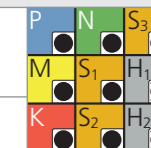


NEW

Type M - Pre-machining

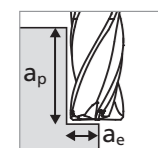
V_c [m/min] | [SFM]
f_z [mm] | [IPT]

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



MILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW

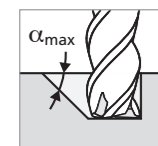
Pre-machining



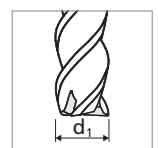
- ① a_p = 1.5 x d₁
a_e = 0.2 x d₁

- ② a_p = 3 x d₁
a_e = 0.1 x d₁

- ③ a_p = 3 x d₁
a_e = 0.05 x d₁



Note:
In case of linear ramp or helical interpolation milling reduce f_z by 35%



Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	1.0 mm .039"			1.5 mm .059"			3/32" 2.0 mm .079"			1/8" 3.0 mm .118"			5/32" 4.0 mm .157"			3/16" - 7/32" 5.0 mm .197"			1/4" 6.0 mm .236"			8.0 mm .315"										
					1			2			3			1			2			3			1			2			3							
					v _c	f _z	③	v _c	f _z	③	v _c	f _z	③	v _c	f _z	③	v _c	f _z	③	v _c	f _z	③	v _c	f _z	③	v _c	f _z	③	v _c	f _z	③					
P	Unalloyed carbon steel Rm < 800 N/mm ²	1.0301	C10	AISI 1010																																
		1.0401	C15	AISI 1015																																
		1.1191	C45E/CK45	AISI 1045	140	0.011	0.015	0.020	200	0.015	0.020	0.028	220	0.024	0.032	0.044	240	0.033	0.044	0.061	260	0.034	0.045	0.062	260	0.035	0.047	0.064	260	0.046	0.061	0.084	260	0.054	0.072	0.100
		1.0044	S275JR	AISI 1020	459	.00043	.00059	.00079	656	.00059	.00079	.00110	722	.00094	.00126	.00173	787	.00130	.00173	.00240	853	.00134	.00177	.00244	853	.00138	.00185	.00252	853	.00181	.00240	.00331	853	.00213	.00283	.00394
		1.0715	11SMn30	AISI 1215																																
	Low alloyed steel Rm > 900 N/mm ²	1.5752	15NiCr13	ASTM 3415 / AISI 3310																																
		1.7131	16MnCr5	AISI 5115	140	0.010	0.013	0.018	200	0.013	0.017	0.024	220	0.022	0.029	0.040	240	0.031	0.041	0.057	260	0.032	0.043	0.059	260	0.033	0.044	0.061	260	0.044	0.059	0.081	260	0.052	0.069	0.095
		1.3505	100Cr6	AISI 52100	459	.00039	.00051	.00071	656	.00051	.00067	.00094	722	.00087	.00114	.00157	787	.00122	.00161	.00224	853	.00126	.00169	.00232	853	.00130	.00173	.00240	853	.00173	.00232	.00319	853	.00205	.00272	.00374
		1.7225	42CrMo4	AISI 4140																																
		1.2842	90MnCrV8	AISI O2																																
High alloyed tool steel Rm < 1200 N/mm ²	1.2379	X153CrMoV12	AISI D2																																	
	1.2436	X210CrW12	AISI D4/D6	140	0.008	0.011	0.015	200	0.011	0.015	0.020	220	0.019	0.025	0.035	240	0.028	0.037	0.051	260	0.029	0.039	0.053	260	0.030	0.040	0.055	260	0.042	0.056	0.077	260	0.050	0.067	0.092	
	1.3343	HS6-5-2C	AISI M2 / UNS T11302	459	.00032	.00043	.00059	656	.00043	.00059	.00079	722	.00075	.00098	.00138	787	.00110	.00146	.00201	853	.00114	.00154	.00209	853	.00118	.00157	.00217	853	.00165	.00220	.00303	853	.00197	.00264	.00362	
	1.3355	HS18-0-1	AISI T1 / UNS T12001																																	
	M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430 / UNS S43000	140	0.012	0.016	0.022	180	0.015	0.020	0.028	180	0.021	0.028	0.039	200	0.030	0.040	0.055	220	0.032	0.043	0.059	220	0.033	0.044	0.061	220	0.040	0.053	0.073	260	0.048	0.064
1.4105			X6CrMoS17	AISI 430F	459	.00047	.00063	.00087	591	.00059	.00079	.00110	591	.00079	.00106	.00146	656	.00110	.00146	.00201	722	.00126	.00169	.00232	722	.00130	.00173	.00240	722	.00157	.00209	.00287	853	.00189	.00252	.00346
1.4034			X46Cr13	AISI 420C	140	0.011	0.015	0.020	180	0.014	0.019	0.026	180	0.020	0.027	0.037	200	0.028	0.037	0.051	220	0.031	0.041	0.057	220	0.032	0.043	0.059	220	0.037	0.049	0.068	260	0.045	0.060	0.083
