

Tool	Feed column No.								
	1	2	3	4	5	6	7	8	9
	f: mm/R								
∅ 2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
∅ 2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,152	0,160
∅ 3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
∅ 4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
∅ 5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
∅ 6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
∅ 8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
∅ 10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
∅ 12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
∅ 16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
∅ 20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
∅ 25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
∅ 31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
∅ 40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Tool material
TiN-coated
Norme DIN
With coolant

$$\text{Formula for RPM} = \frac{V_c \text{ (m/min)} \times 1000}{d \text{ (}\varnothing \text{ mm)} \times 3,14}$$

HSCO: S6-5-2,5
 1.3243 (6,5 W/5% Mo/2% V/4,8% Co)

HM: Carbide

Material group	Material examples (bold printed numbers: according to DIN EN 10027)	Tensile strenght N/mm ²
Common structural steels	1.0035 St 33, 1.0254 St 37.0, 1.0486 StE 285, 1.0345 H1, 1.0425 H2 1.0050 St 50-2, 1.0070 St 70-2, 1.8937 WStE500	≤500 >500–850
Free-cutting steels	1.0718 9SMnPb28, 1.0723 15 S20, 1.0736 9 SMn36 1.0727 45 S20, 1.0728 60 S20, 1.0757 45SPb20	≤850 850–1000
Unalloyed heat-treatable steels	1.0402 C22, 1.1178 Ck30 1.0503 C45, 1.1191 Ck45 1.0601 C60, 1.1221 Ck60	≤700 700–850 850–1000
Alloyed heat-treatable steels	1.5131 50MnSi4, 1.7003 38Cr2, 1.7030 28Cr4 1.5710 36NiCr6, 1.0735 41Cr4, 1.7225 42CrMo5	850–1000 >1000–1200
Unalloyed case-hard steels	1.0301 C10, 1.1121 Ck10, 1.1140 Cm15	≤750
Alloyed case-hard steels	1.5919 15CrNi6, 1.7012 13Cr2, 1.7015 15Cr13 1.5752 14NiCr14, 1.7131 16MnCr5, 1.7264 20CrMo5	850–1000 >1000–1200
Nitriding steels	1.8504 34CrAl6, 1.8506 34CrAlS5, 1.8509 41CrAlMo7 1.8507 34CrAlMo5, 1.8519 31CrMoV9, 1.8550 34CrAlNi7	≥850–1000 >1000–1200
Tool steels	1.1750 C75W, 1.2067 100Cr6, 1.2307 29CrMoV 1.2080 X210Cr12, 1.2083 X42Cr13, 1.2419 105WCr6, 1.2767 X45NiCrMo4	≤850 >850–1000
High-speed steels	1.3243 S 6-5-2-5, 1.3343 S 6-5-2, 1.3344 S 6-5-3	≥650–1000
Stainless steels	sulphured austenitic martensitic 1.4005 X12CrS13, 1.4104 X2CrMoS17, 1.4105 X4CrMoS18, 1.4305 1.4301 X5CrNi1810, 1.4541 X6CrNiTi1810, 1.4571 X6CrNiMoTi 1712 2 1.4057 X20CrNi17 2, 1.4122 X35CrMo17, 1.4521 X2CrMoTi18 2	≤850 ≤850 ≤850
Cast iron	≤ 240 HB < 300 HB GG 10–GG 20 GG 25–GG 45	
Spheroidat and malleable cast iron	GTW 35, GTS 55, GGG 50 GTW 65, GTS 70, GGG 70	
Ti and Ti alloys	3.7024 Ti99,5, 3.7114 TiAl5Su2,5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7164 TiAl6V4, 3.7184 TiAl4Mo45Su2, - TiAl8Mo1V1	≤850 >850–1200
Aluminum and Al alloys	3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1	≤400
Aluminum wrought alloys	3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	≤450
Aluminum cast alloys	≤ 10 % Si < 10 % Si 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9 3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600
Magnesium alloys	MgMn2, G-MgAl18Zn1, G-MgAl6Zn3	≤450
Copper, low alloys	2.0070 SE-Cu, 2.1020 CuSn6, 2.1096 G-CuSn5ZnPb	≤400
Brass	short-chipping long-chipping 2.0380 CuZn39Pb2, 2.0401 CuZn39Pb3, 2.0410 CuZn43Pb2 2.0250 CuZn20, 2.0280 CuZn33, 2.0332 CuZn37Pb0,5	≤600 ≤600
Bronze, short-chipping	2.1090 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0790 CuNi18Zn19Pb	≤600 >600–850
Bronze, long-chipping	2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10 2.0980 CuAl11Ni, 2.1247 CuBe2	≤850 850–1000
Plastic	a = duroplastics b = thermoplastics Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	

