

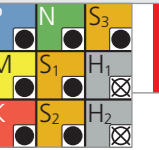
NEW

Type C - Z3 - Side milling - Roughing

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

RECOMMENDATION FOR USE

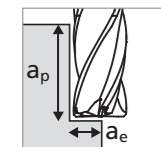
● Excellent | ● Good | ○ Acceptable | ⊗ Not recommended



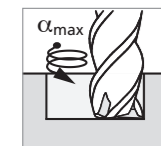
MILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW

Side milling

Roughing

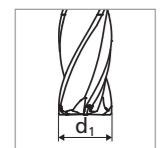
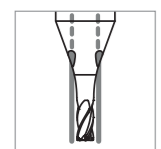


■ a_p = 1 x d₁
■ a_e = 0.1 x d₁



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															
						.008" 0.2 mm		.012" 0.3 mm		1/64" 0.4 mm		.020" 0.5 mm		.024" 0.6 mm		.028" 0.7 mm		1/32" 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	v _c	f _z
P	Unalloyed carbon steel Rm < 800 N/mm ²	1.0301	C10	AISI 1010	GEOMETRY S	49 - 82	.00016	66 - 131	.00024	82 - 164	.00039	98 - 213	.00047	131 - 246	.00055	148 - 295	.00067	164 - 328	.00075	180 - 377	.00083
		1.0401	C15	AISI 1015		15 - 25	0.004	20 - 40	0.006	25 - 50	0.010	30 - 65	0.012	40 - 75	0.014	45 - 90	0.017	50 - 100	0.019	55 - 115	0.021
		1.1191	C45E/CK45	AISI 1045		49 - 82	.00016	66 - 131	.00024	82 - 164	.00039	98 - 213	.00047	131 - 246	.00055	148 - 295	.00067	164 - 328	.00075	180 - 377	.00083
		1.0044	S275JR	AISI 1020		15 - 25	0.004	20 - 40	0.006	25 - 50	0.010	30 - 65	0.012	40 - 75	0.014	45 - 90	0.017	50 - 100	0.019	55 - 115	0.021
		1.0715	11SMn30	AISI 1215		49 - 82	.00016	66 - 131	.00024	82 - 164	.00039	98 - 213	.00047	131 - 246	.00055	148 - 295	.00067	164 - 328	.00075	180 - 377	.00083
	Low alloyed steel Rm > 900 N/mm ²	1.5752	15NiCr13	ASTM 3415 / AISI 3310		15 - 25	0.004	20 - 40	0.006	25 - 50	0.010	30 - 65	0.012	40 - 75	0.014	45 - 90	0.017	50 - 100	0.019	55 - 115	0.021
		1.7131	16MnCr5	AISI 5115		49 - 82	.00016	66 - 131	.00024	82 - 164	.00039	98 - 213	.00047	131 - 246	.00055	148 - 295	.00067	164 - 328	.00075	180 - 377	.00083
		1.3505	100Cr6	AISI 52100		15 - 25	0.004	20 - 40	0.006	25 - 50	0.010	30 - 65	0.012	40 - 75	0.014	45 - 90	0.017	50 - 100	0.019	55 - 115	0.021
		1.7225	42CrMo4	AISI 4140		49 - 82	.00012	66 - 131	.00020	82 - 164	.00028	98 - 213	.00035	131 - 246	.00043	148 - 295	.00051	164 - 328	.00059	180 - 377	.00067
		1.2842	90MnCrV8	AISI O2		15 - 25	0.003	20 - 40	0.005	25 - 50	0.007	30 - 65	0.009	40 - 75	0.011	45 - 90	0.013	50 - 100	0.015	55 - 115	0.017
High alloyed tool steel Rm < 1200 N/mm ²	1.2379	X153CrMoV12	AISI D2	49 - 82	.00012	66 - 131	.00020	82 - 164	.00028	98 - 213	.00035	131 - 246	.00043	148 - 295	.00051	164 - 328	.00059	180 - 377	.00067		
	1.2436	X210CrW12	AISI D4/D6	15 - 25	0.003	20 - 40	0.005	25 - 50	0.007	30 - 65	0.009	40 - 75	0.011	45 - 90	0.013	50 - 100	0.015	55 - 115	0.017		
