SPEEDS & FEEDS

Multi-Flute - Finisher

HXF

HXF																	
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	.0017	.0018	.0026	.0020	.0034	.0022	.0051	.0026	.0066	.0030	.0097	.0036	.0123	.0044
		75 - 98 HRB	445	.0012	.0015	.0019	.0017	.0025	.0019	.0038	.0022	.0048	.0026	.0071	.0031	.0090	.0037
		21 - 36 HRC	400	.0008	.0012	.0012	.0014	.0016	.0015	.0024	.0018	.0031	.0021	.0046	.0025	.0058	.0030
LOW ALLOY STEEL	13XX, 41XX, 43XX, 51XX, 86XX, 93XX	75 - 98 HRB	390	.0011	.0014	.0017	.0016	.0021	.0018	.0033	.0021	.0041	.0024	.0061	.0029	.0078	.0035
		21 - 36 HRC	340	.0008	.0012	.0012	.0013	.0016	.0015	.0024	.0018	.0031	.0021	.0045	.0025	.0058	.0030
		36 - 50 HRC	260	.0007	.0011	.0011	.0013	.0014	.0014	.0021	.0017	.0027	.0019	.0040	.0023	.0050	.0028
		> 50 HRC	155	.0006	.0010	.0009	.0011	.0011	.0013	.0017	.0015	.0021	.0017	.0031	.0020	.0040	.0025
TOOL STEEL	A2, H13, L6, P20, S7	75 - 98 HRB	340	.0011	.0014	.0017	.0016	.0021	.0018	.0033	.0021	.0041	.0024	.0061	.0029	.0078	.0035
		21 - 36 HRC	250	.0009	.0012	.0013	.0014	.0017	.0016	.0026	.0018	.0033	.0021	.0049	.0025	.0062	.0031
		36 - 50 HRC	145	.0007	.0011	.0010	.0012	.0013	.0014	.0020	.0016	.0026	.0019	.0038	.0023	.0048	.0027
		> 50 HRC	85	.0006	.0010	.0008	.0011	.0011	.0013	.0017	.0015	.0021	.0017	.0031	.0020	.0039	.0025
SPECIALTY STEEL	300M, Invar 36, Kovar, Maraging 200, Maraging 250, Maraging 300, Maraging 350	< 75 HRB	290	.0014	.0016	.0022	.0018	.0028	.0020	.0043	.0024	.0054	.0028	.0080	.0033	.0102	.0040
		75 - 98 HRB	255	.0010	.0013	.0015	.0015	.0019	.0017	.0029	.0019	.0037	.0023	.0055	.0027	.0070	.0033
		21 - 36 HRC	175	.0009	.0013	.0013	.0014	.0017	.0016	.0026	.0019	.0034	.0021	.0049	.0026	.0063	.0031
		36 - 50 HRC	150	.0008	.0012	.0012	.0013	.0015	.0015	.0023	.0017	.0030	.0020	.0044	.0024	.0056	.0030
		> 50 HRC	55	.0005	.0009	.0007	.0010	.0009	.0012	.0014	.0014	.0018	.0016	.0027	.0019	.0034	.0023
AUSTENITIC STAINLESS STEEL	Nitronic 50, Nitronic 60, 301, 303, 304, 304L, Incoloy 27-7MO, 316, 316L, 321, 347	75 - 98 HRB	265	.0011	.0014	.0016	.0016	.0021	.0018	.0032	.0020	.0040	.0024	.0060	.0028	.0076	.0034
		21 - 36 HRC	225	.0010	.0013	.0015	.0015	.0019	.0017	.0029	.0019	.0036	.0023	.0054	.0027	.0068	.0033
		36 - 50 HRC	180	.0008	.0012	.0012	.0013	.0015	.0015	.0023	.0017	.0029	.0020	.0043	.0024	.0055	.0029
MARTENSITIC & FERRITIC STAINLESS STEEL	403, 410, 416, 420, 440, 430, 446	75 - 98 HRB	300	.0011	.0014	.0017	.0016	.0021	.0018	.0033	.0021	.0042	.0024	.0061	.0029	.0078	.0035
		21 - 36 HRC	280	.0010	.0013	.0014	.0015	.0019	.0017	.0029	.0019	.0036	.0022	.0053	.0027	.0068	.0033
PH STAINLESS STEEL	15-5, 17-4, Carpenter 450, Carpenter 465	21 - 36 HRC	200	.0008	.0012	.0012	.0013	.0016	.0015	.0024	.0018	.0031	.0021	.0045	.0025	.0057	.0030
