

# Speed & Feed Recommendations



7M, 7MB Metric	HARDNESS	CUT	SPEED	FEED (mm/flute)					
	BRINELL	Type	m/min	3	6	10	12	20	25
CARBON STEEL 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 175	Finish	250	0.0166	0.043	0.093	0.110	0.147	0.160
	> 175 ≤ 275	Finish	220	0.0166	0.043	0.093	0.110	0.147	0.160
ALLOY STEEL 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 275	Finish	185	0.0122	0.034	0.069	0.082	0.109	0.120
	> 275 ≤ 375	Finish	125	0.0122	0.034	0.069	0.082	0.109	0.120
TOOL STEEL A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 250	Finish	170	0.0086	0.024	0.048	0.058	0.077	0.085
	> 250 ≤ 375	Finish	105	0.0070	0.019	0.040	0.048	0.064	0.070
CAST IRON Gray, Malleable, Ductile	≤ 220	Finish	185	0.0132	0.036	0.075	0.089	0.117	0.130
	> 220 ≤ 260	Finish	135	0.0132	0.036	0.075	0.089	0.117	0.130
STAINLESS (free machining) 303, 416, 420F, 430F, 440F	≤ 275	Finish	130	0.0086	0.024	0.048	0.058	0.077	0.085
STAINLESS (difficult) 304, 304L, 316, 316L	≤ 275	Finish	90	0.0082	0.022	0.045	0.048	0.072	0.078
STAINLESS (PH) 17-4PH, 15-5PH, Custom 450, 16- 6PH, PH13-8Mo	≤ 325	Finish	80	0.0070	0.019	0.040	0.048	0.064	0.070
TITANIUM Ti5Al-5V-5Mo, Ti6Al4V, Ti-7Al4Mo	≤ 350	Finish	90	0.0091	0.024	0.051	0.060	0.080	0.088
HIGH TEMPERATURE ALLOY Inconel, Rene, Waspalloy	≤ 300	Finish	25	0.0072	0.019	0.037	0.046	0.061	0.085

CUT TYPE	$\text{rpm} = (1000 \times \text{m/min}) / (3.14 \times D_1)$ $\text{mm/min} = (\text{mm/flute}) \times 4 \times \text{rpm}$ <ul style="list-style-type: none"> <li>• maximum recommended depths shown</li> <li>• adjust feed as required for optimum results</li> <li>• reduce speed and feed for materials harder than listed</li> <li>• refer to the SGS Tool Wizard for more complete technical information (available at )</li> <li>• ramping not recommended</li> </ul>
FINISH	
$a_p = L_2$ $a_e = 0.02 \times D_1$	