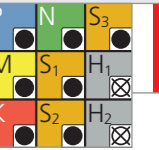


NEW

Type B - Z4 - Side milling - Finishing

v_c [SFM] | [m/min]
f_z [IPT] | [mm]

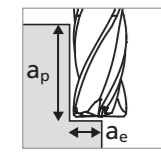
RECOMMENDATION FOR USE
● Excellent | ● Good | ○ Acceptable | ⊗ Not recommended



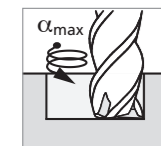
MILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW

Side milling

Finishing

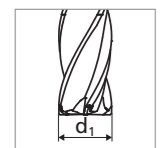
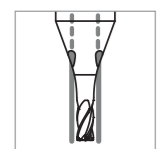


■ $a_p = 1.5 \times d_1$
■ $a_e = 0.02 \times d_1$



Note:

In case of helical interpolation milling see α_{max} on page 35



Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	Cutting edge geometry	Ød ₁																
						1/64"		.020" 0.5 mm		.024" 0.6 mm		.028" 0.7 mm		1/32"		.031" 0.8 mm		.035" - .039" 0.9 - 1.0 mm				
						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			
P	Unalloyed carbon steel Rm < 800 N/mm ²	1.0301	C10	AISI 1010	GEOMETRY S	148 - 246	.00035	180 - 312	.00039	213 - 377	.00047	246 - 426	.00055	295 - 492	.00063	328 - 558	.00071					
		1.0401	C15	AISI 1015		45 - 75	0.009	55 - 95	0.010	65 - 115	0.012	75 - 130	0.014	90 - 150	0.016	100 - 170	0.018					
		1.1191	C45E/CK45	AISI 1045		148 - 246	.00035	180 - 312	.00039	213 - 377	.00047	246 - 426	.00055	295 - 492	.00063	328 - 558	.00071					
		1.0044	S275JR	AISI 1020		45 - 75	0.009	55 - 95	0.010	65 - 115	0.012	75 - 130	0.014	90 - 150	0.016	100 - 170	0.018					
		1.0715	11SMn30	AISI 1215		148 - 246	.00035	180 - 312	.00039	213 - 377	.00047	246 - 426	.00055	295 - 492	.00063	328 - 558	.00071					
		1.5752	15NiCr13	ASTM 3415 / AISI 3310		45 - 75	0.009	55 - 95	0.010	65 - 115	0.012	75 - 130	0.014	90 - 150	0.016	100 - 170	0.018					
	Low alloyed steel Rm > 900 N/mm ²	1.7131	16MnCr5	AISI 5115		GEOMETRY S	148 - 246	.00035	180 - 312	.00039	213 - 377	.00047	246 - 426	.00055	295 - 492	.00063	328 - 558	.00071				
		1.3505	100Cr6	AISI 52100			45 - 75	0.009	55 - 95	0.010	65 - 115	0.012	75 - 130	0.014	90 - 150	0.016	100 - 170	0.018				
		1.7225	42CrMo4	AISI 4140			148 - 246	.00035	180 - 312	.00039	213 - 377	.00047	246 - 426	.00055	295 - 492	.00063	328 - 558	.00071				
		1.2842	90MnCrV8	AISI O2			45 - 75	0.009	55 - 95	0.010	65 - 115	0.012	75 - 130	0.014	90 - 150	0.016	100 - 170	0.018				
		1.2379	X153CrMoV12	AISI D2			148 - 246	.00024	180 - 312	.00031	213 - 377	.00039	246 - 426	.00043	295 - 492	.00051	328 - 558	.00055				
		1.2436	X210CrW12	AISI D4/D6			45 - 75	0.006	55 - 95	0.008	65 - 115	0.010	75 - 130	0.011	90 - 150	0.013	100 - 170	0.014				
High alloyed tool steel Rm < 1200 N/mm ²	1.3343	HS6-5-2C	AISI M2 / UNS T11302	GEOMETRY S	148 - 246		.00024	180 - 312	.00031	213 - 377	.00039	246 - 426	.00043	295 - 492	.00051	328 - 558	.00055					
