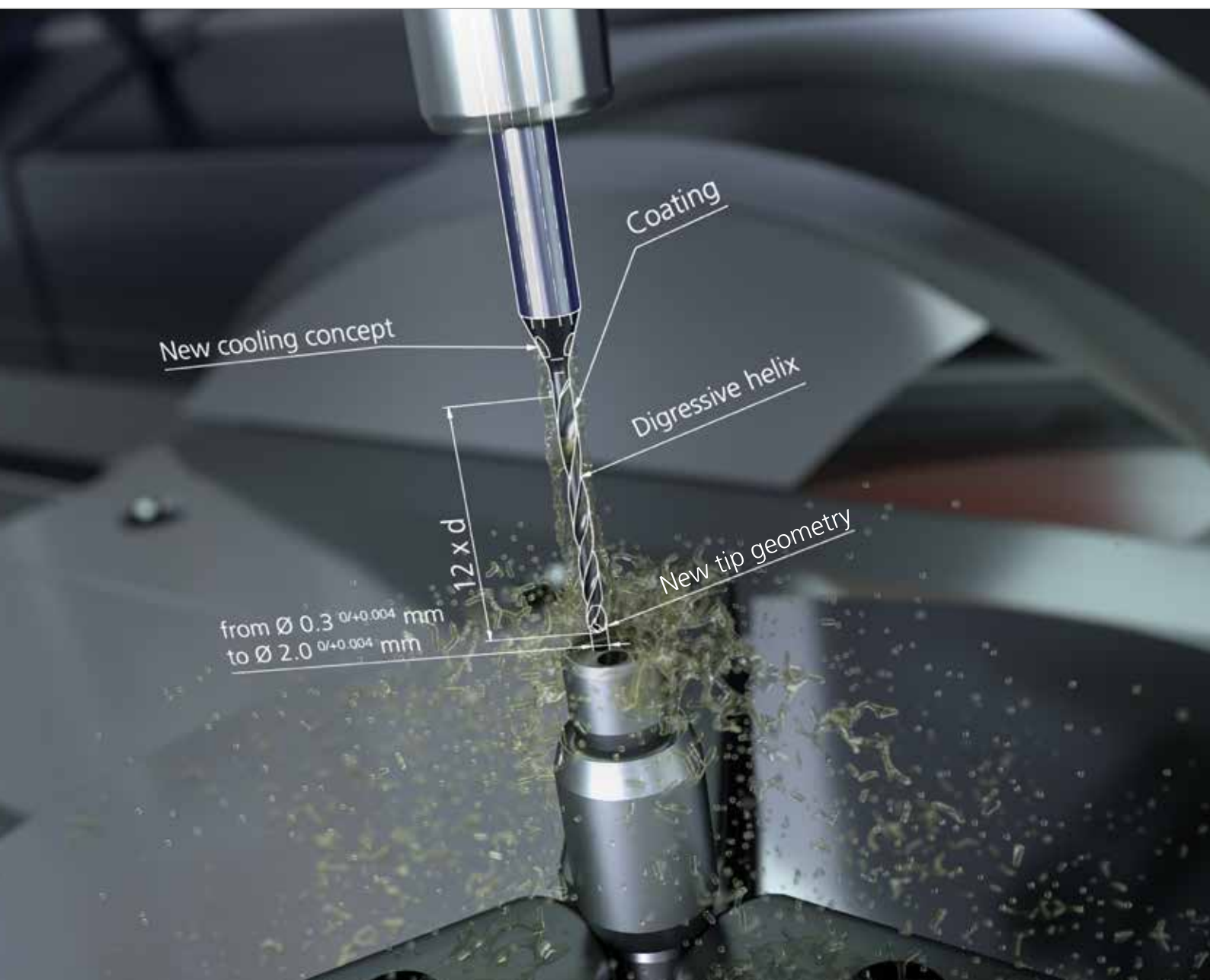
Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	v _c [m/min] [SFM]			
					Low	Mid	High	
P	Unalloyed carbon steel Rm < 800 N/mm²	1.0301	C 10	AISI 1010				
		1.0401	C 15	AISI 1015				
		1.1191	C 45E/CK45	AISI 1045				
		1.0044	S275JR	AISI 1020				
		1.0715	11SMn30	AISI 1215				
	Low alloyed steel Rm > 900 N/mm²	1.5752	15NiCr13	ASTM 3415 / AISI 3310				
		1.7131	16MnCr5	AISI 5115				
		1.3505	100Cr6	AISI 52100				
		1.7225	42CrMo4	AISI 4140				
		1.2842	90MnCrV8	AISI O2				
	High alloyed tool steel Rm < 1200 N/mm²	1.2379	X153CrMoV12	AISI D2				
		1.2436	X210CrW12	AISI D4/D6				
		1.3343	HS6-5-2C	AISI M2 / UNS T11302				
		1.3355	HS18-0-1	AISI T1 / UNS T12001				
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430 / UNS S43000	60 197	80 262	100 328	
		1.4105	X6CrMoS17	AISI 430F				
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	60 197	80 262	100 328	
		1.4112	X90CrMoV18	AISI 440B				
	Stainless steel martensitic – PH	1.4542	X5CrNiCuNb 16-4	AISI 630 / ASTM 17-4 PH	60 197	80 262	100 328	
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH				
	Stainless steel austenitic	1.4301	X5CrNi 18-10	AISI 304	60 197	80 262	100 328	
		1.4435	X2CrNiMo 18-14-3	AISI 316L				
		1.4441	X2CrNiMo 18-14-3	AISI 316LM				
		1.4539	X1NiCrMoCu 25-20-5	AISI 904L				
K	Cast iron	0.6020	GG20	ASTM 30				
		0.6030	GG30	ASTM 40B				
		0.7040	GGG40	ASTM 60-40-18				
		0.7060	GGG60	ASTM 80-60-03				
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351				
		3.4365	AlZnMgCu1.5	ASTM 7075				
	Aluminium alloy cast	3.2163	GD-AlSi9Cu3	ASTM A380				
		3.2381	GD-AlSi10Mg	UNS A03590				
	Copper	2.004	Cu-OF / CW008A	UNS C10100				
		2.0065	Cu-ETP / CW004A	UNS C11000				
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400				
		2.036	CuZn40 CW509L	UNS C28000				
	Brass, Bronze Rm < 400 N/mm²	2.0401	CuZn39Pb3 / CW614N	UNS C38500				
		2.102	CuSn6	UNS C51900				
	Bronze Rm < 600 N/mm²	2.0966	CuAl10Ni5Fe4	UNS C63000				
2.096		CuAl9Mn2	UNS C63200					
S ₁	Super alloys	2.4856		Inconel 625	30 98	40 131	50 164	
		2.4668		Inconel 718				
		2.4617	NiMo28	Hastelloy B-2				
		2.4665	NiCr22Fe18Mo	Hastelloy X				
S ₂	Titanium pure	3.7035	Gr.2	ASTM B348 / F67				
		3.7065	Gr.4	ASTM B348 / F68				
	Titanium alloys	3.7165	TiAl6V4	ASTM B348 / F136				
		9.9367	TiAl6Nb7	ASTM F1295				
S ₃	Cr-Co alloys	2.4964	CoCr20W15Ni	Haynes 25	50 164	70 230	90 295	
			CrCoMo28	ASTM F1537				
H ₁	Hardened steel < 55 HRC	1.2510	100MnCrMoW4	AISI O1				
H ₂	Hardened steel ≥ 55 HRC	1.2379	X153CrMoV12	AISI D2				

☒ Excellent |
 ☐ Good |
 ☐ Acceptable |
 ☒ Not recommended

**f [mm/rev] | [IPR]**

NEW

CrazyDrill SST-Inox Type IK 12 x d



DRILLING STAINLESS MATERIALS – IN SMALL DIMENSIONS



What's new: CrazyDrill SST-Inox in its "long" design is suitable for drilling in stainless materials in drilling depths of up to 12 x d. It features the highest cutting speeds and feed rates, long tool life and a high degree of process reliability.

The features: The geometry of the solid carbide drill CrazyDrill SST-Inox differs significantly from today's standards. The specially designed geometry of the drill tip for Ni-alloyed materials reduces the feed force and imparts good centering properties to the drill. Moreover, it produces short chips in long-chipping materials and prevents cutting edge breakages. A digressive helical flute is the key for good chip removal.

Similar to the "short" design already in the market, the new tool also has two versions for drilling depths of up to 12 x d: one for an external coolant supply, one with integrated cooling channels.

The CrazyDrill SST-Inox type IK variant for up to 12 x d has integrated cooling channels in the shaft, ensuring an efficient coolant jet starting from 15 bar (218 psi). This keeps the temperature constantly under control, dissipates heat, flushes the chips from the hole and results in longer and consistent tool life. The cutting parameters of this design can be increased by 20% – 30% compared to the version with a conventional external coolant supply.

Diameter range: 0.3 mm to 2.0 mm (.012" to .079")

Drilling depth: 12 x d

Coating: eXedur RIP

PATENTED

Small dimensions - Great performance

TWO SOLUTIONS FOR STAINLESS, ACID-RESISTANT AND HEAT-RESISTANT STEELS

With CrazyDrill SST-Inox, Mikron Tool introduces two exclusive drills for drilling in stainless steel up to 12 x d and in the diameter range of 0.3 mm to 2.0 mm (.012" to .079").

- CrazyDrill SST-Inox IK, drilling depth 12 x d, with integrated cooling
- CrazyDrill SST-Inox IN, drilling depth 12 x d, with external cooling

The new tip geometry, digressive helical flute, combined with a novel cooling concept, ensure a consistent machining process at higher cutting speeds.

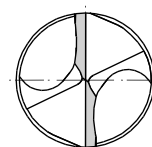
THE ADVANTAGES*

- | | |
|---|-----------------------------------|
| ■ SHORT MACHINING TIME | Up to 10 times faster |
| ■ LONG TOOL LIFE | Up to 15 times longer |
| ■ HIGH DEGREE OF PROCESS RELIABILITY | Higher productivity |
| ■ HIGH DEGREE OF PRECISION | Due to small tolerances |
| ■ LOW PRODUCTION COSTS | Up to 3 times more cost-effective |

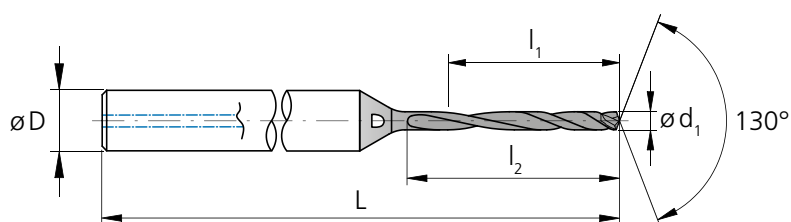
* The comparison applies to good-quality drilling tools with traditional technology and the cutting parameters as recommended by manufacturers.

