Helical

HEF-5

SPEEDS & FEEDS

5 Flute - Finisher

HEF-5

Material Guide		Hardness	SFM	Inches Per Tooth (IPT)													
				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
CARBON STEEL	10XX, 11XX, 12XX, 12LXX, ASTM A27, ASTM A36	< 75 HRB	455	.0016	.0019	.0023	.0022	.0031	.0024	.0046	.0028	.0061	.0033	.0087	.0039	.0111	.0047
		75 - 98 HRB	445	.0012	.0016	.0017	.0018	.0023	.0021	.0034	.0024	.0044	.0028	.0064	.0033	.0081	.0040
		21 - 36 HRC	400	.0008	.0013	.0011	.0015	.0015	.0017	.0022	.0019	.0029	.0022	.0041	.0027	.0053	.0033
LOW ALLOY STEEL	13XX, 41XX, 43XX, 51XX, 86XX, 93XX	75 - 98 HRB	390	.0010	.0015	.0015	.0017	.0020	.0019	.0029	.0022	.0038	.0026	.0055	.0031	.0070	.0038
		21 - 36 HRC	340	.0008	.0013	.0011	.0014	.0015	.0017	.0022	.0019	.0029	.0023	.0041	.0027	.0052	.0033
		36 - 50 HRC	260	.0007	.0012	.0009	.0014	.0013	.0016	.0019	.0018	.0025	.0021	.0036	.0025	.0046	.0030
		> 50 HRC	155	.0005	.0011	.0007	.0012	.0010	.0014	.0015	.0016	.0020	.0019	.0028	.0022	.0036	.0027
TOOL STEEL	A2, H13, L6, P20, S7	75 - 98 HRB	340	.0010	.0015	.0015	.0017	.0020	.0019	.0029	.0022	.0038	.0026	.0055	.0031	.0070	.0038
		21 - 36 HRC	250	.0008	.0014	.0012	.0015	.0016	.0017	.0023	.0020	.0031	.0023	.0044	.0028	.0056	.0034
		36 - 50 HRC	145	.0006	.0012	.0009	.0013	.0012	.0015	.0018	.0017	.0024	.0020	.0034	.0024	.0044	.0029
		> 50 HRC	85	.0005	.0011	.0008	.0012	.0010	.0014	.0015	.0016	.0020	.0019	.0028	.0022	.0036	.0027
SPECIALTY STEEL	300M, Invar 36, Kovar, Maraging 200, Maraging 250, Maraging 300, Maraging 350	< 75 HRB	290	.0013	.0017	.0019	.0020	.0026	.0022	.0038	.0026	.0050	.0030	.0072	.0035	.0092	.0043
		75 - 98 HRB	255	.0009	.0014	.0013	.0016	.0018	.0018	.0026	.0021	.0035	.0025	.0050	.0029	.0063	.0036
		21 - 36 HRC	175	.0008	.0014	.0012	.0015	.0016	.0018	.0024	.0020	.0031	.0023	.0044	.0028	.0057	.0034
		36 - 50 HRC	150	.0007	.0013	.0011	.0014	.0014	.0017	.0021	.0019	.0028	.0022	.0040	.0026	.0051	.0032
		> 50 HRC	55	.0004	.0010	.0006	.0011	.0009	.0013	.0013	.0015	.0017	.0017	.0024	.0021	.0031	.0025
AUSTENITIC STAINLESS STEEL	Nitronic 50, Nitronic 60, 301, 303, 304, 304L, Incoloy 27-7MO, 316, 316L, 321, 347	75 - 98 HRB	265	.0010	.0015	.0014	.0017	.0019	.0019	.0029	.0022	.0037	.0026	.0054	.0031	.0069	.0037
		21 - 36 HRC	225	.0009	.0014	.0013	.0016	.0017	.0018	.0026	.0021	.0034	.0024	.0048	.0029	.0062	.0035
		36 - 50 HRC	180	.0007	.0013	.0010	.0014	.0014	.0016	.0021	.0019	.0027	.0022	.0039	.0026	.0050	.0032
MARTENSITIC & FERRITIC STAINLESS STEEL	403, 410, 416, 420, 440, 430, 446	75 - 98 HRB	300	.0010	.0015	.0015	.0017	.0020	.0019	.0030	.0022	.0039	.0026	.0055	.0031	.0071	.0038
		21 - 36 HRC	280	.0009	.0014	.0013	.0016	.0017	.0018	.0026	.0021	.0034	.0024	.0048	.0029	.0062	.0035
