

HEV-5 / HEV-RN-5 / HSM-5

Material Guide		Hardness	SFM	Inches per Tooth (IPT)																													
				1/16			3/32			1/8			3/16			1/4			3/8			1/2			3/4			1					
				Slot	Rgh	Fin	Slot	Rgh	Fin	Slot	Rgh	Fin	Slot	Rgh	Fin	Slot	Rgh	Fin	Slot	Rgh	Fin	Slot	Rgh	Fin	Slot	Rgh	Fin	Slot	Rgh	Fin	Slot	Rgh	Fin
CARBON STEEL	10XX, 11XX, 12XX, 12LXX, ASTM A27, ASTM A36	< 75 HRB	455	.0005	.0008	.0009	.0007	.0011	.0014	.0009	.0015	.0018	.0014	.0021	.0020	.0018	.0029	.0022	.0027	.0043	.0026	.0035	.0056	.0030	.0051	.0080	.0036	.0065	.0102	.0044			
		75 - 98 HRB	445	.0004	.0006	.0008	.0005	.0008	.0011	.0007	.0011	.0015	.0010	.0015	.0017	.0013	.0021	.0019	.0020	.0031	.0022	.0026	.0041	.0026	.0037	.0059	.0031	.0047	.0075	.0037			
		21 - 36 HRC	400	.0002	.0004	.0006	.0003	.0005	.0009	.0004	.0007	.0012	.0007	.0010	.0014	.0009	.0014	.0015	.0013	.0020	.0018	.0017	.0026	.0021	.0024	.0038	.0025	.0031	.0048	.0030			
LOW ALLOY STEEL	13XX, 41XX, 43XX, 51XX, 86XX, 93XX	75 - 98 HRB	390	.0003	.0005	.0007	.0005	.0007	.0011	.0006	.0009	.0014	.0009	.0013	.0016	.0012	.0018	.0018	.0017	.0027	.0021	.0022	.0035	.0024	.0032	.0051	.0029	.0041	.0065	.0035			
		21 - 36 HRC	340	.0002	.0004	.0006	.0004	.0005	.0009	.0005	.0007	.0012	.0007	.0011	.0014	.0009	.0015	.0016	.0015	.0024	.0018	.0017	.0028	.0023	.0029	.0045	.0025	.0030	.0048	.0030			
		> 50 HRC	155	.0002	.0003	.0005	.0002	.0004	.0008	.0003	.0005	.0010	.0005	.0007	.0011	.0006	.0009	.0013	.0009	.0014	.0015	.0011	.0018	.0017	.0017	.0026	.0020	.0021	.0033	.0025			
TOOL STEEL	A2, H13, L6, P20, S7	75 - 98 HRB	340	.0003	.0005	.0007	.0005	.0007	.0011	.0006	.0009	.0014	.0009	.0013	.0016	.0012	.0018	.0018	.0017	.0027	.0021	.0022	.0035	.0024	.0032	.0051	.0029	.0041	.0065	.0035			
		21 - 36 HRC	250	.0002	.0004	.0006	.0004	.0005	.0009	.0005	.0007	.0012	.0007	.0011	.0014	.0009	.0015	.0016	.0014	.0022	.0018	.0018	.0028	.0023	.0029	.0045	.0025	.0030	.0048	.0031			
		> 50 HRC	85	.0002	.0003	.0005	.0002	.0004	.0008	.0003	.0005	.0010	.0005	.0007	.0011	.0006	.0009	.0013	.0009	.0014	.0015	.0011	.0018	.0017	.0017	.0026	.0020	.0021	.0033	.0025			
SPECIALTY STEEL	300M, Invar 36, Kovar, Maraging 200, Maraging 250, Maraging 300, Maraging 350	< 75 HRB	290	.0004	.0006	.0008	.0006	.0009	.0012	.0008	.0012	.0016	.0011	.0018	.0018	.0015	.0024	.0020	.0023	.0035	.0024	.0029	.0046	.0028	.0042	.0066	.0033	.0054	.0085	.0040			
		75 - 98 HRB	255	.0003	.0004	.0007	.0004	.0006	.0010	.0005	.0007	.0012	.0007	.0011	.0014	.0009	.0015	.0016	.0015	.0024	.0019	.0020	.0032	.0023	.0029	.0045	.0025	.0030	.0048	.0033			
		21 - 36 HRC	175	.0003	.0004	.0007	.0004	.0006	.0010	.0005	.0007	.0012	.0007	.0011	.0014	.0009	.0015	.0016	.0014	.0022	.0019	.0018	.0029	.0021	.0026	.0041	.0026	.0033	.0052	.0031			
