

SPEEDS & FEEDS

HTPR-5

Tapered End Mill - 5 Flute - Square - Variable Pitch

HTPR-5													
Material Guide		Hardness	SFM	Inches Per Tooth (IPT)									
				1/8		3/16		1/4		3/8		1/2	
				Rgh	Fin	Rgh	Fin	Rgh	Fin	Rgh	Fin	Rgh	Fin
CARBON STEEL	10XX, 11XX, 12XX, 12LXX, ASTM A27, ASTM A36	< 75 HRB	455	.0015	.0018	.0021	.0020	.0029	.0022	.0043	.0026	.0056	.0030
		75 - 98 HRB	445	.0011	.0015	.0015	.0017	.0021	.0019	.0031	.0022	.0041	.0026
		21 - 36 HRC	400	.0007	.0012	.0010	.0014	.0014	.0015	.0020	.0018	.0026	.0021
LOW ALLOY STEEL	13XX, 41XX, 43XX, 51XX, 86XX, 93XX	75 - 98 HRB	390	.0009	.0014	.0013	.0016	.0018	.0018	.0027	.0021	.0035	.0024
		21 - 36 HRC	340	.0007	.0012	.0010	.0013	.0013	.0015	.0020	.0018	.0026	.0021
		36 - 50 HRC	260	.0006	.0011	.0009	.0013	.0012	.0014	.0017	.0017	.0023	.0019
TOOL STEEL	A2, H13, L6, P20, S7	> 50 HRC	155	.0005	.0010	.0007	.0011	.0009	.0013	.0014	.0015	.0018	.0017
		75 - 98 HRB	340	.0009	.0014	.0013	.0016	.0018	.0018	.0027	.0021	.0035	.0024
		21 - 36 HRC	250	.0007	.0012	.0011	.0014	.0015	.0016	.0022	.0018	.0028	.0021
SPECIALTY STEEL	300M, Invar 36, Kovar, Maraging 200, Maraging 250, Maraging 300, Maraging 350	36 - 50 HRC	145	.0006	.0011	.0008	.0012	.0011	.0014	.0017	.0016	.0022	.0019
		> 50 HRC	85	.0005	.0010	.0007	.0011	.0009	.0013	.0014	.0015	.0018	.0017
		< 75 HRB	290	.0012	.0016	.0018	.0018	.0024	.0020	.0035	.0024	.0046	.0028
AUSTENITIC STAINLESS STEEL	Nitronic 50, Nitronic 60, 301, 303, 304, 304L, Incoloy 27-7MO, 316, 316L, 321, 347	75 - 98 HRB	255	.0008	.0013	.0012	.0015	.0016	.0017	.0024	.0019	.0032	.0023
		21 - 36 HRC	175	.0008	.0013	.0011	.0014	.0015	.0016	.0022	.0019	.0029	.0021
		36 - 50 HRC	150	.0007	.0012	.0010	.0013	.0013	.0015	.0019	.0017	.0026	.0020
MARTENSITIC & FERRITIC STAINLESS STEEL	403, 410, 416, 420, 440, 430, 446	> 50 HRC	55	.0004	.0009	.0006	.0010	.0008	.0012	.0012	.0014	.0016	.0016
		75 - 98 HRB	265	.0009	.0014	.0013	.0016	.0018	.0018	.0026	.0020	.0034	.0024
		21 - 36 HRC	225	.0008	.0013	.0012	.0015	.0016	.0017	.0024	.0019	.0031	.0023
PH STAINLESS STEEL	15-5, 17-4, Carpenter 450, Carpenter 465	36 - 50 HRC	180	.0007	.0012	.0009	.0013	.0013	.0015	.0019	.0017	.0025	.0020
		75 - 98 HRB	300	.0009	.0014	.0013	.0016	.0018	.0018	.0027	.0021	.0035	.0024
		21 - 36 HRC	280	.0008	.0013	.0012	.0015	.0016	.0017	.0024	.0019	.0031	.0022
GRAY CAST IRON	SAE J431, ASTM A48	21 - 36 HRC	200	.0007	.0012	.0010	.0013	.0013	.0015	.0020	.0018	.0026	.0021
		36 - 50 HRC	145	.0006	.0011	.0009	.0013	.0012	.0014	.0017	.0016	.0023	.0019
