

CUTTING DATA - TA90, TS90 & TX90 END MILLS

CUTTING DATA FOR SQUARE SHOULDER END MILLS					Coated						Cermet			Uncoated					
ISO 513	MILLING CUTTER / MATERIAL				TN7525			TN25M			TN7535/TN450			TTI-25			TTM (TTR ¹⁾)		
P	Cutter	Max. a _p	Carbide Insert		Feed fz inches per tooth ²⁾														
	TA90 ²⁾	.33	AONT-10T308		.006	.008	.010	.006	.009	.011	.006	.009	.011	.003	.005	.006	.006	.008	.010
	TX90 ²⁾	.33	222.79.600		---	.002	.004	---	.002	.004	---	.003	.005	---	.002	.003	---	.002	.004
	TS90 ²⁾	.40	SDMT-1204 PDR...		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	TX90 ²⁾	.55	222.79.400 / 500		.003	.006	.009	.003	.006	.009	.003	.007	.010	.003	.005	.006	.003	.006	.009
Hardness HB					Cutting Speeds in SFPM														
Work Material	Condition	HB	Mat. Gr.																
Carbon steel,	< 0.25% C	annealed	125	1	1073	813	683	910	699	601	618	536	504	1138	878	748	553	488	455
Unalloyed steel,	≥ 0.25% C	annealed	190	2	813	634	553	618	488	423	455	374	358	943	715	601	390	325	293
cast steel and free	< 0.55% C	heat-treated	250	3	683	520	471	520	390	358	374	325	293	780	585	488	325	260	228
cutting steel	≥ 0.55% C	annealed	220	4	699	553	471	536	423	358	390	358	325	878	650	553	358	276	260
		heat-treated	300	5	601	423	374	455	325	276	325	276	260	---	---	---	276	228	195
Low alloy steel		annealed	200	6	780	601	488	601	455	374	455	374	358	943	699	601	390	325	293
and cast steel		heat-treated	275	7	601	471	390	455	358	293	358	293	276	---	---	---	293	260	228
		heat-treated	300	8	520	390	341	390	293	260	293	260	228	---	---	---	260	195	179
		heat-treated	350	9	471	341	---	358	260	---	---	260	179	---	---	---	228	163	---
High alloy steel,		annealed	200	10	601	471	423	455	358	325	390	341	293	910	666	553	358	276	260
cast steel & tool steel		heat-treated	325	11	390	309	---	293	228	---	260	179	---	---	---	---	228	163	---

CUTTING DATA FOR SQUARE SHOULDER END MILLS					Coated						Uncoated								
ISO 513	MILLING CUTTER / MATERIAL				TN5515			THM			THR								
M	Cutter	Max. a _p	Carbide Insert		Feed fz as inches per tooth ²⁾														
	TA90 ²⁾	.33	AONT-10T308		.006	.008	.010	---	---	---	.006	.009	.011	.003	.005	.006	.006	.008	.010
	TX90 ²⁾	.33	222.79.600		---	.002	.004	---	.002	.004	---	.003	.005	---	.002	.003	---	.002	.004
	TS90 ²⁾	.40	SDMT-1204 PDR...		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	TX90 ²⁾	.55	222.79.400 / 500		.003	.006	.009	.003	.006	.009	.003	.007	.010	.003	.005	.006	.003	.006	.009
Hardness HB					Cutting Speeds in SFPM														
Work Material	Condition	HB	Mat. Gr.																
400 series Stainless & cast steel	ferrit./mart.	200	12	764	569	488	585	439	374	423	374	341	878	650	553	374	293	276	
	martensitic	240	13	666	471	390	504	358	293	358	293	276	748	585	504	325	260	228	
300 series Stainless & cast steel	austenitic	180	14	683	423	---	520	325	---	390	228	---	---	---	---	325	195	---	