	1.3355	HS18-0-1	AISI T1 / UNS T12001		45 - 75		0.006	55 - 95	0.008	65 - 115	0.010	75 - 130	0.011	90 - 150	0.013	100 - 170	0.014					
	1.4016	X6Cr17	AISI 430 / UNS S43000		GEOMETRY S		148 - 246	.00031	180 - 312	.00039	213 - 377	.00047	246 - 426	.00055	295 - 492	.00063	328 - 558	.00071				
	1.4105	X6CrMoS17	AISI 430F				45 - 75	0.008	55 - 95	0.010	65 - 115	0.012	75 - 130	0.014	90 - 150	0.016	100 - 170	0.018				
	1.4034	X46Cr13	AISI 420C				148 - 246	.00031	180 - 312	.00039	213 - 377	.00047	246 - 426	.00055	295 - 492	.00063	328 - 558	.00071				
	1.4112	X90CrMoV18	AISI 440B				45 - 75	0.008	55 - 95	0.010	65 - 115	0.012	75 - 130	0.014	90 - 150	0.016	100 - 170	0.018				
	1.4542	X5CrNiCuNb16-4	AISI 630 / ASTM 17-4 PH			148 - 246	.00031	180 - 312	.00039	213 - 377	.00047	246 - 426	.00055	295 - 492	.00063	328 - 558	.00071					
	1.4545	X5CrNiCuNb15-5	ASTM 15-5 PH			45 - 75	0.008	55 - 95	0.010	65 - 115	0.012	75 - 130	0.014	90 - 150	0.016	100 - 170	0.018					
1.4301	X5CrNi18-10	AISI 304	148 - 246			.00031	180 - 312	.00039	213 - 377	.00047	246 - 426	.00055	295 - 492	.00063	328 - 558	.00071						
1.4435	X2CrNiMo18-14-3	AISI 316L	45 - 75			0.008	55 - 95	0.010	65 - 115	0.012	75 - 130	0.014	90 - 150	0.016	100 - 170	0.018						
Stainless steel austenitic	1.4441	X2CrNiMo18-15-3	AISI 316LM		GEOMETRY S	148 - 246	.00024	180 - 312	.00031	213 - 377	.00039	246 - 426	.00043	295 - 492	.00051	328 - 558	.00055					
	1.4539	X1NiCrMoCu25-20-5	AISI 904L			45 - 75	0.006	55 - 95	0.008	65 - 115	0.010	75 - 130	0.011	90 - 150	0.013	100 - 170	0.014					
	0.6020	GG20	ASTM 30	GEOMETRY S		148 - 246	.00035	180 - 312	.00039	213 - 377	.00047	246 - 426	.00055	295 - 492	.00063	328 - 558	.00071					
	0.6030	GG30	ASTM 40B			45 - 75	0.009	55 - 95	0.010	65 - 115	0.012	75 - 130	0.014	90 - 150	0.016	100 - 170	0.018					
0.7040	GGG40	ASTM 60-40-18	148 - 246		.00035	180 - 312	.00039	213 - 377	.00047	246 - 426	.00055	295 - 492	.00063	328 - 558	.00071							
0.7060	GGG60	ASTM 80-60-03	45 - 75		0.009	55 - 95	0.010	65 - 115	0.012	75 - 130	0.014	90 - 150	0.016	100 - 170	0.018							
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351	GEOMETRY S	148 - 246	.00039	180 - 312	.00039	213 - 377	.00047	246 - 426	.00051	295 - 492	.00055	328 - 558	.00055					
		3.4365	AlZnMgCu1.5	ASTM 7075		45 - 75	0.010	55 - 95	0.010	65 - 115	0.012	75 - 130	0.013	90 - 150	0.014	100 - 170	0.014					
	Aluminium alloy cast	3.2163	GD-AlSi9Cu3	ASTM A380		GEOMETRY S	148 - 246	.00039	180 - 312	.00039	213 - 377	.00047	246 - 426	.00051	295 - 492	.00055	328 - 558	.00055				
		3.2381	GD-AlSi10Mg	UNS A03590			45 - 75	0.010	55 - 95	0.010	65 - 115	0.012	75 - 130	0.013	90 - 150	0.014	100 - 170	0.014				
	Copper	2.0040	Cu-OF / CW008A	UNS C10100			GEOMETRY S	148 - 246	.00039	180 - 312	.00039	213 - 377	.00047	246 - 426	.00051	295 - 492	.00055	328 - 558	.00055			
