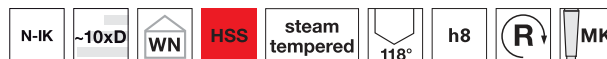


Taper shank twist drills

Twist drills with internal coolant



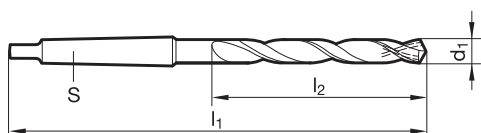
Catalog no. 71554



P	M	K	N	S	H
●	○	●	○		

Application
recomm. p. 188

- web thinning $\geq \varnothing 10.000$
- relieved cone
- also for drilling through drill bushes



d1 mm	S	l1 mm	l2 mm
10.000	MK-2	233.000	116.000
11.000	MK-2	242.000	125.000
12.000	MK-2	251.000	134.000
13.000	MK-2	251.000	134.000
14.000	MK-2	259.000	142.000
15.000	MK-2	264.000	147.000
16.000	MK-2	270.000	153.000
17.000	MK-2	276.000	159.000
18.000	MK-2	282.000	165.000
19.000	MK-3	307.000	171.000
20.000	MK-3	313.000	177.000
21.000	MK-3	320.000	184.000
22.000	MK-3	327.000	191.000
23.000	MK-3	334.000	198.000
24.000	MK-3	342.000	206.000
25.000	MK-3	342.000	206.000
26.000	MK-3	350.000	214.000
27.000	MK-4	385.000	222.000

d1 mm	S	l1 mm	l2 mm
28.000	MK-4	385.000	222.000
29.000	MK-4	393.000	230.000
30.000	MK-4	393.000	230.000
32.000	MK-4	421.000	248.000
33.000	MK-4	421.000	248.000
34.000	MK-4	430.000	257.000
35.000	MK-4	430.000	257.000
40.000	MK-4	450.000	277.000

Application recommendations for drills

Feed column										
Code-letter	A	B	C	D	E	F	G	H	I	
Drill-Ø mm	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

Tools with feed column no. in bold are preferred choices for listed material group.

Lubricants:

- cutting oil, highly activated ■
- soluble oil (emulsion) ■
- without lubricant □
- air only □

Material group	Materials examples, new designations (old designation in brackets) Figures in bold = material no. to DIN EN	Tensile strength MPa (N/mm ²)	Hardness	Coolant
General purpose steels	1.0035 S185(St33), 1.0486 P275N(StE285), 1.0345 P235GH(H1), 1.0425 P265GH(H2) 1.0050 E295 (St50-2), 1.0070 E360 (St70-2), 1.8937 P500NH (WStE500)	≤500 >500-850		■
Free-cutting steels	1.0718 11SMnPb30 (9SMnPb28), 1.0736 11SMn37 (9SMn36) 1.0727 46S20 (45S20), 1.0728 (60S20), 1.0757 46SPb20 (45SPb20)	≤850 850-1000		■
Unalloyed tempering steels	1.0402 C22, 1.1178 C30E (Ck30) 1.0503 C45, 1.1191 C45E (Ck45) 1.0601 C60, 1.1221 C60E (Ck60)	≤ 700 700-850 850-1000		■
Alloyed tempering steels	1.5131 50MnSi4, 1.7003 38Cr2, 1.7030 28Cr4 1.5710 36NiCr6, 1.7035 41Cr4, 1.7225 42CrMo4	850-≤1000 1000-1200		■
Unalloyed case hardened steels	1.0301 (C10), 1.1121 C10E (Ck10)	≤750		■
Alloyed case hardened steels	1.7043 38Cr4 1.5752 15NiCr13 (15NiCr13), 1.7131 16MnCr5, 1.7264 20CrMo5	850-≤1000 1000-1200		■ ■
Nitriding steels	1.8504 34CrAl6 1.8519 31CrMoV9, 1.8550 34CrAlNi7	≥850-≤1000 >1000-1200		■ ■
Tool steels	1.1750 C75W, 1.2067 102Cr6, 1.2307 29CrMoV9 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		■
Spring steels	1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4 (51CrV4)		≤330 HB	■ ■
Hardened steels	-		≤40-48 HRC >48-60 HRC	■ ■
Stainless steels, sulphured austenitic martensitic	1.4005 X12CrS13, 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X8CrNiS18-9 1.4301 X5CrNi18-10 (V2A), 1.4541 X6CrNiTi18-10, 1.4571 X6CrNiMoTi 17-12-2 (V4A) 1.4057 X20CrNi17.2 (X17CrNi16-2), 1.4122 X39CrMo17-1, 1.4521 X2CrMoTi18-2	≤850 ≤850 ≤850		■ ■ ■
Cast iron	0.6010 EN-GJL-100(GG10), 0.6020 EN-GJL-200(GG20) 0.6025 EN-GJL-250(GG25), 0.6035 EN-GJL-350(GG35)	850-≤1000 1000-1200		■ □
Spheroidal graphite iron and malleable cast iron	0.7050 EN-GJS-500-7(GGG50), 0.8035 EN-GJMW-350-4(GTW35) 0.7070 EN-GJS-700-2(GGG70), 0.8170 EN-GJMB-700-2(GTS70)		≤240 HB <300 HB	■ ■
Chilled cast iron	-		≤350 HB	■
New Cast iron GGV	EN-GJV250 (GGV25), EN-GJV350 (GGV35) EN-GJV400 (GGV40), EN-GJV500 (GGV50), SiMo6			■ □
New Cast iron ADI	EN-GJS-800-8 (ADI800), EN-GJS-1000-5 (ADI1000) EN-GJS-1200-2 (ADI1200), EN-GJS-1400-1 (ADI1400)	800-1000 1200-1400		■ □
Special alloys	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Ti and Ti-alloys	3.7024 Ti99.5, 3.7114 TiAl5Sn2.5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7165 TiAl6V4, 3.7184 TiAl4Mo4Sn2.5, - TiAl8Mo1V1	≤850 >850-1200		■ ■
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	≤450		■
Al 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	3.5200 MgMn2, 3.5812.05 G-MgAl8Zn1, 3.5612.05 G-MgAl6Zn1	≤450		□
Copper, low alloyed	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		■ ■
Duroplastics	Epoxy resin, Resopal, Pertinax, Moltopren			- □
Thermoplastics	Plexiglas, Hostalen, Novodur, Makralon			- ■ □
Kevlar	Kevlar			- □
Glass/carbon-concentr. plastics	GFK/CFK			- □