AUSTENITIC STAINLESS STEEL	Nitronic 50, Nitronic 60, 301, 303, 304, 304L, Incoloy 27-7MO, 316, 316L, 321, 347	75 - 98 HRB	265	.0003	.0005	.0007	.0005	.0007	.0011	.0006	.0009	.0014	.0009	.0013	.0016	.0011	.0018	.0018	.0017	.0026	.0020	.0022	.0034	.0024	.0031	.0049	.0028	.0040	.0063	.0034			
		21 - 36 HRC	225	.0003	.0004	.0007	.0004	.0006	.0010	.0005	.0007	.0012	.0007	.0011	.0014	.0009	.0015	.0016	.0015	.0024	.0019	.0020	.0031	.0023	.0028	.0044	.0027	.0036	.0057	.0033			
		> 50 HRC	180	.0002	.0004	.0006	.0003	.0005	.0009	.0004	.0007	.0012	.0006	.0009	.0013	.0008	.0013	.0015	.0012	.0019	.0017	.0016	.0025	.0020	.0023	.0036	.0024	.0029	.0045	.0029			
MARTENSITIC & FERRITIC STAINLESS STEEL	403, 410, 416, 420, 440, 430, 446	75 - 98 HRB	300	.0003	.0005	.0007	.0005	.0007	.0011	.0006	.0009	.0014	.0009	.0013	.0016	.0012	.0018	.0018	.0017	.0027	.0021	.0023	.0035	.0024	.0032	.0051	.0029	.0041	.0065	.0035			
		21 - 36 HRC	280	.0003	.0004	.0007	.0004	.0006	.0010	.0005	.0007	.0012	.0006	.0009	.0013	.0008	.0012	.0015	.0010	.0016	.0017	.0015	.0024	.0019	.0020	.0031	.0022	.0028	.0044	.0027	.0036	.0056	.0033
		> 50 HRC	180	.0002	.0003	.0005	.0002	.0004	.0008	.0003	.0005	.0010	.0005	.0007	.0011	.0006	.0009	.0013	.0009	.0014	.0015	.0011	.0018	.0017	.0017	.0026	.0020	.0021	.0033	.0025			
PH STAINLESS STEEL	15-5, 17-4, Carpenter 450, Carpenter 465	21 - 36 HRC	200	.0002	.0004	.0006	.0003	.0005	.0009	.0004	.0007	.0012	.0006	.0010	.0013	.0009	.0013	.0015	.0013	.0020	.0018	.0017	.0026	.0021	.0024	.0037	.0025	.0030	.0048	.0030			
		36 - 50 HRC	145	.0002	.0003	.0006	.0003	.0005	.0008	.0004	.0006	.0011	.0006	.0009	.0013	.0007	.0012	.0014	.0011	.0017	.0016	.0014	.0023	.0019	.0021	.0032	.0023	.0026	.0041	.0028			
		> 50 HRC	85	.0002	.0003	.0005	.0002	.0004	.0008	.0003	.0005	.0010	.0005	.0007	.0011	.0006	.0009	.0013	.0009	.0014	.0015	.0011	.0018	.0017	.0017	.0026	.0020	.0021	.0033	.0025			
GRAY CAST IRON	SAE J431, ASTM A48	75 - 98 HRB	410	.0005	.0008	.0009	.0008	.0011	.0014	.0010	.0015	.0018	.0014	.0022	.0020	.0019	.0029	.0023	.0028	.0044	.0026	.0036	.0057	.0030	.0052	.0082	.0037	.0066	.0104	.0044			
MALLEABLE CAST IRON	ASTM A47, ASTM A220, ASTM A602	75 - 98 HRB	345	.0003	.0005	.0007	.0005	.0008	.0011	.0006	.0010	.0014	.0009	.0014	.0016	.0012	.0019	.0018	.0018	.0028	.0021	.0023	.0036	.0024	.0033	.0052	.0029	.0042	.0066	.0035			
NODULAR (DUCTILE) CAST IRON	ASTM A536, ASTM 897	75 - 98 HRB	310	.0003	.0005	.0008	.0005	.0008	.0011	.0006	.0010	.0015	.0009	.0014	.0016	.0012	.0020	.0018	.0018	.0029	.0021	.0024	.0038	.0025	.0034	.0054	.0029	.0044	.0069	.0036			
		21 - 36 HRC	260	.0002	.0004	.0006	.0003	.0005	.0009	.0004	.0007	.0012	.0006	.0010	.0013	.0008	.0013	.0015	.0012	.0019	.0017	.0016	.0025	.0020	.0023	.0036	.0024	.0029	.0046	.0029			
		> 50 HRC	135	.0002	.0002	.0005	.0002	.0003	.0007	.0003	.0004	.0009	.0004	.0006	.0010	.0005	.0008	.0012	.0008	.0012	.0014	.0010	.0016	.0016	.0016	.0014	.0023	.0019	.0018	.0029	.0023		
