


**HEV-6 / HEV-RN-6**

Material Guide		Hardness	SFM	1/8		3/16		1/4		3/8		1/2		3/4		1		
				Rgh	Fin	Rgh	Fin	Rgh	Fin	Rgh	Fin	Rgh	Fin	Rgh	Fin	Rgh	Fin	
				<b>CARBON STEEL</b>	10XX, 11XX, 12XX, 12LXX, ASTM A27, ASTM A36	< 75 HRB 75 - 98 HRB 21 - 36 HRC	455 445 400	.0014 .0010 .0007	.0017 .0014 .0012	.0020 .0015 .0010	.0019 .0016 .0013	.0028 .0020 .0013	.0022 .0018 .0015	.0041 .0030 .0020	.0025 .0021 .0017	.0054 .0039 .0025	.0029 .0025 .0020	.0077 .0056 .0036
<b>LOW ALLOY STEEL</b>	13XX, 41XX, 43XX, 51XX, 86XX, 93XX	75 - 98 HRB 21 - 36 HRC 36 - 50 HRC > 50 HRC	390 340 260 155	.0009 .0007 .0006 .0005	.0013 .0011 .0011 .0010	.0013 .0010 .0008 .0007	.0015 .0013 .0012 .0011	.0018 .0013 .0011 .0009	.0017 .0015 .0014 .0012	.0026 .0019 .0017 .0013	.0020 .0017 .0016 .0014	.0034 .0025 .0022 .0017	.0023 .0020 .0018 .0016	.0049 .0036 .0032 .0025	.0027 .0023 .0022 .0019	.0063 .0047 .0041 .0032	.0033 .0028 .0027 .0024	
<b>TOOL STEEL</b>	A2, H13, L6, P20, S7	75 - 98 HRB 21 - 36 HRC 36 - 50 HRC > 50 HRC	340 250 145 85	.0009 .0007 .0006 .0005	.0013 .0012 .0011 .0010	.0013 .0010 .0008 .0007	.0015 .0013 .0012 .0011	.0018 .0014 .0011 .0009	.0017 .0015 .0014 .0012	.0026 .0021 .0016 .0013	.0020 .0017 .0015 .0014	.0034 .0027 .0021 .0017	.0023 .0020 .0018 .0016	.0049 .0039 .0030 .0025	.0027 .0024 .0022 .0019	.0063 .0050 .0039 .0032	.0033 .0029 .0026 .0023	
<b>SPECIALTY STEEL</b>	300M, Invar 36, Kovar, Maraging 200, Maraging 250, Maraging 300, Maraging 350	< 75 HRB 75 - 98 HRB 21 - 36 HRC 36 - 50 HRC > 50 HRC	290 255 175 150 55	.0012 .0008 .0007 .0006 .0004	.0015 .0013 .0012 .0011 .0009	.0017 .0012 .0010 .0009 .0006	.0017 .0014 .0013 .0013 .0010	.0023 .0016 .0014 .0013 .0008	.0020 .0016 .0015 .0014 .0011	.0034 .0023 .0021 .0019 .0012	.0022 .0019 .0018 .0017 .0013	.0045 .0031 .0027 .0025 .0015	.0026 .0022 .0020 .0019 .0015	.0064 .0044 .0039 .0035 .0022	.0064 .0026 .0025 .0023 .0018	.0031 .0056 .0051 .0045 .0028	.0082 .0031 .0030 .0045 .0028	.0038 .0031 .0030 .0028 .0022
<b>AUSTENITIC STAINLESS STEEL</b>	Nitronic 50, Nitronic 60, 301, 303, 304, 304L, Incoloy 27-7MO, 316, 316L, 321, 347	75 - 98 HRB 21 - 36 HRC 36 - 50 HRC	265 225 180	.0009 .0008 .0006	.0013 .0013 .0011	.0013 .0011 .0009	.0015 .0014 .0012	.0017 .0015 .0012	.0017 .0016 .0014	.0025 .0023 .0018	.0019 .0018 .0016	.0033 .0030 .0024	.0023 .0021 .0019	.0048 .0043 .0034	.0027 .0026 .0023	.0061 .0055 .0044	.0033 .0031 .0028	
<b>MARTENSITIC &amp; FERRITIC STAINLESS STEEL</b>	403, 410, 416, 420, 440, 430, 446	75 - 98 HRB 21 - 36 HRC	300 280	.0009 .0008	.0013 .0013	.0013 .0011	.0015 .0014	.0018 .0015	.0017 .0016	.0026 .0023	.0020 .0018	.0034 .0030	.0023 .0021	.0049 .0043	.0027 .0025	.0063 .0055	.0033 .0031	
<b>PH STAINLESS STEEL</b>	15-5, 17-4, Carpenter 450, Carpenter 465	21 - 36 HRC 36 - 50 HRC	200 145	.0007 .0006	.0011 .0011	.0010 .0008	.0013 .0012	.0013 .0011	.0015 .0014	.0019 .0017	.0017 .0016	.0025 .0022	.0020 .0018	.0036 .0031	.0023 .0022	.0046 .0040	.0028 .0027	