Type IN	Type IK	NEW	
■ Drill with external cooling	■ Drill with integrated cooling		
		1 SHANK The robust solid carbide shank allows stable drilling without vibrations. 2 NEW COOLING CONCEPT The integrated cooling channels guarantee continuous and substantial cooling of the cutting edges starting from 15 bar (218 psi). The result is greater process reliability and productivity. 3 SOLID CARBIDE Due to the high degree of toughness and thermal shock resistance, the carbide grade developed for CrazyDrill SST-Inox perfectly meets the requirements for machining of stainless and heat-resistant steels. 4 COATING The high-performance coating eXedur RIP is wear-resistant and heat-resistant. It prevents build up edges and facilitates chip evacuation. The result is long tool life. 5 DIGRESSIVE HELICAL FLUTE - PATENTED The digressive flutes with a new and patented geometry guarantees a high degree of tool stability. The front part ensures good chip breaking, while the rear ensures effective chip removal. 6 TIP GEOMETRY The tip geometry was especially developed for the machining of stainless, acid-resistant and heat-resistant steels: ■ High degree of cutting edge stability ■ Self-centering ■ Short chips	
		 	
CrazyDrill SST-Inox without cool channels	CrazyDrill SST-Inox with cool channels		

Drill tip



CrazyDrill SST-Inox Type IK 12 x d



from stock	Item number	d ₁ k5 [mm]	d ₁ k5 [inch]	L ₁ [mm]	L ₁ [inch]	L ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.CD.120030.IK	0.30	.012	3.6	.142	4.1	3	38	1.50
■	2.CD.120035.IK	0.35	.014	4.2	.165	4.8	3	38	1.50
■	2.CD.120040.IK	0.40	.016	4.8	.189	5.5	3	38	1.50
■	2.CD.120045.IK	0.45	.018	5.4	.213	6.2	3	42	1.65
■	2.CD.120050.IK	0.50	.020	6.0	.236	6.9	3	42	1.65
■	2.CD.120055.IK	0.55	.022	6.6	.260	7.6	3	42	1.65
■	2.CD.120060.IK	0.60	.024	7.2	.283	8.3	3	42	1.65
■	2.CD.120065.IK	0.65	.026	7.8	.307	9.0	3	45	1.77
■	2.CD.120070.IK	0.70	.028	8.4	.331	9.7	3	45	1.77
■	2.CD.120075.IK	0.75	.030	9.0	.354	10.4	3	45	1.77
■	2.CD.120080.IK	0.80	.031	9.6	.378	11.0	3	45	1.77
■	2.CD.120085.IK	0.85	.033	10.2	.402	11.7	3	45	1.77
■	2.CD.120090.IK	0.90	.035	10.8	.425	12.4	3	45	1.77
■	2.CD.120095.IK	0.95	.037	11.4	.449	13.1	3	48	1.89
■	2.CD.120100.IK	1.00	.039	12.0	.472	13.8	3	48	1.89
■	2.CD.120105.IK	1.05	.041	12.6	.496	14.5	3	48	1.89
■	2.CD.120110.IK	1.10	.043	13.2	.520	15.2	3	48	1.89
■	2.CD.120115.IK	1.15	.045	13.8	.543	15.9	3	48	1.89

from stock	Item number	d ₁ k5 [mm]	d ₁ k5 [inch]	L ₁ [mm]	L ₁ [inch]	L ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.CD.120120.IK	1.20	.047	14.4	.567	16.6	3	48	1.89
■	2.CD.120125.IK	1.25	.049	15.0	.591	17.3	4	55	2.17
■	2.CD.120130.IK	1.30	.051	15.6	.614	17.9	4	55	2.17
■	2.CD.120135.IK	1.35	.053	16.2	.638	18.6	4	55	2.17
■	2.CD.120140.IK	1.40	.055	16.8	.661	19.3	4	55	2.17
■	2.CD.120145.IK	1.45	.057	17.4	.685	20.0	4	55	2.17
■	2.CD.120150.IK	1.50	.059	18.0	.709	20.7	4	55	2.17
■	2.CD.120155.IK	1.55	.061	18.6	.732	21.4	4	58	2.28
■	2.CD.120160.IK	1.60	.063	19.2	.756	22.1	4	58	2.28
■	2.CD.120165.IK	1.65	.065	19.8	.780	22.8	4	58	2.28
■	2.CD.120170.IK	1.70	.067	20.4	.803	23.5	4	58	2.28
■	2.CD.120175.IK	1.75	.069	21.0	.827	24.2	4	58	2.28
■	2.CD.120180.IK	1.80	.071	21.6	.850	24.8	4	58	2.28
■	2.CD.120185.IK	1.85	.073	22.2	.874	25.5	4	60	2.36
■	2.CD.120190.IK	1.90	.075	22.8	.898	26.2	4	60	2.36
■	2.CD.120195.IK	1.95	.077	23.4	.921	26.9	4	60	2.36
■	2.CD.120200.IK	2.00	.079	24.0	.945	27.6	4	60	2.36

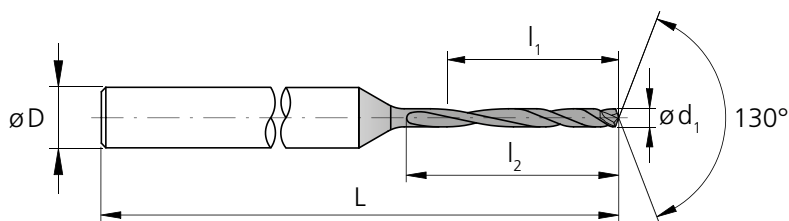
Complementary products

CrazyDrill Pilot SST-Inox

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Cutting process: It is available on www.mikrontool.com

CrazyDrill SST-Inox Type IN 12 x d



from stock	Item number	d ₁ k5 [mm]	d ₁ k5 [inch]	l ₁ [mm]	l ₁ [inch]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.CD.120030.IN	0.30	.012	3.6	.142	4.1	3	38	1.50
■	2.CD.120035.IN	0.35	.014	4.2	.165	4.8	3	38	1.50
■	2.CD.120040.IN	0.40	.016	4.8	.189	5.5	3	38	1.50
■	2.CD.120045.IN	0.45	.018	5.4	.213	6.2	3	42	1.65
■	2.CD.120050.IN	0.50	.020	6.0	.236	6.9	3	42	1.65
■	2.CD.120055.IN	0.55	.022	6.6	.260	7.6	3	42	1.65
■	2.CD.120060.IN	0.60	.024	7.2	.283	8.3	3	42	1.65
■	2.CD.120065.IN	0.65	.026	7.8	.307	9.0	3	45	1.77
■	2.CD.120070.IN	0.70	.028	8.4	.331	9.7	3	45	1.77
■	2.CD.120075.IN	0.75	.030	9.0	.354	10.4	3	45	1.77
■	2.CD.120080.IN	0.80	.031	9.6	.378	11.0	3	45	1.77
■	2.CD.120085.IN	0.85	.033	10.2	.402	11.7	3	45	1.77
■	2.CD.120090.IN	0.90	.035	10.8	.425	12.4	3	45	1.77
■	2.CD.120095.IN	0.95	.037	11.4	.449	13.1	3	48	1.89
■	2.CD.120100.IN	1.00	.039	12.0	.472	13.8	3	48	1.89
■	2.CD.120105.IN	1.05	.041	12.6	.496	14.5	3	48	1.89
■	2.CD.120110.IN	1.10	.043	13.2	.520	15.2	3	48	1.89
■	2.CD.120115.IN	1.15	.045	13.8	.543	15.9	3	48	1.89

from stock	Item number	d ₁ k5 [mm]	d ₁ k5 [inch]	l ₁ [mm]	l ₁ [inch]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.CD.120120.IN	1.20	.047	14.4	.567	16.6	3	48	1.89
■	2.CD.120125.IN	1.25	.049	15.0	.591	17.3	3	55	2.17
■	2.CD.120130.IN	1.30	.051	15.6	.614	17.9	3	55	2.17
■	2.CD.120135.IN	1.35	.053	16.2	.638	18.6	3	55	2.17
■	2.CD.120140.IN	1.40	.055	16.8	.661	19.3	3	55	2.17
■	2.CD.120145.IN	1.45	.057	17.4	.685	20.0	3	55	2.17
■	2.CD.120150.IN	1.50	.059	18.0	.709	20.7	3	55	2.17
■	2.CD.120155.IN	1.55	.061	18.6	.732	21.4	3	58	2.28
■	2.CD.120160.IN	1.60	.063	19.2	.756	22.1	3	58	2.28
■	2.CD.120165.IN	1.65	.065	19.8	.780	22.8	3	58	2.28
■	2.CD.120170.IN	1.70	.067	20.4	.803	23.5	3	58	2.28
■	2.CD.120175.IN	1.75	.069	21.0	.827	24.2	3	58	2.28
■	2.CD.120180.IN	1.80	.071	21.6	.850	24.8	3	58	2.28
■	2.CD.120185.IN	1.85	.073	22.2	.874	25.5	3	60	2.36
■	2.CD.120190.IN	1.90	.075	22.8	.898	26.2	3	60	2.36
■	2.CD.120195.IN	1.95	.077	23.4	.921	26.9	3	60	2.36
■	2.CD.120200.IN	2.00	.079	24.0	.945	27.6	3	60	2.36

Complementary products

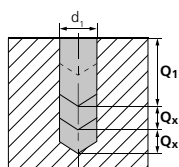
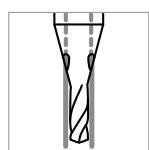
CrazyDrill Pilot SST-Inox

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Cutting process: It is available on www.mikrontool.com

CrazyDrill SST-Inox Type IK 12 x d

DRILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW



Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	v_c [m/min] [SFM]	Q_1	
P	Unalloyed carbon steel $R_m < 800 \text{ N/mm}^2$	1.0301	C10	AISI 1010			
		1.0401	C15	AISI 1015			
		1.1191	C45E/CK45	AISI 1045			
		1.0044	S275JR	AISI 1020			
		1.0715	11SMn30	AISI 1215			
	Low alloyed steel $R_m > 900 \text{ N/mm}^2$	1.5752	15NiCr13	ASTM 3415 / AISI 3310			
		1.7131	16MnCr5	AISI 5115			
		1.3505	100Cr6	AISI 52100			
		1.7225	42CrMo4	AISI 4140			
		1.2842	90MnCrV8	AISI O2			
	High alloyed tool steel $R_m < 1200 \text{ N/mm}^2$	1.2379	X153CrMoV12	AISI D2			
		1.2436	X210CrW12	AISI D4/D6			
		1.3343	HS6-5-2C	AISI M2 / UNS T11302			
		1.3355	HS18-0-1	AISI T1 / UNS T12001			
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430 / UNS S43000	35–50 115 – 164	4xd1–7xd1	
		1.4105	X6CrMoS17	AISI 430F			
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	35–50 115 – 164	4xd1–7xd1	
		1.4112	X90CrMoV18	AISI 440B			
	Stainless steel martensitic – PH	1.4542	X5CrNiCuNb 16-4	AISI 630 / ASTM 17-4 PH	35–50 115 – 164	4xd1–7xd1	
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH			
	Stainless steel austenitic	1.4301	X5CrNi 18-10	AISI 304			
		1.4435	X2CrNiMo 18-14-3	AISI 316L	30–45 98 – 148	4xd1–7xd1	
		1.4441	X2CrNiMo 18-14-3	AISI 316LM			
		1.4539	X1NiCrMoCu 25-20-5	AISI 904L			
K	Cast iron	0.6020	GG20	ASTM 30			
		0.6030	GG30	ASTM 40B			
		0.7040	GGG40	ASTM 60-40-18			
		0.7060	GGG60	ASTM 80-60-03			
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351			
		3.4365	AlZnMgCu1.5	ASTM 7075			
	Aluminium alloy cast	3.2163	GD-AlSi9Cu3	ASTM A380			
		3.2381	GD-AlSi10Mg	UNS A03590			
	Copper	2.004	Cu-OF / CW008A	UNS C10100	40–100 131 – 328	7xd1–11xd1	
		2.0065	Cu-ETP / CW004A	UNS C11000			
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400	40–100 131 – 328	7xd1–11xd1	
		2.036	CuZn40 CW509L	UNS C28000			
	Brass, Bronze $R_m < 400 \text{ N/mm}^2$	2.0401	CuZn39Pb3 / CW614N	UNS C38500			
		2.102	CuSn6	UNS C51900			
	Bronze $R_m < 600 \text{ N/mm}^2$	2.0966	CuAl10Ni5Fe4	UNS C63000			
		2.096	CuAl9Mn2	UNS C63200			
S₁	Super alloys	2.4856		Inconel 625	15–30 49 – 98	3.5xd1–4xd1	
		2.4668		Inconel 718			
		2.4617	NiMo28	Hastelloy B-2			
		2.4665	NiCr22Fe18Mo	Hastelloy X			
S₂	Titanium pure	3.7035	Gr.2	ASTM B348 / F67			
		3.7065	Gr.4	ASTM B348 / F68			
S₃	Titanium alloys	3.7165	TiAl6V4	ASTM B348 / F136			
		9.9367	TiAl6Nb7	ASTM F1295			
H₁	Cr-Co alloys	2.4964	CoCr20W15Ni	Haynes 25	40–50 131 – 164	1xd1–4xd1	
			CrCoMo28	ASTM F1537			
H₂	Hardened steel $\geq 55 \text{ HRC}$	1.2510	100MnCrMoW4	AISI O1			
	Hardened steel $\geq 55 \text{ HRC}$	1.2379	X153CrMoV12	AISI D2			

