



Tool material

HSCo

Surface



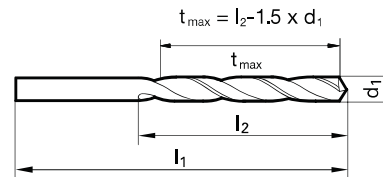
P	Steel	○
M	Stainless steel	●
K	Cast iron	
N	Aluminum	
S	Titanium alloys	●
H	Hardened steel	

●=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 • antifriction bearing steels • Hastelloy, Inconel, Nimonic



Speeds and feeds information on pg. 513

Shank diameter = cut diameter

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.0394		1.00	56.00	31.50	33.00	9006170010000
0.0433		1.10	60.00	35.35	37.00	9006170011000
0.0472		1.20	65.00	39.20	41.00	9006170012000
0.0512		1.30	65.00	39.05	41.00	9006170013000
0.0551	#54	1.40	70.00	42.90	45.00	9006170014000
0.0571		1.45	70.00	42.83	45.00	9006170014500
0.0591		1.50	70.00	42.75	45.00	9006170015000
0.0626	1/16	1.59	76.00	47.62	50.00	9006170015900
0.0630		1.60	76.00	47.60	50.00	9006170016000
0.0634	#52	1.61	76.00	47.59	50.00	9006170016100
0.0650		1.65	76.00	47.53	50.00	9006170016500
0.0669	#51	1.70	76.00	47.45	50.00	9006170017000
0.0689		1.75	80.00	50.38	53.00	9006170017500
0.0709		1.80	80.00	50.30	53.00	9006170018000
0.0728	#49	1.85	80.00	50.23	53.00	9006170018500
0.0748		1.90	80.00	50.15	53.00	9006170019000
0.0760	#48	1.93	85.00	53.11	56.00	9006170019300
0.0768		1.95	85.00	53.08	56.00	9006170019500
0.0780	5/64	1.98	85.00	53.03	56.00	9006170019800
0.0787		2.00	85.00	53.00	56.00	9006170020000
0.0807		2.05	85.00	52.93	56.00	9006170020500
0.0827		2.10	85.00	52.85	56.00	9006170021000
0.0846		2.15	90.00	55.78	59.00	9006170021500
0.0866		2.20	90.00	55.70	59.00	9006170022000
0.0890	#43	2.26	90.00	55.61	59.00	9006170022600
0.0906		2.30	90.00	55.55	59.00	9006170023000
0.0937	3/32	2.38	95.00	58.43	62.00	9006170023800
0.0945		2.40	95.00	58.40	62.00	9006170024000
0.0965		2.45	95.00	58.33	62.00	9006170024500
0.0984		2.50	95.00	58.25	62.00	9006170025000
0.1004		2.55	95.00	58.18	62.00	9006170025500
0.1024		2.60	95.00	58.10	62.00	9006170026000
0.1063		2.70	100.00	61.95	66.00	9006170027000
0.1094	7/64	2.78	100.00	61.83	66.00	9006170027800
0.1102		2.80	100.00	61.80	66.00	9006170028000
0.1142		2.90	100.00	61.65	66.00	9006170029000
0.1181		3.00	100.00	61.50	66.00	9006170030000
0.1201	#31	3.05	106.00	64.43	69.00	9006170030500
0.1220		3.10	106.00	64.35	69.00	9006170031000
0.1248	1/8	3.17	106.00	64.25	69.00	9006170031700
0.1260		3.20	106.00	64.20	69.00	9006170032000
0.1280		3.25	106.00	64.13	69.00	9006170032500
0.1299		3.30	106.00	64.05	69.00	9006170033000
0.1339		3.40	112.00	67.90	73.00	9006170034000

