



Tool material

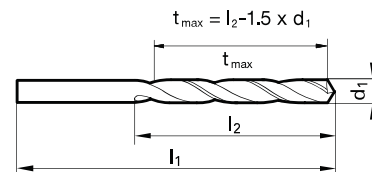
HSS

Surface



P Steel	•	web thinning $\geq \varnothing 2.380$ • relieved cone • for extremely deep holes
M Stainless steel		
K Cast iron	•	alloyed/unalloyed steel and cast steel • grey cast iron, malleable and spheroidal iron • sintered powder metal, German silver and graphite
N Aluminum	○	
S Titanium alloys		
H Hardened steel		

•=Optimal
○=Limited



Speeds and feeds information on pg. 481

Shank diameter = cut diameter

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.0630		1.600	115.00	72.60	75.00	9002350016000
0.0709		1.800	120.00	77.30	80.00	9002350018000
0.0748		1.900	120.00	77.15	80.00	9002350019000
0.0768		1.950	125.00	82.08	85.00	9002350019500
0.0787		2.000	125.00	82.00	85.00	9002350020000
0.0807		2.050	125.00	81.93	85.00	9002350020500
0.0827		2.100	125.00	81.85	85.00	9002350021000
0.0866		2.200	135.00	86.70	90.00	9002350022000
0.0906		2.300	135.00	86.55	90.00	9002350023000
0.0937	3/32	2.380	140.00	91.43	95.00	9002350023800
0.0945		2.400	140.00	91.40	95.00	9002350024000
0.0984		2.500	140.00	91.25	95.00	9002350025000
0.1024		2.600	140.00	91.10	95.00	9002350026000
0.1063		2.700	150.00	95.95	100.00	9002350027000
0.1094	7/64	2.780	150.00	95.83	100.00	9002350027800
0.1102		2.800	150.00	95.80	100.00	9002350028000
0.1142		2.900	150.00	95.65	100.00	9002350029000
0.1181		3.000	150.00	95.50	100.00	9002350030000
0.1220		3.100	155.00	100.35	105.00	9002350031000
0.1248	1/8	3.170	155.00	100.25	105.00	9002350031700
0.1260		3.200	155.00	100.20	105.00	9002350032000
0.1280		3.250	155.00	100.13	105.00	9002350032500
0.1299		3.300	155.00	100.05	105.00	9002350033000
0.1339		3.400	165.00	109.90	115.00	9002350034000
0.1378		3.500	165.00	109.75	115.00	9002350035000
0.1406	9/64 #28	3.570	165.00	109.65	115.00	9002350035700
0.1417		3.600	165.00	109.60	115.00	9002350036000
0.1457		3.700	165.00	109.45	115.00	9002350037000
0.1496	#25	3.800	175.00	114.30	120.00	9002350038000
0.1535		3.900	175.00	114.15	120.00	9002350039000
0.1563	5/32	3.970	175.00	114.05	120.00	9002350039700
0.1575		4.000	175.00	114.00	120.00	9002350040000
0.1614		4.100	175.00	113.85	120.00	9002350041000
0.1654		4.200	175.00	113.70	120.00	9002350042000
0.1693	#18	4.300	185.00	118.55	125.00	9002350043000
0.1720	11/64	4.370	185.00	118.45	125.00	9002350043700
0.1732		4.400	185.00	118.40	125.00	9002350044000
0.1772	#16	4.500	185.00	118.25	125.00	9002350045000
0.1811		4.600	185.00	118.10	125.00	9002350046000
0.1850	#13	4.700	185.00	117.95	125.00	9002350047000
0.1874	3/16	4.760	195.00	127.86	135.00	9002350047600
0.1890	#12	4.800	195.00	127.80	135.00	9002350048000

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.1929		4.900	195.00	127.65	135.00	9002350049000
0.1969		5.000	195.00	127.50	135.00	9002350050000
0.2008		5.100	195.00	127.35	135.00	9002350051000
0.2047		5.200	195.00	127.20	135.00	9002350052000
0.2087		5.300	195.00	127.05	135.00	9002350053000
0.2126		5.400	205.00	131.90	140.00	9002350054000
0.2165		5.500	205.00	131.75	140.00	9002350055000
0.2189	7/32	5.560	205.00	131.66	140.00	9002350055600
0.2205		5.600	205.00	131.60	140.00	9002350056000
0.2244		5.700	205.00	131.45	140.00	9002350057000
0.2283		5.800	205.00	131.30	140.00	9002350058000
0.2323		5.900	205.00	131.15	140.00	9002350059000
0.2343	15/64	5.950	205.00	131.08	140.00	9002350059500
0.2362		6.000	205.00	131.00	140.00	9002350060000
0.2402		6.100	215.00	140.85	150.00	9002350061000
0.2441		6.200	215.00	140.70	150.00	9002350062000
0.2480		6.300	215.00	140.55	150.00	9002350063000
0.2500	1/4 E	6.350	215.00	140.48	150.00	9002350063500
0.2520		6.400	215.00	140.40	150.00	9002350064000
0.2559		6.500	215.00	140.25	150.00	9002350065000
0.2598		6.600	215.00	140.10	150.00	9002350066000
0.2638		6.700	215.00	139.95	150.00	9002350067000
0.2657	17/64 H	6.750	225.00	144.88	155.00	9002350067500
0.2677		6.800	225.00	144.80	155.00	9002350068000
0.2756		7.000	225.00	144.50	155.00	9002350070000
0.2795		7.100	225.00	144.35	155.00	9002350071000
0.2811	9/32 K	7.140	225.00	144.29	155.00	9002350071400
0.2835		7.200	225.00	144.20	155.00	9002350072000
0.2913		7.400	225.00	143.90	155.00	9002350074000
0.2953		7.500	225.00	143.75	155.00	9002350075000
0.2969	19/64	5.950	240.00	153.69	165.00	9002350075400
0.3031		7.700	240.00	153.45	165.00	9002350077000
0.3071		7.800	240.00	153.30	165.00	9002350078000
0.3110		7.900	240.00	153.15	165.00	9002350079000
0.3126	5/16	7.940	240.00	153.09	165.00	9002350079400
0.3150		8.000	240.00	153.00	165.00	9002350080000
0.3189		8.100	240.00	152.85	165.00	9002350081000
0.3228	P	8.200	240.00	152.70	165.00	9002350082000
0.3268		8.300	240.00	152.55	165.00	9002350083000
0.3280	21/64	8.330	240.00	152.51	165.00	9002350083300
0.3307		8.400	240.00	152.40	165.00	9002350084000
0.3346		8.500	240.00	152.25	165.00	9002350085000

