



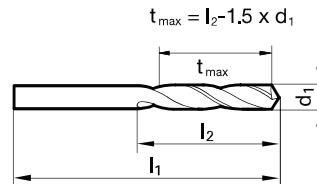
Tool material **HSCo**

Surface **S**

Stub Length

P Steel	•	web thinning ≥ Ø 1.000 • relieved cone • PM-Co-alloyed high speed steel • especially high rigidity • especially high wear resistance
M Stainless steel	•	
K Cast iron	•	
N Aluminum	○	high-alloyed steels • heat treatable and case hardened steels
S Titanium alloys	•	• cast iron, brass, bronze
H Hardened steel	○	

•=Optimal
○=Limited



Speeds and feeds information on pg. 554

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	26.00	4.50	6.00	9055210010000
0.0433		1.10	28.00	5.35	7.00	9055210011000
0.0472		1.20	30.00	6.20	8.00	9055210012000
0.0512		1.30	30.00	6.05	8.00	9055210013000
0.0551	#54	1.40	32.00	6.90	9.00	9055210014000
0.0591		1.50	32.00	6.75	9.00	9055210015000
0.0626	1/16	1.59	34.00	7.62	10.00	9055210015900
0.0630		1.60	34.00	7.60	10.00	9055210016000
0.0669	#51	1.70	34.00	7.45	10.00	9055210017000
0.0709		1.80	36.00	8.30	11.00	9055210018000
0.0748		1.90	36.00	8.15	11.00	9055210019000
0.0780	5/64	1.98	38.00	9.03	12.00	9055210019800
0.0787		2.00	38.00	9.00	12.00	9055210020000
0.0827		2.10	38.00	8.85	12.00	9055210021000
0.0866		2.20	40.00	9.70	13.00	9055210022000
0.0906		2.30	40.00	9.55	13.00	9055210023000
0.0937	3/32	2.38	43.00	10.43	14.00	9055210023800
0.0945		2.40	43.00	10.40	14.00	9055210024000
0.0984		2.50	43.00	10.25	14.00	9055210025000
0.1024		2.60	43.00	10.10	14.00	9055210026000
0.1063		2.70	46.00	11.95	16.00	9055210027000
0.1094	7/64	2.78	46.00	11.83	16.00	9055210027800
0.1102		2.80	46.00	11.80	16.00	9055210028000
0.1142		2.90	46.00	11.65	16.00	9055210029000
0.1181		3.00	46.00	11.50	16.00	9055210030000
0.1220		3.10	49.00	13.35	18.00	9055210031000
0.1248	1/8	3.17	49.00	13.25	18.00	9055210031700
0.1260		3.20	49.00	13.20	18.00	9055210032000
0.1299		3.30	49.00	13.05	18.00	9055210033000
0.1339		3.40	52.00	14.90	20.00	9055210034000
0.1378		3.50	52.00	14.75	20.00	9055210035000
0.1406	9/64	3.57	52.00	14.65	20.00	9055210035700
0.1417		3.60	52.00	14.60	20.00	9055210036000
0.1457		3.70	52.00	14.45	20.00	9055210037000
0.1496	#25	3.80	55.00	16.30	22.00	9055210038000
0.1535		3.90	55.00	16.15	22.00	9055210039000
0.1563	5/32	3.97	55.00	16.05	22.00	9055210039700
0.1575		4.00	55.00	16.00	22.00	9055210040000
0.1614		4.10	55.00	15.85	22.00	9055210041000
0.1654		4.20	55.00	15.70	22.00	9055210042000
0.1693	#18	4.30	58.00	17.55	24.00	9055210043000

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.1720	11/64	4.37	58.00	17.45	24.00	9055210043700
0.1732		4.40	58.00	17.40	24.00	9055210044000
0.1772	#16	4.50	58.00	17.25	24.00	9055210045000
0.1811		4.60	58.00	17.10	24.00	9055210046000
0.1850	#13	4.70	58.00	16.95	24.00	9055210047000
0.1874	3/16	4.76	62.00	18.86	26.00	9055210047600
0.1890	#12	4.80	62.00	18.80	26.00	9055210048000
0.1929		4.90	62.00	18.65	26.00	9055210049000
0.1969		5.00	62.00	18.50	26.00	9055210050000
0.2008		5.10	62.00	18.35	26.00	9055210051000
0.2031	13/64	5.16	62.00	18.26	26.00	9055210051600
0.2047		5.20	62.00	18.20	26.00	9055210052000
0.2087		5.30	62.00	18.05	26.00	9055210053000
0.2126		5.40	66.00	19.90	28.00	9055210054000
0.2165		5.50	66.00	19.75	28.00	9055210055000
0.2189	7/32	5.56	66.00	19.66	28.00	9055210055600
0.2205		5.60	66.00	19.60	28.00	9055210056000
0.2244		5.70	66.00	19.45	28.00	9055210057000
0.2283		5.80	66.00	19.30	28.00	9055210058000
0.2323		5.90	66.00	19.15	28.00	9055210059000
0.2343	15/64	5.95	66.00	19.08	28.00	9055210059500
0.2362		6.00	66.00	19.00	28.00	9055210060000
0.2402		6.10	70.00	21.85	31.00	9055210061000
0.2441		6.20	70.00	21.70	31.00	9055210062000
0.2480		6.30	70.00	21.55	31.00	9055210063000
0.2500	1/4	6.35	70.00	21.48	31.00	9055210063500
0.2520		6.40	70.00	21.40	31.00	9055210064000
0.2559		6.50	70.00	21.25	31.00	9055210065000
0.2598		6.60	70.00	21.10	31.00	9055210066000
0.2638		6.70	70.00	20.95	31.00	9055210067000
0.2657	17/64	6.75	74.00	23.88	34.00	9055210067500
0.2677		6.80	74.00	23.80	34.00	9055210068000
0.2717	I	6.90	74.00	23.65	34.00	9055210069000
0.2756		7.00	74.00	23.50	34.00	9055210070000
0.2795		7.10	74.00	23.35	34.00	9055210071000
0.2811	9/32	7.14	74.00	23.29	34.00	9055210071400
0.2835		7.20	74.00	23.20	34.00	9055210072000
0.2874		7.30	74.00	23.05	34.00	9055210073000
0.2913		7.40	74.00	22.90	34.00	9055210074000
0.2953		7.50	74.00	22.75	34.00	9055210075000
0.2969	19/64	7.54	79.00	25.69	37.00	9055210075400

