Turning – High Positive Inserts

coated

ISO	Material		Tensile strength [N/mm²]	Cutting speed Vc [m/min] AL10	AL20	AT10	AT20	PVD1	PVD2	AD2
P	Unalloyed steel and cast steel	ca. 0,15% C	350	220 - 320	180 - 280	220 - 320	180 - 280	200 - 290	160 - 250	-
		ca. 0,45% C	650	180 - 290	160 - 250	180 - 290	160 - 250	160 - 260	140 - 220	-
		ca. 0,75% C	1000	150 - 250	120 - 220	150 - 250	120 - 220	130 - 230	110 - 180	-
	Low alloyed steel and cast steel		600	180 - 280	160 - 250	180 - 280	160 - 250	160 - 250	140 - 220	-
			900	170 - 250	140 - 230	170 - 250	140 - 230	150 - 230	130 - 200	-
			1200	150 - 220	120 - 200	150 - 220	120 - 200	130 - 200	110 - 190	-
	High alloyed steel, high alloyed tool steel and cast steel	annealed	700	-	-	-	-	-	-	-
		hardened and tempered	1100	-	-	-	-	-	-	-
	Stainless steel and cast steel	ferritic / martensitic, annealed	700	170 - 290	160 - 280	170 - 290	160 - 280	150 - 260	130 - 220	-
		martensitic, hardened and tempered	1000	140 - 280	130 - 280	140 - 280	130 - 280	120 - 250	110 - 200	-
M	Stainless steel and cast steel	austenitic and austenitic/ferritic	450 - 600	140 - 280	140 - 240	140 - 280	140 - 240	120 - 250	120 - 200	-
		chilled	600 - 900	-	-	-	-	-	-	-
K	Cast iron	pearlitic, ferritic	500 - 700	180 - 300	160 - 270	180 - 300	160 - 270	160 - 270	-	-
		pearlitic, martensitic	700 - 850	160 - 280	140 - 250	160 - 280	140 - 250	140 - 250	-	-
			800 - 1100	120 - 240	110 - 220	120 - 240	110 - 220	110 - 220	-	-
	Cast iron with nodular graphite	ferritic	550	140 - 230	130 - 210	140 - 230	130 - 210	120 - 210	-	-
		pearlitic	800	120 - 170	110 - 150	120 - 170	110 - 150	110 - 150	-	-
	Malleable cast iron	ferritic	450	150 - 210	130 - 200	150 - 210	130 - 200	130 - 180	-	-
		pearlitic	750	150 - 210	130 - 200	150 - 210	130 - 200	130 - 180	-	-
N	Aluminum alloys, long chipping	not heat treatable	200	-	-	850 - 1300	850 - 1300	750 - 1200	750 - 1200	650 - 2000
		heat treatable, heat treated	350	-	-	400 - 900	400 - 900	350 - 800	350 - 800	300 - 2000
	Casted aluminum alloys	≤ 12% Si, hardened	250	-	-	260 - 800	260 - 800	230 - 700	230 - 700	650 - 2000
		≤ 12% Si, heat treatable, heat treated	300	-	-	200 - 550	200 - 550	180 - 500	180 - 500	300 - 2000
		≤ 12% Si, not heat treatable	450	-	-	200 - 500	200 - 500	180 - 450	180 - 450	200 - 2000
	Copper and copper alloys (brass / bronze)	Lead alloys, Pb > 1%	400	-	-	-	-	-	-	250 - 800
		Brass, bronze	300	-	-	-	-	-	-	250 - 800
		Aluminum bronze	500	-	-	-	-	-	-	250 - 800
		Copper and electrolyte copper	200	-	-	-	-	-	-	130 - 400
	Non-ferrous materials	Duroplastics		-	-	-	-	-	-	-
		Reinforced plastics		-	-	-	-	-	-	-
		Hard rubber		-	-	-	-	-	-	-
S	High temperature resistant alloys	Fe-alloyed annealed	700	20 - 50	20 - 50	20 - 50	20 - 50	15 - 45	15 - 45	-
		Fe-alloyed hardened	950	20 - 50	20 - 50	20 - 50	20 - 50	15 - 45	15 - 45	-
		Ni- oder Co- based annealed	800	15 - 40	15 - 40	15 - 40	15 - 40	10 - 35	10 - 35	-
		Ni- oder Co- based casting	1100	15 - 30	15 - 30	15 - 30	15 - 30	10 - 25	10 - 25	-
		Ni- oder Co- based hardened	1200	15 - 30	15 - 30	15 - 30	15 - 30	10 - 25	10 - 25	-
	Titanium alloys, high strength	Pure titanium	500 - 700	-	-	-	-	-	-	-
	Alpha- and beta-alloys, hardened		700 - 1000	-	-	-	-	-	-	-
H	Hardened steel	hardened and tempered	1000 - 1350	-	-	-	-	-	-	-
		hardened and tempered	1350 - 1700	-	-	-	-	-	-	-
	Hard cast iron	casting	1350	-	-	-	-	-	-	-
	Hardened cast iron	hardened and tempered	1900	-	-	-	-	-	-	-

The datas cutting speeds given are approximate values.
It is necessary to adjust them to the individual machining operation.

More grades on the following pages.