

FRACTIONAL Series M105

Series M105	Hardness	Vc (sfm)	DC • in							
			0.004	0.010	0.020	0.040	0.080	0.125		
P CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 175 Bhn or ≤ 7 HRc	130 (104-156)	RPM	124150	49660	24830	12415	6208	3973	
			Fz	0.00012	0.00029	0.0006	0.0012	0.0023	0.0036	
			Feed (ipm)	14.3	14.3	14.3	14.3	14.3	14.3	
	ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 275 Bhn or ≤ 28 HRc	195 (156-234)	RPM	186225	74490	37245	18623	9311	5959
				Fz	0.00010	0.00026	0.0005	0.0010	0.0021	0.0033
				Feed (ipm)	19.4	19.4	19.4	19.4	19.4	19.4
H TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 475 Bhn or ≤ 50 HRc	80 (64-96)	RPM	76400	30560	15280	7640	3820	2445	
			Fz	0.00005	0.00013	0.0003	0.0005	0.0010	0.0016	
			Feed (ipm)	4.0	4.0	4.0	4.0	4.0	4.0	
K CAST IRONS Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	280 (224-336)	RPM	267400	106960	53480	26740	13370	8557	
			Fz	0.00007	0.00016	0.0003	0.0007	0.0013	0.0020	
			Feed (ipm)	17.5	17.5	17.5	17.5	17.5	17.5	
M STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F, 440F	≤ 275 Bhn or ≤ 28 HRc	65 (52-78)	RPM	62075	24830	12415	6208	3104	1986	
			Fz	0.00009	0.00022	0.0004	0.0009	0.0017	0.0027	
			Feed (ipm)	5.4	5.4	5.4	5.4	5.4	5.4	
	STAINLESS STEELS (DIFFICULT) 304, 316, 321, 13-8 PH, 15-5PH, 17-4 PH, CUSTOM 450	≤ 325 Bhn or ≤ 35 HRc	40 (32-48)	RPM	38200	15280	7640	3820	1910	1222
				Fz	0.0001	0.0002	0.0004	0.0007	0.0014	0.0022
				Feed (ipm)	2.7	2.7	2.7	2.7	2.7	2.7
S SUPER ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 601, 617, 625, Incoloy 800, Monel 400, Rene, Waspaloy	≤ 320 Bhn or ≤ 34 HRc	50 (40-60)	RPM	47750	19100	9550	4775	2388	1528	
			Fz	0.00004	0.00011	0.0002	0.0004	0.0009	0.0014	
			Feed (ipm)	2.1	2.1	2.1	2.1	2.1	2.1	
	TITANIUM ALLOYS Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	≤ 350 Bhn or ≤ 38 HRc	50 (40-60)	RPM	47750	19100	9550	4775	2388	1528
				Fz	0.00005	0.00013	0.0003	0.0005	0.0010	0.0016
				Feed (ipm)	2.5	2.5	2.5	2.5	2.5	2.5
N ALUMINUM ALLOYS 2017, 2024, 356, 6061, 7075	≤ 150 Bhn or ≤ 7 HRc	245 (196-294)	RPM	233975	93590	46795	23398	11699	7487	
			Fz	0.00020	0.00049	0.0010	0.0020	0.0039	0.0062	
			Feed (ipm)	46.1	46.1	46.1	46.1	46.1	46.1	
	COPPER ALLOYS Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	180 (144-216)	RPM	171900	68760	34380	17190	8595	5501
				Fz	0.00020	0.00049	0.0010	0.0020	0.0039	0.0062
				Feed (ipm)	33.9	33.9	33.9	33.9	33.9	33.9
PLASTICS Polycarbonate, PVC		245 (196-294)	RPM	233975	93590	46795	23398	11699	7487	
			Fz	0.00020	0.00049	0.0010	0.0020	0.0039	0.0062	
			Feed (ipm)	46.1	46.1	46.1	46.1	46.1	46.1	

Note:

- Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B)
- rpm = Vc x 3.82 / DC
- ipm = Fr x rpm (Fr x maximum available rpm when recommendation exceeds machine limit)
- reduce speed and feed 30% when using uncoated drills
- reduce speed and feed for materials harder than listed
- refer to the KYOCERA SGS Tool Wizard® or sgsmicrotools.com for complete technical information