

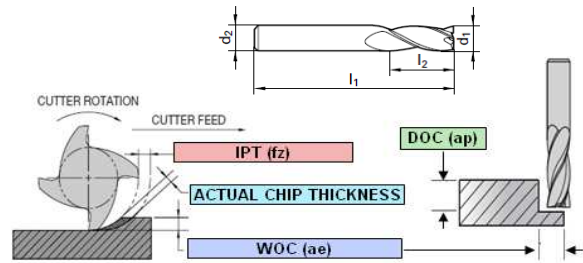
**FEEDS & SPEEDS FOR ALL RF100 (variable helix)  
Normal & Rougher**

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

**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	RF100-	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	F VA SF	1700	1350	750	425	425	.0006	.0014	.0018	.0022	.0026	.0030	.0040	.0047
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	U F S/F	900	625	350	275	275	.0006	.0014	.0018	.0022	.0026	.0030	.0040	.0047
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	U U SF	550	450	300	200	200	.0005	.0012	.0015	.0018	.0022	.0026	.0034	.0038
Hardened Steels Carbon and Alloy Steels, Tool & Die Steels	H	up to 54 HRc	U SF	325					.0003	.0007	.0010	.0012	.0015	.0020	.0024	.0030
	H	54 to 60 HRc	H	200					.0002	.0004	.0007	.0010	.0012	.0017	.0020	.0025
Stainless Steel - Easy to Machine 430F, 301, 303, 410, 416 Annealed, 420F, 430, 430F	BLUE	up to 28 HRc	VA VA SF	1050	725	400	325	325	.0006	.0014	.0018	.0022	.0026	.0030	.0040	.0047
Stainless Steel - Moderately Difficult 301, 302, 303 High Tensile, 304, 304L, 305, 420, 15-5PH, 17-4PH, 17-7PH	BLUE	up to 28 HRc	VA VA SF	650	450	250	200	200	.0005	.0012	.0015	.0018	.0022	.0026	.0030	.0037
Stainless Steel - Difficult to Machine 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8MO, Nitronic	BLUE	over 28 HRc	VA/F VA/F SF	600	400	225	175	175	.0005	.0010	.0012	.0016	.0018	.0024	.0028	.0037
High-Temperature Alloys Nimonic, Inconel, Monel, Hastelloy	GRAY	up to 42 HRc	Ti/F	120	120	120	100	100	.0003	.0007	.0010	.0012	.0015	.0020	.0024	.0030
			VA													
			SF													
Titanium Alloys 6Al-4V, 5Al-2.5 Sn, 6Al-2Sn-4Zr-6Mo, 3Al-8V-6Cr4Mo-4Zr, 10V-2Fe-3Al, 13V-11Cr-3Al	GRAY	up to 42 HRc	Ti/U	350	300	250	150	150	.0005	.0012	.0015	.0018	.0022	.0028	.0035	.0040
			VA													
			SF													
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	F	1300	1100	750	375	375	.0006	.0014	.0018	.0022	.0026	.0030	.0040	.0047
			U													
			SF													
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	U	900	625	400	275	275	.0006	.0014	.0018	.0022	.0026	.0030	.0040	.0047
			VA													
			SF													
Aluminum, Al-wrought alloys, Al-alloys 2024, 6061, 7075, 1050, 6351, 5005, 2017, 7075	BLACK	up to 3% Si	A	1500	1500	1500	1000	1000	.0010	.0023	.0029	.0035	.0045	.0058	.0068	.0090
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	A	1500	1500	1200	700	700	.0008	.0018	.0023	.0028	.0036	.0046	.0054	.0072
Magnesium Alloys	PURPLE	-	A	2100	1500	800	650	650	.0006	.0015	.0019	.0022	.0029	.0037	.0044	.0058
			F													
			SF													
Non-ferrous Copper Alloys, Brass, Bronze	BROWN	up to 28 HRc	A	1500	1000	575	450	450	.0005	.0010	.0014	.0018	.0021	.0028	.0033	.0046
			F													
			SF													