PH STAINLESS STEEL	15-5, 17-4, Carpenter 450, Carpenter 465	21 - 36 HRC	200	.0007	.0013	.0011	.0014	.0015	.0017	.0022	.0019	.0028	.0022	.0041	.0026	.0052	.0032
		36 - 50 HRC	145	.0006	.0012	.0009	.0014	.0013	.0016	.0019	.0018	.0024	.0021	.0035	.0025	.0045	.0030
GRAY CAST IRON	SAE J431, ASTM A48	75 - 98 HRB	410	.0016	.0019	.0024	.0022	.0032	.0024	.0048	.0028	.0062	.0033	.0089	.0039	.0114	.0048
		21 - 36 HRC	370	.0009	.0014	.0013	.0016	.0017	.0018	.0026	.0021	.0034	.0025	.0048	.0029	.0062	.0035
MALLEABLE CAST IRON	ASTM A47, ASTM A220, ASTM A602	75 - 98 HRB	345	.0010	.0015	.0015	.0017	.0020	.0020	.0030	.0023	.0040	.0026	.0057	.0031	.0073	.0038
		21 - 36 HRC	335	.0009	.0014	.0013	.0016	.0017	.0018	.0026	.0021	.0034	.0025	.0049	.0029	.0062	.0035
NODULAR (DUCTILE) CAST IRON	ASTM A536, ASTM 897	75 - 98 HRB	310	.0011	.0016	.0016	.0017	.0021	.0020	.0031	.0023	.0041	.0027	.0059	.0032	.0075	.0039
		21 - 36 HRC	260	.0007	.0013	.0010	.0014	.0014	.0016	.0021	.0019	.0027	.0022	.0039	.0026	.0050	.0032
		36 - 50 HRC	135	.0005	.0010	.0007	.0011	.0009	.0013	.0013	.0015	.0017	.0017	.0025	.0021	.0032	.0025
PURE NICKEL	Nickel 200, Nickel 201	< 75 HRB	285	.0014	.0018	.0020	.0020	.0027	.0023	.0040	.0026	.0053	.0030	.0076	.0036	.0097	.0044
		75 - 98 HRB	250	.0012	.0016	.0017	.0018	.0023	.0021	.0034	.0024	.0044	.0028	.0063	.0033	.0081	.0040
NICKEL ALLOY	Hastelloy C-22, Inconel 625, Waspaloy, René 41, Inconel 718, Incoloy 20	75 - 98 HRB	80	.0007	.0013	.0010	.0014	.0014	.0016	.0021	.0019	.0027	.0022	.0039	.0026	.0049	.0031
		21 - 36 HRC	75	.0007	.0012	.0010	.0014	.0013	.0016	.0020	.0018	.0026	.0021	.0037	.0025	.0047	.0031
		36 - 50 HRC	70	.0006	.0011	.0008	.0013	.0011	.0015	.0017	.0017	.0022	.0020	.0032	.0023	.0041	.0028
PURE TITANIUM	Ti Grade 1, Ti Grade 2, Ti Grade 3, Ti Grade 4, Ti Grade 7, Ti Grade 12	< 75 HRB	300	.0019	.0021	.0028	.0024	.0037	.0027	.0056	.0031	.0073	.0036	.0104	.0043	.0134	.0052
		75 - 98 HRB	275	.0016	.0019	.0023	.0022	.0032	.0024	.0047	.0028	.0061	.0033	.0087	.0039	.0112	.0048
		21 - 36 HRC	250	.0012	.0017	.0017	.0019	.0024	.0021	.0035	.0024	.0046	.0028	.0066	.0034	.0084	.0041
TITANIUM ALLOY	Ti 3Al-2.5V, Ti 6Al-4V, Ti 10V-2Fe-3Al	21 - 36 HRC	180	.0009	.0015	.0014	.0017	.0019	.0019	.0028	.0022	.0036	.0025	.0052	.0030	.0066	.0037
		36 - 50 HRC	160	.0009	.0014	.0012	.0016	.0017	.0018	.0025	.0021	.0033	.0024	.0047	.0029	.0060	.0035
COBALT ALLOY	ASTM F562, ASTM F90, ASTM F75, ASTM F799	75 - 98 HRB	210	.0008	.0013	.0012	.0015	.0016	.0017	.0023	.0020	.0031	.0023	.0044	.0028	.0056	.0034
		21 - 36 HRC	170	.0008	.0013	.0011	.0015	.0015	.0017	.0023	.0019	.0029	.0023	.0042	.0027	.0054	.0033
		36 - 50 HRC	65	.0005	.0011	.0008	.0012	.0010	.0014	.0015	.0016	.0020	.0019	.0029	.0023	.0037	.0027

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. For more accurate running parameters, please refer to Machining Advisor Pro.