	HSS	HSS	HSCO	HSCO	HSCO	HSCO	HM-K 20	HM-K 40	HM-K 40	HM-K 20	HM-K 20	HM-K 20	HM-K 20
	TiN		TiN		TiN			TiN	TiN		TiN	TiN	
	1897	1897	1897	1897	6537	6537	6539	6539	6539	6537	6539	6539	6537
					x	x				x			x
Lubrication	1	2	3	4	5	6	7	8	9	10	11	12	13
● Emulsion ● Oil ○ Air	m/min No.	m/min No.	m/min No.	m/min No.	m/min No.	m/min No.	m/min No.	m/min No.	m/min No.	m/min No.	m/min No.	m/min No.	m/min No.
● ●	36 6 28 5	45 6 36 5			48 7 38 6	60 7 48 6	80 4 55 3		100 6 85 5	110 6 90 5		100 5 85 4	110 5 90 4
● ●	36 6 28 5	45 6 36 5	30 5	40 5	48 7 38 6	60 7 48 6	80 5 70 4	70 6 60 5	110 7 85 6	130 7 110 7		110 6 85 5	130 6 110 6
● ● ●	36 5 28 5 - -	45 5 32 5 18 4	30 5 22 4	40 5 28 4	48 6 38 6 20 5	60 6 48 6 25 5	55 4 - - - -		90 6 85 6 80 6	100 7 95 6 90 6		90 5 85 5 80 5	100 6 95 5 90 5
● ●		22 4	20 4 16 3	25 4 20 3	25 5 20 4	30 5 25 4			80 6 75 5	90 6 80 6		80 5 70 4	90 5 80 5
●	36 6	45 6			50 7	62 7	70 5		100 7	110 7		100 6	110 6
● ●		20 4	18 4 14 3	22 4 18 3	22 5 16 4	28 5 20 4			90 6 65 4	90 6 65 4		80 5 70 4	90 5 80 5
● ●		18 4	16 4 12 3	20 4 15 3	20 5 14 4	25 5 18 4			75 5 70 4	85 6 80 4		75 4 70 4	80 5 75 4
● ●	18 4 - -	22 4 - -	20 4 12 3	25 4 15 3	24 5 14 4	30 5 18 4			50 5 40 4	60 5 50 4		50 4 40 4	55 4 45 4
●			12 3	15 3	14 4	18 4			40 3	45 3		35 3	45 3
● ● ●			16 4 12 3 14 3	20 4 15 3 18 3	20 5 14 4 16 4	25 5 18 4 20 4			40 3 35 3 35 2	45 4 40 4 35 2			
● ○ ● ○	36 6 28 6	45 6 36 6	40 6 30 6	50 6 40 6	48 7 38 7	60 7 48 7	100 5 80 5	130 6 100 6	160 7 120 7	190 7 110 7	100 6 80 6	140 6 100 6	190 6 130 6
● ●	32 6 23 6	40 6 28 6	36 6 28 6	45 6 32 6	42 7 30 7	52 7 38 7	80 5 70 5	100 6 80 6	120 7 95 7	100 7 95 7	80 6 70 6	100 6 90 6	130 6 100 6
● ●			12 2 8 2	15 2 10 2	14 3 10 3	18 3 12 3			30 3 25 2	35 3 30 2			
●	90 7		100 7				200 7		200 8	240 8			
●	90 7		100 7				180 6	180 7	200 8	240 8			
● ●	70 7 55 6	90 7 80 6	80 7 60 6		95 8 75 7	120 8 95 7	150 5 120 5	160 7 130 6	170 8 140 7	200 8 170 8	150 7 120 6	170 7 140 6	200 7 170 7
○	90 6						180 5	180 6	200 7		180 6	200 6	
●	36 5	45 5	40 5	50 5	48 6	60 6	70 4	70 5	80 6	95 6			
● ●	70 6 45 5	- - 55 5	- - 50 5	- - 60 5	- - 60 6	- - 75 6	180 5 120 4	200 6 - -	210 7 140 6	250 7 170 6	180 6	210 6	250 6
● ● ●	36 4 32 4	45 4 40 4	40 4 36 4	- - 45 4	- - 42 5	- - 52 5	75 3 55 3	80 5 60 5	80 5 65 5	95 6 80 5			
● ●	28 4 - -	35 4 28 4	30 4 25 4	40 4 32 4	38 5 30 5	48 5 38 5	50 3 35 2	65 4 45 3	60 4 45 4	70 5 60 5			
○ ● ○	18 4 28 5	22 4 36 5	20 4 - -	25 4 - -	- - 38 6	- - 48 6	50 4 40 3						