



Tool material

HSCO

Surface

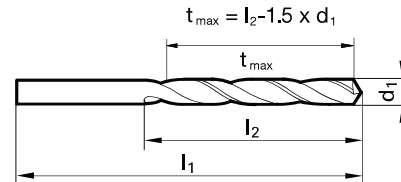


P	Steel	○
M	Stainless steel	●
K	Cast iron	
N	Aluminum	
S	Titanium alloys	●
H	Hardened steel	

●=Optimal
○=Limited

web thinning $\geq \varnothing 1.000$ • relieved cone split point • Co-alloyed high speed steel
• increased wear resistance

Titanium and Titanium alloys • stainless/acid-/heat-resistant austenitic steels • high tensile/short chipping steels over 900 N/mm² • Hastelloy, Inconel, Nimonic



Speeds and feeds information on pg. 536

Shank diameter = cut diameter

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.0157	1/64	0.40	20.00	4.40	5.00	9024580004000
0.0394		1.00	34.00	10.50	12.00	9024580010000
0.0433		1.10	36.00	12.35	14.00	9024580011000
0.0469	3/64	1.19	38.00	14.22	16.00	9024580011900
0.0472		1.20	38.00	14.20	16.00	9024580012000
0.0512		1.30	38.00	14.05	16.00	9024580013000
0.0551	#54	1.40	40.00	15.90	18.00	9024580014000
0.0591		1.50	40.00	15.75	18.00	9024580015000
0.0598		1.52	43.00	17.72	20.00	9024580015200
0.0602		1.53	43.00	17.71	20.00	9024580015300
0.0626	1/16	1.59	43.00	17.62	20.00	9024580015900
0.0630		1.60	43.00	17.60	20.00	9024580016000
0.0650		1.65	43.00	17.53	20.00	9024580016500
0.0669	#51	1.70	43.00	17.45	20.00	9024580017000
0.0709		1.80	46.00	19.30	22.00	9024580018000
0.0748		1.90	46.00	19.15	22.00	9024580019000
0.0780	5/64	1.98	49.00	21.03	24.00	9024580019800
0.0787		2.00	49.00	21.00	24.00	9024580020000
0.0807		2.05	49.00	20.93	24.00	9024580020500
0.0827		2.10	49.00	20.85	24.00	9024580021000
0.0866		2.20	53.00	23.70	27.00	9024580022000
0.0906		2.30	53.00	23.55	27.00	9024580023000
0.0933	#44	2.37	57.00	26.45	30.00	9024580023700
0.0937	3/32	2.38	57.00	26.43	30.00	9024580023800
0.0945		2.40	57.00	26.40	30.00	9024580024000
0.0984		2.50	57.00	26.25	30.00	9024580025000
0.1024		2.60	57.00	26.10	30.00	9024580026000
0.1063		2.70	61.00	28.95	33.00	9024580027000
0.1083		2.75	61.00	28.88	33.00	9024580027500
0.1094	7/64	2.78	61.00	28.83	33.00	9024580027800
0.1102		2.80	61.00	28.80	33.00	9024580028000
0.1142		2.90	61.00	28.65	33.00	9024580029000
0.1181		3.00	61.00	28.50	33.00	9024580030000
0.1220		3.10	65.00	31.35	36.00	9024580031000
0.1248	1/8	3.17	65.00	31.25	36.00	9024580031700
0.1260		3.20	65.00	31.20	36.00	9024580032000
0.1280		3.25	65.00	31.13	36.00	9024580032500
0.1299		3.30	65.00	31.05	36.00	9024580033000
0.1339		3.40	70.00	33.90	39.00	9024580034000
0.1378		3.50	70.00	33.75	39.00	9024580035000
0.1406	9/64 #28	3.57	70.00	33.65	39.00	9024580035700
0.1417		3.60	70.00	33.60	39.00	9024580036000

