

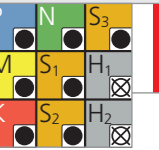
**NEW**

# Type C - Z4 - Side milling - Semi-finishing

$v_c$  [m/min]  
 $f_z$  [mm]

RECOMMENDATION FOR USE

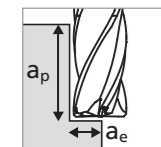
● Excellent | ● Good | ○ Acceptable | ⊗ Not recommended



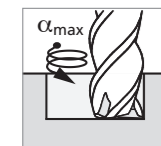
## MILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW

Side milling

Semi-finishing

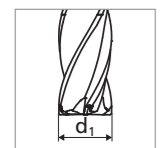
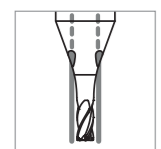


■  $a_p = 1.5 \times d_1$   
■  $a_e = 0.05 \times d_1$



Note:

In case of helical interpolation milling see  $\alpha_{max}$  on page 35



Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	Cutting edge geometry	$\varnothing d_1$											
						0.4 mm 1/64"		0.5 mm		0.6 mm		0.7 mm		0.8 mm 1/32"		0.9 - 1.0 mm	
						$v_c$	$f_z$	$v_c$	$f_z$	$v_c$	$f_z$	$v_c$	$f_z$	$v_c$	$f_z$	$v_c$	$f_z$
P	Unalloyed carbon steel Rm < 800 N/mm <sup>2</sup>	1.0301	C10	AISI 1010	GEOMETRY S	45 - 75	0.012	55 - 95	0.015	65 - 115	0.018	75 - 130	0.021	90 - 150	0.024	100 - 170	0.027
		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/mm <sup>2</sup>	1.5752	15NiCr13	ASTM 3415 / AISI 3310		45 - 75	0.012	55 - 95	0.015	65 - 115	0.018	75 - 130	0.021	90 - 150	0.024	100 - 170	0.027
		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/mm <sup>2</sup>	1.2379	X153CrMoV12	AISI D2	45 - 75	0.008	55 - 95	0.011	65 - 115	0.014	75 - 130	0.016	90 - 150	0.019	100 - 170	0.022		
	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
1.4105			X6CrMoS17	AISI 430F													
Stainless steel martensitic		1.4034	X46Cr13	AISI 420C	45 - 75	0.012	55 - 95	0.015	65 - 115	0.018	75 - 130	0.021	90 - 150	0.024	100 - 170	0.027	
		1.4112	X90CrMoV18	AISI 440B													
Stainless steel martensitic - PH		1.4542	X5CrNiCuNb16-4	AISI 630 / ASTM 17-4 PH	45 - 75	0.012	55 - 95	0.015	65 - 115	0.018	75 - 130	0.021	90 - 150	0.024	100 - 170	0.027	
		1.4545	X5CrNiCuNb15-5	ASTM 15-5 PH													
Stainless steel austenitic		1.4301	X5CrNi18-10	AISI 304	45 - 75	0.008	55 - 95	0.011	65 - 115	0.014	75 - 130	0.016	90 - 150	0.019	100 - 170	0.022	
		1.4435	X2CrNiMo18-14-3	AISI 316L													
	1.4441	X2CrNiMo18-15-3	AISI 316LM														
1.4539	X1NiCrMoCu25-20-5	AISI 904L															
K	Cast iron	0.6020	GG20	ASTM 30	GEOMETRY S	45 - 75	0.012	55 - 95	0.015	65 - 115	0.018	75 - 130	0.021	90 - 150	0.024	100 - 170	0.027
		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	GEOMETRY S	45 - 75	0.013	55 - 95	0.015	65 - 115	0.016	75 - 130	0.018	90 - 150	0.020	100 - 170	0.022
		3.4365	AlZnMgCu1.5	ASTM 7075													
	Aluminium alloy cast	3.2163	GD-AlSi9Cu3	ASTM A380		45 - 75	0.013	55 - 95	0.015	65 - 115	0.016	75 - 130	0.018	90 - 150	0.020	100 - 170	0.022
		3.2381	GD-AlSi10Mg	UNS A03590													
	Copper	2.0040	Cu-OF / CW008A	UNS C10100		45 - 75	0.013	55 - 95	0.015	65 - 115	0.016	75 - 130	0.018	90 - 150	0.020	100 - 170	0.022
		2.0065	Cu-ETP / CW004A	UNS C11000													
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400		45 - 75	0.013	55 - 95	0.015	65 - 115	0.016	75 - 130	0.018	90 - 150	0.020	100 - 170	0.022
		2.0360	CuZn40 CW509L	UNS C28000													
	Brass, Bronze Rm < 400 N/mm <sup>2</sup>	2.0401	CuZn39Pb3 / CW614N	UNS C38500		45 - 75	0.013	55 - 95	0.015	65 - 115	0.016	75 - 130	0.018	90 - 150	0.020	100 - 170	0.022
		2.1020	CuSn6	UNS C51900													
Bronze Rm < 600 N/mm <sup>2</sup>	2.0966	CuAl10Ni5Fe4	UNS C63000	45 - 75	0.013	55 - 95	0.015	65 - 115	0.016	75 - 130	0.018	90 - 150	0.020	100 - 170	0.022		
	2.0960	CuAl9Mn2	UNS C63200														
S <sub>1</sub>	Super alloys	2.4856		Inconel 625	GEOMETRY SX	45 - 75	0.008	55 - 95	0.010	65 - 115	0.012	75 - 130	0.014	90 - 150	0.016	100 - 170	0.018
		2.4668		Inconel 718													
		2.4617	NiMo28	Hastelloy B-2													
		2.4665	NiCr22Fe18Mo	Hastelloy X													
S <sub>2</sub>	Titanium pure	3.7035	Gr.2	ASTM B348 / F67	GEOMETRY S	45 - 75	0.009	55 - 95	0.011	65 - 115	0.014	75 - 130	0.016	90 - 150	0.019	100 - 170	0.022
		3.7065	Gr.4	ASTM B348 / F68													
	Titanium alloys	3.7165	TiAl6V4	ASTM B348 / F136		45 - 75	0.009	55 - 95	0.011	65 - 115	0.014	75 - 130	0.016	90 - 150	0.019	100 - 170	0.022
9.9367		TiAl6Nb7	ASTM F1295														
S <sub>3</sub>	CoCr alloys	2.4964	CoCr20W15Ni CrCoMo28	Haynes 25 ASTM F1537	GEOMETRY SX	45 - 75	0.008	55 - 95	0.010	65 - 115	0.012	75 - 130	0.014	90 - 150	0.016	100 - 170	0.018
H <sub>1</sub> H <sub>2</sub>	Hardened steel ≥ 55 HRC	1.2510	100MnCrMoW4	AISI O1													
		1.2379	X153CrMoV12	AISI D2													