



ISO	MATERIAL	HARDNESS	Vc (SFM)*		EFFECTIVE CUTTER DIAMETER (INCH)						
					≤ 1/16"	1/16"- 1/8"	1/8"- 1/4"	1/4"- 3/8"	3/8" - 1/2"	1/2" - 3/4"	3/4" - 1"
			HSS/ Cobalt	Carbide	Fz (INCH PER TOOTH)*						
P	CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 275 BHN or ≤ 28 HRC	80-200	250-600	.0003 - .0009	.0003 - .0009	.0004 - .0011	.0005 - .0012	.0006 - .0013	.0009 - .0015	.0010 - .0030
	ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 17-4 PH"	≤ 375 BHN or ≤ 40 HRC	60-150	150-400	.0003 - .0009	.0003 - .0009	.0004 - .0011	.0005 - .0012	.0006 - .0013	.0009 - .0015	.0010 - .0030
M	STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F, 440F	≤ 275 BHN or ≤ 28 HRC	50-100	130-400	.0002 - .0009	.0003 - .0009	.0004 - .0012	.0005 - .0014	.0006 - .0016	.0009 - .0018	.0010 - .0022
	STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L	≤ 275 BHN or ≤ 28 HRC	30-75	100-300	.0003 - .0008	.0003 - .0009	.0004 - .0012	.0005 - .0014	.0006 - .0016	.0009 - .0018	.0010 - .0020
K	GRAY IRONS Class 20, 30, 40, 50, 60, G3000, G3500	≤ 220 BHN or ≤ 19 HRC	60-180	200-650	.0002 - .0009	.0003 - .0010	.0004 - .0012	.0005 - .0014	.0007 - .0016	.0009 - .0018	.0010 - .0025
	DUCTILE IRONS D&M series, 250 , 300, 350, 400, 60-40-18, 65-45-12	≤ 260 BHN or ≤ 26 HRC	50-120	150-450	.0003 - .0009	.0003 - .0009	.0004 - .0011	.0005 - .0012	.0006 - .0013	.0009 - .0015	.0010 - .0030
N	NON-FERROUS Aluminum, Aluminum cast, Brass, Copper, Bronze, Non Metallic	≤ 271 BHN or ≤ 28 HRC	70-300	200-700	.0003 - .0009	.0003 - .0011	.0004 - .0013	.0005 - .0015	.0006 - .0017	.0009 - .0020	.0010 - .0035
H	TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 375 BHN or ≤ 55 HRC	30-65	80-250	.0002 - .0009	.0003 - .0009	.0004 - .0012	.0005 - .0014	.0007 - .0016	.0009 - .0018	.0010 - .0025
S	HR SUPER ALLOYS Inconel 718, Waspaloy, Hastelloy, Inconel 625, Stellite 31, Haynes 25, Rene 41	≤ 275 BHN or ≤ 28 HRC	20-50	50-90	.0002 - .0005	.0003 - .0007	.0004 - .0010	.0005 - .0011	.0006 - .0011	.0007 - .0011	.0007 - .0013
	TITANIUM 6AL-4V, ASTM 1, 2, 3,6AL-2S	≤ 275 BHN or ≤ 28 HRC	30-65	70-160	.0002 - .0007	.0003 - .0009	.0004 - .0010	.0005 - .0011	.0006 - .0012	.0007 - .0012	.0007 - .0016

*Speeds & feeds are starting recommendations only. Factors such as machine type, fixture, tooling rigidity, available horsepower, coolant delivery method and others will affect the performance significantly.