RECOMMENDATION FOR USE

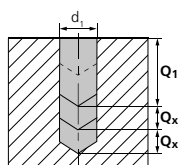
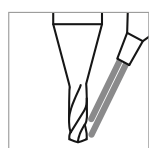
● Excellent | ● Good | ○ Acceptable | ☒ Not recommended



f [mm/rev] [IPR]							
	Q _x	Ød1 0.3–0.5 mm .018"–.020" f	Ød1 0.6–0.8 mm .024"–.032" f	Ød1 0.9–1.1 mm .035"–.043" f	Ød1 1.2–1.4 mm .047"–.055" f	Ød1 1.5–1.7 mm .059"–.067" f	Ød1 1.8–2.0 mm .071"–.079" f
	1xd1–2xd1	0.015–0.020 .0006–.0008	0.020–0.030 .0008–.0012	0.030–0.040 .0012–.0016	0.040–0.050 .0016–.0020	0.050–0.060 .0020–.0024	0.060–0.070 .0024–.0028
	1xd1–2xd1	0.020–0.030 .0008–.0012	0.030–0.040 .0012–.0016	0.050–0.060 .0020–.0024	0.060–0.070 .0024–.0028	0.070–0.080 .0028–.0031	0.080–0.100 .0031–.0039
	1xd1–2xd1	0.015–0.020 .0006–.0008	0.020–0.025 .0008–.0010	0.025–0.035 .0010–.0014	0.040–0.050 .0016–.0020	0.050–0.060 .0020–.0024	0.060–0.070 .0024–.0028
	1xd1–2xd1	0.010–0.020 .0004–.0008	0.015–0.025 .0006–.0010	0.025–0.035 .0010–.0014	0.035–0.045 .0014–.0018	0.045–0.055 .0018–.0022	0.055–0.060 .0022–.0024
	4xd1	0.040–0.060 .0016–.0024	0.050–0.080 .0020–.0031	0.060–0.100 .0024–.0039	0.080–0.120 .0031–.0047	0.100–0.150 .0039–.0059	0.120–0.180 .0047–.0071
	4xd1	0.040–0.060 .0016–.0024	0.050–0.080 .0020–.0031	0.060–0.100 .0024–.0039	0.080–0.120 .0031–.0047	0.100–0.150 .0039–.0059	0.120–0.180 .0047–.0071
	0.5xd1	0.010–0.015 .0004–.0006	0.015–0.020 .0006–.0008	0.020–0.025 .0008–.0010	0.025–0.035 .0010–.0014	0.035–0.040 .0014–.0016	0.045–0.055 .0018–.0022
	1xd1–2xd1	0.020–0.030 .0008–.0012	0.030–0.040 .0012–.0016	0.050–0.060 .0020–.0024	0.060–0.070 .0024–.0028	0.070–0.080 .0028–.0031	0.080–0.100 .0031–.0039

CrazyDrill SST-Inox Type IN 12 x d

DRILLING WITH EXTERNAL COOLING | CUTTING DATA OVERVIEW



Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	v_c [m/min] [SFM]	Q_1	
P	Unalloyed carbon steel $R_m < 800 \text{ N/mm}^2$	1.0301	C 10	AISI 1010			
		1.0401	C 15	AISI 1015			
		1.1191	C 45E/CK45	AISI 1045			
		1.0044	S 275JR	AISI 1020			
		1.0715	11SMn30	AISI 1215			
	Low alloyed steel $R_m > 900 \text{ N/mm}^2$	1.5752	15NiCr13	ASTM 3415 / AISI 3310			
		1.7131	16MnCr5	AISI 5115			
		1.3505	100Cr6	AISI 52100			
		1.7225	42CrMo4	AISI 4140			
		1.2842	90MnCrV8	AISI O2			
	High alloyed tool steel $R_m < 1200 \text{ N/mm}^2$	1.2379	X153CrMoV12	AISI D2			
		1.2436	X210CrW12	AISI D4/D6			
		1.3343	HS6-5-2C	AISI M2 / UNS T11302			
		1.3355	HS18-0-1	AISI T1 / UNS T12001			
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430 / UNS S43000	30–40 98 – 131	3.5xd1–4xd1	
		1.4105	X6CrMoS17	AISI 430F			
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	30–40 98 – 131	3.5xd1–4xd1	
		1.4112	X90CrMoV18	AISI 440B			
	Stainless steel martensitic – PH	1.4542	X5CrNiCuNb 16-4	AISI 630 / ASTM 17-4 PH	30–40 98 – 131	3.5xd1–4xd1	
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH			
	Stainless steel austenitic	1.4301	X5CrNi 18-10	AISI 304	25–30 82 – 98	3.5xd1–4xd1	
		1.4435	X2CrNiMo 18-14-3	AISI 316L			
		1.4441	X2CrNiMo 18-14-3	AISI 316LM			
K	Cast iron	1.4539	X1NiCrMoCu 25-20-5	AISI 904L			
		0.6020	GG20	ASTM 30			
		0.6030	GG30	ASTM 40B			
		0.7040	GGG40	ASTM 60-40-18			
N	Aluminium alloy wrought	0.7060	GGG60	ASTM 80-60-03			
		3.2315	AlMgSi1	ASTM 6351			
	Aluminium alloy cast	3.4365	AlZnMgCu1.5	ASTM 7075			
		3.2163	GD-AlSi9Cu3	ASTM A380			
	Copper	3.2381	GD-AlSi10Mg	UNS A03590			
		2.004	Cu-OF / CW008A	UNS C10100	30–100 98 – 328	5xd1–7xd1	
	Brass lead free	2.0065	Cu-ETP / CW004A	UNS C11000			
		2.0321	CuZn37 CW508L	UNS C27400	30–100 98 – 328	5xd1–7xd1	
	Brass, Bronze $R_m < 400 \text{ N/mm}^2$	2.036	CuZn40 CW509L	UNS C28000			
		2.0401	CuZn39Pb3 / CW614N	UNS C38500			
	Bronze $R_m < 600 \text{ N/mm}^2$	2.102	CuSn6	UNS C51900			
		2.0966	CuAl10Ni5Fe4	UNS C63000			
S₁ S₂ S₃ H₁ H₂	Super alloys	2.096	CuAl9Mn2	UNS C63200			
		2.4856		Inconel 625	15–25 49 – 82	3.25xd1–3.5xd1	
		2.4668		Inconel 718			
		2.4617	NiMo28	Hastelloy B-2			
	Titanium pure	2.4665	NiCr22Fe18Mo	Hastelloy X			
		3.7035	Gr.2	ASTM B348 / F67			
	Titanium alloys	3.7065	Gr.4	ASTM B348 / F68			
		3.7165	TiAl6V4	ASTM B348 / F136			
	Cr-Co alloys	9.9367	TiAl6Nb7	ASTM F1295			
		2.4964	CoCr20W15Ni	Haynes 25	25–35 82 – 115	3.5xd1–4xd1	
			CrCoMo28	ASTM F1537			
	Hardened steel $< 55 \text{ HRC}$	1.2510	100MnCrMoW4	AISI O1			
	Hardened steel $\geq 55 \text{ HRC}$	1.2379	X153CrMoV12	AISI D2			

RECOMMENDATION FOR USE

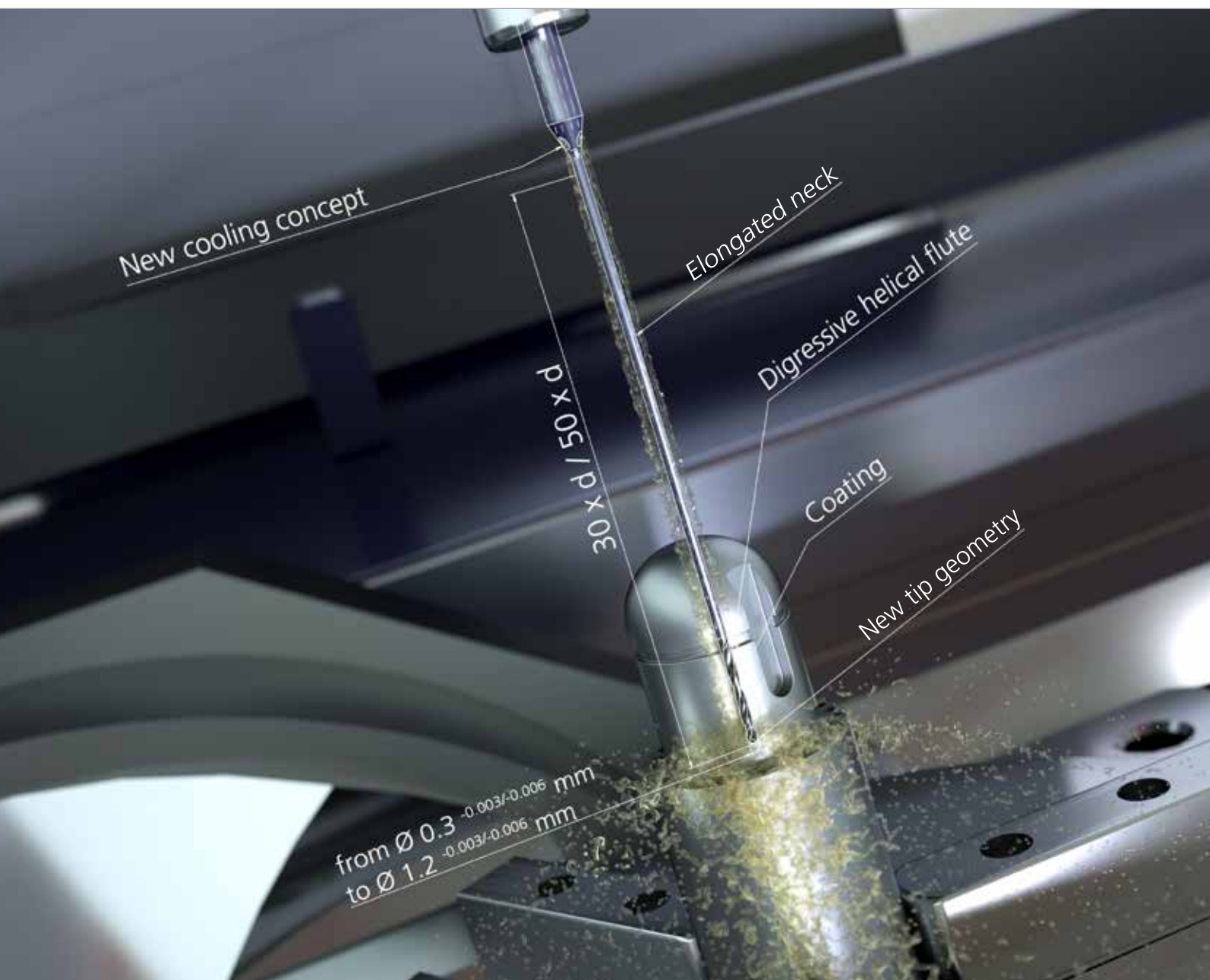
● Excellent | ● Good | ○ Acceptable | ☒ Not recommended