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.3386		8.600	250.00	162.10	175.00	9002350086000
0.3425		8.700	250.00	161.95	175.00	9002350087000
0.3437	11/32	8.730	250.00	161.91	175.00	9002350087300
0.3465		8.800	250.00	161.80	175.00	9002350088000
0.3543		9.000	250.00	161.50	175.00	9002350090000
0.3594	23/64	9.130	250.00	161.31	175.00	9002350091300
0.3740		9.500	250.00	160.75	175.00	9002350095000
0.3748	3/8	9.520	265.00	170.72	185.00	9002350095200
0.3780		9.600	265.00	170.60	185.00	9002350096000
0.3819		9.700	265.00	170.45	185.00	9002350097000
0.3858	W	9.800	265.00	170.30	185.00	9002350098000
0.3898		9.900	265.00	170.15	185.00	9002350099000

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.3937		10.000	265.00	170.00	185.00	9002350100000
0.4063	13/32	10.320	265.00	169.52	185.00	9002350103200
0.4134		10.500	265.00	169.25	185.00	9002350105000
0.4331		11.000	280.00	178.50	195.00	9002350110000
0.4374	7/16	11.110	280.00	178.34	195.00	9002350111100
0.4528		11.500	280.00	177.75	195.00	9002350115000
0.4724		12.000	295.00	187.00	205.00	9002350120000
0.4764		12.100	295.00	186.85	205.00	9002350121000
0.4843	31/64	12.300	295.00	186.55	205.00	9002350123000
0.4921		12.500	295.00	186.25	205.00	9002350125000
0.5000	1/2	12.700	295.00	185.95	205.00	9002350127000
0.5118		13.000	295.00	185.50	205.00	9002350130000

Material group	Hardness		SFM	Feed Rate - IPR									
	HRc	Bhn		1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	70 55	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	70 55	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	70 55	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35	0.0010	0.0025	0.0040	0.0050	0.0065					
Unalloyed case hardened steels	≤ 25	≤ 255	70	0.0015	0.0040	0.0065	0.0080	0.0100					
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	30	0.0010	0.0025	0.0040	0.0050	0.0065					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	25	0.0010	0.0025	0.0040	0.0050	0.0065					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	35 15	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050					
High speed steels	≤ 43	≤ 402	15	0.0007	0.0020	0.0030	0.0040	0.0050					
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	25	0.001	0.0025	0.0040	0.0050	0.0065					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	70 55	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	65 45	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100					
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	-	≤ 180 ≤ 180	145 115	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100					
Magnesium alloys	-	≤ 120	180	0.0015	0.0040	0.0065	0.0080	0.0100					
Copper, low-alloyed	-	≤ 150	70	0.0012	0.0030	0.0050	0.0065	0.0080					
Brass, short-chipping	-	≤ 180	145	0.0012	0.0030	0.0050	0.0065	0.0080					
long-chipping	-	≤ 180	90	0.0012	0.0030	0.0050	0.0065	0.0080					
Bronze, short-chipping	-	≤ 180	70	0.0010	0.0025	0.0040	0.0050	0.0065					
long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	65 45	0.0010 0.0010	0.0025 0.0025	0.0040 0.0040	0.0050 0.0050	0.0065 0.0065					
Duroplastics			35	0.0010	0.0025	0.0040	0.0050	0.0065					
Thermoplastics			55	0.0012	0.0030	0.0050	0.0065	0.0080					
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													

Material group	Hardness		SFM	Feed Rate - IPR									
	HRc	Bhn		1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	100 80		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125	0.0200 0.0160	0.0245 0.0200
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	100 80		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125	0.0200 0.0160	0.0245 0.0200
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	100 80		0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255	100		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160	0.0200	0.0245
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	50		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	0.0160
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435											
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	100 80		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200	0.0245 0.0245
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	90 65		0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200	0.0245 0.0245
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	-	≤ 180 ≤ 180	205 160		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160	0.0245 0.0200	0.0290 0.0245
Magnesium alloys	-	≤ 120	260		0.0050	0.0080	0.0100	0.0125	0.0125	0.0140	0.0160	0.0200	0.0245
Copper, low-alloyed	-	≤ 150	100		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125	0.0160	0.0200
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180	130		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125	0.0160	0.0200
Bronze, short-chipping	-	≤ 180	100		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	0.0160
long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	90 80		0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160
Duroplastics			50		0.0030	0.0050	0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	0.0160
Thermoplastics			80		0.0040	0.0065	0.0080	0.0100	0.0100	0.0110	0.0125	0.0160	0.0200
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													