Stainless steel martensitic		1.4112	X90CrMoV18	AISI 440B	459	.00043	.00059	.00079	591	.00055	.00075	.00102	591	.00079	.00106	.00146	656	.00110	.00146	.00201	722	.00122	.00161	.00224	722	.00126	.00169	.00232	722	.00145	.00193	.00268	853	.00177	.00236	.00327
		1.4542	X5CrNiCuNb16-4	AISI 630 / ASTM 17-4 PH	140	0.011	0.015	0.020	180	0.014	0.019	0.026	180	0.020	0.027	0.037	200	0.028	0.037	0.051	220	0.031	0.041	0.057	220	0.032	0.043	0.059	220	0.037	0.049	0.068	260	0.045	0.060	0.083
Stainless steel martensitic - PH		1.4545	X5CrNiCuNb15-5	ASTM 15-5 PH	459	.00043	.00059	.00079	591	.00055	.00075	.00102	591	.00079	.00106	.00146	656	.00110	.00146	.00201	722	.00122	.00161	.00224	722	.00126	.00169	.00232	722	.00145	.00193	.00268	853	.00177	.00236	.00327
		1.4301	X5CrNi18-10	AISI 304																																
		1.4435	X2CrNiMo18-14-3	AISI 316L	140	0.009	0.012	0.017	180	0.012	0.016	0.022	180	0.018	0.024	0.034	200	0.026	0.035	0.048	220	0.030	0.040	0.055	220	0.031	0.041	0.057	220	0.035	0.047	0.064	260	0.042	0.056	0.077
Stainless steel austenitic		1.4441	X2CrNiMo18-15-3	AISI 316LM	459	.00035	.00047	.00067	591	.00047	.00063	.00087	591	.00071	.00094	.00134	656	.00102	.00138	.00189	722	.00118	.00157	.00217	722	.00122	.00161	.00224	722	.00139	.00185	.00252	853	.00165	.00220	.00303
		1.4539	X1NiCrMoCu25-20-5	AISI 904L																																
	K	Cast iron	0.6020	GG20	ASTM 30																															
0.6030			GG30	ASTM 40B	120	0.008	0.016	0.022	160	0.014	0.019	0.026	160	0.024	0.032	0.044	220	0.032	0.043	0.059	240	0.038	0.051	0.070	240	0.042	0.056	0.077	240	0.044	0.059	0.081	240	0.052	0.069	0.095
0.7040			GGG40	ASTM 60-40-18	394	.00032	.00063	.00087	525	.00055	.00075	.00102	525	.00079	.00106	.00146	656	.00110	.00146	.00201	722	.00122	.00161	.00224	722	.00126	.00169	.00232	722	.00145	.00193	.00268	853	.00177	.00236	.00327
0.7060			GGG60	ASTM 80-60-03																																
N			Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351	160	0.013	0.017	0.024	200	0.016	0.021	0.029	240	0.026	0.035	0.048	260	0.040	0.053	0.073	300	0.048	0.064	0.088	300	0.051	0.068	0.094	320	0.052	0.069	0.095	350	0.060
	3.4365	AlZnMgCu1.5		ASTM 7075	525	.00051	.00067	.00094	656	.00063	.00083	.00114	656	.00094	.00126	.00173	722	.00122	.00161	.00224	787	.00157	.00209	.00287	787	.00189	.00252	.00346	853	.00201	.00268	.00370	1050	.00205	.00272	.00374
	Aluminium alloy cast	3.2163	GD-AISI9Cu3	ASTM A380	160	0.013	0.017	0.024	220	0.016	0.021	0.029	240	0.026	0.035	0.048	260	0.040	0.053	0.073	300	0.048	0.064	0.088	300	0.051	0.068	0.094	320	0.052	0.069	0.095	350	0.060	0.080	0.110
		3.2381	GD-AISI10Mg	UNS A03590	525	.00051	.00067	.00094	656	.00063	.00083	.00114	656	.00094	.00126	.00173	722	.00122	.00161	.00224	787	.00157	.00209	.00287	787	.00189	.00252	.00346	853	.00201	.00268	.00370	1050	.00205	.00272	.00374
	Copper	2.0040	Cu-OF / CW008A	UNS C10100	160	0.013	0.017	0.024	220	0.016	0.021	0.029	240	0.026	0.035	0.048	260	0.040	0.053	0.073	300	0.048	0.064	0.088	300	0.051	0.068	0.094	320	0.052	0.069	0.095	350	0.060	0.080	0.110
		2.0065	Cu-ETP / CW004A	UNS C11000	525	.00051	.00067	.00094	656	.00063	.00083	.00114	656	.00094	.00126	.00173	722	.00122	.00161	.00224	787	.00157	.00209	.00287	787	.00189	.00252	.00346	853	.00201	.00268	.00370	1050	.00205	.00272	.00374
	Brass lead free	2.0321	CuZn																																	