

FRACTIONAL Series M080

	Series M080	Hardness	Vc (sfm)		DC • in					
					0.005	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	280 (224-336)	RPM	213920	106960	53480	26740	13370	8557
				Fz	0.00010	0.00021	0.0004	0.0008	0.0016	0.0026
				Feed (ipm)	22.0	22.0	22.0	22.0	22.0	22.0
	ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 275 Bhn or ≤ 28 HRc	180 (144-216)	RPM	137520	68760	34380	17190	8595	5501
				Fz	0.00010	0.00019	0.0004	0.0008	0.0015	0.0024
				Feed (ipm)	13.3	13.3	13.3	13.3	13.3	13.3
H	TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 475 Bhn or ≤ 50 HRc	70 (56-84)	RPM	53480	26740	13370	6685	3343	2139
				Fz	0.00004	0.00008	0.0002	0.0003	0.0006	0.0010
				Feed (ipm)	2.1	2.1	2.1	2.1	2.1	2.1
K	CAST IRONS Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	280 (224-336)	RPM	213920	106960	53480	26740	13370	8557
				Fz	0.00007	0.00015	0.0003	0.0006	0.0012	0.0018
				Feed (ipm)	15.8	15.8	15.8	15.8	15.8	15.8
M	STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F, 440F	≤ 250 Bhn or ≤ 24 HRc	210 (168-252)	RPM	160440	80220	40110	20055	10028	6418
				Fz	0.00011	0.00021	0.0004	0.0008	0.0017	0.0026
				Feed (ipm)	17.0	17.0	17.0	17.0	17.0	17.0
	STAINLESS STEELS (DIFFICULT) 304, 316, 321, 13-8 PH, 15-5PH, 17-4 PH, CUSTOM 450	≤ 275 Bhn or ≤ 28 HRc	180 (144-216)	RPM	137520	68760	34380	17190	8595	5501
				Fz	0.0001	0.0002	0.0004	0.0008	0.0015	0.0024
				Feed (ipm)	13.3	13.3	13.3	13.3	13.3	13.3
S	SUPER ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 601, 617, 625, Incoloy 800, Monel 400, Rene, Waspaloy	≤ 320 Bhn or ≤ 34 HRc	70 (56-84)	RPM	53480	26740	13370	6685	3343	2139
				Fz	0.00006	0.00012	0.0002	0.0005	0.0010	0.0015
				Feed (ipm)	3.2	3.2	3.2	3.2	3.2	3.2
	TITANIUM ALLOYS Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	≤ 350 Bhn or ≤ 38 HRc	120 (96-144)	RPM	91680	45840	22920	11460	5730	3667
				Fz	0.00006	0.00012	0.0002	0.0005	0.0010	0.0015
				Feed (ipm)	5.6	5.6	5.6	5.6	5.6	5.6
N	ALUMINUM ALLOYS 2017, 2024, 356, 6061, 7075	≤ 150 Bhn or ≤ 7 HRc	600 (480-720)	RPM	458400	229200	114600	57300	28650	18336
				Fz	0.00012	0.00024	0.0005	0.0009	0.0019	0.0029
				Feed (ipm)	54.0	54.0	54.0	54.0	54.0	54.0
	COPPER ALLOYS Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	190 (152-228)	RPM	145160	72580	36290	18145	9073	5806
				Fz	0.00010	0.00019	0.0004	0.0008	0.0016	0.0024
				Feed (ipm)	14.1	14.1	14.1	14.1	14.1	14.1
	PLASTICS Polycarbonate, PVC		500 (400-600)	RPM	382000	191000	95500	47750	23875	15280
				Fz	0.00012	0.00024	0.0005	0.0009	0.0019	0.0029
				Feed (ipm)	45.0	45.0	45.0	45.0	45.0	45.0

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

Series M081

				DC • mm						
Series M081		Hardness	Vc (m/min)		0.15	0.25	0.5	1	2	3
P	CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 175 Bhn or ≤ 7 HRc	85 (68-102)	RPM	180958	108575	54287	27144	13572	9048
				Fz	0.0031	0.0051	0.0103	0.0206	0.0412	0.0618
				Feed (mm/min)	559	559	559	559	559	559
	ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 275 Bhn or ≤ 28 HRc	55 (44-66)	RPM	116330	69798	34899	17449	8725	5816
				Fz	0.0029	0.0048	0.0097	0.0194	0.0387	0.0581
				Feed (mm/min)	338	338	338	338	338	338
H	TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 475 Bhn or ≤ 50 HRc	21 (17-26)	RPM	45239	27144	13572	6786	3393	2262
				Fz	0.0012	0.0020	0.0039	0.0079	0.0157	0.0236
				Feed (mm/min)	53	53	53	53	53	53
K	CAST IRONS Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	85 (68-102)	RPM	180958	108575	54287	27144	13572	9048
				Fz	0.0022	0.0037	0.0074	0.0148	0.0296	0.0444
				Feed (mm/min)	401	401	401	401	401	401
M	STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F, 440F	≤ 250 Bhn or ≤ 24 HRc	64 (51-77)	RPM	135718	81431	40715	20358	10179	6786
				Fz	0.0032	0.0053	0.0106	0.0212	0.0424	0.0636
				Feed (mm/min)	432	432	432	432	432	432
	STAINLESS STEELS (DIFFICULT) 304, 316, 321, 13-8 PH, 15-5PH, 17-4 PH, CUSTOM 450	≤ 275 Bhn or ≤ 28 HRc	55 (44-66)	RPM	116330	69798	34899	17449	8725	5816
				Fz	0.0029	0.0048	0.0097	0.0194	0.0387	0.0581
				Feed (mm/min)	338	338	338	338	338	338
S	SUPER ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 601, 617, 625, Incoloy 800, Monel 400, Rene, Waspaloy	≤ 320 Bhn or ≤ 34 HRc	21 (17-26)	RPM	45239	27144	13572	6786	3393	2262
				Fz	0.0018	0.0030	0.0060	0.0120	0.0240	0.0359
				Feed (mm/min)	81	81	81	81	81	81
	TITANIUM ALLOYS Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	≤ 350 Bhn or ≤ 38 HRc	37 (29-44)	RPM	77553	46532	23266	11633	5816	3878
				Fz	0.0018	0.0031	0.0061	0.0122	0.0245	0.0367
				Feed (mm/min)	142	142	142	142	142	142
N	ALUMINUM ALLOYS 2017, 2024, 356, 6061, 7075	≤ 150 Bhn or ≤ 7 HRc	183 (146-219)	RPM	387767	232660	116330	58165	29082	19388
				Fz	0.0035	0.0059	0.0118	0.0236	0.0472	0.0707
				Feed (mm/min)	1372	1372	1372	1372	1372	1372
	COPPER ALLOYS Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	58 (46-69)	RPM	122793	73676	36838	18419	9209	6140
				Fz	0.0029	0.0049	0.0097	0.0194	0.0389	0.0583
				Feed (mm/min)	358	358	358	358	358	358
	PLASTICS Polycarbonate, PVC		152 (122-183)	RPM	323139	193883	96942	48471	24235	16157
				Fz	0.0035	0.0059	0.0118	0.0236	0.0472	0.0707
				Feed (mm/min)	1143	1143	1143	1143	1143	1143

Note:

- Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B)
- rpm = (Vc x 1000) / (DC x 3.14)
- mm/min = 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