Application recommendations twist drills

Tools with bold feed column no. are preferred choice.

Drill Ø mm	Feed column no. 1	2	3	4	5	6	7	8	9
	f (mm/rev.)								
0.50	0.004	0.006	0.007	0.008	0.010	0.012	0.014	0.016	0.019
1.00	0.006	0.008	0.012	0.014	0.016	0.018	0.020	0.023	0.025
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	0.125	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
50.00	0.250	0.310	0.400	0.500	0.630	0.800	1.000	1.250	1.250
63.00	0.315	0.400	0.500	0.630	0.800	1.000	1.250	1.600	1.600
80.00	0.400	0.500	0.630	0.800	1.000	1.250	1.600	1.600	2.000

Coolant:
- ○ Air
- ● Neat oil
- ◐ Soluble oil

Cutting direction:
- right-hand cutting
- left-hand cutting

Material group	Material examples Figures in bold = material no. to DIN EN 10 027	Tensile strength N/mm²	Hardness	Coolant
Common structural steels	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2)	≤500		◐
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤1000		◐
Free-cutting steels	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		◐
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤1000		◐
Unalloyed heat-treatable steels	**1.0402** C22, **1.1178** C30E (Ck30)	≤700		◐
	1.0503 C45, **1.1191** C45E (Ck45)	≤850		◐
	1.0601 C60, **1.1221** C60E (Ck60)	≤1000		◐
Alloyed heat-treatable steels	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	≤1000		◐
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1400		◐
Unalloyed case hard. steels	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		◐
Alloyed case hardened steels	**1.7276** 10CrMo11, **1.5125** 11MnSi6	≤1000		●
	1.5752 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1400		●
Nitriding steels	**1.8504** 34CrAl6	≤1000		◐
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	≤1400		●
Tool steels	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		◐
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤1400		●
High speed steels	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Spring steels	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Hardened steels	–		≤48 HRC	●
			≤66 HRC	●
Stainless steels, sulphured	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤900		●
austenitic	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
martensitic	**1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤1500		●
Cast iron	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20)		≤240 HB	◐○
	0.6025 EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤350 HB	◐○
Spheroidal graphite iron and malleable cast iron	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35)		≤240 HB	◐
	0.7070 EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤350 HB	◐
Chilled cast iron	–		≤350 HB	◐
New cast materials GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)		≤220 HB	◐○
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤300 HB	◐○
New cast materials ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	≤1000		◐○
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1400		◐○
Special alloys	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Ti and Ti-alloys	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		●
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		●
Aluminium and Al-alloys	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		◐
Al wrought alloys	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		◐
Al cast alloys ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		◐
≤ 24 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		◐
Magnesium alloys	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Copper, low-alloyed	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		◐
Brass, short-chipping	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		◐
long-chipping	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		◐
Bronze, short-chipping	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		◐●
	2.0790 CuNi18Zn19Pb	≤850		●
Bronze, long-chipping	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		●
	2.0980 CuAl11Ni, **2.1247** CuBe2	≤1000		●
Duroplastics	Epoxy resin, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastics	Plexiglass, Hostalen, Novodur, Makralon	≤100		◐○
Kevlar	Kevlar	≤1000		○
Glass, carbon concentr. plastics	GFK/CFK	≤1000		○

≤10xD

Order-Nr.	81210	81317	81310	82210	81320	81330	81350	81340	84814	84812	84418	84423	84506
Order-Nr.													
Standard/DIN	339	340	340	341	340	340	340	340	340	340	340	340	340
Tool material	HSS								HSS-E	HSS-E	HSS		HSS
Surface finish	>Ø 2,36		>Ø 2,36					>Ø 2,36		T	T	T	F
Type	N	N	N	N	H	W	FW	FN	FU500DZ	FU500DZ	N	FN	FN
Std. range page	109	114	111	168	117	118	124	120	131	131	115	122	122

v_c m/min	81210	81317	81310	82210	81320	81330	81350	81340	v_c m/min	84814 Feed col. no.	v_c m/min	84812 Feed col. no.	v_c m/min	84418	84423	v_c m/min	84506 Feed col. no.
	Feed column no.													Feed column no.			
24	6	6	6	6				**6**	*29*	5	32	5	*28*	6	**6**	*30*	**7**
20	5	5	5	5				**5**	*22*	4	25	4	*22*	5	**5**	*24*	**6**
27	6	6	6	6				**6**	*32*	5	35	5	*30*	6	**6**	*33*	**7**
27	5	5	5	5				5	*25*	5	28	5	*30*	5	5	*33*	6
22	5	5	5	5				**5**	*25*	5	28	5	*25*	5	**5**	*28*	**6**
22	5	5	5	5				**5**	*22*	5	25	5	*25*	5	**5**	*28*	**6**
									13	4	15	4	*22*	4	4	*24*	5
									12	3	13	3	*18*	4	4	*23*	5
									11	2	12	2					
27	6	6	6	6				**6**	*25*	5	28	5	*30*	6	**6**	*33*	**7**
									12	3	14	3	*14*	4	4	*18*	5
									11	2	12	2					
									12	3	13	3	*12*	4	4	*15*	5
									7	2	8	2					
14	4	4	4	4				4	*12*	3	13	9	*16*	4	4	*19*	5
									9	2	10	2	*10*	3	3	*13*	4
									9	2	10	2					
									12	3	13	3					
									7	3	8	3					
									11	3	12	3					
27	6	6	6	6				**6**	*29*	6	32	6	*30*	6	**6**	*33*	**7**
27	6	6	6	6				6	*23*	6	26	6	*30*	6	6	*33*	7
22	6	6	6	6				**6**	*25*	6	28	6	*24*	6	**6**	*26*	**7**
18	6	6	6	6				6	*18*	6	20	6	*20*	6	6	*22*	7
65						**7**	**7**		*45*	7	50	7					
65						**7**	**7**		*45*	7	50	7					
45	7	7	7	7		7		**7**	*54*	7	60	7	*50*	7	**7**	*55*	**8**
45	6	6	6	6				**6**	*45*	6	50	6	*50*	6	**6**	*55*	**7**
63	6	6	6	6	6		**6**		*45*	6	50	6	*70*	6			
54	5	5	5	5		5		**5**	*60*	5	70	5	*60*	5	**5**	*65*	**6**
63					**6**				*40*	5	50	5					
36	5	5	5	5				**5**	*25*	5	28	5	*40*	5	**5**	*44*	**6**
28	4	4	4	4	**4**				*31*	4	35	4	*30*	**4**			
22	4	4	4	4					*22*	4	25	4	*25*	**4**			
22	4	4	4	4				**4**	*22*	4	24	4	*14*	4	**4**	*16*	**5**
									18	4	20	4	*12*	4	4	*14*	5
14	4	4	4	4	4			**4**	*16*	4	18	4	*18*	4	**4**	*23*	**5**
22	5	5	5	5	**5**	5	5		*11*	4	12	4	*32*	5			