f [mm/rev] [IPR]							
Q _s	Ød1 0.3–0.5 mm .018"–.020" f	Ød1 0.6–0.8 mm .024"–.032" f	Ød1 0.9–1.1 mm .035"–.043" f	Ød1 1.2–1.4 mm .047"–.055" f	Ød1 1.5–1.7 mm .059"–.067" f	Ød1 1.8–2.0 mm .071"–.079" f	Ød1 1.8–2.0 mm .071"–.079" f
0.5xd1	0.010–0.015 .0004–.0006	0.015–0.025 .0006–.0010	0.025–0.030 .0010–.0012	0.030–0.040 .0012–.0016	0.040–0.050 .0016–.0020	0.050–0.060 .0020–.0024	0.050–0.060 .0020–.0024
0.5xd1	0.015–0.025 .0006–.0010	0.025–0.035 .0010–.0014	0.035–0.040 .0014–.0016	0.040–0.050 .0016–.0020	0.050–0.060 .0020–.0024	0.060–0.070 .0024–.0028	0.060–0.070 .0024–.0028
0.5xd1	0.010–0.015 .0004–.0006	0.015–0.020 .0006–.0008	0.020–0.030 .0008–.0012	0.030–0.040 .0012–.0016	0.040–0.050 .0016–.0020	0.050–0.060 .0020–.0024	0.050–0.060 .0020–.0024
0.5xd1	0.010–0.015 .0004–.0006	0.015–0.020 .0006–.0008	0.020–0.030 .0008–.0012	0.030–0.040 .0012–.0016	0.040–0.045 .0016–.0018	0.040–0.060 .0016–.0024	0.040–0.060 .0016–.0024
2xd1	0.030–0.060 .0012–.0024	0.040–0.080 .0016–.0031	0.050–0.100 .0020–.0039	0.060–0.120 .0024–.0047	0.070–0.150 .0028–.0059	0.080–0.180 .0031–.0071	0.080–0.180 .0031–.0071
1xd1–2xd1	0.030–0.060 .0012–.0024	0.040–0.080 .0016–.0031	0.050–0.100 .0020–.0039	0.060–0.120 .0024–.0047	0.070–0.150 .0028–.0059	0.080–0.180 .0031–.0071	0.080–0.180 .0031–.0071
0.25xd1	0.005–0.010 .0002–.0004	0.010–0.015 .0004–.0006	0.015–0.020 .0006–.0008	0.020–0.025 .0008–.0010	0.030–0.035 .0012–.0014	0.030–0.040 .0012–.0016	0.030–0.040 .0012–.0016
0.5xd1	0.015–0.025 .0008–.0012	0.025–0.035 .0010–.0014	0.040–0.050 .0016–.0020	0.050–0.060 .0020–.0024	0.060–0.070 .0024–.0028	0.070–0.080 .0028–.0031	0.070–0.080 .0028–.0031

NEW

CrazyDrill Flex SST-Inox 30 x d / 50 x d



MICRO DEEP-HOLE DRILLING IN STAINLESS MATERIALS



What's new: The micro deep-hole drill, CrazyDrill Flex SST-Inox, was designed for drilling stainless, acid-resistant and heat-resistant materials. The special attributes of this drill are the digressive helical flute geometry, the coolant channels through the shank and the new high-performance coating formula.

The features: The solid carbide micro deep-hole drill, CrazyDrill Flex SST-Inox, with its extended neck and digressive flute geometry, is designed for deep drilling in stainless, acid-resistant and heat-resistant steels. It is available starting from the drilling diameter of 0.3 mm (.012"), and guarantees a significantly shorter machining time compared to gun drills, laser techniques or micro-erosion.

CrazyDrill Flex SST-Inox has integrated cooling channels which guarantee constant and maximal cooling of the cutting edges starting from 15 bar (218 psi). The temperature is kept constantly under control, an important factor when it comes to tough materials with poor thermal conductivity. Chips are effectively flushed from the flute for consistent tool life. The high-performance coating contributes to the long tool life.

Diameter range: 0.3 mm to 1.2 mm (.012" to .047")

Drilling depths: 30 x d and 50 x d

Coating: eXedur RIP

PATENTED

Small – Deep – Quick

MICRO DEEP-HOLE DRILLING UP TO 50 X D WITH INTEGRATED COOLING

With CrazyDrill Flex SST-Inox, Mikron Tool introduces a solid carbide drill for deep-hole drilling of up to 50 x d in stainless steels and in heat-resistant and Cr-Co alloys. The diameter range goes from 0.3 mm to 1.2 mm (.012" to .047").

■ CrazyDrill Flex SST-Inox, drilling depth 30 x d and 50 x d, with integrated cooling

Thanks to its elongated neck between the drill tip and the shank taper, CrazyDrill Flex SST-Inox is an ideal drill for quick, precise and efficient deep-hole drilling. This tool guarantees significantly shorter machining times compared to gun drills, electro-erosion or laser hole making processes.

THE ADVANTAGES*

- | | |
|--------------------------------------|-----------------------------------|
| ■ SHORT MACHINING TIME | Up to 10 times faster |
| ■ LONG TOOL LIFE | Up to 15 times longer |
| ■ HIGH DEGREE OF PROCESS RELIABILITY | Higher productivity |
| ■ HIGH DEGREE OF PRECISION | Due to small tolerances |
| ■ LOW PRODUCTION COSTS | Up to 3 times more cost-effective |

* The comparison applies to good-quality drilling tools with traditional technology and the cutting parameters as recommended by manufacturers.

30 x d	50 x d		
■ Drill with integrated cooling	■ Drill with integrated cooling	NEW	
			
			
CrazyDrill Flex SST-Inox 30 x d	CrazyDrill Flex SST-Inox 50 x d		

1 | COOLING

The integrated cooling channels guarantee constant and targeted cooling of the cutting edges starting from 15 bar (218 psi). Due to their special shape and layout, they produce an extremely concentrated coolant jet that also flushes chips from the flutes. The jet remains focused even at high speed.

2 | EXTENDED MIDDLE PIECE

The helical flutes are ground to a length of 10 x d. An extended cylindrical neck gives the tool the necessary reach up to a drilling depth of 50 x d and guarantees a high degree of stability.

3 | CARBIDE

The micro-grain carbide developed for CrazyDrill Flex SST-Inox exhibits a high degree of toughness and thermal shock resistance, perfectly meeting the requirements for the machining of stainless steels and heat-resistant alloys.

4 | COATING

The high-performance eXedur RIP coating provides thermal and wear protection against heat and abrasion. Extremely smooth and consistent coating provides low adhesion to work materials and prevents from cutting edge chipping. The result is a long tool life.

5 | DIGRESSIVE HELICAL FLUTE - PATENTED

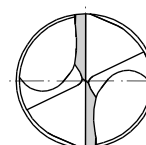
The digressive helical flute with a new and patented geometry guarantees a high degree of tool stability. The front part ensures good chip breaking, while the rear helps with rapid chip removal.

6 | TIP GEOMETRY

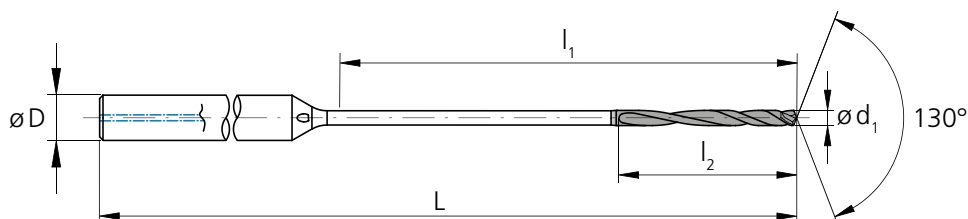
The tip geometry was especially developed for the machining of stainless, acid-resistant and heat-resistant steels:

- High degree of cutting edge stability
- Self-centering
- Short chips

Drill tip



CrazyDrill Flex SST-Inox 30 x d



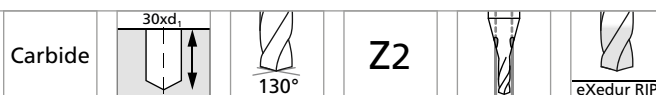
■ from stock Δ upon request	Item number	d ₁ -0.0003 -0.0006 [mm]	d ₁ -0.0012 -0.0024 [inch]	l ₁ [mm]	l ₁ [inch]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.CFI.30030.IK.1	0.30	.012	9.0	.354	2.9	3	50	1.97
Δ	2.CFI.30031.IK.1	0.31	.012	9.3	.366	3.0	3	50	1.97
Δ	2.CFI.30032.IK.1	0.32	.013	9.6	.378	3.1	3	50	1.97
Δ	2.CFI.30033.IK.1	0.33	.013	9.9	.390	3.2	3	50	1.97
Δ	2.CFI.30034.IK.1	0.34	.013	10.2	.402	3.3	3	50	1.97
■	2.CFI.30035.IK.1	0.35	.014	10.5	.413	3.4	3	50	1.97
Δ	2.CFI.30036.IK.1	0.36	.014	10.8	.425	3.5	3	50	1.97
Δ	2.CFI.30037.IK.1	0.37	.015	11.1	.437	3.6	3	50	1.97
Δ	2.CFI.30038.IK.1	0.38	.015	11.4	.449	3.7	3	50	1.97
Δ	2.CFI.30039.IK.1	0.39	.015	11.7	.461	3.8	3	50	1.97
■	2.CFI.30040.IK.1	0.40	.016	12.0	.472	3.9	3	50	1.97
Δ	2.CFI.30041.IK.1	0.41	.016	12.3	.484	4.0	3	50	1.97
Δ	2.CFI.30042.IK.1	0.42	.017	12.6	.496	4.1	3	50	1.97
Δ	2.CFI.30043.IK.1	0.43	.017	12.9	.508	4.2	3	50	1.97
Δ	2.CFI.30044.IK.1	0.44	.017	13.2	.520	4.3	3	50	1.97
■	2.CFI.30045.IK.1	0.45	.018	13.5	.531	4.4	3	50	1.97
Δ	2.CFI.30046.IK.1	0.46	.018	13.8	.543	4.5	3	50	1.97
Δ	2.CFI.30047.IK.1	0.47	.019	14.1	.555	4.6	3	50	1.97
Δ	2.CFI.30048.IK.1	0.48	.019	14.4	.567	4.7	3	50	1.97
Δ	2.CFI.30049.IK.1	0.49	.019	14.7	.579	4.8	3	50	1.97
■	2.CFI.30050.IK.1	0.50	.020	15.0	.591	4.9	3	53	2.09
Δ	2.CFI.30051.IK.1	0.51	.020	15.3	.602	5.0	3	53	2.09
Δ	2.CFI.30052.IK.1	0.52	.020	15.6	.614	5.1	3	53	2.09

■ from stock Δ upon request	Item number	d ₁ -0.0003 -0.0006 [mm]	d ₁ -0.0012 -0.0024 [inch]	l ₁ [mm]	l ₁ [inch]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
Δ	2.CFI.30053.IK.1	0.53	.021	15.9	.626	5.2	3	53	2.09
Δ	2.CFI.30054.IK.1	0.54	.021	16.2	.638	5.3	3	53	2.09
■	2.CFI.30055.IK.1	0.55	.022	16.5	.650	5.4	3	53	2.09
Δ	2.CFI.30056.IK.1	0.56	.022	16.8	.661	5.5	3	53	2.09
Δ	2.CFI.30057.IK.1	0.57	.022	17.1	.673	5.6	3	53	2.09
Δ	2.CFI.30058.IK.1	0.58	.023	17.4	.685	5.7	3	53	2.09
Δ	2.CFI.30059.IK.1	0.59	.023	17.7	.697	5.8	3	53	2.09
■	2.CFI.30060.IK.1	0.60	.024	18.0	.709	5.9	3	53	2.09
Δ	2.CFI.30061.IK.1	0.61	.024	18.3	.720	6.0	3	53	2.09
Δ	2.CFI.30062.IK.1	0.62	.024	18.6	.732	6.1	3	53	2.09
Δ	2.CFI.30063.IK.1	0.63	.025	18.9	.744	6.2	3	53	2.09
Δ	2.CFI.30064.IK.1	0.64	.025	19.2	.756	6.3	3	53	2.09
■	2.CFI.30065.IK.1	0.65	.026	19.5	.768	6.4	3	53	2.09
Δ	2.CFI.30066.IK.1	0.66	.026	19.8	.780	6.5	3	53	2.09
Δ	2.CFI.30067.IK.1	0.67	.026	20.1	.791	6.6	3	53	2.09
Δ	2.CFI.30068.IK.1	0.68	.027	20.4	.803	6.7	3	53	2.09
Δ	2.CFI.30069.IK.1	0.69	.027	20.7	.815	6.8	3	53	2.09
■	2.CFI.30070.IK.1	0.70	.028	21.0	.827	6.9	3	60	2.36
Δ	2.CFI.30071.IK.1	0.71	.028	21.3	.839	7.0	3	60	2.36
Δ	2.CFI.30072.IK.1	0.72	.028	21.6	.850	7.1	3	60	2.36
Δ	2.CFI.30073.IK.1	0.73	.029	21.9	.862	7.2	3	60	2.36
Δ	2.CFI.30074.IK.1	0.74	.029	22.2	.874	7.3	3	60	2.36
■	2.CFI.30075.IK.1	0.75	.030	22.5	.886	7.4	3	60	2.36

■ Article in stock.