		36 - 50 HRC	145	.0007	.0011	.0011	.0013	.0014	.0014	.0021	.0016	.0027	.0019	.0039	.0023	.0049	.0028
GRAY CAST IRON	SAE J431, ASTM A48	75 - 98 HRB	410	.0018	.0018	.0027	.0020	.0035	.0023	.0053	.0026	.0067	.0030	.0099	.0037	.0126	.0044
		21 - 36 HRC	370	.0009	.0013	.0015	.0015	.0019	.0017	.0029	.0019	.0037	.0022	.0054	.0027	.0068	.0033
MALLEABLE CAST IRON	ASTM A47, ASTM A220, ASTM A602	75 - 98 HRB	345	.0011	.0014	.0017	.0016	.0022	.0018	.0034	.0021	.0043	.0024	.0063	.0029	.0080	.0035
		21 - 36 HRC	335	.0010	.0013	.0015	.0015	.0019	.0017	.0029	.0019	.0037	.0022	.0054	.0027	.0069	.0033
NODULAR (DUCTILE) CAST IRON	ASTM A536, ASTM 897	75 - 98 HRB	310	.0012	.0015	.0018	.0016	.0023	.0018	.0035	.0021	.0044	.0025	.0065	.0029	.0083	.0036
		21 - 36 HRC	260	.0008	.0012	.0012	.0013	.0015	.0015	.0023	.0017	.0029	.0020	.0043	.0024	.0055	.0029
		36 - 50 HRC	135	.0005	.0009	.0008	.0010	.0010	.0012	.0015	.0014	.0019	.0016	.0027	.0019	.0035	.0023
PURE NICKEL	Nickel 200, Nickel 201	< 75 HRB	285	.0015	.0017	.0023	.0019	.0029	.0021	.0045	.0024	.0057	.0028	.0084	.0034	.0107	.0041
		75 - 98 HRB	250	.0013	.0015	.0019	.0017	.0025	.0019	.0037	.0022	.0048	.0026	.0070	.0031	.0089	.0037
NICKEL ALLOY	Hastelloy C-22, Inconel 625, Waspaloy, René 41, Inconel 718, Incoloy 20	75 - 98 HRB	80	.0008	.0012	.0012	.0013	.0015	.0015	.0023	.0017	.0029	.0020	.0043	.0024	.0054	.0029
		21 - 36 HRC	75	.0007	.0012	.0011	.0013	.0014	.0015	.0022	.0017	.0028	.0020	.0041	.0023	.0052	.0028
		36 - 50 HRC	70	.0006	.0010	.0010	.0012	.0012	.0014	.0019	.0015	.0024	.0018	.0035	.0022	.0044	.0026
PURE TITANIUM	Ti Grade 1, Ti Grade 2, Ti Grade 3, Ti Grade 4, Ti Grade 7, Ti Grade 12	< 75 HRB	300	.0020	.0019	.0031	.0022	.0041	.0025	.0062	.0028	.0079	.0033	.0116	.0039	.0147	.0048
		75 - 98 HRB	275	.0017	.0018	.0026	.0020	.0034	.0023	.0052	.0026	.0066	.0030	.0097	.0036	.0123	.0044
		21 - 36 HRC	250	.0013	.0015	.0020	.0017	.0025	.0020	.0039	.0022	.0050	.0026	.0073	.0031	.0093	.0038
TITANIUM ALLOY	Ti 3Al-2.5V, Ti 6Al-4V, Ti 10V-2Fe-3Al	21 - 36 HRC	180	.0010	.0014	.0016	.0015	.0020	.0017	.0031	.0020	.0039	.0023	.0057	.0028	.0073	.0034
		36 - 50 HRC	160	.0009	.0013	.0014	.0015	.0018	.0017	.0028	.0019	.0036	.0022	.0052	.0027	.0067	.0032
COBALT ALLOY	ASTM F562, ASTM F90, ASTM F75, ASTM F799	75 - 98 HRB	210	.0009	.0012	.0013	.0014	.0017	.0016	.0026	.0018	.0033	.0022	.0049	.0026	.0062	.0031
		21 - 36 HRC	170	.0008	.0012	.0013	.0014	.0017	.0016	.0025	.0018	.0032	.0021	.0047	.0025	.0060	.0030
		36 - 50 HRC	65	.0006	.0010	.0009	.0011	.0011	.0013	.0017	.0015	.0022	.0017	.0032	.0021	.0040	.0025

Milling Process	Hardness	ADOC	RDOC
Rgh (Traditional Roughing)	< 35 HRC	Up to Max LOC	8%-10% Diameter
	≥ 35 HRC	Up to Max LOC	8%-10% 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.