

Cutting Data

for TR360 Milling Cutters

ANSI ISO 513	Cutting Data for TR360 Milling Cutters					COATED									CERMET			UNCOATED		
	Cutter	Max ap	Carbide Insert	TN7525 TN6525			TN7535 TN6540			TN450			TTI25			TTM				
						feed per tooth *(inch)														
	TR360 ¹⁾	.157 / .197	RD.. 08/10...	.0032	.0059	.0079	.0032	.0059	.0079	.0032	.0059	.0079	.0032	.0051	.0063	.0032	.0059	.0079		
		.236	RD.. 12...	.0039	.0087	.0118	.0039	.0087	.0118	.0039	.0087	.0118	.0039	.0075	.0095	.0039	.0087	.0118		
		.315	RC / RD.. 16...	.0047	.0102	.0142	.0047	.0102	.0142	.0047	.0102	.0142	.0047	.0087	.0110	.0047	.0102	.0142		
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	1345	1065	915	1180	915	785	820	705	655	1475	1130	980	1045	635	590
		≥ 0.25% C	annealed	190	2	1065	820	705	820	620	540	590	490	455	1245	915	785	520	425	390
		< 0.55% C	heat-treated	250	3	900	685	605	685	520	455	490	425	390	1015	770	655	425	325	295
		≥ 0.55% C	annealed	220	4	915	705	605	705	540	455	520	455	425	1145	850	720	455	360	325
		heat-treated	300	5	770	555	455	590	425	360	425	360	295	-	-	-	360	295	225	
	Low alloy steel and cast steel	annealed	200	6	1030	770	635	785	590	490	590	490	455	1245	915	785	520	425	390	
		heat-treated	275	7	770	605	520	590	455	390	455	390	360	1015	720	620	390	325	295	
		heat-treated	300	8	685	520	425	520	390	325	390	325	260	820	570	490	325	260	210	
		heat-treated	350	9	605	425	360	455	325	260	325	225	180	-	-	-	295	195	145	
	High alloy steel, cast steel & tool steel	annealed	200	10	770	620	555	590	475	425	520	440	390	1180	865	720	455	360	325	
		heat-treated	325	11	520	390	325	390	295	225	325	225	180	-	-	-	295	195	145	
	400 series stainless	FE / MA	200	12	980	915	635	750	750	490	555	490	455	1145	850	720	490	390	360	
		MA	240	13.1	850	625	520	655	475	390	455	390	360	980	750	655	425	325	295	
		MA / PH	330	13.2	425	310	260	325	245	195	225	195	180	490	375	325	210	160	145	
					COATED									CERMET			UNCOATED			
M	Cutter	Max ap	Carbide Insert	TN7525 TN6525			TN7535 TN6540			TN450			TTI25			TTM				
						feed per tooth *(inch)														
	TR360 ¹⁾	.157 / .197	RD.. 08/10...	.0032	.0059	.0079	.0032	.0059	.0079	.0032	.0059	.0079	.0032	.0051	.0063	.0032	.0059	.0079		
		.236	RD.. 12...	.0039	.0087	.0118	.0039	.0087	.0118	.0039	.0087	.0118	.0039	.0075	.0095	.0039	.0087	.0118		
		.315	RC / RD.. 16...	.0047	.0102	.0142	.0047	.0102	.0142	.0047	.0102	.0142	.0047	.0087	.0110	.0047	.0102	.0142		
	Work Material		Condition	Hardness HB	Mat. Gr.	vc *(sfm)														
	300 Series	AU	180	14.1	850	720	490	785	655	455	685	590	390	1145	980	750	390	325	260	
	Stainless	DU	230	14.2	720	590	425	620	605	410	555	490	310	885	785	620	325	295	195	
Duplex	S-AU	200	14.3	555	455	325	455	440	310	425	360	225	720	590	455	275	225	160		
Stainless	AU-PH	330	14.4	425	360	245	390	325	225	340	295	195	590	490	375	195	160	130		
					COATED						UNCOATED			CERMET						
K	Cutter	Max ap	Carbide Insert	TN2510			TN5515			THM			TTI25							
						feed per tooth *(inch)														
	TR360 ¹⁾	.157 / .197	RD.. 08/10...	.0032	.0051	.0063	.0032	.0059	.0079	.0032	.0059	.0079	.0032	.0051	.0063					
		.236	RD.. 12...	.0039	.0075	.0095	.0039	.0087	.0118	.0039	.0091	.0126	.0039	.0075	.0095					
		.315	RC / RD.. 16...	.0047	.0087	.0110	.0047	.0102	.0142	.0047	.0110	.0158	.0047	.0087	.0110					
	Work Material		Condition	Hardness HB	Mat. Gr.	vc *(sfm)														
	Grey cast iron	ferrit./pearl.	180	15	1605	1180	980	1245	915	770	520	390	325	-	-	-				
		pearlitic	260	16	1180	915	785	950	705	605	390	295	260	-	-	-				
Nodular cast iron	ferritic	160	17	1180	980	820	1065	770	635	455	340	295	1275	925	765					
	pearlitic	250	18	885	655	520	770	475	390	325	225	160	925	570	470					
Malleable cast iron	ferritic	130	19	1045	820	655	1065	635	520	455	295	225	-	-	-					
	pearlitic	230	20	885	685	555	850	520	425	360	225	160	-	-	-					

Cutting Data

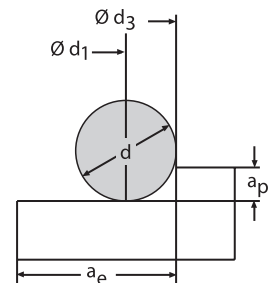
for TR360 Milling Cutters

ANSI ISO 513	Cutting Data for TR360 Milling Cutters					UNCOATED					
	Cutter	Max ap	Carbide Insert		THM						
feed per tooth *(inch)											
	TR360 ¹⁾	.157 / .197	RD.. 08/10...		.0032	.0059	.0079				
		.236	RD.. 12...		.0039	.0087	.0118				
		.315	RC / RD.. 16...		.0047	.0102	.0142				
	N	Work Material	Condition		Hardness HB	Mat. Gr.	vc *(sfm)				
Wrought		Non AG		60	21	3280	2460	1965			
		AG		100	22	1640	1180	980			
Cast aluminum alloys		Non Ag		75	23	3280	2460	1965			
		Si ≤ 12%	AG	90	24	2620	1965	1640			
Si ≥ 12%			130	25	1640	1145	820				
Copper & Copper alloys		Pb > 1%		110	26	1475	1310	980			
				90	27	1310	820	655			
				100	28	980	655	455			
Non Metals					29	1965	1475	980			
				30	1965	1475	980				
						COATED			UNCOATED		
S	Cutter	Max ap	Carbide Insert		TN5515			THM			
					feed per tooth *(inch)						
	TR360 ¹⁾	.157 / .197	RD.. 08/10...		.0032	.0047	.0055	.0032	.0047	.0055	
		.236	RD.. 12...		.0039	.0059	.0071	.0039	.0059	.0071	
		.315	RC / RD.. 16...		.0047	.0071	.0087	.0047	.0071	.0087	
	Work Material	Condition		Hardness HB	Mat. Gr.	vc *(sfm)					
	High Temp	G		200	31	205	160	145	120	95	80
	Alloy FE	AG		280	32	160	130	110	95	75	65
	High Temp	G		250	33	110	80	65	75	60	50
	Alloy	AG		350	34	80	65	45	65	45	40
	Ni / Co	GO		320	35	90	70	55	65	45	40
	Titanium alloys				36	-	-	-	260	160	130
TiAL6V4	AG			37	-	-	-	225	150	110	
						COATED					
H	Cutter	Max ap	Carbide Insert		TN2510**						
					feed per tooth *(inch)						
	TR360 ¹⁾	.157 / .197	RD.. 08/10...		.0024	.0039	.0047				
		.236	RD.. 12...		.0032	.0055	.0063				
		.315	RC / RD.. 16...		.0039	.0063	.0079				
	Work Material	Condition		Hardness HB	Mat. Gr.	vc *(sfm)					
	Hardened steel	H		45	38.1	950	785	200			
		H		55	38.2	785	655	160			
H			60	39.1	590	490	120				
H			> 62	39.2	390	325	70				

fz-factor for ratio ae:d ¹				
ap	0.05	0.1	0.2	0.4
5% of d	9	6.3	4.3	3.2
10% of d	6.3	4.3	3.2	2.2
20% of d	4.3	3.2	2.2	1.6
40% of d	3.2	4.2	1.6	1.1

SFPM Factors for various fz factors	
fz factor	SFPM factor
9	1.6
6.3	1.5
4.3	1.4
3.2	1.3
2.2	1.2
1.6	1.1
1.1	1

1) 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%.



Legend

ae - width of cut
ap - depth of cut
d - insert diameter
 $\varnothing d^1$ - effective cutter diameter
 $\varnothing d^3$ - nominal cutter diameter

* vc for TN450 = 0.8 Vc for TN7525

* fz for TN450 = fz for TN7525