Δ Delivery term upon request, minimum purchase order quantity 5 pcs.

Cutting process: It is available on www.mikrontool.com



■ from stock Δ upon request	Item number	d ₁ -0.0003 -0.0006 [mm]	d ₁ -0.0012 -0.0024 [inch]	l ₁ [mm]	l ₁ [inch]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
Δ	2.CFI.30076.IK.1	0.76	.030	22.8	.898	7.4	3	60	2.36
Δ	2.CFI.30077.IK.1	0.77	.030	23.1	.909	7.5	3	60	2.36
Δ	2.CFI.30078.IK.1	0.78	.031	23.4	.921	7.6	3	60	2.36
Δ	2.CFI.30079.IK.1	0.79	.031	23.7	.933	7.7	3	60	2.36
■	2.CFI.30080.IK.1	0.80	.031	24.0	.945	7.8	3	60	2.36
Δ	2.CFI.30081.IK.1	0.81	.032	24.3	.957	7.9	3	60	2.36
Δ	2.CFI.30082.IK.1	0.82	.032	24.6	.969	8.0	3	60	2.36
Δ	2.CFI.30083.IK.1	0.83	.033	24.9	.980	8.1	3	60	2.36
Δ	2.CFI.30084.IK.1	0.84	.033	25.2	.992	8.2	3	60	2.36
■	2.CFI.30085.IK.1	0.85	.033	25.5	1.00	8.3	3	64	2.52
Δ	2.CFI.30086.IK.1	0.86	.034	25.8	1.02	8.4	3	64	2.52
Δ	2.CFI.30087.IK.1	0.87	.034	26.1	1.03	8.5	3	64	2.52
Δ	2.CFI.30088.IK.1	0.88	.035	26.4	1.04	8.6	3	64	2.52
Δ	2.CFI.30089.IK.1	0.89	.035	26.7	1.05	8.7	3	64	2.52
■	2.CFI.30090.IK.1	0.90	.035	27.0	1.06	8.8	3	64	2.52
Δ	2.CFI.30091.IK.1	0.91	.036	27.3	1.07	8.9	3	64	2.52
Δ	2.CFI.30092.IK.1	0.92	.036	27.6	1.09	9.0	3	64	2.52
Δ	2.CFI.30093.IK.1	0.93	.037	27.9	1.10	9.1	3	64	2.52
Δ	2.CFI.30094.IK.1	0.94	.037	28.2	1.11	9.2	3	64	2.52
■	2.CFI.30095.IK.1	0.95	.037	28.5	1.12	9.3	3	64	2.52
Δ	2.CFI.30096.IK.1	0.96	.038	28.8	1.13	9.4	3	64	2.52
Δ	2.CFI.30097.IK.1	0.97	.038	29.1	1.15	9.5	3	64	2.52
Δ	2.CFI.30098.IK.1	0.98	.039	29.4	1.16	9.6	3	64	2.52

■ from stock Δ upon request	Item number	d ₁ -0.0003 -0.0006 [mm]	d ₁ -0.0012 -0.0024 [inch]	l ₁ [mm]	l ₁ [inch]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
Δ	2.CFI.30099.IK.1	0.99	.039	29.7	1.17	9.7	3	64	2.52
■	2.CFI.30100.IK.1	1.00	.039	30.0	1.18	9.8	3	70	2.76
Δ	2.CFI.30101.IK.1	1.01	.040	30.3	1.19	9.9	3	70	2.76
Δ	2.CFI.30102.IK.1	1.02	.040	30.6	1.20	10.0	3	70	2.76
Δ	2.CFI.30103.IK.1	1.03	.041	30.9	1.22	10.1	3	70	2.76
Δ	2.CFI.30104.IK.1	1.04	.041	31.2	1.23	10.2	3	70	2.76
■	2.CFI.30105.IK.1	1.05	.041	31.5	1.24	10.3	3	70	2.76
Δ	2.CFI.30106.IK.1	1.06	.042	31.8	1.25	10.4	3	70	2.76
Δ	2.CFI.30107.IK.1	1.07	.042	32.1	1.26	10.5	3	70	2.76
Δ	2.CFI.30108.IK.1	1.08	.043	32.4	1.28	10.6	3	70	2.76
Δ	2.CFI.30109.IK.1	1.09	.043	32.7	1.29	10.7	3	70	2.76
■	2.CFI.30110.IK.1	1.10	.043	33.0	1.30	10.8	3	70	2.76
Δ	2.CFI.30111.IK.1	1.11	.044	33.3	1.31	10.9	3	70	2.76
Δ	2.CFI.30112.IK.1	1.12	.044	33.6	1.32	11.0	3	70	2.76
Δ	2.CFI.30113.IK.1	1.13	.044	33.9	1.33	11.1	3	70	2.76
Δ	2.CFI.30114.IK.1	1.14	.045	34.2	1.35	11.2	3	70	2.76
■	2.CFI.30115.IK.1	1.15	.045	34.5	1.36	11.3	3	70	2.76
Δ	2.CFI.30116.IK.1	1.16	.046	34.8	1.37	11.4	3	70	2.76
Δ	2.CFI.30117.IK.1	1.17	.046	35.1	1.38	11.5	3	70	2.76
Δ	2.CFI.30118.IK.1	1.18	.046	35.4	1.39	11.6	3	70	2.76
Δ	2.CFI.30119.IK.1	1.19	.047	35.7	1.41	11.7	3	70	2.76
■	2.CFI.30120.IK.1	1.20	.047	36.0	1.42	11.8	3	70	2.76

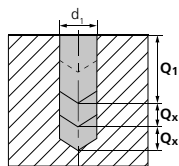
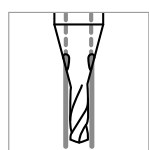
Complementary products

CrazyDrill Pilot SST-Inox

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CrazyDrill Flex SST-Inox 30 x d

DRILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW



Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	v _c [m/min] [SFM] Ød1 ≤ 0.4 .018" Ød1 > 0.4 .018"		Q ₁	
P	Unalloyed carbon steel R _m < 800 N/mm ²	1.0301	C10	AISI 1010				
		1.0401	C15	AISI 1015				
		1.1191	C45E/CK45	AISI 1045				
		1.0044	S275JR	AISI 1020				
		1.0715	11SMn30	AISI 1215				
	Low alloyed steel R _m > 900 N/mm ²	1.5752	15NiCr13	ASTM 3415 / AISI 3310				
		1.7131	16MnCr5	AISI 5115				
		1.3505	100Cr6	AISI 52100				
		1.7225	42CrMo4	AISI 4140				
		1.2842	90MnCrV8	AISI O2				
	High alloyed tool steel R _m < 1200 N/mm ²	1.2379	X153CrMoV12	AISI D2				
		1.2436	X210CrW12	AISI D4/D6				
		1.3343	HS6-5-2C	AISI M2 / UNS T11302				
		1.3355	HS18-0-1	AISI T1 / UNS T12001				
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430 / UNS S43000	30-40 98-131	40-50 131-164	2xd1 - 3xd1	
		1.4105	X6CrMoS17	AISI 430F				
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	20-30 66-98	30-40 98-131	2xd1 - 3xd1	
		1.4112	X90CrMoV18	AISI 440B				
	Stainless steel martensitic - PH	1.4542	X5CrNiCuNb 16-4	AISI 630 / ASTM 17-4 PH	20-30 66-98	30-40 98-131	2xd1 - 3xd1	
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH				
	Stainless steel austenitic	1.4301	X5CrNi 18-10	AISI 304				
		1.4435	X2CrNiMo 18-14-3	AISI 316L	20-30 66-98	30-40 98-131	2xd1 - 3xd1	
		1.4441	X2CrNiMo 18-14-3	AISI 316LM				
		1.4539	X1NiCrMoCu 25-20-5	AISI 904L				
K	Cast iron	0.6020	GG20	ASTM 30				
		0.6030	GG30	ASTM 40B				
		0.7040	GGG40	ASTM 60-40-18				
		0.7060	GGG60	ASTM 80-60-03				
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351				
		3.4365	AlZnMgCu1.5	ASTM 7075				
	Aluminium alloy cast	3.2163	GD-AlSi9Cu3	ASTM A380				
		3.2381	GD-AlSi10Mg	UNS A03590				
	Copper	2.004	Cu-OF / CW008A	UNS C10100	20-30 66-98	35-60 115-197	2xd1 - 3xd1	
		2.0065	Cu-ETP / CW004A	UNS C11000				
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400	20-30 66-98	35-60 115-197	2xd1 - 3xd1	
		2.036	CuZn40 CW509L	UNS C28000				
	Brass, Bronze R _m < 400 N/mm ²	2.0401	CuZn39Pb3 / CW614N	UNS C38500				
		2.102	CuSn6	UNS C51900				
	Bronze R _m < 600 N/mm ²	2.0966	CuAl10Ni5Fe4	UNS C63000				
		2.096	CuAl9Mn2	UNS C63200				
S₁	Super alloys	2.4856		Inconel 625	10-20 33-66	20-30 66-98	2xd1 - 3xd1	
		2.4668		Inconel 718				
		2.4617	NiMo28	Hastelloy B-2				
		2.4665	NiCr22Fe18Mo	Hastelloy X				
S₂	Titanium pure	3.7035	Gr.2	ASTM B348 / F67				
		3.7065	Gr.4	ASTM B348 / F68				
S₃	Titanium alloys	3.7165	TiAl6V4	ASTM B348 / F136				
		9.9367	TiAl6Nb7	ASTM F1295				
H₁	Cr-Co alloys	2.4964	CoCr20W15Ni	Haynes 25	20-30 66-98	30-40 98-131	2xd1 - 3xd1	
			CrCoMo28	ASTM F1537				
H₂	Hardened steel < 55 HRC	1.2510	100MnCrMoW4	AISI O1				
	Hardened steel ≥ 55 HRC	1.2379	X153CrMoV12	AISI D2				