	1.3343	HS6-5-2C	AISI M2 / UNS T11302	49 - 82	.00016	66 - 131	.00024	82 - 164	.00039	98 - 213	.00047	131 - 246	.00055	148 - 295	.00067	164 - 328	.00075	180 - 377	.00083		
	1.3355	HS18-0-1	AISI T1 / UNS T12001	15 - 25	0.004	20 - 40	0.006	25 - 50	0.010	30 - 65	0.012	40 - 75	0.014	45 - 90	0.017	50 - 100	0.019	55 - 115	0.021		
	1.4016	X6Cr17	AISI 430 / UNS S43000	49 - 82	.00016	66 - 131	.00024	82 - 164	.00039	98 - 213	.00047	131 - 246	.00055	148 - 295	.00067	164 - 328	.00075	180 - 377	.00083		
M	Stainless steel ferritic	1.4105	X6CrMoS17	AISI 430F	15 - 25	0.004	20 - 40	0.006	25 - 50	0.010	30 - 65	0.012	40 - 75	0.014	45 - 90	0.017	50 - 100	0.019	55 - 115	0.021	
		1.4034	X46Cr13	AISI 420C	49 - 82	.00016	66 - 131	.00024	82 - 164	.00039	98 - 213	.00047	131 - 246	.00055	148 - 295	.00067	164 - 328	.00075	180 - 377	.00083	
	Stainless steel martensitic	1.4112	X90CrMoV18	AISI 440B	15 - 25	0.004	20 - 40	0.006	25 - 50	0.010	30 - 65	0.012	40 - 75	0.014	45 - 90	0.017	50 - 100	0.019	55 - 115	0.021	
		1.4542	X5CrNiCuNb16-4	AISI 630 / ASTM 17-4 PH	49 - 82	.00012	66 - 131	.00020	82 - 164	.00028	98 - 213	.00035	131 - 246	.00043	148 - 295	.00051	164 - 328	.00059	180 - 377	.00067	
	Stainless steel martensitic - PH	1.4545	X5CrNiCuNb15-5	ASTM 15-5 PH	15 - 25	0.003	20 - 40	0.005	25 - 50	0.007	30 - 65	0.009	40 - 75	0.011	45 - 90	0.013	50 - 100	0.015	55 - 115	0.017	
		1.4301	X5CrNi18-10	AISI 304	49 - 82	.00012	66 - 131	.00020	82 - 164	.00028	98 - 213	.00035	131 - 246	.00043	148 - 295	.00051	164 - 328	.00059	180 - 377	.00067	
	Stainless steel austenitic	1.4435	X2CrNiMo18-14-3	AISI 316L	15 - 25	0.003	20 - 40	0.005	25 - 50	0.007	30 - 65	0.009	40 - 75	0.011	45 - 90	0.013	50 - 100	0.015	55 - 115	0.017	
1.4441		X2CrNiMo18-15-3	AISI 316LM	49 - 82	.00012	66 - 131	.00020	82 - 164	.00028	98 - 213	.00035	131 - 246	.00043	148 - 295	.00051	164 - 328	.00059	180 - 377	.00067		
1.4539		X1NiCrMoCu25-20-5	AISI 904L	15 - 25	0.003	20 - 40	0.005	25 - 50	0.007	30 - 65	0.009	40 - 75	0.011	45 - 90	0.013	50 - 100	0.015	55 - 115	0.017		
K	Cast iron	0.6020	GG20	ASTM 30	49 - 82	.00012	66 - 131	.00020	82 - 164	.00028	98 - 213	.00035	131 - 246	.00043	148 - 295	.00051	164 - 328	.00059	180 - 377	.00067	
		0.6030	GG30	ASTM 40B	15 - 25	0.003	20 - 40	0.005	25 - 50	0.007	30 - 65	0.009	40 - 75	0.011	45 - 90	0.013	50 - 100	0.015	55 - 115	0.017	
		0.7040	GGG40	ASTM 60-40-18	49 - 82	.00012	66 - 131	.00020	82 - 164	.00028	98 - 213	.00035	131 - 246	.00043	148 - 295	.00051	164 - 328	.00059	180 - 377	.00067	
		0.7060	GGG60	ASTM 80-60-03	15 - 25	0.003	20 - 40	0.005	25 - 50	0.007	30 - 65	0.009	40 - 75	0.011	45 - 90	0.013	50 - 100	0.015	55 - 115	0.017	
