

Recommended Cutting Conditions

Machining data for MTEC, MTECB, MTECQ, MTECZ, MTECH

ISO	Material	Condition	Tensile strength (N/mm ²)	Hardness HB	Material No.	Cutting speed Vc(m/min)		Feed (mm/tooth) for diameter (mm)					
						TT9030	TT5515	Ø2	Ø3	Ø4	Ø6	Ø8	Ø10
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C Annealed	420	125	1	100-250	100-250	0.03	0.04	0.04	0.06	0.07	0.08
		>=0.25%C Annealed	650	190	2	80-210	80-210	0.03	0.04	0.04	0.06	0.07	0.08
		<0.55%C Quenched and tempered	850	250	3	65-170	65-170						
		>=0.55%C Annealed	750	220	4	110-180	110-180	0.02	0.03	0.03	0.05	0.06	0.07
		Quenched and tempered	1000	300	5	95-160	95-160	0.02	0.03	0.03	0.05	0.06	0.07
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Annealed	600	200	6	90-160	90-160	0.02	0.02	0.03	0.03	0.04	0.05
		Quenched and tempered	930	275	7	65-200	65-200	0.02	0.02	0.03	0.03	0.04	0.05
			1000	300	8	70-210	70-210	0.02	0.02	0.03	0.03	0.04	0.05
			1200	350	9	95-160	95-160	0.02	0.02	0.03	0.03	0.04	0.05
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	130-170	130-170	0.02	0.02	0.03	0.03	0.04	0.05
		Quenched and tempered	1100	325	11	75-100	75-100	0.02	0.02	0.03	0.03	0.04	0.05
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	110-170	110-170	0.02	0.02	0.03	0.03	0.04	0.05
		Martensitic	820	240	13	70-155	70-155	0.02	0.02	0.03	0.03	0.04	0.05
		Austenitic	600	180	14	85-100	85-100	0.02	0.02	0.03	0.03	0.04	0.05
K	Gray cast iron (GG)	Ferritic		160	15	70-150	70-150	0.03	0.04	0.04	0.06	0.07	0.08
		Pearlitic		250	16	110-140	110-140	0.03	0.04	0.04	0.06	0.07	0.08
	Cast iron nodular (GGG)	Ferritic		180	17	120-160	120-160	0.03	0.04	0.04	0.06	0.07	0.08
		Pearlitic		260	18	75-160	75-160	0.03	0.04	0.04	0.06	0.07	0.08
	Malleable cast iron	Ferritic		130	19	120-160	120-160	0.03	0.04	0.04	0.06	0.07	0.08
		Pearlitic		230	20	110-140	110-140	0.03	0.04	0.04	0.06	0.07	0.08
N	Aluminum - Wrought alloy	Not cureable		60	21	160-300	160-300	0.03	0.04	0.04	0.06	0.07	0.08
		Cured		100	22								
	Aluminum- <=12% Si cast, alloyed	Not cureable		75	23	150-350	150-350	0.03	0.04	0.04	0.06	0.07	0.08
		Cured		90	24								
		>12% Si High temp.		130	25	100-250	100-250	0.02	0.02	0.03	0.03	0.04	0.05
	Copper alloys	>1% Pb Free cutting		110	26								
		Brass		90	27								
		Electrolitic copper		100	28								
	Non-metallic	Duroplastics, fiber plastics			29	100-400	100-400	0.05	0.06	0.07	0.09	0.1	0.11
		Hard rubber			30								
S	High temp. alloys	Fe based Annealed		200	31								
		Cured		280	32								
		Ni or Co based Annealed		250	33	20-80	20-80	0.02	0.02	0.02	0.03	0.03	0.03
		Cured		350	34								
	Titanium, Ti alloys	Cast		320	35								
		Pure	Rm 400		36								
H	Hardened steel	Alpha+beta alloys cured	Rm 1050		37	20-80	30-100	0.02	0.02	0.02	0.03	0.03	0.03
		Hardened		55HRC	38	55-65	60-80						
	Chilled cast iron	Hardened		60HRC	39	45-55	50-70						
		Cast		400	40	90-105	100-120						
	Cast iron nodular	Hardened		55HRC	41	55-65	60-80						

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous
 ■ High temp. alloys
 ■ Hardened steel

