

Cutting Data

for THA90 / THX90 Helical Milling Cutters

ANSI ISO 513	Cutting Data for THA90 / THX90 Milling Cutters				COATED									UNCOATED								
	Cutter		Carbide Insert		TN7525 TN6525			TN7535 TN6540			TN450			TTM								
														feed per tooth *(inch)								
	THA90 ¹⁾		AONT-10T308		.0024	.0039	.0059	.0024	.0039	.0059	.0024	.0039	.0059	.0024	.0039	.0059						
	THXD90 ¹⁾		222.76.600		--	.003	.005	--	.003	.005	--	.003	.005	--	.003	.005						
	THXP90 ¹⁾		222.79.400 / 500		.0047	.0095	.0126	.0047	.0095	.0126	.0047	.0102	.0138	.0032	.0063	.0087						
P	Work Material	Condition	Hardness HB	Mat. Gr.	vc *(sfm)																	
	Carbon steel, Unalloyed steel, cast steel and free cutting steel	< 0.25% C annealed	125	1	1085	820	690	920	720	625	625	555	490	555	490	460						
		≥ 0.25% C annealed	190	2	820	655	555	625	490	425	460	390	360	390	325	295						
		< 0.55% C heat-treated	250	3	690	525	490	525	390	360	390	325	295	325	260	230						
		≥ 0.55% C annealed	220	4	720	555	490	540	425	360	425	360	325	360	275	260						
		heat-treated	300	5	625	425	390	460	325	275	360	295	260	275	230	195						
	Low alloy steel and cast steel	annealed	200	6	785	625	490	605	460	375	460	390	360	390	325	295						
		heat-treated	275	7	625	490	390	460	360	295	360	295	260	295	260	230						
		heat-treated	300	8	525	390	360	390	295	260	325	260	230	260	195	180						
		heat-treated	350	9	490	360	295	360	260	230	260	180	130	230	160	130						
	High alloy steel, cast steel & tool steel	annealed	200	10	625	490	425	460	360	325	425	360	295	360	275	260						
		heat-treated	325	11	390	310	230	295	230	195	260	180	130	230	160	130						
	400 series stainless	FE / MA	200	12	785	590	490	590	440	375	425	390	325	375	295	275						
		MA	240	13.1	690	480	390	505	360	295	360	295	260	325	260	230						
MA / PH		330	13.2	360	245	195	260	180	145	180	145	130	160	130	115							
					COATED									UNCOATED								
Cutter		Carbide Insert		TN7525 TN6525			TN7535 TN6540			TN450			TTM									
														feed per tooth *(inch)								
	THA90 ¹⁾		AONT-10T308		.0024	.0032	.0047	.0024	.0032	.0047	.0024	.0032	.0047	.0024	.0032	.0047						
	THXD90 ¹⁾		222.76.600		-	.003	.005	-	.003	.005	-	.003	.005	-	-	-						
	THXP90 ¹⁾		222.79.400 / 500		.0032	.0071	.0099	.0032	.0071	.0099	.0032	.0071	.0099	.0032	.0071	.0099						
M	Work Material	Condition	Hardness HB	Mat. Gr.	vc *(sfm)																	
	300 Series	AU	180	14.1	690	425	295	525	325	230	390	230	195	325	195	130						
	Stainless	DU	230	14.2	555	360	230	425	260	195	310	195	160	260	160	115						
	Duplex	S-AU	200	14.3	425	275	195	325	195	160	230	160	130	195	115	80						
	Stainless	AU-PH	330	14.4	360	210	160	295	160	130	195	145	115	160	95	65						
					COATED									UNCOATED								
Cutter		Carbide Insert		TN2510			TN5515 TN6510 TN6520			THM			THR									
														feed per tooth *(inch)								
	THA90 ¹⁾		AONT-10T308		-	-	-	.0032	.0047	.0071	.0032	.0047	.0071	-	-	-						
	THXD90 ¹⁾		222.76.600		-	-	-	.003	.006	.008	.004	.007	.009	-	-	-						
	THXP90 ¹⁾		222.79.400 / 500		.0032	.0063	.0087	.0047	.0102	.0138	.0047	.0118	.0165	-	-	-						
K	Work Material	Condition	Hardness HB	Mat. Gr.	vc *(sfm)																	
	Grey cast iron	ferrit./pearl.	180	15	1215	885	720	985	720	590	460	325	260	390	295	230						
		pearlitic	260	16	985	690	590	755	555	490	325	260	230	295	230	195						
	Nodular cast iron	ferritic	160	17	950	720	555	820	625	490	390	295	245	360	260	210						
		pearlitic	250	18	855	490	360	625	360	260	360	275	195	325	245	180						
	Malleable cast iron	ferritic	130	19	1015	625	325	820	490	425	490	390	260	460	360	210						
pearlitic		230	20	785	525	360	655	425	295	425	310	195	390	295	160							