		75 - 98 HRB	410	.0015	.0018	.0022	.0020	.0029	.0023	.0044	.0026	.0057	.0030
MALLEABLE CAST IRON	ASTM A47, ASTM A220, ASTM A602	21 - 36 HRC	370	.0008	.0013	.0012	.0015	.0016	.0017	.0024	.0019	.0031	.0022
		75 - 98 HRB	345	.0010	.0014	.0014	.0016	.0019	.0018	.0028	.0021	.0036	.0024
		21 - 36 HRC	335	.0008	.0013	.0012	.0015	.0016	.0017	.0024	.0019	.0031	.0022
NODULAR (DUCTILE) CAST IRON	ASTM A536, ASTM 897	75 - 98 HRB	310	.0010	.0015	.0014	.0016	.0020	.0018	.0029	.0021	.0038	.0025
		21 - 36 HRC	260	.0007	.0012	.0010	.0013	.0013	.0015	.0019	.0017	.0025	.0020
		36 - 50 HRC	135	.0004	.0009	.0006	.0010	.0008	.0012	.0012	.0014	.0016	.0016
PURE NICKEL	Nickel 200, Nickel 201	< 75 HRB	285	.0013	.0017	.0018	.0019	.0025	.0021	.0037	.0024	.0049	.0028
		75 - 98 HRB	250	.0011	.0015	.0015	.0017	.0021	.0019	.0031	.0022	.0041	.0026
		21 - 36 HRC	250	.0006	.0012	.0009	.0013	.0013	.0015	.0019	.0017	.0025	.0020
NICKEL ALLOY	Hastelloy C-22, Inconel 625, Waspaloy, René 41, Inconel 718, Incoloy 20	21 - 36 HRC	75	.0006	.0012	.0009	.0013	.0012	.0015	.0018	.0017	.0024	.0020
		36 - 50 HRC	70	.0005	.0010	.0008	.0012	.0010	.0014	.0015	.0015	.0020	.0018
		75 - 98 HRB	80	.0006	.0012	.0009	.0013	.0013	.0015	.0019	.0017	.0025	.0020
PURE TITANIUM	Ti Grade 1, Ti Grade 2, Ti Grade 3, Ti Grade 4, Ti Grade 7, Ti Grade 12	< 75 HRB	300	.0017	.0019	.0025	.0022	.0035	.0025	.0051	.0028	.0067	.0033
		75 - 98 HRB	275	.0015	.0018	.0021	.0020	.0029	.0023	.0043	.0026	.0056	.0030
		21 - 36 HRC	250	.0011	.0015	.0016	.0017	.0022	.0020	.0032	.0022	.0042	.0026
TITANIUM ALLOY	Ti 3Al-2.5V, Ti 6Al-4V, Ti 10V-2Fe-3Al	21 - 36 HRC	180	.0009	.0014	.0013	.0015	.0017	.0017	.0025	.0020	.0033	.0023
		36 - 50 HRC	160	.0008	.0013	.0012	.0015	.0016	.0017	.0023	.0019	.0030	.0022
		75 - 98 HRB	210	.0007	.0012	.0011	.0014	.0015	.0016	.0021	.0018	.0028	.0022
COBALT ALLOY	ASTM F562, ASTM F90, ASTM F75, ASTM F799	21 - 36 HRC	170	.0007	.0012	.0010	.0014	.0014	.0016	.0021	.0018	.0027	.0021
		36 - 50 HRC	65	.0005	.0010	.0007	.0011	.0010	.0013	.0014	.0015	.0018	.0017
		75 - 98 HRB	210	.0007	.0012	.0011	.0014	.0015	.0016	.0021	.0018	.0028	.0022

Milling Process	Hardness	ADOC	RDOC
Rgh (Traditional Roughing)	< 35 HRC	Up to Max LOC	30%-40% Diameter
	≥ 35 HRC	Up to Max LOC	25%-35% Diameter
Fin (Finishing)	< 35 HRC	Up to Max LOC	4%-6% Diameter
	≥ 35 HRC	Up to Max LOC	4%-6% Diameter

Note: Speed (SFM) and feed (IPT) numbers shown in table above are considered to be average values. Use a tolerance of +/-25% as needed.

Effective cutter diameter should be used to select the proper chipload per tooth.