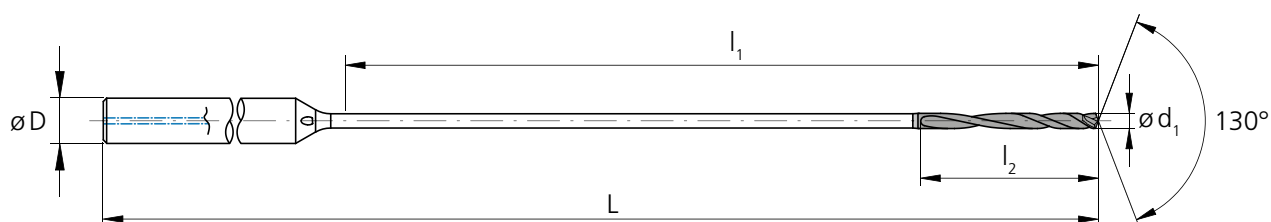
RECOMMENDATION FOR USE

● Excellent | ● Good | ○ Acceptable | ☒ Not recommended



f [mm/rev] [IPR]							
Q _x	Ød1 0.3 mm .012" f	Ød1 0.4 mm .018" f	Ød1 0.6 mm .024" f	Ød1 0.8 mm .032" f	Ød1 1.0 mm .039" f	Ød1 1.2 mm .047" f	
0.5xd1	0.015–0.020 .0006–.0008	0.015–0.020 .0006–.0008	0.020–0.030 .0008–.0012	0.020–0.030 .0008–.0012	0.030–0.040 .0012–.0016	0.040–0.050 .0016–.0020	
0.5xd1	0.015–0.020 .0006–.0008	0.015–0.020 .0006–.0008	0.020–0.025 .0008–.0010	0.020–0.025 .0008–.0010	0.025–0.035 .0010–.0014	0.040–0.050 .0016–.0020	
0.5xd1	0.015–0.020 .0006–.0008	0.015–0.020 .0006–.0008	0.020–0.025 .0008–.0010	0.020–0.025 .0008–.0010	0.025–0.035 .0010–.0014	0.040–0.050 .0016–.0020	
0.5xd1	0.010–0.020 .0004–.0008	0.010–0.020 .0004–.0008	0.015–0.025 .0006–.0010	0.020–0.030 .0008–.0012	0.025–0.035 .0010–.0014	0.035–0.045 .0014–.0018	
0.5xd1	0.040 .0016	0.045 .0018	0.050 .0020	0.060 .0024	0.070 .0028	0.080 .0031	
0.5xd1	0.040 .0016	0.045 .0018	0.050 .0020	0.060 .0024	0.070 .0028	0.080 .0031	
0.2xd1	0.010–0.020 .0004–.0008	0.010–0.020 .0004–.0008	0.015–0.025 .0006–.0010	0.020–0.030 .0008–.0012	0.025–0.035 .0010–.0014	0.035–0.045 .0014–.0018	
0.5xd1	0.010–0.020 .0004–.0008	0.010–0.020 .0004–.0008	0.015–0.025 .0006–.0010	0.020–0.030 .0008–.0012	0.025–0.035 .0010–.0014	0.035–0.045 .0014–.0018	

CrazyDrill Flex SST-Inox 50 x d



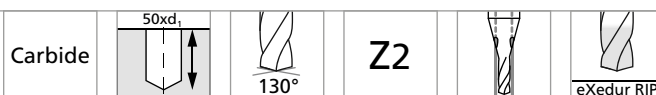
■ from stock Δ upon request	Item number	d ₁ -0.0003 -0.0006 [mm]	d ₁ -0.0012 -0.0024 [inch]	L ₁ [mm]	L ₁ [inch]	L ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.CFI.50030.IK.1	0.30	.012	15.0	.591	2.9	3	53	2.09
Δ	2.CFI.50031.IK.1	0.31	.012	15.5	.610	3.0	3	53	2.09
Δ	2.CFI.50032.IK.1	0.32	.013	16.0	.630	3.1	3	53	2.09
Δ	2.CFI.50033.IK.1	0.33	.013	16.5	.650	3.2	3	53	2.09
Δ	2.CFI.50034.IK.1	0.34	.013	17.0	.669	3.3	3	53	2.09
■	2.CFI.50035.IK.1	0.35	.014	17.5	.689	3.4	3	53	2.09
Δ	2.CFI.50036.IK.1	0.36	.014	18.0	.709	3.5	3	53	2.09
Δ	2.CFI.50037.IK.1	0.37	.015	18.5	.728	3.6	3	53	2.09
Δ	2.CFI.50038.IK.1	0.38	.015	19.0	.748	3.7	3	53	2.09
Δ	2.CFI.50039.IK.1	0.39	.015	19.5	.768	3.8	3	53	2.09
■	2.CFI.50040.IK.1	0.40	.016	20.0	.787	3.9	3	53	2.09
Δ	2.CFI.50041.IK.1	0.41	.016	20.5	.807	4.0	3	60	2.36
Δ	2.CFI.50042.IK.1	0.42	.017	21.0	.827	4.1	3	60	2.36
Δ	2.CFI.50043.IK.1	0.43	.017	21.5	.846	4.2	3	60	2.36
Δ	2.CFI.50044.IK.1	0.44	.017	22.0	.866	4.3	3	60	2.36
■	2.CFI.50045.IK.1	0.45	.018	22.5	.886	4.4	3	60	2.36
Δ	2.CFI.50046.IK.1	0.46	.018	23.0	.906	4.5	3	60	2.36
Δ	2.CFI.50047.IK.1	0.47	.019	23.5	.925	4.6	3	60	2.36
Δ	2.CFI.50048.IK.1	0.48	.019	24.0	.945	4.7	3	60	2.36
Δ	2.CFI.50049.IK.1	0.49	.019	24.5	.965	4.8	3	60	2.36
■	2.CFI.50050.IK.1	0.50	.020	25.0	.984	4.9	3	60	2.36
Δ	2.CFI.50051.IK.1	0.51	.020	25.5	1.00	5.0	3	64	2.52
Δ	2.CFI.50052.IK.1	0.52	.020	26.0	1.02	5.1	3	64	2.52

■ from stock Δ upon request	Item number	d ₁ -0.0003 -0.0006 [mm]	d ₁ -0.0012 -0.0024 [inch]	L ₁ [mm]	L ₁ [inch]	L ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
Δ	2.CFI.50053.IK.1	0.53	.021	26.5	1.04	5.2	3	64	2.52
Δ	2.CFI.50054.IK.1	0.54	.021	27.0	1.06	5.3	3	64	2.52
■	2.CFI.50055.IK.1	0.55	.022	27.5	1.08	5.4	3	64	2.52
Δ	2.CFI.50056.IK.1	0.56	.022	28.0	1.10	5.5	3	64	2.52
Δ	2.CFI.50057.IK.1	0.57	.022	28.5	1.12	5.6	3	64	2.52
Δ	2.CFI.50058.IK.1	0.58	.023	29.0	1.14	5.7	3	64	2.52
Δ	2.CFI.50059.IK.1	0.59	.023	29.5	1.16	5.8	3	64	2.52
■	2.CFI.50060.IK.1	0.60	.024	30.0	1.18	5.9	3	64	2.52
Δ	2.CFI.50061.IK.1	0.61	.024	30.5	1.20	6.0	3	70	2.76
Δ	2.CFI.50062.IK.1	0.62	.024	31.0	1.22	6.1	3	70	2.76
Δ	2.CFI.50063.IK.1	0.63	.025	31.5	1.24	6.2	3	70	2.76
Δ	2.CFI.50064.IK.1	0.64	.025	32.0	1.26	6.3	3	70	2.76
■	2.CFI.50065.IK.1	0.65	.026	32.5	1.28	6.4	3	70	2.76
Δ	2.CFI.50066.IK.1	0.66	.026	33.0	1.30	6.5	3	70	2.76
Δ	2.CFI.50067.IK.1	0.67	.026	33.5	1.32	6.6	3	70	2.76
Δ	2.CFI.50068.IK.1	0.68	.027	34.0	1.34	6.7	3	70	2.76
Δ	2.CFI.50069.IK.1	0.69	.027	34.5	1.36	6.8	3	70	2.76
■	2.CFI.50070.IK.1	0.70	.028	35.0	1.38	6.9	3	70	2.76
Δ	2.CFI.50071.IK.1	0.71	.028	35.5	1.40	7.0	3	75	2.95
Δ	2.CFI.50072.IK.1	0.72	.028	36.0	1.42	7.1	3	75	2.95
Δ	2.CFI.50073.IK.1	0.73	.029	36.5	1.44	7.2	3	75	2.95
Δ	2.CFI.50074.IK.1	0.74	.029	37.0	1.46	7.3	3	75	2.95
■	2.CFI.50075.IK.1	0.75	.030	37.5	1.48	7.4	3	75	2.95

■ Article in stock.

Δ Delivery term upon request, minimum purchase order quantity 5 pcs.

Cutting process: It is available on www.mikrontool.com



■ from stock Δ upon request	Item number	d ₁ -0.0003 -0.0006 [mm]	d ₁ -0.00012 -0.00024 [inch]	l ₁ [mm]	l ₁ [inch]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
Δ	2.CFI.50076.IK.1	0.76	.030	38.0	1.50	7.4	3	75	2.95
Δ	2.CFI.50077.IK.1	0.77	.030	38.5	1.52	7.5	3	75	2.95
Δ	2.CFI.50078.IK.1	0.78	.031	39.0	1.54	7.6	3	75	2.95
Δ	2.CFI.50079.IK.1	0.79	.031	39.5	1.56	7.7	3	75	2.95
■	2.CFI.50080.IK.1	0.80	.031	40.0	1.57	7.8	3	75	2.95
Δ	2.CFI.50081.IK.1	0.81	.032	40.5	1.59	7.9	3	80	3.15
Δ	2.CFI.50082.IK.1	0.82	.032	41.0	1.61	8.0	3	80	3.15
Δ	2.CFI.50083.IK.1	0.83	.033	41.5	1.63	8.1	3	80	3.15
Δ	2.CFI.50084.IK.1	0.84	.033	42.0	1.65	8.2	3	80	3.15
■	2.CFI.50085.IK.1	0.85	.033	42.5	1.67	8.3	3	80	3.15
Δ	2.CFI.50086.IK.1	0.86	.034	43.0	1.69	8.4	3	80	3.15
Δ	2.CFI.50087.IK.1	0.87	.034	43.5	1.71	8.5	3	80	3.15
Δ	2.CFI.50088.IK.1	0.88	.035	44.0	1.73	8.6	3	80	3.15
Δ	2.CFI.50089.IK.1	0.89	.035	44.5	1.75	8.7	3	80	3.15
■	2.CFI.50090.IK.1	0.90	.035	45.0	1.77	8.8	3	80	3.15
Δ	2.CFI.50091.IK.1	0.91	.036	45.5	1.79	8.9	3	85	3.35
Δ	2.CFI.50092.IK.1	0.92	.036	46.0	1.81	9.0	3	85	3.35
Δ	2.CFI.50093.IK.1	0.93	.037	46.5	1.83	9.1	3	85	3.35
Δ	2.CFI.50094.IK.1	0.94	.037	47.0	1.85	9.2	3	85	3.35
■	2.CFI.50095.IK.1	0.95	.037	47.5	1.87	9.3	3	85	3.35
Δ	2.CFI.50096.IK.1	0.96	.038	48.0	1.89	9.4	3	85	3.35
Δ	2.CFI.50097.IK.1	0.97	.038	48.5	1.91	9.5	3	85	3.35
Δ	2.CFI.50098.IK.1	0.98	.039	49.0	1.93	9.6	3	85	3.35

■ from stock Δ upon request	Item number	d ₁ -0.0003 -0.0006 [mm]	d ₁ -0.00012 -0.00024 [inch]	l ₁ [mm]	l ₁ [inch]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
Δ	2.CFI.50099.IK.1	0.99	.039	49.5	1.95	9.7	3	85	3.35
■	2.CFI.50100.IK.1	1.00	.039	50.0	1.97	9.8	3	85	3.35
Δ	2.CFI.50101.IK.1	1.01	.040	50.5	1.99	9.9	3	90	3.54
Δ	2.CFI.50102.IK.1	1.02	.040	51.0	2.01	10.0	3	90	3.54
Δ	2.CFI.50103.IK.1	1.03	.041	51.5	2.03	10.1	3	90	3.54
Δ	2.CFI.50104.IK.1	1.04	.041	52.0	2.05	10.2	3	90	3.54
■	2.CFI.50105.IK.1	1.05	.041	52.5	2.07	10.3	3	90	3.54
Δ	2.CFI.50106.IK.1	1.06	.042	53.0	2.09	10.4	3	90	3.54
Δ	2.CFI.50107.IK.1	1.07	.042	53.5	2.11	10.5	3	90	3.54
Δ	2.CFI.50108.IK.1	1.08	.043	54.0	2.13	10.6	3	90	3.54
Δ	2.CFI.50109.IK.1	1.09	.043	54.5	2.15	10.7	3	90	3.54
■	2.CFI.50110.IK.1	1.10	.043	55.0	2.17	10.8	3	90	3.54
Δ	2.CFI.50111.IK.1	1.11	.044	55.5	2.19	10.9	3	95	3.74
Δ	2.CFI.50112.IK.1	1.12	.044	56.0	2.20	11.0	3	95	3.74
Δ	2.CFI.50113.IK.1	1.13	.044	56.5	2.22	11.1	3	95	3.74
Δ	2.CFI.50114.IK.1	1.14	.045	57.0	2.24	11.2	3	95	3.74
■	2.CFI.50115.IK.1	1.15	.045	57.5	2.26	11.3	3	95	3.74
Δ	2.CFI.50116.IK.1	1.16	.046	58.0	2.28	11.4	3	95	3.74
Δ	2.CFI.50117.IK.1	1.17	.046	58.5	2.30	11.5	3	95	3.74
Δ	2.CFI.50118.IK.1	1.18	.046	59.0	2.32	11.6	3	95	3.74
Δ	2.CFI.50119.IK.1	1.19	.047	59.5	2.34	11.7	3	95	3.74
■	2.CFI.50120.IK.1	1.20	.047	60.0	2.36	11.8	3	95	3.74

