

Speed & Feed Recommendations



Series 7, 7B Fractional		Hardness BRINELL			Vc (SFM)	Diameter (D ₁) (inch)								
			Ae x D ₁	Ap x D ₁		1/8	1/4	3/8	1/2	5/8	3/4	1		
P	CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 275	Finish 	≤ 0.02	≤ 2	480	RPM	14669	7334	4890	3667	2934	2445	1834
						(384-576)	Fz	0.0004	0.0010	0.0019	0.0025	0.0032	0.0033	0.0035
						Feed (IPM)	23.5	29.3	37.2	36.7	37.6	32.3	25.7	
P	ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 375	Finish 	≤ 0.02	≤ 2	275	RPM	8404	4202	2801	2101	1681	1401	1051
						(220-330)	Fz	0.0003	0.0007	0.0014	0.0018	0.0023	0.0024	0.0026
						Feed (IPM)	10.1	11.8	15.7	15.1	15.5	13.4	10.9	
P	TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 375	Finish 	≤ 0.02	≤ 2	230	RPM	7029	3514	2343	1757	1406	1171	879
						(184-276)	Fz	0.0002	0.0006	0.0012	0.0016	0.0020	0.0021	0.0022
						Feed (IPM)	5.6	8.4	11.2	11.2	11.2	9.8	7.7	
K	CAST IRONS (LOW & MEDIUM ALLOY) Gray, Malleable, Ductile	≤ 220	Finish 	≤ 0.02	≤ 2	605	RPM	18489	9244	6163	4622	3698	3081	2311
						(484-726)	Fz	0.0006	0.0015	0.0028	0.0037	0.0046	0.0047	0.0051
						Feed (IPM)	44.4	55.5	69.0	68.4	68.0	57.9	47.1	
K	CAST IRONS (HIGH ALLOY) Gray, Malleable, Ductile	> 220 ≤ 260	Finish 	≤ 0.02	≤ 2	465	RPM	14210	7105	4737	3553	2842	2368	1776
						(372-558)	Fz	0.0004	0.0011	0.0021	0.0028	0.0034	0.0036	0.0039
						Feed (IPM)	22.7	31.3	39.8	39.8	38.7	34.1	27.7	
M	STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F 440F	≤ 275	Finish 	≤ 0.02	≤ 2	420	RPM	12835	6418	4278	3209	2567	2139	1604
						(336-504)	Fz	0.0004	0.0010	0.0019	0.0025	0.0032	0.0033	0.0035
						Feed (IPM)	20.5	25.7	32.5	32.1	32.9	28.2	22.5	
M	STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L	≤ 275	Finish 	≤ 0.02	≤ 2	290	RPM	8862	4431	2954	2216	1772	1477	1108
						(232-348)	Fz	0.0003	0.0007	0.0014	0.0018	0.0023	0.0024	0.0026
						Feed (IPM)	10.6	12.4	16.5	16.0	16.3	14.2	11.5	
M	STAINLESS STEELS (PH) 13-8 PH, 15-5PH, 17-4 PH, Custom 450	< 325	Finish 	≤ 0.02	≤ 2	265	RPM	8098	4049	2699	2025	1620	1350	1012
						(212-318)	Fz	0.0003	0.0007	0.0014	0.0018	0.0023	0.0024	0.0026
						Feed (IPM)	9.7	11.3	15.1	14.6	14.9	13.0	10.5	
S	SUPER ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 601, 617, 625, Incoly 800, Monel 400	≤ 300	Finish 	≤ 0.02	≤ 2	80	RPM	2445	1222	815	611	489	407	306
						(64-96)	Fz	0.0003	0.0007	0.0014	0.0018	0.0023	0.0024	0.0026
						Feed (IPM)	2.9	3.4	4.6	4.4	4.5	3.9	3.2	
S	SUPER ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 718, 750X, Incoly 925, Waspaloy, Hastelloy, Rene	> 300	Finish 	≤ 0.02	≤ 2	65	RPM	1986	993	662	497	397	331	248
						(52-78)	Fz	0.0002	0.0006	0.0010	0.0014	0.0017	0.0018	0.0019
						Feed (IPM)	1.6	2.4	2.6	2.8	2.7	2.4	1.9	
S	TITANIUM ALLOYS Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	≤ 350	Finish 	≤ 0.02	≤ 2	300	RPM	9168	4584	3056	2292	1834	1528	1146
						(240-360)	Fz	0.0004	0.0011	0.0021	0.0028	0.0034	0.0036	0.0039
						Feed (IPM)	14.7	20.2	25.7	25.7	24.9	22.0	17.9	
S	TITANIUM ALLOYS (DIFFICULT) Ti10Al2Fe3Al, Ti5Al5V5Mo3Cr, Ti7Al4Mo, Ti3Al8V6Cr4Zr4Mo, Ti6Al6V6Sn, Ti15V3 Cr3Sn3Al	> 350 ≤ 440	Finish 	≤ 0.02	≤ 2	105	RPM	3209	1604	1070	802	642	535	401
						(84-126)	Fz	0.0004	0.0011	0.0021	0.0028	0.0034	0.0036	0.0039
						Feed (IPM)	5.1	7.1	9.0	9.0	8.7	7.7	6.3	

rpm = sfm x 3.82 / D₁

ipm = (inch / flute) x 4 x rpm

reduce speed and feed for materials harder than listed

refer to the SGS Tool Wizard for complete technical information ()