



Technical Information

TECHNICAL INFORMATION ■ HIGH PERFORMANCE CARBIDE ENDMILLS

HIGH PERFORMANCE ENDMILLS - SOLID MICROGRAIN CARBIDE

THESE VALUES ARE FOR UNCOATED TOOLS (EXCEPT FOR TERMINATOR).
 FOR COATED TOOLS INCREASE SFM: ZRN = +30% ALTN = +40%

**SFM FOR HIGH PERFORMANCE CARBIDE ENDMILLS
 TERMINATOR FINISHING PASSES ONLY, 10% OF DIAMETER MAX**

MATERIAL / TYPE	Rc HARDNESS	2 Fl, 3 Fl 45° Helix Aluminum	3 Flute 45° & 60° Helix	5 Flute 45° Helix	TERMINATOR ALTN COATING	TERMINATOR ALCRO-MAX COATING
COBALT BASE ALLOYS						
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	UNDER 32 OVER 32	- -	200-275 125-175	250-300 150-200	220-270 150-200	265-325 180-240
NICKEL BASE ALLOYS						
INCONEL-625/718, WASPALLOY, RENE, HASTELLOY	UNDER 32 OVER 32	- -	150-200 90-125	250-300 150-200	220-270 150-200	265-325 180-240
IRON BASE ALLOYS						
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	UNDER 32 OVER 32	- -	250-300 150-200	250-300 150-200	220-270 150-200	265-325 180-240
MONEL						
MONEL-65% NICKEL	-	-	200-300	225-350	200-245	240-295
TITANIUM ALLOYS						
COMMERCIALLY PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	- -	500 min. -	250-400 -	250-400 -	245-400 -	295-480 -
STAINLESS STEEL (PRECIPITATION)						
12/8, 15/5, 17/4, AM-350/355	UNDER 32 OVER 32	- -	200-350 150-250	200-350 150-250	200-350 150-245	240-420 180-295
STAINLESS STEEL (AUSTENITIC)						
200 SERIES, 302, 303, 304, 316	UNDER 32 OVER 32	- -	250-350 175-275	250-350 175-275	245-345 170-270	295-415 200-325
STAINLESS STEEL (AUSTENITIC)						
304L, 316L	UNDER 32 OVER 32	- -	125-200 90-125	125-200 90-125	120-200 90-120	145-240 110-145
STAINLESS STEEL (MARTENSITIC)						
403, 410, 416, 440	UNDER 32 OVER 32	- -	200-350 150-250	200-350 150-250	200-350 150-250	240-420 180-300
HIGH STRENGTH TOOL STEELS						
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, 01	UNDER 32 OVER 32	- -	225-300 125-200	225-300 125-200	220-300 120-200	265-360 145-240
MEDIUM ALLOY STEELS						
200, 250, 300	UNDER 32 OVER 32	- -	250-350 150-200	250-350 150-200	245-345 150-200	295-415 180-240
CARBON STEELS						
1000's, 1100's, 1300's	UNDER 32 OVER 32	- -	250-350 150-200	250-350 150-200	245-345 150-200	295-415 180-240
DUCTILE						
DUCTILE CAST IRONS	-	-	350-450	300-400	200-300	240-360
CAST IRONS						
GRAY CAST IRONS	-	-	300-400	250-350	170-245	200-295
ALUMINUM						
2014, 2024, 6061-(T1-T6) 7075, DIE CAST, EXTRUDED	- -	500 min. -	500 min. -	500 min. -	- -	- -
MAGNESIUM						
	-	500 min.	500 min.	500 min.	-	-
COPPER, COPPER ALLOYS						
	-	400-500	400-500	250-350	-	-
BRASS BRONZE						
BRASS, ALUM/BRONZE, LOW SILICON BRONZE	- -	300-400 -	300-400 -	- -	- -	- -
COMPOSITES						
G-10 FIBERGLASS, GRAPHITE, GRAPHITE/EPOXY, PLASTICS	- -	250-1000 -	- -	- -	- -	- -



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I.P.T. (Inch Per Tooth)					
MATERIAL / TYPE	Rc HARDNESS	1/8"	1/8" - 1/4"	1/4" - 1/2"	1/2" - 1"
COBALT BASE ALLOYS					
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"
NICKEL BASE ALLOYS					
INCONEL-625/718, WASPALLOY, RENE, HASTELLOY	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"
IRON BASE ALLOYS					
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"
MONEL					
MONEL-65% NICKEL	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0030"-.0050"
TITANIUM ALLOYS					
COMMERCIALLY PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0030"-.0050"
	-	-	-	-	-
STAINLESS STEEL (PRECIPITATION)					
12/8, 15/5, 17/4, AM-350/355	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"
STAINLESS STEEL (AUSTENITIC)					
200 SERIES, 302, 303, 304, 316	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"
STAINLESS STEEL (AUSTENITIC)					
304L, 316L	UNDER 32	.0005"-.0008"	.0005"-.0008"	.0008"-.0015"	.0015"-.0030"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0010"	.0010"-.0020"
STAINLESS STEEL (MARTENSITIC)					
403, 410, 416, 440	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"
HIGH STRENGTH TOOL STEELS					
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, O1	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"
MEDIUM ALLOY STEELS					
200, 250, 300	UNDER 32	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0030"-.0050"
	OVER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"
CARBON STEELS					
1000's, 1100's, 1300's	UNDER 32	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0030"-.0050"
	OVER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"
DUCTILE					
DUCTILE CAST IRONS	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"
CAST IRONS					
GRAY CAST IRONS	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"
ALUMINUM					
2014, 2024, 6061-(T1-T6) 7075, DIE CAST, EXTRUDED	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0150"
	-	-	-	-	-
MAGNESIUM					
	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"
COPPER, COPPER ALLOYS					
	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0020"-.0080"
BRASS BRONZE					
BRASS, ALUM/BRONZE, LOW SILICON BRONZE	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0020"-.0080"
	-	-	-	-	-
COMPOSITES					
G-10 FIBERGLASS, GRAPHITE, GRAPHITE/EPOXY, PLASTICS	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"
	-	-	-	-	-

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