Recommended Cutting Conditions

Machining data for MTEC, MTECB, MTECQ, MTECZ, MTECH

ISO	Material	Condition	Tensile strength (N/mm ²)	Hardness HB	Material No.	Cutting speed Vc(m/min)		Feed (mm/tooth) for diameter (mm)					
						TT9030	TT5515	Ø12	Ø14	Ø16	Ø20	Ø25	Ø30
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C Annealed	420	125	1	100-250	100-250	0.09	0.11	0.12	0.15	0.18	0.21
		>=0.25%C Annealed	650	190	2	80-210	80-210	0.09	0.11	0.12	0.15	0.18	0.21
		<0.55%C Quenched and tempered	850	250	3	65-170	65-170						
		>=0.55%C Annealed	750	220	4	110-180	110-180	0.08	0.09	0.1	0.12	0.15	0.18
		Quenched and tempered	1000	300	5	95-160	95-160	0.08	0.09	0.1	0.12	0.15	0.18
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Annealed	600	200	6	90-160	90-160	0.05	0.06	0.07	0.08	0.1	0.11
		Quenched and tempered	930	275	7	65-200	65-200	0.05	0.06	0.07	0.08	0.1	0.11
			1000	300	8	70-210	70-210	0.05	0.06	0.07	0.08	0.1	0.11
			1200	350	9	95-160	95-160	0.05	0.06	0.07	0.08	0.1	0.11
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	130-170	130-170	0.05	0.06	0.07	0.08	0.1	0.11
		Quenched and tempered	1100	325	11	75-100	75-100	0.05	0.06	0.07	0.08	0.1	0.11
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	110-170	110-170	0.05	0.06	0.07	0.08	0.1	0.11
		Martensitic	820	240	13	70-155	70-155	0.05	0.06	0.07	0.08	0.1	0.11
		Austenitic	600	180	14	85-100	85-100	0.05	0.06	0.07	0.08	0.1	0.11
K	Gray cast iron (GG)	Ferritic		160	15	70-150	70-150	0.09	0.11	0.12	0.15	0.18	0.21
		Pearlitic		250	16	110-140	110-140	0.09	0.11	0.12	0.15	0.18	0.21
	Cast iron nodular (GGG)	Ferritic		180	17	120-160	120-160	0.09	0.11	0.12	0.15	0.18	0.21
		Pearlitic		260	18	75-160	75-160	0.09	0.11	0.12	0.15	0.18	0.21
	Malleable cast iron	Ferritic		130	19	120-160	120-160	0.09	0.11	0.12	0.15	0.18	0.21
		Pearlitic		230	20	110-140	110-140	0.09	0.11	0.21	0.15	0.18	0.21
N	Aluminum - Wrought alloy	Not cureable		60	21	160-300	160-300	0.09	0.11	0.12	0.15	0.18	0.21
		Cured		100	22								
	Aluminum- <=12% Si cast, alloyed	Not cureable		75	23	150-350	150-350	0.09	0.11	0.12	0.15	0.18	0.21
		Cured		90	24								
		>12% Si High temp.		130	25	100-250	100-250	0.05	0.06	0.07	0.08	0.1	0.12
	Copper alloys	>1% Pb Free cutting		110	26								
		Brass		90	27								
		Electrolitic copper		100	28								
	Non-metallic	Duroplastics, fiber plastics			29	100-400	100-400	0.12	0.13	0.15	0.18	0.22	0.25
		Hard rubber			30								
S	High temp. alloys	Fe based Annealed		200	31								
		Cured		280	32								
		Ni or Co based Annealed		250	33	20-80	20-80	0.03	0.04	0.04	0.04	0.05	0.05
		Cured		350	34								
	Titanium, Ti alloys	Cast		320	35								
		Pure	Rm 400		36								
		Alpha+beta alloys cured	Rm 1050		37	20-80	30-100	0.03	0.04	0.04	0.04	0.05	0.05
H	Hardened steel	Hardened		55HRC	38	55-65	60-80						
		Hardened		60HRC	39	45-55	50-70						
	Chilled cast iron	Cast		400	40	90-105	100-120						
	Cast iron nodular	Hardened		55HRC	41	55-65	60-80						

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous
 ■ High temp. alloys
 ■ Hardened steel