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.1457		3.70	70.00	33.45	39.00	9024580037000
0.1496	#25	3.80	75.00	37.30	43.00	9024580038000
0.1535		3.90	75.00	37.15	43.00	9024580039000
0.1563	5/32	3.97	75.00	37.05	43.00	9024580039700
0.1575		4.00	75.00	37.00	43.00	9024580040000
0.1614		4.10	75.00	36.85	43.00	9024580041000
0.1634		4.15	75.00	36.78	43.00	9024580041500
0.1654		4.20	75.00	36.70	43.00	9024580042000
0.1661		4.22	75.00	36.67	43.00	9024580042200
0.1693	#18	4.30	80.00	40.55	47.00	9024580043000
0.1720	11/64	4.37	80.00	40.45	47.00	9024580043700
0.1732		4.40	80.00	40.40	47.00	9024580044000
0.1772	#16	4.50	80.00	40.25	47.00	9024580045000
0.1811		4.60	80.00	40.10	47.00	9024580046000
0.1850	#13	4.70	80.00	39.95	47.00	9024580047000
0.1874	3/16	4.76	86.00	44.86	52.00	9024580047600
0.1890	#12	4.80	86.00	44.80	52.00	9024580048000
0.1929		4.90	86.00	44.65	52.00	9024580049000
0.1969		5.00	86.00	44.50	52.00	9024580050000
0.1988		5.05	86.00	44.43	52.00	9024580050500
0.2008		5.10	86.00	44.35	52.00	9024580051000
0.2031	13/64	5.16	86.00	44.26	52.00	9024580051600
0.2047		5.20	86.00	44.20	52.00	9024580052000
0.2087		5.30	86.00	44.05	52.00	9024580053000
0.2126		5.40	93.00	48.90	57.00	9024580054000
0.2165		5.50	93.00	48.75	57.00	9024580055000
0.2189	7/32	5.56	93.00	48.66	57.00	9024580055600
0.2205		5.60	93.00	48.60	57.00	9024580056000
0.2244		5.70	93.00	48.45	57.00	9024580057000
0.2283		5.80	93.00	48.30	57.00	9024580058000
0.2323		5.90	93.00	48.15	57.00	9024580059000
0.2343	15/64	5.95	93.00	48.08	57.00	9024580059500
0.2362		6.00	93.00	48.00	57.00	9024580060000
0.2402		6.10	101.00	53.85	63.00	9024580061000
0.2441		6.20	101.00	53.70	63.00	9024580062000
0.2480		6.30	101.00	53.55	63.00	9024580063000
0.2500	1/4 E	6.35	101.00	53.48	63.00	9024580063500
0.2520		6.40	101.00	53.40	63.00	9024580064000
0.2559		6.50	101.00	53.25	63.00	9024580065000
0.2598		6.60	101.00	53.10	63.00	9024580066000
0.2638		6.70	101.00	52.95	63.00	9024580067000
0.2657	17/64 H	6.75	109.00	58.88	69.00	9024580067500

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.2677		6.80	109.00	58.80	69.00	9024580068000
0.2717	I	6.90	109.00	58.65	69.00	9024580069000
0.2756		7.00	109.00	58.50	69.00	9024580070000
0.2795		7.10	109.00	58.35	69.00	9024580071000
0.2811	9/32 K	7.14	109.00	58.29	69.00	9024580071400
0.2835		7.20	109.00	58.20	69.00	9024580072000
0.2874		7.30	109.00	58.05	69.00	9024580073000
0.2913		7.40	109.00	57.90	69.00	9024580074000
0.2953		7.50	109.00	57.75	69.00	9024580075000
0.2969	19/64	7.54	117.00	63.69	75.00	9024580075400
0.2992		7.60	117.00	63.60	75.00	9024580076000
0.3031		7.70	117.00	63.45	75.00	9024580077000
0.3071		7.80	117.00	63.30	75.00	9024580078000
0.3110		7.90	117.00	63.15	75.00	9024580079000
0.3126	5/16	7.94	117.00	63.09	75.00	9024580079400
0.3150		8.00	117.00	63.00	75.00	9024580080000
0.3189		8.10	117.00	62.85	75.00	9024580081000
0.3228	P	8.20	117.00	62.70	75.00	9024580082000
0.3268		8.30	117.00	62.55	75.00	9024580083000
0.3280	21/64	8.33	117.00	62.51	75.00	9024580083300
0.3307		8.40	117.00	62.40	75.00	9024580084000
0.3346		8.50	117.00	62.25	75.00	9024580085000
0.3386		8.60	125.00	68.10	81.00	9024580086000
0.3425		8.70	125.00	67.95	81.00	9024580087000
0.3437	11/32	8.73	125.00	67.91	81.00	9024580087300
0.3465		8.80	125.00	67.80	81.00	9024580088000
0.3504		8.90	125.00	67.65	81.00	9024580089000
0.3543		9.00	125.00	67.50	81.00	9024580090000
0.3583		9.10	125.00	67.35	81.00	9024580091000
0.3594	23/64	9.13	125.00	67.31	81.00	9024580091300
0.3622		9.20	125.00	67.20	81.00	9024580092000
0.3661		9.30	125.00	67.05	81.00	9024580093000
0.3701		9.40	125.00	66.90	81.00	9024580094000