≥10×D drilling depth

Catalog no.	71145 ^① 71146 ^② 71147 ^③	71195 ^① 71196 ^②	71325 ^④ 71326 ^⑤	71192 ^① 71193 ^②	71565 ^⑥ 71566 ^⑦ 71567 ^⑧ 71568 ^⑨	71554 ^⑩
Tool material	HSS	HSS	HSS	HSS-Co	HSS-Co	HSS
Surface finish	bright/nitr.l.	nitr. l.	nitr.l./st.	nitr. l.	steam	steam
DIN/Form	1869	Stock	1870	1869	Stock	Stock
Type	V63	V63	V63	V63	V63-IK	N-IK
Page	282/285/287	288/289	307/308	284/286	312/314/313/315	309

v_c m/min	Feed column no.			v_c m/min	Feed col. no.	v_c m/min	Feed col. no.	v_c m/min	Feed col. no.
22	E	E	E	30	D	30	E	26	F
18	D	D	D	25	D	25	D	22	E
22	E	E	E	33	D	30	E	30	F
18	D	D	D	30	D	25	D	30	E
22	D	D	D	33	D	30	D	24	E
18	D	D	D	33	D	25	D	24	E
				20	C	18	C	22	D
				14	C	16	C	20	D
				10	B	12	B	14	C
22	E	E	E	29	D	30	E	30	F
				14	C	14	C	17	D
				10	B	12	B	12	C
				10	C	12	C	14	D
				8	B	8	B	10	C
12	C	C	C	11	C	16	C	15	D
6	B	B	B	8	B	8	B	10	C
				8	B	8	B	10	C
				5	A	6	A	7	B
				3	A	3	A		
				10	C	12	C		
				8	B	8	B		
				10	B	12	B		
22	E	E	E	30	E	30	E	30	F
18	E	E	E	20	E	25	E	30	F
20	E	E	E	16	E	28	E	24	F
14	E	E	E	16	E	20	E	20	F
				5	B	6	B	7	C
				6	A	6	A		
				6	A	8	B		
				5	A	6	B		
45	F	F	F	50	F	63	F	50	G
36	E	E	E	40	E	50	E	50	F
55	E	E	E						
22	D	D	D	30	D	30	D	60	E
				45	D				
28	D	D	D	30	D	40	D	40	E
22	C	C	C	25	D				
20	C	C	C	20	D	28	D	24	D
18	C	C	C	16	C	25	D	24	D
				10	C	20	D	22	D
				14	C				
12	C	C	C	14	C				
18	D	D	D	20	C	25	D	24	E