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.1358	#29	3.45	112.00	67.83	73.00	9006170034500
0.1378		3.50	112.00	67.75	73.00	9006170035000
0.1406	9/64	#28	112.00	67.65	73.00	9006170035700
0.1417		3.60	112.00	67.60	73.00	9006170036000
0.1457		3.70	112.00	67.45	73.00	9006170037000
0.1496	#25	3.80	119.00	72.30	78.00	9006170038000
0.1535		3.90	119.00	72.15	78.00	9006170039000
0.1563	5/32	3.97	119.00	72.05	78.00	9006170039700
0.1575		4.00	119.00	72.00	78.00	9006170040000
0.1594		4.05	119.00	71.93	78.00	9006170040500
0.1614		4.10	119.00	71.85	78.00	9006170041000
0.1654		4.20	119.00	71.70	78.00	9006170042000
0.1693	#18	4.30	126.00	75.55	82.00	9006170043000
0.1732		4.40	126.00	75.40	82.00	9006170044000
0.1772	#16	4.50	126.00	75.25	82.00	9006170045000
0.1811		4.60	126.00	75.10	82.00	9006170046000
0.1850	#13	4.70	126.00	74.95	82.00	9006170047000
0.1874	3/16	4.76	132.00	79.86	87.00	9006170047600
0.1890	#12	4.80	132.00	79.80	87.00	9006170048000
0.1929		4.90	132.00	79.65	87.00	9006170049000
0.1949		4.95	132.00	79.58	87.00	9006170049500
0.1969		5.00	132.00	79.50	87.00	9006170050000
0.2008		5.10	132.00	79.35	87.00	9006170051000
0.2031	13/64	5.16	132.00	79.26	87.00	9006170051600
0.2047		5.20	132.00	79.20	87.00	9006170052000
0.2087		5.30	132.00	79.05	87.00	9006170053000
0.2126		5.40	139.00	82.90	91.00	9006170054000
0.2165		5.50	139.00	82.75	91.00	9006170055000
0.2205		5.60	139.00	82.60	91.00	9006170056000
0.2244		5.70	139.00	82.45	91.00	9006170057000
0.2283		5.80	139.00	82.30	91.00	9006170058000
0.2362		6.00	139.00	82.00	91.00	9006170060000
0.2402		6.10	148.00	87.85	97.00	9006170061000
0.2441		6.20	148.00	87.70	97.00	9006170062000
0.2480		6.30	148.00	87.55	97.00	9006170063000
0.2500	1/4	E	148.00	87.48	97.00	9006170063500
0.2520		6.40	148.00	87.40	97.00	9006170064000
0.2559		6.50	148.00	87.25	97.00	9006170065000
0.2598		6.60	148.00	87.10	97.00	9006170066000
0.2638		6.70	148.00	86.95	97.00	9006170067000
0.2657	17/64	H	156.00	91.88	102.00	9006170067500
0.2677		6.80	156.00	91.80	102.00	9006170068000
0.2717	I	6.90	156.00	91.65	102.00	9006170069000
0.2756		7.00	156.00	91.50	102.00	9006170070000

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.2795		7.10	156.00	91.35	102.00	9006170071000
0.2811	9/32 K	7.14	156.00	91.29	102.00	9006170071400
0.2913		7.40	156.00	90.90	102.00	9006170074000
0.2953		7.50	156.00	90.75	102.00	9006170075000
0.2969	19/64	7.54	165.00	97.69	109.00	9006170075400
0.3031		7.70	165.00	97.45	109.00	9006170077000
0.3071		7.80	165.00	97.30	109.00	9006170078000
0.3126	5/16	7.94	165.00	97.09	109.00	9006170079400
0.3150		8.00	165.00	97.00	109.00	9006170080000
0.3189		8.10	165.00	96.85	109.00	9006170081000
0.3228	P	8.20	165.00	96.70	109.00	9006170082000
0.3268		8.30	165.00	96.55	109.00	9006170083000
0.3280	21/64	8.33	165.00	96.51	109.00	9006170083300
0.3307		8.40	165.00	96.40	109.00	9006170084000
0.3346		8.50	165.00	96.25	109.00	9006170085000
0.3386		8.60	175.00	102.10	115.00	9006170086000
0.3425		8.70	175.00	101.95	115.00	9006170087000