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.3740		9.50	125.00	66.75	81.00	9024580095000
0.3748	3/8	9.52	133.00	72.72	87.00	9024580095200
0.3780		9.60	133.00	72.60	87.00	9024580096000
0.3819		9.70	133.00	72.45	87.00	9024580097000
0.3858	W	9.80	133.00	72.30	87.00	9024580098000
0.3898		9.90	133.00	72.15	87.00	9024580099000
0.3906	25/64	9.92	133.00	72.12	87.00	9024580099200
0.3937		10.00	133.00	72.00	87.00	9024580100000
0.3976		10.10	133.00	71.85	87.00	9024580101000
0.4016		10.20	133.00	71.70	87.00	9024580102000
0.4055		10.30	133.00	71.55	87.00	9024580103000
0.4063	13/32	10.32	133.00	71.52	87.00	9024580103200
0.4094		10.40	133.00	71.40	87.00	9024580104000
0.4134		10.50	133.00	71.25	87.00	9024580105000
0.4220	27/64	10.72	142.00	77.92	94.00	9024580107200
0.4252		10.80	142.00	77.80	94.00	9024580108000
0.4331		11.00	142.00	77.50	94.00	9024580110000
0.4374	7/16	11.11	142.00	77.34	94.00	9024580111100
0.4409		11.20	142.00	77.20	94.00	9024580112000
0.4528		11.50	142.00	76.75	94.00	9024580115000
0.4531	29/64	11.51	142.00	76.74	94.00	9024580115100
0.4689	15/32	11.91	151.00	83.14	101.00	9024580119100
0.4724		12.00	151.00	83.00	101.00	9024580120000
0.4843	31/64	12.30	151.00	82.55	101.00	9024580123000
0.4921		12.50	151.00	82.25	101.00	9024580125000
0.5000	1/2	12.70	151.00	81.95	101.00	9024580127000
0.5118		13.00	151.00	81.50	101.00	9024580130000
0.5157	33/64	13.10	151.00	81.35	101.00	9024580131000
0.5311	17/32	13.49	160.00	87.77	108.00	9024580134900
0.5512		14.00	160.00	87.00	108.00	9024580140000
0.5626	9/16	14.29	169.00	92.57	114.00	9024580142900
0.5709		14.50	169.00	92.25	114.00	9024580145000
0.5906		15.00	169.00	91.50	114.00	9024580150000

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	325 275		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	360 275		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	295 275 260		0.0050 0.0050 0.0050	0.0080 0.0080 0.0080	0.0100 0.0100 0.0100	0.0125 0.0125 0.0125	0.0125 0.0125 0.0125				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	260 245		0.0050 0.0040	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100				
Unalloyed case hardened steels	≤ 25	≤ 255	325		0.0065	0.0100	0.0125	0.0160	0.0160				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	295 210		0.0050 0.0030	0.0080 0.0050	0.0100 0.0065	0.0125 0.0080	0.0125 0.0080				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	245 225		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	160 130		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080				
High speed steels	≤ 43	≤ 402	130		0.0025	0.0040	0.0050	0.0065	0.0065				
Spring steels	≤ 38	≤ 354	110		0.0020	0.0030	0.0040	0.0050	0.0050				
Hardened steels	≤ 48 ≤ 66	≤ 460 -	110 65		0.0020 0.0015	0.0030 0.0025	0.0040 0.0030	0.0050 0.0040	0.0050 0.0040				
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	115 110 110		0.0025 0.0025 0.0020	0.0040 0.0040 0.0030	0.0050 0.0050 0.0040	0.0065 0.0065 0.0050	0.0065 0.0065 0.0050				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	520 390		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	390 310		0.0065 0.0065	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160				
Chilled cast iron	≤ 38	≤ 354	80		0.0020	0.0030	0.0040	0.0050	0.0050				
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	65		0.0025	0.0040	0.0050	0.0065	0.0065				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	95 80		0.0020 0.0020	0.0030 0.0030	0.0040 0.0040	0.0050 0.0050	0.0050 0.0050				
Aluminium and Al-alloys	-	≤ 120	655		0.0080	0.0125	0.0160	0.0200	0.0200				
Al wrought alloys	-	≤ 200	655		0.0080	0.0125	0.0160	0.0200	0.0200				
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	555 455		0.0080 0.0065	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160				
Magnesium alloys	-	≤ 120	655		0.0065	0.0100	0.0125	0.0160	0.0160				
Copper, low-alloyed	-	≤ 150	260		0.0050	0.0080	0.0100	0.0125	0.0125				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	685 455		0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Bronze, short-chipping	-	≤ 180	260		0.0040	0.0065	0.0080	0.0100	0.0100				
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	210 195 145		0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080				
Duroplastics Thermoplastics 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											
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301											
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301											
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	75	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	55	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
High speed steels	≤ 43	≤ 402	55	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Spring steels	≤ 38	≤ 354	40	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Hardened steels	≤ 48 ≤ 66	≤ 460 -	20	0.0005	0.0015	0.0025	0.0030	0.0040	0.0040				
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	75 60 65	0.0012 0.0010 0.0010	0.0030 0.0025 0.0025	0.0050 0.0040 0.0040	0.0065 0.0050 0.0050	0.0080 0.0065 0.0065	0.0080 0.0065 0.0065				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354	40	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	30	0.0005	0.0015	0.0025	0.0030	0.0040	0.0040				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	50 30	0.0007 0.0007	0.0020 0.0020	0.0030 0.0030	0.0040 0.0040	0.0050 0.0050	0.0050 0.0050				
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180											
Bronze, short-chipping	-	≤ 180											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	100	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK													