TuffCut DM™

192 Recommended Cutting Data - Profile Milling
Inch

Workpiece Material Group	ISO	Hardness	Coolant • P referred o Possible x Not Possible			Profile Milling (ae)*					End Mill Diameter				
						5%	10%	20%	30%	50%	1/4	3/8	1/2	5/8	3/4
											ap < .7D Stub Length ap < 1.5D Standard Length				
						2.3	1.8	1.2	1.1	1	← Multiply fz by this Factor based on ae. When finishing, use the standard fz per chart below. Only add chip thinning when roughing or semi-finishing.				
			Max.	Air	MMS	vc - SFM					fz - in/tooth				
Free Machining & Low Carbon Steels 1006, 1008, 1015, 1018, 1020, 1022, 1025, 1117, 1140, 1141, 11L08, 11L14, 1213, 12L13, 12L14, 1215, 1330	P	up to 28 Rc	•	•	•	1485	1485	1155	1000	825	.0033	.0047	.0066	.0078	.0090
Medium Carbon & High Carbon Steels, Alloy Steels & Easy to Machine Tool Steels 1030, 1035, 1040, 1045, 1050, 1052, 1055, 1060, 1085, 1095, 1541, 1551, 9255, 2515, 3135, 3415, 4130, 4137, 4140, 4150, 4320, 4340, 4520, 5015, 5115, 5120, 5132, 5140, 5155, 6150, 8620, 9262, 9840, 52100, O1, O2, O6, S2, W1 to W310	P	28 to 38 Rc	•	•	•	890	890	825	750	660	.0033	.0047	.0066	.0078	.0090
Tool Steels & Die Steels O7, M1, M2, M3, M4, M7, T1, T2, T4, T5, T8, T15, A2, A3, A6, A7, H10, H11, H12, H13, H19, H21, L3, L6, L7, P2, P20, S1, S5, S7, 52100, A 128, D2, D3, D4, D5, D7	P	28 to 44 Rc	•	•	•	750	750	660	560	430	.0033	.0047	.0066	.0078	.0090
Hardened Steels	H	35-45 Rc	•	o	o	450	450	410	300	165	.0029	.0039	.0059	.0070	.0078
Hardened Steels	H	45-55 Rc	•	o	o	380	380	350	250	150	.0020	.0029	.0039	.0051	.0061
Stainless Steel - Easy to Machine 430F, 301, 303, 410, 416 Annealed, 420F, 430, 430F	M	up to 28 Rc	•	x	o	500	500	430	400	350	.0033	.0047	.0066	.0078	.0090
Stainless Steel - Moderately Difficult 301, 302, 303 High Tensile, 304, 304L, 305, 420, 15-5PH, 17-4PH, 17-7PH	M	up to 28 Rc	•	x	o	430	430	400	370	330	.0025	.0033	.0049	.0059	.0066
Stainless Steel - Difficult to Machine 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics	M	over 28 Rc	•	x	o	430	430	400	360	330	.0025	.0033	.0049	.0059	.0066
High Temp Alloys Nimonics, Inconel, Monel, Hastelloy	S	up to 42 Rc	•	x	x	165	165	130	115	100	.0008	.0011	.0017	.0019	.0023
Titanium Alloys 6Al-4V, 5Al-2.5 Sn, 6Al-2 Sn-4Zr-6Mo, 3Al-8V-6Cr4Mo-4Zr, 10V-2Fe-3Al, 13V-11Cr-3Al	S	up to 42 Rc	•	x	x	400	400	370	300	250	.0008	.0011	.0017	.0019	.0023
Cast-Iron - Gray CG, ASTM A48, CLASS 20, 25, 30, 35, SAE J431C, GRADES G1800, G3000, G3500, GG 10, 15, 20, 25, 30, 35, 40	K	up to 240 HB	•	o	o	1180	1180	1120	800	630	.0033	.0047	.0066	.0078	.0090
Cast Iron - Ductile & Malleable CGI 60-40-18, 65-45-12, D4018, D4512, D5506, 32510, 35108, M3210, M4504, M5503, 250, 300, 350, 400, 450	K	over 240 HB	•	o	o	530	530	500	460	430	.0033	.0047	.0066	.0078	.0090