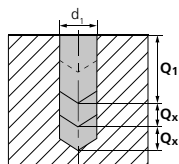
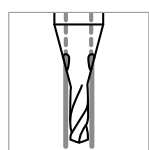
Complementary products

CrazyDrill Pilot SST-Inox

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CrazyDrill Flex SST-Inox 50 x d

DRILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW



Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	v _c [m/min] [SFM] Ød1 ≤ 0.4 .018" Ød1 > 0.4 .018"		Q ₁	
P	Unalloyed carbon steel R _m < 800 N/mm ²	1.0301	C10	AISI 1010				
		1.0401	C15	AISI 1015				
		1.1191	C45E/CK45	AISI 1045				
		1.0044	S275JR	AISI 1020				
		1.0715	11SMn30	AISI 1215				
	Low alloyed steel R _m > 900 N/mm ²	1.5752	15NiCr13	ASTM 3415 / AISI 3310				
		1.7131	16MnCr5	AISI 5115				
		1.3505	100Cr6	AISI 52100				
		1.7225	42CrMo4	AISI 4140				
		1.2842	90MnCrV8	AISI O2				
	High alloyed tool steel R _m < 1200 N/mm ²	1.2379	X153CrMoV12	AISI D2				
		1.2436	X210CrW12	AISI D4/D6				
		1.3343	HS6-5-2C	AISI M2 / UNS T11302				
		1.3355	HS18-0-1	AISI T1 / UNS T12001				
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430 / UNS S43000	25-35 82-115	35-40 115-131	2xd1-3xd1	
		1.4105	X6CrMoS17	AISI 430F				
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	25-35 82-115	35-40 115-131	2xd1-3xd1	
		1.4112	X90CrMoV18	AISI 440B				
	Stainless steel martensitic - PH	1.4542	X5CrNiCuNb 16-4	AISI 630 / ASTM 17-4 PH	25-35 82-115	35-40 115-131	2xd1-3xd1	
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH				
	Stainless steel austenitic	1.4301	X5CrNi 18-10	AISI 304				
		1.4435	X2CrNiMo 18-14-3	AISI 316L	25-35 82-115	35-40 115-131	2xd1-3xd1	
		1.4441	X2CrNiMo 18-14-3	AISI 316LM				
K	Cast iron	0.6020	GG20	ASTM 30				
		0.6030	GG30	ASTM 40B				
		0.7040	GGG40	ASTM 60-40-18				
		0.7060	GGG60	ASTM 80-60-03				
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351				
		3.4365	AlZnMgCu1.5	ASTM 7075				
	Aluminium alloy cast	3.2163	GD-ALSi9Cu3	ASTM A380				
		3.2381	GD-ALSi10Mg	UNS A03590				
	Copper	2.004	Cu-OF / CW008A	UNS C10100	20-30 66-98	35-60 115-197	2xd1-3xd1	
		2.0065	Cu-ETP / CW004A	UNS C11000				
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400	20-30 66-98	35-60 115-197	2xd1-3xd1	
		2.036	CuZn40 CW509L	UNS C28000				
	Brass, Bronze R _m < 400 N/mm ²	2.0401	CuZn39Pb3 / CW614N	UNS C38500				
		2.102	CuSn6	UNS C51900				
S₁ S₂ S₃	Super alloys	2.4856		Inconel 625	10-20 33-66	20-30 66-98	2xd1-3xd1	
		2.4668		Inconel 718				
		2.4617	NiMo28	Hastelloy B-2				
		2.4665	NiCr22Fe18Mo	Hastelloy X				
	Titanium pure	3.7035	Gr.2	ASTM B348 / F67				
		3.7065	Gr.4	ASTM B348 / F68				
	Titanium alloys	3.7165	TiAl6V4	ASTM B348 / F136				
		9.9367	TiAl6Nb7	ASTM F1295				
	Cr-Co alloys	2.4964	CoCr20W15Ni	Haynes 25	20-30 66-98	30-40 98-131	2xd1-3xd1	
			CrCoMo28	ASTM F1537				
H₁	Hardened steel < 55 HRC	1.2510	100MnCrMoW4	AISI O1				
H₂	Hardened steel ≥ 55 HRC	1.2379	X153CrMoV12	AISI D2				

RECOMMENDATION FOR USE

● Excellent | ● Good | ○ Acceptable | ☒ Not recommended



f [mm/rev] [IPR]							
Q _x	Ød1 0.3 mm .012" f	Ød1 0.4 mm .018" f	Ød1 0.6 mm .024" f	Ød1 0.8 mm .032" f	Ød1 1.0 mm .039" f	Ød1 1.2 mm .047" f	
0.2xd1–0.5xd1	0.010–0.015 .0004–.0006	0.010–0.015 .0004–.0006	0.015–0.020 .0006–.0008	0.015–0.020 .0006–.0008	0.030–0.040 .0012–.0016	0.040–0.050 .0016–.0020	
0.2xd1–0.5xd1	0.010–0.015 .0004–.0006	0.010–0.015 .0004–.0006	0.015–0.020 .0006–.0008	0.015–0.020 .0006–.0008	0.030–0.040 .0012–.0016	0.040–0.050 .0016–.0020	
0.2xd1–0.5xd1	0.010–0.015 .0004–.0006	0.010–0.015 .0004–.0006	0.015–0.020 .0006–.0008	0.015–0.020 .0006–.0008	0.030–0.040 .0012–.0016	0.040–0.050 .0016–.0020	
0.2xd1–0.5xd1	0.005–0.010 .0002–.0004	0.005–0.010 .0002–.0004	0.010–0.015 .0004–.0006	0.010–0.015 .0004–.0006	0.020–0.030 .0008–.0012	0.030–0.040 .0012–.0016	
0.5xd1	0.040 .0016	0.045 .0018	0.050 .0020	0.060 .0024	0.070 .0028	0.080 .0031	
0.5xd1	0.040 .0016	0.045 .0018	0.050 .0020	0.060 .0024	0.070 .0028	0.080 .0031	
0.2xd1	0.010–0.020 .0004–.0008	0.010–0.020 .0004–.0008	0.015–0.025 .0006–.0010	0.020–0.030 .0008–.0012	0.025–0.035 .0010–.0014	0.035–0.045 .0014–.0018	
0.5xd1	0.010–0.020 .0004–.0008	0.010–0.020 .0004–.0008	0.015–0.025 .0006–.0010	0.020–0.030 .0008–.0012	0.025–0.035 .0010–.0014	0.035–0.045 .0014–.0018	

NEW

CrazyDrill Pilot SST-Inox



THE MICRO PILOT OR SHORT DRILL FOR STAINLESS STEEL, HRSA AND CR-CO ALLOYS



What's new: The pilot and short drill was developed for stainless steels, heat-resistant and Cr-Co alloys. It has integrated cooling as well as a digressive helical flute and, as a pilot drill, is the ideal complement of CrazyDrill SST-Inox and CrazyDrill Flex SST-Inox. It is also suitable as a short drill for drilling depths of up to 3 x d.

The features: CrazyDrill Pilot SST-Inox was developed as a pilot and short drill with an integrated bevel cutting edge. What is special about this drill are the integrated cooling channels, which ensure an efficient coolant jet starting from 15 bar (218 psi), flush away the chips from the drill and keep the temperature under control. The result is significantly longer tool life.

It is suitable just as well for the preparation of deep holes as for short drilling up to a drilling depth of 3 x d. An additional cutting edge for 90° chamfer also allows the placement of a 90° countersink in the same drilling step.

Diameter range: 0.3 mm to 2.0 mm (.012" to .078")

Drilling depth: 3 x d

Countersink angle: 90°

Coating: eXedur RIP

PATENTED

Precise in depth

CRAZYDRILL PILOT SST-INOX: EFFICIENT PILOT OR SHORT DRILLING IN STAINLESS STEEL

With CrazyDrill Pilot SST-Inox, Mikron Tool introduces a pilot and short drill for stainless steels, heat-resistant and Cr-Co alloys in the diameter range of 0.3 mm to 2.0 mm (.012" to .078") and for drilling depths of up to 3 x d. All short drills are coated, have integrated cooling and a cutting edge for 90° chamfer.

■ CrazyDrill Pilot SST-Inox, drilling depth 3 x d, with integrated cooling, countersink 90°

This is the perfect preparation for the deep and precise drilling with CrazyDrill SST-Inox and CrazyDrill Flex SST-Inox. The digressive helical flute, the cooling channels, the coating and the possibility of adding a 90° countersink make it an extremely efficient pilot or short drill.

THE ADVANTAGES*

- | | |
|---|---|
| ■ SHORT MACHINING TIME | Drilling 3 x d + 90° countersink in one step |
| ■ HIGH DEGREE OF PROCESS RELIABILITY | Higher productivity |
| ■ HIGH DEGREE OF PRECISION | Due to small tolerances |

* The comparison applies to good-quality drilling tools with traditional technology and the cutting parameters as recommended by manufacturers.

CrazyDrill Pilot SST-Inox

■ Drilling with external cooling

■ Drilling with integrated cooling

NEW



CrazyDrill Pilot SST-Inox
with external cooling

CrazyDrill Pilot SST-Inox
with integrated cooling

1 | SHANK

The robust solid carbide shank guarantees stable vibration-free machining.

2 | NEW COOLING CONCEPT

The integrated cooling channels guarantee regular and significant cooling of the cutting edges starting from 15 bar (218 psi). The result is greater process reliability and higher productivity. This tool can also be used with external coolant supply.

3 | CARBIDE

Due to the high degree of toughness and thermal shock resistance, the carbide developed for SST-Inox products perfectly meets the requirements for the machining of stainless steels, heat-resistant and Cr-Co alloys.

4 | COATING

The high-performance eXedur RIP coating provides thermal and wear protection against heat and abrasion. Extremely smooth and consistent coating exhibits low adhesion to work materials and prevents from cutting edge chipping. The result is a long tool life even in the smallest diameter sizes.

5 | CUTTING EDGE FOR 90° CHAMFER

A 90° countersink can be placed simultaneously with the drilling.

6 | DIGRESSIVE HELICAL FLUTE - PATENTED

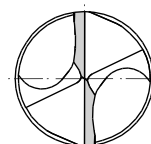
The digressive helical flute with a new and patented geometry guarantees a high degree of tool stability. The front part ensures good chip breaking, while the rear ensures rapid chip removal.