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	Cutter		Carbide Insert		TN6501			TN6502			THM-U			THM			
	THA90 ¹⁾		AONT-10T308		-	-	-	-	-	-	-	-	-	-	-	-	
	THXD90 ¹⁾		222.76.610		-	-	-	-	-	-	-	-	-	.004	.007	.009	
	THXP90 ¹⁾		222.79.510		-	-	-	-	-	-	.0394	.0906	.1182	-	-	-	
N	Work Material	Condition	Hardness HB	Mat. Gr.	vc *(sfm)												
	Wrought	Non AG	60	21	6560	3935	3280	5245	3115	2620	6560	3935	3280	2950	1965	1640	
		AG	100	22	3280	1965	1640	2620	1640	1310	3280	196	1640	1475	980	820	
	Cast aluminum alloys	Non Ag	75	23	6560	3935	3280	5245	3115	2620	6560	3935	3280	2950	1965	1640	
		Si ≤ 12%	AG	90	24	3605	1230	1640	2950	1800	1475	3605	2130	1640	2295	1640	1310
		Si ≥ 12%		130	25	2620	1640	1310	2130	1310	980	2620	1640	1310	1475	915	655
	Copper & Copper alloys	Pb > 1%		110	26	-	-	-	-	-	-	-	-	-	1310	820	655
				90	27	-	-	-	-	-	-	-	-	-	1115	685	520
				100	28	-	-	-	-	-	-	-	-	-	820	520	390
	Non Metals			29	-	-	-	-	-	-	-	-	-	1640	1145	655	
				30	-	-	-	-	-	-	-	-	-	1640	1145	655	
S					COATED			UNCOATED									
	Cutter		Carbide Insert		TN5515 TN6510 TN6520			THM			THR						
	THA90 ¹⁾		AONT-10T308		.0158	.0236	.0315	.0158	.0236	.0315	-	-	-				
	THXD90 ¹⁾		222.76.600		-	-	-	-	-	-	-	.003	.005				
	THXP90 ¹⁾		222.79.400 / 500		.0315	.0473	.0552	.0315	.0473	.0552	.0394	.0591	.0709				
	Work Material	Condition	Hardness HB	Mat. Gr.	vc *(sfm)												
	High Temp	G	200	31	160	120	100	120	95	80	95	75	55				
	Alloy FE	AG	280	32	130	95	85	95	75	65	75	55	45				
	High Temp	G	250	33	110	80	65	75	60	50	55	45	35				
	Alloy	AG	350	34	85	65	50	65	45	40	45	35	30				
Ni / Co	GO	320	35	145	95	85	100	75	65	75	55	50					
Titanium alloys			36	-	-	-	160	130	100	-	-	-					
TiAL6V4	AG		37	-	-	-	-	-	-	135	105	90					

The feeds per tooth fz are valid for face milling with width of cut ae ≥ 0.4 d1 and max. depth of cut ap. For smaller widths and depths of cut, the figures in the table should be converted using correction factors (d = dia. of insert, d1 = cutter dia.). The axial feed in plunge milling should be reduced by approximately 40%.

E. - Ratio ae : d1	0.05	0.1	0.2	0.4
fz - Factor	3	2	1.5	1
vc - Factor	1.5	1.4	1.3	1.2

Example:
fz, nom = 0.19 fz, eff = 0.19 x 2 = 0.38 mm / z
vc, nom = 150 vc, eff = 150 x 1.4 = 210 m / min