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.3437	11/32	8.73	175.00	101.91	115.00	9006170087300
0.3465		8.80	175.00	101.80	115.00	9006170088000
0.3543		9.00	175.00	101.50	115.00	9006170090000
0.3583		9.10	175.00	101.35	115.00	9006170091000
0.3740		9.50	175.00	100.75	115.00	9006170095000
0.3748	3/8	9.52	184.00	106.72	121.00	9006170095200
0.3858	W	9.80	184.00	106.30	121.00	9006170098000
0.3937		10.00	184.00	106.00	121.00	9006170100000
0.4016		10.20	184.00	105.70	121.00	9006170102000
0.4134		10.50	184.00	105.25	121.00	9006170105000
0.4331		11.00	195.00	111.50	128.00	9006170110000
0.4374	7/16	11.11	195.00	111.34	128.00	9006170111100
0.4531	29/64	11.51	195.00	110.74	128.00	9006170115100
0.4724		12.00	205.00	116.00	134.00	9006170120000
0.4921		12.50	205.00	115.25	134.00	9006170125000
0.5118		13.00	205.00	114.50	134.00	9006170130000
0.5906		15.00	220.00	121.50	144.00	9006170150000

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	35	0,0010	0,0025	0,0040	0,0050	0,0065					
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402											
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402											
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	35 25 30	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					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354											
Chilled cast iron	≤ 38	≤ 354	15	0,0010	0,0025	0,0040	0,0050	0,0065					
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	15	0,0005	0,0015	0,0025	0,0030	0,0040					
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	25 15	0,0007 0,0007	0,0020 0,0020	0,0030 0,0030	0,0040 0,0040	0,0050 0,0050					
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180											
≤ 24 % Si	-	≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180											
Bronze, short-chipping	-	≤ 180											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			65	0,0012	0,0030	0,0050	0,0065	0,0080					

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	65		0,0030	0,0050	0,0065	0,0080					
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	45		0,0025	0,0040	0,0050	0,0065					
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 30		0,0025 0,0020	0,0040 0,0030	0,0050 0,0040	0,0065 0,0050					
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35 30		0,0025 0,0020	0,0040 0,0030	0,0050 0,0040	0,0065 0,0050					
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	30 25		0,0025 0,0020	0,0040 0,0030	0,0050 0,0040	0,0065 0,0050					
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	45 25		0,0025 0,0020	0,0040 0,0030	0,0050 0,0040	0,0065 0,0050					
High speed steels	≤ 43	≤ 402	25		0,0020	0,0030	0,0040	0,0050					
Spring steels	≤ 38	≤ 354	15		0,0015	0,0025	0,0030	0,0040					
Hardened steels	≤ 48 ≤ 66	≤ 460 -	5		0,0015	0,0025	0,0030	0,0040					
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	30 25 30		0,0025 0,0020 0,0020	0,0040 0,0030 0,0030	0,0050 0,0040 0,0040	0,0065 0,0050 0,0050					
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	65		0,0040	0,0065	0,0080	0,0100					
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	50		0,0040	0,0065	0,0080	0,0100					
Chilled cast iron	≤ 38	≤ 354	15		0,0020	0,0030	0,0040	0,0050					
New cast materials GGV	≤ 20 ≤ 32	≤ 220 ≤ 301											
New cast materials ADI	≤ 32 ≤ 43	≤ 301 ≤ 402											
Special alloys	≤ 54	≤ 549	15		0,0015	0,0025	0,0030	0,0040					
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	25 15		0,0015 0,0015	0,0025 0,0025	0,0030 0,0030	0,0040 0,0040					
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180	160		0,0050	0,0080	0,0100	0,0125					
≤ 24 % Si	-	≤ 180	130		0,0040	0,0065	0,0080	0,0100					
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150	75		0,0030	0,0050	0,0065	0,0080					
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180	95		0,0030	0,0050	0,0065	0,0080					
Bronze, short-chipping	-	≤ 180											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	65 50		0,0025 0,0025	0,0040 0,0040	0,0050 0,0050	0,0065 0,0065					
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			45		0,0025	0,0040	0,0050	0,0065					