CVD Coated Carbide Grade Machining Recommendations for Milling

Type of Material	Hardness		Maximum Surface Speeds (ft/min)			
	Rc	BHN	GA-5036	GA-5040	GA-5026	GA-5022 GA-5023
Non-Alloy Carbon Steel:						
C < 0.25 %		110	1050	820	N/A	N/A
C < 0.80 %	6	150	850	630	N/A	N/A
C < 1.40 %	33	310	700	500	N/A	N/A
Low-Alloy Steels:						
Medium - High Carbon, Annealed	12	180	700	530	N/A	N/A
Hardened	36	330	560	340	N/A	N/A
High-Alloy Steels:						
Annealed	16	200	500	320	N/A	N/A
Hardened	41	380	400	230	N/A	N/A
High-Alloy Tool Steel:						
Hardened	36	330	450	330	N/A	N/A
Cast Steel:						
Non-Alloy	6	150	730	630	N/A	N/A
Low-Alloy	16	200	570	500	N/A	N/A
High-Alloy	16	200	500	440	N/A	N/A
Stainless Steels:						
Ferritic, 400 Series	16	200	N/A	630	N/A	760
Ferritic, 400 Series	32	310	500	470	N/A	660
Austenitic, 300 Series	16	200	N/A	320	450	500
Gray, Perlitic Cast Irons:						
Low Tensile	12	180	N/A	680	600	950
High Tensile	26	260	N/A	240	350	340
Nodular / Malleable Irons:						
Short Chipping	6	150	N/A	820	N/A	1370
Long Chipping	21	230	N/A	490	N/A	820
Aluminum Alloys:			N/A	N/A	1800	N/A
Brass, Copper, Bronze:			N/A	N/A	700	N/A
Hardened Steels (> 50 Rc):			N/A	N/A	N/A	N/A
Chilled, Hardened Irons (> 50 Rc):			N/A	N/A	N/A	N/A
Titanium, Refractory Metals:			N/A	N/A	200	N/A
Nickel & Iron Based Superalloys:						
Inconels			N/A	N/A	130	N/A
Hastelloys			N/A	N/A	170	N/A
Waspoloys			N/A	N/A	130	N/A
Renes			N/A	N/A	110	N/A
Monels			N/A	N/A	110	N/A
Cobalt Based Superalloys:						
Stellites			N/A	N/A	90	N/A
Haynes Alloys			N/A	N/A	90	N/A

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.

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