

# CUTTING DATA - TA90, TS90 & TX90 FACE MILLS

CUTTING DATA FOR SQUARE SHOULDER FACE MILLS					Coated						Cermet			Uncoated					
ISO 513	MILLING CUTTER / MATERIAL				TN7525			TN25M			TN7535/TN450			TTI-25			TTM (TTR <sup>1)</sup> )		
P	Cutter	Max. a <sub>p</sub>	Carbide Insert		Feed f <sub>z</sub> inches per tooth <sup>2)</sup>														
	TA90 <sup>2)</sup>	.33	AONT-10T308		.005	.008	.010	.005	.008	.011	.005	.009	.012	.003	.006	.008	.005	.008	.010
	TX90 <sup>2)</sup>	.33	222.79.600		.003	.006	.008	.003	.006	.009	.003	.007	.010	.003	.005	.006	.003	.006	.009
	TS90 <sup>2)</sup>	.40	SDMT-1204 PDR...																
	TX90 / TS90 <sup>2)</sup>	.55	222.79.400 / 500 & SDMT-1506 PDR...		.005	.009	.013	.005	.009	.013	.005	.010	.014	.003	.006	.009	.005	.009	.013
Hardness					Cutting Speeds in SFPM														
Work Material	Condition	HB	Mat. Gr.																
Carbon steel,	< 0.25% C	annealed	125	1	1333	1056	910	1170	910	780	813	699	650	1463	1121	975	715	634	585
Unalloyed steel,	≥ 0.25% C	annealed	190	2	1056	813	699	813	618	536	585	517	455	1235	910	780	520	423	393
cast steel and free cutting steel	< 0.55% C	heat-treated	250	3	894	683	601	683	520	455	488	423	390	1008	764	650	423	325	290
	≥ 0.55% C	annealed	220	4	910	699	601	699	536	455	520	455	423	1138	845	715	455	358	325
Low alloy steel and cast steel		heat-treated	300	5	764	553	471	585	423	358	423	358	325	---	---	---	358	293	260
		annealed	200	6	1024	764	634	780	585	488	585	488	455	1235	910	780	520	423	390
		heat-treated	275	7	764	601	520	585	455	390	455	390	358	---	---	---	390	325	293
		heat-treated	300	8	683	520	423	520	390	325	390	325	293	---	---	---	325	260	228
High alloy steel, cast steel & tool steel		heat-treated	350	9	601	423	---	455	325	---	325	228	---	---	---	293	195	---	---
		annealed	200	10	764	618	553	585	471	423	520	439	390	1170	861	715	455	358	325
		heat-treated	325	11	520	390	---	390	293	---	325	228	---	---	---	293	195	---	---

  

CUTTING DATA FOR SQUARE SHOULDER FACE MILLS					Coated						Uncoated								
ISO 513	MILLING CUTTER / MATERIAL				TN5515			THM											
M	Cutter	Max. a <sub>p</sub>	Carbide Insert		Feed f <sub>z</sub> as inches per tooth <sup>2)</sup>														
	TA90 <sup>2)</sup>	.33	AONT-10T308		.005	.008	.010	.005	.008	.010	.005	.008	.010	.003	.006	.007	.005	.008	.010
	TX90 <sup>2)</sup>	.33	222.79.600		.003	.006	.008	.003	.006	.008	.003	.006	.008	.003	.005	.006	.003	.006	.008
	TS90 <sup>2)</sup>	.40	SDMT-1204 PDR...																
	TX90 / TS90 <sup>2)</sup>	.55	222.79.400 / 500 & SDMT-1506 PDR...		.003	.007	.010	.003	.007	.010	.003	.007	.010	.002	.005	.007	.003	.007	.010
Hardness					Cutting Speeds in SFPM														
Work Material	Condition	HB	Mat. Gr.																
400 series Stainless & cast steel	ferrit./mart.	200	12	975	910	634	748	569	488	553	488	455	1138	845	715	488	390	358	
	martensitic	240	13	845	618	520	650	471	390	455	390	358	975	748	650	423	325	293	
300 series Stainless & cast steel	austenitic	180	14	845	520	---	650	390	---	488	293	---	---	---	390	260	---	---	

