

# FRACTIONAL Series M105

Series M105	Hardness	Vc (sfm)	DC • in							
			0.004	0.010	0.020	0.040	0.080	0.125		
<b>P</b>	<b>CARBON STEELS</b> 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
	<b>ALLOY STEELS</b> 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
<b>H</b>	<b>TOOL STEELS</b> 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
<b>K</b>	<b>CAST IRONS</b> 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
<b>M</b>	<b>STAINLESS STEELS</b> (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
	<b>STAINLESS STEELS</b> (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
<b>S</b>	<b>SUPER ALLOYS</b> (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
	<b>TITANIUM ALLOYS</b> 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
<b>N</b>	<b>ALUMINUM ALLOYS</b> 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
	<b>COPPER ALLOYS</b> 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
<b>PLASTICS</b> 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