<b>GRAY CAST IRON</b>	SAE J431, ASTM A48	75 - 98 HRB 21 - 36 HRC	410 370	.0014 .0008	.0017 .0013	.0021 .0011	.0019 .0014	.0029 .0015	.0022 .0016	.0042 .0023	.0025 .0018	.0055 .0030	.0029 .0021	.0079 .0043	.0035 .0025	.0102 .0055	.0042 .0031	
<b>MALLEABLE CAST IRON</b>	ASTM A47, ASTM A220, ASTM A602	75 - 98 HRB 21 - 36 HRC	345 335	.0009 .0008	.0014 .0013	.0013 .0011	.0015 .0014	.0018 .0016	.0017 .0016	.0027 .0023	.0020 .0018	.0035 .0030	.0023 .0021	.0050 .0043	.0028 .0026	.0065 .0056	.0034 .0031	
<b>NODULAR (DUCTILE) CAST IRON</b>	ASTM A536, ASTM 897	75 - 98 HRB 21 - 36 HRC 36 - 50 HRC	310 260 135	.0009 .0006 .0004	.0014 .0011 .0009	.0014 .0009 .0006	.0015 .0013 .0010	.0019 .0012 .0008	.0018 .0014 .0011	.0028 .0019 .0012	.0020 .0017 .0013	.0036 .0024 .0015	.0024 .0019 .0015	.0052 .0035 .0022	.0028 .0023 .0018	.0067 .0044 .0028	.0034 .0028 .0022	
<b>PURE NICKEL</b>	Nickel 200, Nickel 201	< 75 HRB 75 - 98 HRB	285 250	.0012 .0010	.0016 .0014	.0018 .0015	.0018 .0016	.0024 .0020	.0020 .0018	.0036 .0030	.0023 .0021	.0047 .0039	.0027 .0025	.0067 .0056	.0032 .0029	.0086 .0072	.0039 .0036	
<b>NICKEL ALLOY</b>	Hastelloy C-22, Inconel 625, Waspaloy, René 41, Inconel 718, Incoloy 20	75 - 98 HRB 21 - 36 HRC 36 - 50 HRC	80 75 70	.0006 .0006 .0005	.0011 .0011 .0010	.0009 .0009 .0007	.0013 .0012 .0011	.0012 .0012 .0010	.0014 .0014 .0013	.0018 .0017 .0015	.0016 .0016 .0015	.0024 .0023 .0020	.0019 .0019 .0017	.0034 .0033 .0028	.0023 .0023 .0021	.0044 .0042 .0036	.0028 .0027 .0025	
<b>PURE TITANIUM</b>	Ti Grade 1, Ti Grade 2, Ti Grade 3, Ti Grade 4, Ti Grade 7, Ti Grade 12	< 75 HRB 75 - 98 HRB 21 - 36 HRC	300 275 250	.0017 .0014 .0011	.0019 .0017 .0015	.0024 .0021 .0015	.0021 .0019 .0017	.0033 .0028 .0021	.0024 .0022 .0019	.0049 .0041 .0031	.0027 .0025 .0022	.0065 .0054 .0041	.0032 .0029 .0025	.0093 .0078 .0058	.0038 .0035 .0030	.0119 .0100 .0075	.0046 .0042 .0036	
<b>TITANIUM ALLOY</b>	Ti 3Al-2.5V, Ti 6Al-4V, Ti 10V-2Fe-3Al	21 - 36 HRC 36 - 50 HRC	180 160	.0009 .0008	.0013 .0012	.0012 .0011	.0015 .0014	.0017 .0015	.0017 .0016	.0024 .0022	.0019 .0018	.0032 .0029	.0022 .0021	.0046 .0042	.0027 .0025	.0059 .0054	.0032 .0031	
<b>COBALT ALLOY</b>	ASTM F562, ASTM F90, ASTM F75, ASTM F799	75 - 98 HRB 21 - 36 HRC 36 - 50 HRC	210 170 65	.0007 .0007 .0005	.0012 .0012 .0010	.0010 .0010 .0007	.0013 .0013 .0011	.0014 .0014 .0009	.0015 .0015 .0012	.0021 .0020 .0014	.0018 .0017 .0014	.0027 .0026 .0018	.0021 .0020 .0017	.0039 .0038 .0025	.0024 .0024 .0020	.0050 .0048 .0033	.0030 .0029 .0024	

Milling Process	Hardness	ADOC	RDOC
Rgh (Traditional Roughing)	< 35 HRC	Up to Max LOC	15%-25% Diameter
	≥ 35 HRC	Up to Max LOC	10%-20% Diameter
Fin (Finishing)	N/A	Up to Max LOC	4%-6% Diameter

**NOTES:**

Hardness Scales: HRB = Rockwell B  
HRC = Rockwell C

IPT values shown are for 2.5xD length of cut tools, and should be adjusted for longer or shorter lengths of cut. Values shown are for non-reached tools. For tools with reaches greater than 3xD, IPT should be reduced. For more accurate running parameters, please refer to Machining Advisor Pro.