		2.0065	Cu-ETP / CW004A	UNS C11000				45 - 75	0.010	55 - 95	0.010	65 - 115	0.012	75 - 130	0.013	90 - 150	0.014	100 - 170	0.014			
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400				GEOMETRY S	148 - 246	.00039	180 - 312	.00039	213 - 377	.00047	246 - 426	.00051	295 - 492	.00055	328 - 558	.00055		
		2.0360	CuZn40 CW509L	UNS C28000					45 - 75	0.010	55 - 95	0.010	65 - 115	0.012	75 - 130	0.013	90 - 150	0.014	100 - 170	0.014		
	Brass, Bronze Rm < 400 N/mm ²	2.0401	CuZn39Pb3 / CW614N	UNS C38500					GEOMETRY S	148 - 246	.00039	180 - 312	.00039	213 - 377	.00047	246 - 426	.00051	295 - 492	.00055	328 - 558	.00055	
		2.1020	CuSn6	UNS C51900						45 - 75	0.010	55 - 95	0.010	65 - 115	0.012	75 - 130	0.013	90 - 150	0.014	100 - 170	0.014	
	Bronze Rm < 600 N/mm ²	2.0966	CuAl10Ni5Fe4	UNS C63000						GEOMETRY S	148 - 246	.00039	180 - 312	.00039	213 - 377	.00047	246 - 426	.00051	295 - 492	.00055	328 - 558	.00055
		2.0960	CuAl9Mn2	UNS C63200							45 - 75	0.010	55 - 95	0.010	65 - 115	0.012	75 - 130	0.013	90 - 150	0.014	100 - 170	0.014
S ₁	Super alloys	2.4856		Inconel 625	GEOMETRY SX						148 - 246	.00016	180 - 312	.00024	213 - 377	.00024	246 - 426	.00028	295 - 492	.00031	328 - 558	.00035
		2.4668		Inconel 718							45 - 75	0.004	55 - 95	0.006	65 - 115	0.006	75 - 130	0.007	90 - 150	0.008	100 - 170	0.009
		2.4617	NiMo28	Hastelloy B-2		148 - 246					.00016	180 - 312	.00024	213 - 377	.00024	246 - 426	.00028	295 - 492	.00031	328 - 558	.00035	
		2.4665	NiCr22Fe18Mo	Hastelloy X		45 - 75					0.004	55 - 95	0.006	65 - 115	0.006	75 - 130	0.007	90 - 150	0.008	100 - 170	0.009	
S ₂	Titanium pure	3.7035	Gr.2	ASTM B348 / F67	GEOMETRY S	148 - 246	.00024				180 - 312	.00031	213 - 377	.00039	246 - 426	.00043	295 - 492	.00051	328 - 558	.00055		
		3.7065	Gr.4	ASTM B348 / F68		45 - 75	0.006				55 - 95	0.008	65 - 115	0.010	75 - 130	0.011	90 - 150	0.013	100 - 170	0.014		
S ₂	Titanium alloys	3.7165	TiAl6V4	ASTM B348 / F136	GEOMETRY S	148 - 246	.00024	180 - 312			.00031	213 - 377	.00039	246 - 426	.00043	295 - 492	.00051	328 - 558	.00055			
		9.9367	TiAl6Nb7	ASTM F1295		45 - 75	0.006	55 - 95			0.008	65 - 115	0.010	75 - 130	0.011	90 - 150	0.013	100 - 170	0.014			
S ₃	CoCr alloys	2.4964	CoCr20W15Ni	Haynes 25	GEOMETRY SX	148 - 246	.00016	180 - 312	.00024		213 - 377	.00024	246 - 426	.00028	295 - 492	.00031	328 - 558	.00035				
			CrCoMo28	ASTM F1537		45 - 75	0.004	55 - 95	0.006		65 - 115	0.006	75 - 130	0.007	90 - 150	0.008	100 - 170	0.009				
H ₁ H ₂	Hardened steel ≥ 55 HRC	1.2510	100MnCrMoW4	AISI O1	GEOMETRY S	148 - 246	.00016	180 - 312	.00024	213 - 377	.00024	246 - 426	.00028	295 - 492	.00031	328 - 558	.00035					
		1.2379	X153CrMoV12	AISI D2		45 - 75	0.004	55 - 95	0.006	65 - 115	0.006	75 - 130	0.007	90 - 150	0.008	100 - 170	0.009					