

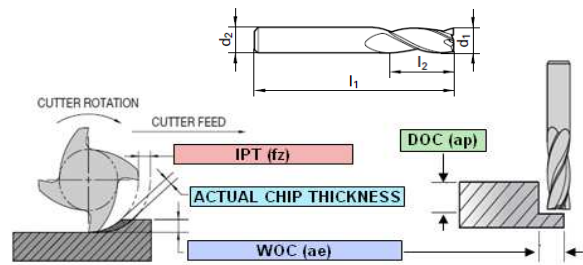
**FEEDS & SPEEDS FOR ALL Tech Line - Normal & Rougher**

$$RPM = \frac{SFM}{d_1} \times 3.82 \quad IPM = \text{No. of Teeth} \times IPT \times RPM$$

**Example - Adjusting SFM and IPT for 1/2" diameter end mill, WOC .050", material 1018**

**SFM**  
 WOC / d<sub>1</sub> = xx%  
 .050 / .500 = 10%  
 WOC = 10%  
 SFM = 1350

**IPT**  
 WOC 10%  
 10% = 1.8 IPT multiplier  
 IPT .0026 x 1.8 = .0047  
 IPT = .0047



If surface finish is the priority use IPT from table with no adjustment for chip thinning. Use SFM for 10% radial width of cut.

Material	Color Code	Hardness	Tech Line	Surface Feet per Minute - SFM					Feed Rate Inch per Tooth - IPT							
				Radial Width of Cut WOC (ae)*					d <sub>1</sub> End Mill Diameter							
				5%	10%	30%	50%	100% Slotting	1/8	1/4	5/16	3/8	1/2	5/8	3/4	1
				2.3	1.8	1.1	1	1	Multiply IPT x this factor based on WOC							
Free Machining & Low Carbon Steels 1006, 1008, 1015, 1018, 1020, 1022, 1025, 1117, 1140, 1141, 11L08, 11L14, 1213, 12L13, 12L14, 1215, 1330	GREEN	up to 28 HRc	GH 100 U RS 100 U GS 100 U	1700	1350	750	425	425	.0005	.0013	.0016	.0020	.0023	.0027	.0036	.0042
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	GREEN RED	28 to 38 HRc	GH 100 U RS 100 U GS 100 U	900	625	350	275	275	.0005	.0013	.0016	.0020	.0023	.0027	.0036	.0042
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	RED	28 to 44 HRc	GH 100 U RS 100 F GS 100 H	550	450	300	200	200	.0005	.0011	.0014	.0016	.0020	.0023	.0031	.0034
Hardened Steels Carbon and Alloy Steels, Tool & Die Steels	H	up to 54 HRc	GH 100 U GS 100 H	325	175	125	100	100	.0003	.0006	.0009	.0011	.0014	.0018	.0022	.0027
	H	54 to 60 HRc	GH 100 H	200	105	75	60	60	.0002	.0004	.0006	.0009	.0011	.0015	.0018	.0023
Stainless Steel - Easy to Machine 430F, 301, 303, 410, 416 Annealed, 420F, 430, 430F	BLUE	up to 28 HRc	GH 100 U RS 100 U GS 100 U	1050	725	400	325	325	.0005	.0013	.0016	.0020	.0023	.0027	.0036	.0042
Stainless Steel - Moderately Difficult 301, 302, 303 High Tensile, 304, 304L, 305, 420, 15-5PH, 17-4PH, 17-7PH	BLUE	up to 28 HRc	GH 100 U RS 100 U GS 100 U	650	450	250	200	200	.0005	.0011	.0014	.0016	.0020	.0023	.0027	.0033
Stainless Steel - Difficult to Machine 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8MO, Nitronic	BLUE	over 28 HRc	GH 100 U RS 100 U GS 100 U	600	400	225	175	175	.0005	.0009	.0011	.0014	.0016	.0022	.0025	.0033
High-Temperature Alloys Nimonic, Inconel, Monel, Hastelloy	GRAY	up to 42 HRc	GH 100 U	150	140	120	100	100	.0003	.0006	.0009	.0011	.0014	.0018	.0022	.0027
			GH 100 H													
			RS 100 F													
Titanium Alloys 6Al-4V, 5Al-2.5 Sn, 6Al-2Sn-4Zr-6Mo, 3Al-8V-6Cr-4Mo-4Zr, 10V-2Fe-3Al, 13V-11Cr-3Al	GRAY	up to 42 HRc	GH 100 U RS 100 U RS 100 F	450	325	225	175	175	.0005	.0011	.0014	.0016	.0020	.0025	.0032	.0036
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	WHITE	up to 240 HB 30	GH 100 U	1300	1100	750	375	375	.0005	.0013	.0016	.0020	.0023	.0027	.0036	.0042
			GS 100 H													
			RS 100 F													
Cast Iron - Ductile & Malleable CGI 60-40-18, 65-45-12, D4018, D4512, D5506, 32510, 35108, M3210, M4504, M5503, 250, 300, 350, 400, 450	WHITE	over 240 HB 30	GH 100 U	900	625	400	275	275	.0005	.0013	.0016	.0020	.0023	.0027	.0036	.0042
			RS 100 F													
			GH 100 H													
Aluminum, Al-wrought alloys, Al-alloys 2024, 6061, 7075, 1050, 6351, 5005, 2017, 7075	BLACK	up to 3% Si	GA 200 A	3250	2750	1750	1000	1000	.0009	.0021	.0026	.0032	.0041	.0052	.0061	.0081
			GS 100 A													
			GH 100 U													
Aluminum-cast alloys High Silicon - A380, A390, Castings, 3.2131 G-AISi5Cu1, 3.2153 G-AISi7Cu3, 3.2573 G-AISi9, 3.2581 G-AISi12, 3.2583 G-AISi12Cu, - G-AISi12CuNiMg	BLACK	over 3% Si	GA 200 A	2275	1925	1225	700	700	.0007	.0017	.0021	.0025	.0032	.0042	.0049	.0065
			GS 100 A													
			GH 100 U													
Magnesium Alloys	PURPLE	-	GA 200 A	2100	1500	800	650	650	.0006	.0013	.0017	.0020	.0026	.0033	.0039	.0052
			GS 100 A													
			GH 100 U													
Non-ferrous Copper Alloys, Brass, Bronze	BROWN	up to 28 HRc	GH 100 U	1500	1000	575	450	450	.0005	.0009	.0013	.0016	.0019	.0025	.0030	.0041
			GH 100 U													
			GS 100 A													