

PVD Coated Carbide Grade Machining Recommendations for Milling and Turning

Type of Material	Hardness		Maximum Surface Speeds (ft/min)				
	Rc	BHN	G-955 G-935	G-925	G-920	G-910	G-915
Non-Alloy Carbon Steel:							
<i>C < 0.25 %</i>		110	1500	N/A	N/A	650	820
<i>C < 0.80 %</i>	6	150	1200	N/A	N/A	500	630
<i>C < 1.40 %</i>	33	310	1000	N/A	N/A	400	500
Low-Alloy Steels:							
<i>Medium - High Carbon, Annealed</i>	12	180	900	N/A	N/A	425	530
<i>Hardened</i>	36	330	600	N/A	N/A	270	340
High-Alloy Steels:							
<i>Annealed</i>	16	200	600	N/A	N/A	255	320
<i>Hardened</i>	41	380	400	N/A	N/A	185	230
High-Alloy Tool Steel:							
<i>Hardened</i>	36	330	600	N/A	N/A	265	330
Cast Steel:							
<i>Non-Alloy</i>	6	150	1200	N/A	N/A	500	630
<i>Low-Alloy</i>	16	200	1000	N/A	N/A	400	500
<i>High-Alloy</i>	16	200	850	N/A	N/A	350	440
Stainless Steels:							
<i>Ferritic, 400 Series</i>	16	200	N/A	N/A	N/A	500	630
<i>Ferritic, 400 Series</i>	32	310	580	N/A	N/A	375	470
<i>Austenitic, 300 Series</i>	16	200	N/A	450	350	260	325
Gray, Pearlitic Cast Irons:							
<i>Low Tensile</i>	12	180	1100	600	500	N/A	N/A
<i>High Tensile</i>	26	260	400	350	250	N/A	N/A
Nodular / Malleable Irons:							
<i>Short Chipping</i>	6	150	1500	N/A	N/A	N/A	N/A
<i>Long Chipping</i>	21	230	900	N/A	N/A	N/A	N/A
Aluminum Alloys:			850	1800	1500	N/A	N/A
Brass, Copper, Bronze:			650	700	550	N/A	N/A
Hardened Steels (> 50 Rc):			N/A	N/A	N/A	N/A	N/A
Chilled, Hardened Irons (> 50 Rc):			N/A	N/A	N/A	N/A	N/A
Titanium, Refractory Metals:			N/A	200	150	80	96
Nickel & Iron Based Superalloys:							
<i>Inconels</i>			N/A	130	100	70	84
<i>Hastelloys</i>			N/A	170	140	100	120
<i>Waspoloys</i>			N/A	130	100	70	84
<i>Renes</i>			N/A	110	80	50	60
<i>Monels</i>			N/A	110	80	50	60
Cobalt Based Superalloys:							
<i>Stellites</i>			N/A	90	60	50	60
<i>Haynes Alloys</i>			N/A	90	60	50	60

Milling

Feeds should be in the range of 0.003 in/tooth to 0.012 in/tooth.
Higher speeds require lower feeds, whereas, low speeds use higher feed rates.
A good general starting point for feed rate in milling is 0.004 in/tooth.

Turning

Finishing: 0.003 to 0.015 in/rev
General Purpose: 0.008 to 0.020 in/rev
Medium Roughing: 0.015 to 0.030 in/rev
Heavy Roughing: > 0.030 in/rev

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