

Usage values, HSS HSSE centre drill, uncoated



Material groups for cutting values	Strength Class [N/mm ²]	Description regarding DIN	Vc [m/min]	f [mm/r] with diameter						
				0.5-2	2-3	3-4	4-6.3	6.3-8	8-10	10-12.5
1. Steels										
1.1 Free machining steel	< 900	9 S 20	25-50	0.01-0.04	0.04-0.05	0.05-0.06	0.06-0.08	0.08-0.15	0.15-0.2	0.2-0.3
1.2 Structural steel	<500	ST 37-2	35-50	0.01-0.04	0.04-0.05	0.05-0.06	0.06-0.08	0.08-0.15	0.15-0.2	0.2-0.3
1.3 Structural steel	> 500	ST 60-2	15-35	0.01-0.04	0.04-0.05	0.05-0.06	0.06-0.08	0.08-0.15	0.15-0.2	0.2-0.3
1.4 Heat-treated steel	<1000	42 CrMo 4	10-30	0.01-0.02	0.02-0.03	0.03-0.04	0.04-0.05	0.05-0.08	0.08-0.1	0.1-0.15
1.5 Cast iron	<1000	GS-45	10-25	0.01-0.02	0.02-0.03	0.03-0.04	0.04-0.05	0.05-0.08	0.08-0.1	0.1-0.15
1.6 Case-hardened steel	<1200	16 MnCr 5	10-25	0.01-0.02	0.02-0.03	0.03-0.04	0.04-0.05	0.05-0.08	0.08-0.1	0.1-0.15
1.7 Ferritic/martensitic stainless steel	<1100	X 10 Cr 13	6-12	0.01-0.02	0.02-0.03	0.03-0.04	0.04-0.05	0.05-0.08	0.08-0.1	0.1-0.15
1.8 Heat-treated steel	>1000	43 CrMo 4	8-30	0.01-0.02	0.02-0.03	0.03-0.04	0.04-0.05	0.05-0.08	0.08-0.1	0.1-0.15
1.9 Nitriding steel	<1300	31 CrMoV 9	8-20	0.01-0.02	0.02-0.03	0.03-0.04	0.04-0.05	0.05-0.08	0.08-0.1	0.1-0.15
1.10 Tool steel	<1300	X 38 CrMoV 5 1	5-15	0.01-0.02	0.02-0.03	0.03-0.04	0.04-0.05	0.05-0.08	0.08-0.1	0.1-0.15
2. Stainless steels										
2.1 Austenitic stainless steel	<1100	G-X 2 CrNiMo 18 15	8-20	0.01-0.02	0.02-0.03	0.03-0.04	0.04-0.05	0.05-0.08	0.08-0.1	0.1-0.15
3. Non-ferrous metals										
3.1 Long-chipping aluminium	<500	Al99.9	50-100	0.01-0.04	0.04-0.05	0.05-0.06	0.06-0.08	0.08-0.12	0.12-0.18	0.18-0.2
3.2 Short-chipping aluminium	<500	G-AlSi12	30-60	0.01-0.04	0.04-0.05	0.05-0.06	0.06-0.08	0.08-0.12	0.12-0.18	0.18-0.2
3.3 Copper alloy bronze, long-chipping	<1200	CuSn4	15-35	0.01-0.04	0.04-0.05	0.05-0.06	0.06-0.08	0.08-0.12	0.12-0.18	0.18-0.2
3.4 Copper alloy bronze, short-chipping	<850	CuNi12Zn24	25-50	0.01-0.04	0.04-0.05	0.05-0.06	0.06-0.08	0.08-0.12	0.12-0.18	0.18-0.2
3.5 Copper alloy brass, long-chipping	<600	Cu Zn 20	30-60	0.01-0.04	0.04-0.05	0.05-0.06	0.06-0.08	0.08-0.12	0.12-0.18	0.18-0.2
3.7 Thermoplastic	<600	Cu Zn 39 Pb 3	60-100	0.01-0.04	0.04-0.05	0.05-0.06	0.06-0.08	0.08-0.12	0.12-0.18	0.18-0.2
	<100	PVC, Acrylglas	20-35	0.01-0.04	0.04-0.05	0.05-0.06	0.06-0.1	0.1-0.15	0.15-0.2	0.2-0.25
3.8 Duroplast	<150	Bakelit, Melamin	10-20	0.01-0.04	0.04-0.05	0.05-0.06	0.06-0.1	0.1-0.15	0.15-0.2	0.2-0.25
3.9 Fibre-reinforced plastics	<1500	CFK, GFK	10-20	0.01-0.04	0.04-0.05	0.05-0.06	0.06-0.1	0.1-0.15	0.15-0.2	0.2-0.25
3.10 Graphite	<60	C8000	12-20	0.01-0.04	0.04-0.05	0.05-0.06	0.06-0.1	0.1-0.15	0.15-0.2	0.2-0.25
3.11 Composite materials										
4. Cast metal										
4.1 Grey cast iron	<260 HB	GG10	15-30	0.01-0.04	0.04-0.05	0.05-0.06	0.06-0.08	0.08-0.12	0.12-0.18	0.18-0.2
4.2 Spheroidal graphite iron	<310 HB	GGG 40	15-30	0.01-0.04	0.04-0.05	0.05-0.06	0.06-0.08	0.08-0.12	0.12-0.18	0.18-0.2
4.3 Ductile iron	<280 HB	GTW-55	15-30	0.01-0.04	0.04-0.05	0.05-0.06	0.06-0.08	0.08-0.12	0.12-0.18	0.18-0.2
5. Special alloys										
5.1 Titanium alloy	<1200	TiAl5Sn2,5	3-10	0.01-0.02	0.02-0.03	0.03-0.04	0.04-0.05	0.05-0.08	0.08-0.1	0.1-0.12
5.2 Nickel-based alloy	<1400	NiCr21Mo	3-8	0.01-0.02	0.02-0.03	0.03-0.04	0.04-0.05	0.05-0.08	0.08-0.1	0.1-0.12
5.3 Super alloys	<1400	X45CrSi 9 3	3-8	0.01-0.02	0.02-0.03	0.03-0.04	0.04-0.05	0.05-0.08	0.08-0.1	0.1-0.12