  

CUTTING DATA FOR SQUARE SHOULDER FACE MILLS					Coated			Uncoated											
ISO 513	MILLING CUTTER / MATERIAL				TN5515			THM											
K	Cutter	Max. a <sub>p</sub>	Carbide Insert		Feed f <sub>z</sub> inches per tooth <sup>2)</sup>														
	TA90 <sup>2)</sup>	.33	AONT-10T308		.005	.009	.012	.005	.010	.012									
	TX90 <sup>2)</sup>	.33	222.79.600		.005	.007	.009	.005	.007	.009									
	TS90 <sup>2)</sup>	.40	SDMT-1204 PDR...																
	TX90 / TS90 <sup>2)</sup>	.55	222.79.400 / 500 & SDMT-1506 PDR...		.005	.010	.014	.005	.012	.017									
Hardness					Cutting Speeds in SFPM														
Work Material	Condition	HB	Mat. Gr.																
Grey cast iron	ferrit./pearl.	180	15	1235	910	764	520	390	325										
	pearlitic	260	16	943	699	601	390	293	260										
Nodular cast iron	ferritic	160	17	1056	764	634	455	341	293										
	pearlitic	250	18	764	471	---	325	228	---										
Malleable cast iron	ferritic	130	19	1056	634	---	455	293	---										
	pearlitic	230	20	845	520	---	358	228	---										

  

N	Cutter	Max. a <sub>p</sub>	Carbide Insert		Feed f <sub>z</sub> inches per tooth <sup>2)</sup>														
	TA90 <sup>2)</sup>	.33	AONT-10T308																
	TX90 <sup>2)</sup>	.33	222.79.600 / 610																
	TS90 <sup>2)</sup>	.40	SDMT-1204 PDR...																
	TX90 / TS90 <sup>2)</sup>	.55	222.79.400 / 500 / 510 & SDMT-1506 PDR...																
Hardness					Cutting Speeds in SFPM														
Work Material	Condition	HB	Mat. Gr.																
Cast aluminium alloys	≤12% Si	75	23	---	---	---	3250	2340	1950										
	age-hardened	90	24	---	---	---	2600	1918	1625										
	>12% Si heat resistant	130	25	---	---	---	1625	1056	813										
Copper & copper alloys	Red Brass, brass	90	27	---	---	---	1300	813	---										
	Bronze	100	28	---	---	---	975	585	---										

  

S	Cutter	Max. a <sub>p</sub>	Carbide Insert		Feed f <sub>z</sub> inches per tooth <sup>2)</sup>														
	TA90 <sup>2)</sup>	.33	AONT-10T308																
	TX90 <sup>2)</sup>	.33	222.79.600																
	TS90 <sup>2)</sup>	.40	SDMT-1204 PDR...																
	TX90 / TS90 <sup>2)</sup>	.55	222.79.400 / 500 & SDMT-1506 PDR...		.003	.004	.005	.003	.004	.005									
Hardness					Cutting Speeds in SFPM														
Work Material	Condition	HB	Mat. Gr.																
High-temperature alloys	age-hardened	280	32	130	98	81	98	75	65										
	annealed	250	33	104	78	65	78	62	52										
	age-hardened	350	34	85	62	52	65	49	42										
Titanium alloys	age-hardened	310	37	---	---	---	---	---	---										

<sup>1)</sup> When using grade TTR, the SFPM values should be reduced by approximately 20%.

<sup>2)</sup> The feeds per tooth f<sub>z</sub> are valid for a width of cut a<sub>e</sub> ≥ 40% of the cutter diameter. In the case of smaller widths of cut, the feed f<sub>z</sub> should be increased as per the following table:

Ratio a <sub>e</sub> : d <sub>1</sub>	f <sub>z</sub> factor
5%	3
10%	2
20%	1.5
≥ 40%	1