PURE NICKEL	Nickel 200, Nickel 201	< 75 HRB	285	.0004	.0007	.0009	.0006	.0010	.0013	.0008	.0013	.0017	.0012	.0018	.0019	.0016	.0025	.0021	.0024	.0037	.0024	.0031	.0049	.0028	.0044	.0070	.0034	.0056	.0089	.0041			
		75 - 98 HRB	250	.0004	.0006	.0008	.0005	.0008	.0011	.0007	.0011	.0015	.0010	.0015	.0017	.0013	.0021	.0019	.0020	.0031	.0022	.0026	.0041	.0026	.0037	.0058	.0031	.0047	.0074	.0037			
		> 50 HRC	155	.0002	.0003	.0005	.0002	.0004	.0008	.0003	.0005	.0010	.0005	.0007	.0011	.0006	.0009	.0013	.0009	.0014	.0015	.0011	.0018	.0017	.0017	.0026	.0020	.0021	.0033	.0025			
NICKEL ALLOY	Hastelloy C-22, Inconel 625, Waspaloy, René 41, Inconel 718, Incoloy 20	75 - 98 HRB	80	.0002	.0003	.0006	.0003	.0005	.0009	.0004	.0006	.0012	.0006	.0009	.0013	.0008	.0013	.0015	.0012	.0019	.0017	.0016	.0025	.0020	.0023	.0035	.0024	.0029	.0045	.0029			
		21 - 36 HRC	75	.0002	.0003	.0006	.0003	.0005	.0009	.0004	.0006	.0012	.0006	.0009	.0013	.0008	.0012	.0015	.0012	.0018	.0017	.0015	.0024	.0020	.0022	.0034	.0023	.0028	.0043	.0028			
		> 50 HRC	70	.0002	.0003	.0005	.0002	.0004	.0008	.0003	.0005	.0010	.0005	.0007	.0011	.0006	.0009	.0013	.0009	.0014	.0015	.0011	.0018	.0017	.0017	.0026	.0020	.0021	.0033	.0025			
PURE TITANIUM	Ti Grade 1, Ti Grade 2, Ti Grade 3, Ti Grade 4, Ti Grade 7, Ti Grade 12	< 75 HRB	300	.0006	.0009	.0010	.0008	.0013	.0014	.0011	.0017	.0019	.0017	.0025	.0022	.0022	.0035	.0025	.0033	.0051	.0028	.0043	.0067	.0033	.0061	.0096	.0039	.0078	.0122	.0048			
		75 - 98 HRB	275	.0005	.0008	.0009	.0007	.0011	.0014	.0009	.0015	.0018	.0014	.0021	.0020	.0018	.0029	.0023	.0027	.0043	.0026	.0036	.0056	.0030	.0051	.0081	.0036	.0065	.0103	.0044			
		21 - 36 HRC	250	.0004	.0006	.0008	.0005	.0008	.0011	.0007	.0011	.0015	.0010	.0016	.0017	.0014	.0022	.0020	.0021	.0032	.0022	.0027	.0042	.0026	.0038	.0060	.0031	.0049	.0077	.0038			
TITANIUM ALLOY	Ti 3Al-2.5V, Ti 6Al-4V, Ti 10V-2Fe-3Al	21 - 36 HRC	180	.0003	.0005	.0007	.0005	.0007	.0011	.0006	.0009	.0014	.0008	.0013	.0015	.0011	.0017	.0016	.0025	.0020	.0021	.0033	.0023	.0030	.0048	.0028	.0039	.0061	.0034				
		36 - 50 HRC	160	.0003	.0004	.0007	.0004	.0006	.0010	.0005	.0008	.0013	.0008	.0012	.0015	.0010	.0016	.0017	.0015	.0023	.0019	.0019	.0030	.0022	.0028	.0043	.0027	.0035	.0055	.0032			
		> 50 HRC	135	.0002	.0003	.0005	.0002	.0004	.0008	.0003	.0005	.0010	.0005	.0007	.0011	.0006	.0009	.0013	.0009	.0014	.0015	.0011	.0018	.0017	.0017	.0026	.0020	.0021	.0033	.0025			
COBALT ALLOY	ASTM F562, ASTM F90, ASTM F75, ASTM F799	75 - 98 HRB	210	.0003	.0004	.0006	.0004	.0005	.0009	.0005	.0007	.0012	.0007	.0011	.0014	.0009	.0015	.0016	.0014	.0021	.0018	.0018	.0028	.0022	.0026	.0040	.0026	.0032	.0051	.0031			
		21 - 36 HRC	170	.0003	.0004	.0006	.0004	.0005	.0009	.0005	.0007	.0012	.0007	.0011	.0014	.0009	.0014	.0016	.0013	.0021	.0018	.0017	.0027	.0021	.0025	.003							