

FRACTIONAL 3 Flute Drills

Series 103 Fractional	Hardness	Vc (sfm)		DC • in						
				1/8	1/4	3/8	1/2	5/8	3/4	
P CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 175 Bhn or ≤ 7 HRc	295 (236-354)	RPM	9015	4508	3005	2254	1803	1503	
			Fr	0.0026	0.0051	0.0077	0.0102	0.0128	0.0153	
			Feed (ipm)	23.0	23.0	23.0	23.0	23.0	23.0	
	≤ 300 Bhn or ≤ 32 HRc	260 (208-312)	RPM	7946	3973	2649	1986	1589	1324	
			Fr	0.0023	0.0045	0.0068	0.0091	0.0113	0.0136	
			Feed (ipm)	18.0	18.0	18.0	18.0	18.0	18.0	
	≤ 425 Bhn or ≤ 45 HRc	150 (120-180)	RPM	4584	2292	1528	1146	917	764	
			Fr	0.0013	0.0026	0.0039	0.0052	0.0065	0.0079	
			Feed (ipm)	6.0	6.0	6.0	6.0	6.0	6.0	
	ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 275 Bhn or ≤ 28 HRc	230 (184-276)	RPM	7029	3514	2343	1757	1406	1171
				Fr	0.0019	0.0038	0.0058	0.0077	0.0096	0.0115
				Feed (ipm)	13.5	13.5	13.5	13.5	13.5	13.5
≤ 375 Bhn or ≤ 40 HRc		145 (116-174)	RPM	4431	2216	1477	1108	886	739	
			Fr	0.0019	0.0038	0.0058	0.0077	0.0096	0.0115	
			Feed (ipm)	8.5	8.5	8.5	8.5	8.5	8.5	
≤ 450 Bhn or ≤ 48 HRc	115 (92-138)	RPM	3514	1757	1171	879	703	586		
		Fr	0.0005	0.0010	0.0015	0.0020	0.0026	0.0031		
		Feed (ipm)	1.8	1.8	1.8	1.8	1.8	1.8		
K CAST IRONS Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	250 (200-300)	RPM	7640	3820	2547	1910	1528	1273	
			Fr	0.0026	0.0052	0.0079	0.0105	0.0131	0.0157	
			Feed (ipm)	20.0	20.0	20.0	20.0	20.0	20.0	
	≤ 330 Bhn or ≤ 36 HRc	195 (156-234)	RPM	5959	2980	1986	1490	1192	993	
			Fr	0.0026	0.0052	0.0078	0.0104	0.0130	0.0156	
			Feed (ipm)	15.5	15.5	15.5	15.5	15.5	15.5	
N ALUMINUM ALLOYS 2017, 2024, 356, 6061, 7075	≤ 80 Bhn or ≤ 47 HRb	540 (432-648)	RPM	16502	8251	5501	4126	3300	2750	
			Fr	0.0032	0.0064	0.0096	0.0128	0.0161	0.0193	
			Feed (ipm)	53.0	53.0	53.0	53.0	53.0	53.0	
	≤ 150 Bhn or ≤ 7 HRc	455 (364-546)	RPM	13905	6952	4635	3476	2781	2317	
			Fr	0.0032	0.0065	0.0097	0.0129	0.0162	0.0194	
			Feed (ipm)	45.0	45.0	45.0	45.0	45.0	45.0	
COPPER ALLOYS Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	305 (244-366)	RPM	9321	4660	3107	2330	1864	1553	
			Fr	0.0019	0.0039	0.0058	0.0077	0.0097	0.0116	
			Feed (ipm)	18.0	18.0	18.0	18.0	18.0	18.0	
≤ 200 Bhn or ≤ 23 HRc	160 (128-192)	RPM	4890	2445	1630	1222	978	815		
		Fr	0.0016	0.0033	0.0049	0.0065	0.0082	0.0098		
		Feed (ipm)	8.0	8.0	8.0	8.0	8.0	8.0		
H TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 250 Bhn or ≤ 24 HRc	85 (68-102)	RPM	2598	1299	866	649	520	433	
			Fr	0.0013	0.0026	0.0039	0.0052	0.0065	0.0079	
			Feed (ipm)	3.4	3.4	3.4	3.4	3.4	3.4	
	≤ 375 Bhn or ≤ 40 HRc	65 (52-78)	RPM	1986	993	662	497	397	331	
			Fr	0.0007	0.0013	0.0020	0.0026	0.0033	0.0039	
			Feed (ipm)	1.3	1.3	1.3	1.3	1.3	1.3	
≤ 475 Bhn or ≤ 50 HRc	50 (40-60)	RPM	1528	764	509	382	306	255		
		Fr	0.0007	0.0013	0.0020	0.0026	0.0033	0.0039		
		Feed (ipm)	1.0	1.0	1.0	1.0	1.0	1.0		

Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B)
 rpm = Vc x 3.82 / DC
 ipm = Fr x rpm
 reduce speed and feed 30 percent when using uncoated drills
 reduce speed and feed for materials harder than listed
 refer to the SGS Tool Wizard® for complete technical information (www.kyocera-sgstool.com)