CUTTING DATA FOR SQUARE SHOULDER END MILLS					Coated						Uncoated					
ISO 513	MILLING CUTTER / MATERIAL				TN5515			THM			THR					
K	Cutter	Max. a _p	Carbide Insert		Feed fz inches per tooth ²⁾											
	TA90 ²⁾	.33	AONT-10T308		.004	.007	.010	.004	.009	.012	---	---	---	---	---	---
	TX90 ²⁾	.33	222.79.600		---	.003	.005	---	.004	.006	---	---	---	---	---	---
	TS90 ²⁾	.40	SDMT-1204 PDR...		---	---	---	---	---	---	---	---	---	---	---	---
	TX90 ²⁾	.55	222.79.400 / 500		.004	.007	.010	.004	.009	.012	---	---	---	---	---	---
Hardness HB					Cutting Speeds in SFPM											
Work Material	Condition	HB	Mat. Gr.													
Grey cast iron	ferrit./pearl.	180	15	959	699	601	439	325	276	---	---	---	---	---	---	
	pearlitic	260	16	731	553	471	325	260	228	---	---	---	---	---	---	
Nodular cast iron	ferritic	160	17	813	601	488	390	293	244	---	---	---	---	---	---	
	pearlitic	250	18	601	358	---	276	195	---	---	---	---	---	---	---	
Malleable cast iron	ferritic	130	19	829	488	---	390	244	---	---	---	---	---	---	---	
	pearlitic	230	20	634	406	---	309	195	---	---	---	---	---	---	---	

CUTTING DATA FOR SQUARE SHOULDER END MILLS					Coated						Uncoated					
ISO 513	MILLING CUTTER / MATERIAL				TN5515			THM			THR					
N	Cutter	Max. a _p	Carbide Insert		Feed fz inches per tooth ²⁾											
	TA90 ²⁾	.33	AONT-10T308		---	---	---	.004	.009	.012	---	---	---	---	---	---
	TX90 ²⁾	.33	222.79.600 / 610		---	---	---	---	.004	.006	---	---	---	---	---	---
	TS90 ²⁾	.40	SDMT-1204 PDR...		---	---	---	---	---	---	---	---	---	---	---	---
	TX90 ²⁾	.55	222.79.400 / 500 / 510		---	---	---	.004	.009	.012	---	---	---	---	---	---
Hardness HB					Cutting Speeds in SFPM											
Work Material	Condition	HB	Mat. Gr.													
Cast aluminium alloys	≤ 12% Si	75	23	---	---	---	2763	1983	1658	---	---	---	---	---	---	
	age-hardened	90	24	---	---	---	2210	1625	1381	---	---	---	---	---	---	
	> 12% Si heat resistant	130	25	---	---	---	1381	894	683	---	---	---	---	---	---	
Copper & copper alloys	Red Brass, brass	90	27	---	---	---	1105	683	0	---	---	---	---	---	---	
	Bronze	100	28	---	---	---	829	504	0	---	---	---	---	---	---	

CUTTING DATA FOR SQUARE SHOULDER END MILLS					Coated						Uncoated					
ISO 513	MILLING CUTTER / MATERIAL				TN5515			THM			THR					
S	Cutter	Max. a _p	Carbide Insert		Feed fz inches per tooth ²⁾											
	TA90 ²⁾	.33	AONT-10T308		.003	.005	.006	---	---	---	---	---	---	---	---	---
	TX90 ²⁾	.33	222.79.600		---	.002	.003	---	.002	.003	---	.003	.004	---	---	---
	TS90 ²⁾	.40	SDMT-1204 PDR...		---	---	---	---	---	---	---	---	---	---	---	---
	TX90 ²⁾	.55	222.79.400 / 500		.003	.005	.006	.003	.005	.006	---	---	---	.004	.006	.007
Hardness HB					Cutting Speeds in SFPM											
Work Material	Condition	HB	Mat. Gr.													
High-temperature alloys	age-hardened	280	32	104	78	65	75	59	49	65	52	46	---	---	---	
Ni- or Co-based	annealed	250	33	81	59	49	59	49	39	49	39	36	---	---	---	
	age-hardened	350	34	65	49	39	49	39	33	39	33	29	---	---	---	
Titanium alloys	age-hardened	310	37	---	---	---	---	---	---	114	88	75	---	---	---	

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

²⁾ The cutting data given is valid for slot milling with full width of cut a_c = 100% of the cutter diameter. For peripheral and shoulder milling with the TX90 end mill, the figures in the table should be converted using the following correction factors:

Ratio a _c : d ₁	f _z factor	SFPM factor
2%	3.5	1.6
5%	3	1.5
10%	2	1.4
20%	1.5	1.3
≥ 40%	1	1.1