

# Speed & Feed Recommendations

66M Metric	HARDNESS BRINELL	CUT Type	SPEED m/min	FEED (mm/flute)						
				6	8	10	12	16	20	25
CARBON STEEL 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 175	Profile	174	0.022	0.034	0.043	0.053	0.061	0.069	0.075
		Light	219	0.029	0.047	0.059	0.072	0.084	0.096	0.105
	> 175 ≤ 275	Profile	151	0.022	0.034	0.043	0.053	0.061	0.069	0.075
		Light	192	0.029	0.047	0.059	0.072	0.084	0.096	0.105
ALLOY STEEL 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 275	Profile	126	0.017	0.028	0.035	0.041	0.049	0.053	0.058
		Light	162	0.022	0.036	0.045	0.055	0.067	0.075	0.080
	> 275 ≤ 375	Profile	87	0.017	0.028	0.035	0.041	0.049	0.053	0.058
		Light	110	0.022	0.036	0.045	0.055	0.067	0.075	0.080
TOOL STEEL A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 250	Profile	113	0.014	0.023	0.029	0.036	0.044	0.048	0.053
		Light	143	0.019	0.032	0.040	0.050	0.059	0.067	0.073
	> 250 ≤ 375	Profile	70	0.012	0.019	0.024	0.029	0.033	0.037	0.040
		Light	88	0.014	0.026	0.032	0.038	0.046	0.051	0.055
CAST IRON Gray, Malleable, Ductile	≤ 220	Profile	169	0.022	0.034	0.043	0.053	0.061	0.069	0.075
		Light	215	0.029	0.047	0.059	0.072	0.084	0.096	0.105
	> 220 ≤ 260	Profile	126	0.022	0.034	0.043	0.053	0.061	0.069	0.075
		Light	160	0.029	0.047	0.059	0.072	0.084	0.096	0.105
STAINLESS (free machining) 303, 416, 420F, 430F, 440F	≤ 275	Profile	131	0.017	0.028	0.035	0.041	0.049	0.053	0.058
		Light	171	0.022	0.036	0.045	0.055	0.067	0.075	0.080
STAINLESS (difficult) 304, 304L, 316, 316L	≤ 275	Profile	93	0.012	0.021	0.027	0.031	0.038	0.043	0.048
		Light	117	0.017	0.030	0.037	0.043	0.051	0.059	0.065
STAINLESS (PH) 17-4PH, 15-5PH, Custom 450, 16-6PH, PH13-8Mo	≤ 325	Profile	85	0.012	0.021	0.027	0.031	0.038	0.043	0.048
		Light	108	0.017	0.030	0.037	0.043	0.051	0.059	0.065
TITANIUM Ti5Al-5V-5Mo, Ti6Al4V, Ti-7Al4Mo	≤ 350	Profile	93	0.014	0.023	0.029	0.036	0.044	0.048	0.053
		Light	119	0.019	0.032	0.040	0.050	0.059	0.067	0.073
HIGH TEMPERATURE ALLOY A-286, Hastelloy, Incoloy, Inconel, Rene, Waspalloy	≤ 300	Profile	26	0.012	0.021	0.027	0.031	0.038	0.043	0.048
		Light	33	0.017	0.030	0.037	0.043	0.051	0.059	0.065

CUT TYPE		
PROFILE	LIGHT*	
Rw = .1 x D <sub>1</sub> Ad = D <sub>1</sub>	Rw = .05 x D <sub>1</sub> Ad = D <sub>1</sub>	<div><math display="block">\text{rpm} = (1000 \times \text{m/min}) / (3.14 \times D_1)</math><math display="block">\text{mm/min} = (\text{mm/flute}) \times \text{no. of flutes} \times \text{rpm}</math></div> <div><ul style="list-style-type: none"><li>• maximum recommended depths shown</li><li>• reduce speed and feed for materials harder than listed</li></ul><div>* finish cuts typically require reduced feed and cutting depths of .02 x D<sub>1</sub> maximum</div><ul style="list-style-type: none"><li>• refer to the SGS Tool Wizard for more complete technical information (available at )</li></ul></div>
		