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351	49 - 82	.00024	66 - 131	.00031	82 - 164	.00043	98 - 213	.00063	131 - 246	.00071	148 - 295	.00075	164 - 328	.00083	180 - 377	.00087	
		3.4365	AlZnMgCu1.5	ASTM 7075	15 - 25	0.006	20 - 40	0.008	25 - 50	0.011	30 - 65	0.016	40 - 75	0.018	45 - 90	0.019	50 - 100	0.021	55 - 115	0.022	
	Aluminium alloy cast	3.2163	GD-AlSi9Cu3	ASTM A380	49 - 82	.00024	66 - 131	.00031	82 - 164	.00043	98 - 213	.00063	131 - 246	.00071	148 - 295	.00075	164 - 328	.00083	180 - 377	.00087	
		3.2381	GD-AlSi10Mg	UNS A03590	15 - 25	0.006	20 - 40	0.008	25 - 50	0.011	30 - 65	0.016	40 - 75	0.018	45 - 90	0.019	50 - 100	0.021	55 - 115	0.022	
	Copper	2.0040	Cu-OF / CW008A	UNS C10100	49 - 82	.00024	66 - 131	.00031	82 - 164	.00043	98 - 213	.00063	131 - 246	.00071	148 - 295	.00075	164 - 328	.00083	180 - 377	.00087	
		2.0065	Cu-ETP / CW004A	UNS C11000	15 - 25	0.006	20 - 40	0.008	25 - 50	0.011	30 - 65	0.016	40 - 75	0.018	45 - 90	0.019	50 - 100	0.021	55 - 115	0.022	
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400	49 - 82	.00024	66 - 131	.00031	82 - 164	.00043	98 - 213	.00063	131 - 246	.00071	148 - 295	.00075	164 - 328	.00083	180 - 377	.00087	
		2.0360	CuZn40 CW509L	UNS C28000	15 - 25	0.006	20 - 40	0.008	25 - 50	0.011	30 - 65	0.016	40 - 75	0.018	45 - 90	0.019	50 - 100	0.021	55 - 115	0.022	
	Brass, Bronze Rm < 400 N/mm ²	2.0401	CuZn39Pb3 / CW614N	UNS C38500	49 - 82	.00024	66 - 131	.00031	82 - 164	.00043	98 - 213	.00063	131 - 246	.00071	148 - 295	.00075	164 - 328	.00083	180 - 377	.00087	
		2.1020	CuSn6	UNS C51900	15 - 25	0.006	20 - 40	0.008	25 - 50	0.011	30 - 65	0.016	40 - 75	0.018	45 - 90	0.019	50 - 100	0.021	55 - 115	0.022	
Bronze Rm < 600 N/mm ²	2.0966	CuAl10Ni5Fe4	UNS C63000	49 - 82	.00024	66 - 131	.00031	82 - 164	.00043	98 - 213	.00063	131 - 246	.00071	148 - 295	.00075	164 - 328	.00083	180 - 377	.00087		
	2.0960	CuAl9Mn2	UNS C63200	15 - 25	0.006	20 - 40	0.008	25 - 50	0.011	30 - 65	0.016	40 - 75	0.018	45 - 90	0.019	50 - 100	0.021	55 - 115	0.022		
S₁	Super alloys	2.4856		Inconel 625	49 - 82	.00008	66 - 131	.00016	82 - 164	.00024	98 - 213	.00031	131 - 246	.00035	148 - 295	.00039	164 - 328	.00047	180 - 377	.00055	
		2.4668		Inconel 718	15 - 25	0.002	20 - 40	0.004	25 - 50	0.006	30 - 65	0.008	40 - 75	0.009	45 - 90	0.010	50 - 100	0.012	55 - 115	0.014	
		2.4617	NiMo28	Hastelloy B-2	49 - 82	.00016	66 - 131	.00024	82 - 164	.00031	98 - 213	.00047	131 - 246	.00051	148 - 295	.00055	164 - 328	.00059	180 - 377	.00067	
		2.4665	NiCr22Fe18Mo	Hastelloy X	15 - 25	0.004	20 - 40	0.006	25 - 50	0.008	30 - 65	0.010	40 - 75	0.011	45 - 90	0.013	50 - 100	0.015	55 - 115	0.017	
S₂	Titanium pure	3.7035	Gr.2	ASTM B348 / F67	49 - 82	.00016	66 - 131	.00024	82 - 164	.00031											