7 | TIP GEOMETRY

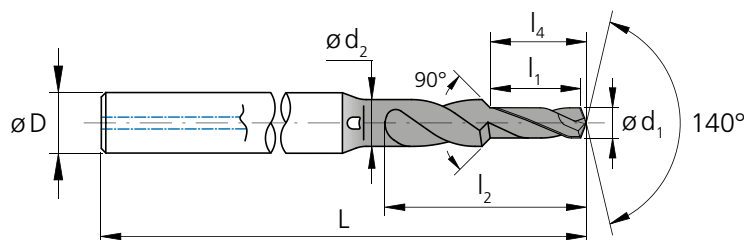
The tip geometry is developed for stainless, acid-resistant and heat-resistant steels:

- High degree of cutting edge stability
- Self-centering
- Short chips

Drill tip



CrazyDrill Pilot SST-Inox



from stock	Item number	d ₁ m5 [mm]	d ₁ m5 [inch]	l ₁ [mm]	l ₁ [inch]	d ₂ [mm]	l ₄ [mm]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.PD.00300.090.IK	0.30	.012	0.90	.035	0.60	0.95	2.5	3	45	1.77
■	2.PD.00350.090.IK	0.35	.014	1.05	.041	0.70	1.11	2.8	3	45	1.77
■	2.PD.00400.090.IK	0.40	.016	1.20	.047	0.80	1.26	3.2	3	45	1.77
■	2.PD.00450.090.IK	0.45	.018	1.35	.053	0.90	1.42	3.6	3	45	1.77
■	2.PD.00500.090.IK	0.50	.020	1.50	.059	1.00	1.58	4.0	3	48	1.89
■	2.PD.00550.090.IK	0.55	.022	1.65	.065	1.00	1.74	4.4	3	48	1.89
■	2.PD.00600.090.IK	0.60	.024	1.80	.071	1.10	1.90	4.7	3	48	1.89
■	2.PD.00650.090.IK	0.65	.026	1.95	.077	1.10	2.05	5.1	3	48	1.89
■	2.PD.00700.090.IK	0.70	.028	2.10	.083	1.30	2.21	5.5	4	52	2.05
■	2.PD.00750.090.IK	0.75	.030	2.25	.089	1.40	2.37	5.8	4	52	2.05
■	2.PD.00800.090.IK	0.80	.031	2.40	.094	1.40	2.53	6.2	4	52	2.05
■	2.PD.00850.090.IK	0.85	.033	2.55	.100	1.50	2.68	6.5	4	52	2.05
■	2.PD.00900.090.IK	0.90	.035	2.70	.106	1.50	2.84	6.9	4	52	2.05
■	2.PD.00950.090.IK	0.95	.037	2.85	.112	1.50	3.00	7.2	4	52	2.05
■	2.PD.01000.090.IK	1.00	.039	3.00	.118	1.70	3.16	7.5	4	55	2.17
■	2.PD.01050.090.IK	1.05	.041	3.15	.124	1.70	3.32	7.9	4	55	2.17
■	2.PD.01100.090.IK	1.10	.043	3.30	.130	1.70	3.47	8.2	4	55	2.17
■	2.PD.01150.090.IK	1.15	.045	3.45	.136	1.80	3.63	8.5	4	55	2.17

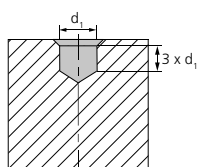
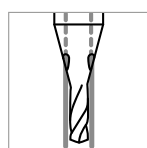
Cutting process: It is available on www.mikrontool.com

Carbide				Z2		
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from stock	Item number	d ₁ m5 [mm]	d ₁ m5 [inch]	l ₁ [mm]	l ₁ [inch]	d ₂ [mm]	l ₄ [mm]	l ₂ [mm]	D (h6) [mm]	L [mm]	L [inch]
■	2.PD.01200.090.IK	1.20	.047	3.60	.142	1.80	3.79	8.8	4	55	2.17
■	2.PD.01250.090.IK	1.25	.049	3.75	.148	2.00	3.95	9.2	4	55	2.17
■	2.PD.01300.090.IK	1.30	.051	3.90	.154	2.00	4.11	9.5	4	55	2.17
■	2.PD.01350.090.IK	1.35	.053	4.05	.159	2.00	4.26	9.8	4	55	2.17
■	2.PD.01400.090.IK	1.40	.055	4.20	.165	2.25	4.42	10.1	4	55	2.17
■	2.PD.01450.090.IK	1.45	.057	4.35	.171	2.25	4.58	10.4	4	55	2.17
■	2.PD.01500.090.IK	1.50	.059	4.50	.177	2.25	4.74	10.7	4	55	2.17
■	2.PD.01550.090.IK	1.55	.061	4.65	.183	2.25	4.89	10.9	4	55	2.17
■	2.PD.01600.090.IK	1.60	.063	4.80	.189	2.25	5.05	11.2	4	55	2.17
■	2.PD.01650.090.IK	1.65	.065	4.95	.195	2.25	5.21	11.5	4	55	2.17
■	2.PD.01700.090.IK	1.70	.067	5.10	.201	2.60	5.37	11.8	6	55	2.17
■	2.PD.01750.090.IK	1.75	.069	5.25	.207	2.60	5.53	12.0	6	55	2.17
■	2.PD.01800.090.IK	1.80	.071	5.40	.213	2.60	5.68	12.3	6	55	2.17
■	2.PD.01850.090.IK	1.85	.073	5.55	.219	2.60	5.84	12.6	6	55	2.17
■	2.PD.01900.090.IK	1.90	.075	5.70	.224	2.60	6.00	12.8	6	55	2.17
■	2.PD.01950.090.IK	1.95	.077	5.85	.230	2.60	6.16	13.1	6	55	2.17
■	2.PD.02000.090.IK	2.00	.079	6.00	.236	3.10	6.32	13.3	6	55	2.17

CrazyDrill Pilot SST-Inox

DRILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW



Note:
In case of external
cooling reduce
 v_c and f of 20%

Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	v_c [m/min] [SFM]	
P	Unalloyed carbon steel $R_m < 800 \text{ N/mm}^2$	1.0301	C10	AISI 1010		
		1.0401	C15	AISI 1015		
		1.1191	C45E/CK45	AISI 1045		
		1.0044	S275JR	AISI 1020		
		1.0715	11SMn30	AISI 1215		
	Low alloyed steel $R_m > 900 \text{ N/mm}^2$	1.5752	15NiCr13	ASTM 3415 / AISI 3310		
		1.7131	16MnCr5	AISI 5115		
		1.3505	100Cr6	AISI 52100		
		1.7225	42CrMo4	AISI 4140		
		1.2842	90MnCrV8	AISI O2		
	High alloyed tool steel $R_m < 1200 \text{ N/mm}^2$	1.2379	X153CrMoV12	AISI D2		
		1.2436	X210CrW12	AISI D4/D6		
		1.3343	HS6-5-2C	AISI M2 / UNS T11302		
		1.3355	HS18-0-1	AISI T1 / UNS T12001		
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430 / UNS S43000	35 – 50 115 – 164	
		1.4105	X6CrMoS17	AISI 430F		
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	35 – 50 115 – 164	
		1.4112	X90CrMoV18	AISI 440B		
	Stainless steel martensitic – PH	1.4542	X5CrNiCuNb 16-4	AISI 630 / ASTM 17-4 PH	35 – 50 115 – 164	
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH		
	Stainless steel austenitic	1.4301	X5CrNi 18-10	AISI 304	30 – 45 98 – 148	
		1.4435	X2CrNiMo 18-14-3	AISI 316L		
		1.4441	X2CrNiMo 18-14-3	AISI 316LM		
K	Cast iron	0.6020	GG20	ASTM 30		
		0.6030	GG30	ASTM 40B		
		0.7040	GGG40	ASTM 60-40-18		
		0.7060	GGG60	ASTM 80-60-03		
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351	40 – 100 131 – 328	
		3.4365	AlZnMgCu1.5	ASTM 7075		
	Aluminium alloy cast	3.2163	GD-AlSi9Cu3	ASTM A380		
		3.2381	GD-AlSi10Mg	UNS A03590		
	Copper	2.004	Cu-OF / CW008A	UNS C10100		
		2.0065	Cu-ETP / CW004A	UNS C11000		
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400		
		2.036	CuZn40 CW509L	UNS C28000		
	Brass, Bronze $R_m < 400 \text{ N/mm}^2$	2.0401	CuZn39Pb3 / CW614N	UNS C38500		
		2.102	CuSn6	UNS C51900		
S₁	Super alloys	2.4856		Inconel 625	15 – 30 49 – 98	
		2.4668		Inconel 718		
		2.4617	NiMo28	Hastelloy B-2		
		2.4665	NiCr22Fe18Mo	Hastelloy X		
S₂	Titanium pure	3.7035	Gr.2	ASTM B348 / F67		
		3.7065	Gr.4	ASTM B348 / F68		
S₃	Titanium alloys	3.7165	TiAl6V4	ASTM B348 / F136	40 – 50 131 – 164	
		9.9367	TiAl6Nb7	ASTM F1295		
	Cr-Co alloys	2.4964	CoCr20W15Ni	Haynes 25		
			CrCoMo28	ASTM F1537		
H₁	Hardened steel $< 55 \text{ HRC}$	1.2510	100MnCrMoW4	AISI O1		
H₂	Hardened steel $\geq 55 \text{ HRC}$	1.2379	X153CrMoV12	AISI D2		

RECOMMENDATION FOR USE

● Excellent | ● Good | ○ Acceptable | ☒ Not recommended



f [mm/rev] [IPR]									
	Ød1 0.3 mm .012" f	Ød1 0.5 mm .020" f	Ød1 0.8 mm .032" f	Ød1 1.0 mm .039" f	Ød1 1.2 mm .047" f	Ød1 1.4 mm .055" f	Ød1 1.6 mm .063" f	Ød1 1.8 mm .071" f	Ød1 2.0 mm .079" f
	0.015 .0006	0.020 .0008	0.030 .0012	0.035 .0014	0.040 .0016	0.050 .0020	0.055 .0022	0.060 .0024	0.070 .0028
	0.020 .0008	0.030 .0012	0.040 .0016	0.055 .0022	0.060 .0024	0.070 .0028	0.075 .0030	0.080 .0031	0.100 .0039
	0.015 .0006	0.020 .0008	0.025 .0010	0.030 .0012	0.040 .0016	0.050 .0020	0.055 .0022	0.060 .0024	0.070 .0028
	0.010 .0004	0.020 .0008	0.025 .0010	0.030 .0012	0.035 .0014	0.045 .0018	0.050 .0020	0.055 .0022	0.060 .0024
	0.040 .0016	0.060 .0024	0.080 .0031	0.090 .0035	0.100 .0039	0.120 .0047	0.140 .0055	0.160 .0063	0.180 .0071
	0.040 .0016	0.060 .0024	0.080 .0031	0.090 .0035	0.100 .0039	0.120 .0047	0.140 .0055	0.160 .0063	0.180 .0071
	0.010 .0004	0.015 .0006	0.020 .0008	0.022 .0009	0.025 .0010	0.035 .0014	0.037 .0015	0.045 .0018	0.055 .0022
	0.020 .0008	0.030 .0012	0.040 .0016	0.055 .0022	0.060 .0024	0.070 .0028	0.075 .0030	0.080 .0031	0.100 .0039

crazy about cool tools



THIS IS WHAT MIKRON TOOL IS ALL ABOUT

The manufacturing of innovative solid carbide tools with highest quality standards requires consistent dedication from the entire Mikron Tool team – from geometry definition, grinding and coating to the pre-machining and finishing of the tools.

INNOVATIVE AND SPECIALIZED

Our strength lies in machining in the small diameter range, (drills from diameter 0.1 mm (.004")), focusing on difficult-to-machine materials.

ABSOLUTE PRECISION IN THE μ RANGE

The most modern technology in manufacturing equipment and measuring instruments guarantee that tools are produced with a precision of ± 0.0005 mm ($\pm .00002$).

THE HIGHEST DEGREE OF PERFORMANCE

For us at Mikron Tool this means high machining speeds, long tool life, high degree of process reliability and convincing results.

SERVICE IS THE FOCUS

We are your partner for technical advice and support during the entire lifespan of your product.

CLIENT-SPECIFIC TOOLS

We produce client-specific solid carbide tools according to your machining and manufacturing methods and required end results.

CERTIFIED

We have all the certificates that are of importance in our industry:
ISO 9001, ISO 14001 and OHS 18001

More information is available by visiting www.mikrontool.com

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