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.2992		7.60	79.00	25.60	37.00	9055210076000
0.3031		7.70	79.00	25.45	37.00	9055210077000
0.3071		7.80	79.00	25.30	37.00	9055210078000
0.3110		7.90	79.00	25.15	37.00	9055210079000
0.3126	5/16	7.94	79.00	25.09	37.00	9055210079400
0.3150		8.00	79.00	25.00	37.00	9055210080000
0.3189		8.10	79.00	24.85	37.00	9055210081000
0.3228	P	8.20	79.00	24.70	37.00	9055210082000
0.3268		8.30	79.00	24.55	37.00	9055210083000
0.3280	21/64	8.33	79.00	24.51	37.00	9055210083300
0.3307		8.40	79.00	24.40	37.00	9055210084000
0.3346		8.50	79.00	24.25	37.00	9055210085000
0.3437	11/32	8.73	84.00	26.91	40.00	9055210087300
0.3465		8.80	84.00	26.80	40.00	9055210088000
0.3543		9.00	84.00	26.50	40.00	9055210090000
0.3594	23/64	9.13	84.00	26.31	40.00	9055210091300
0.3661		9.30	84.00	26.05	40.00	9055210093000
0.3740		9.50	84.00	25.75	40.00	9055210095000
0.3748	3/8	9.52	89.00	28.72	43.00	9055210095200

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.3858	W	9.80	89.00	28.30	43.00	9055210098000
0.3906	25/64	9.92	89.00	28.12	43.00	9055210099200
0.3937		10.00	89.00	28.00	43.00	9055210100000
0.4016		10.20	89.00	27.70	43.00	9055210102000
0.4063	13/32	10.32	89.00	27.52	43.00	9055210103200
0.4134		10.50	89.00	27.25	43.00	9055210105000
0.4220	27/64	10.72	95.00	30.92	47.00	9055210107200
0.4331		11.00	95.00	30.50	47.00	9055210110000
0.4374	7/16	11.11	95.00	30.34	47.00	9055210111100
0.4528		11.50	95.00	29.75	47.00	9055210115000
0.4689	15/32	11.91	102.00	33.14	51.00	9055210119100
0.4724		12.00	102.00	33.00	51.00	9055210120000
0.4843	31/64	12.30	102.00	32.55	51.00	9055210123000
0.4921		12.50	102.00	32.25	51.00	9055210125000
0.5000	1/2	12.70	102.00	31.95	51.00	9055210127000
0.5118		13.00	102.00	31.50	51.00	9055210130000
0.5315		13.50	107.00	33.75	54.00	9055210135000
0.5512		14.00	107.00	33.00	54.00	9055210140000

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	160 130	0,0017 0,0015	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	195 160	0,0017 0,0017	0,0050 0,0050	0,0080 0,0080	0,0100 0,0100	0,0125 0,0125	0,0125 0,0125				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	160 130 80	0,0017 0,0017 0,0015	0,0050 0,0050 0,0040	0,0080 0,0080 0,0065	0,0100 0,0100 0,0080	0,0125 0,0125 0,0100	0,0125 0,0125 0,0100				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	70 45	0,0012 0,0010	0,0030 0,0025	0,0050 0,0040	0,0065 0,0050	0,0080 0,0065	0,0080 0,0065				
Unalloyed case hardened steels	≤ 25	≤ 255	130	0,0017	0,0050	0,0080	0,0100	0,0125	0,0125				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	65 45	0,0012 0,0010	0,0030 0,0025	0,0050 0,0040	0,0065 0,0050	0,0080 0,0065	0,0080 0,0065				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	55 45	0,0012 0,0010	0,0030 0,0025	0,0050 0,0040	0,0065 0,0050	0,0080 0,0065	0,0080 0,0065				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	70 40	0,0012 0,0010	0,0030 0,0025	0,0050 0,0040	0,0065 0,0050	0,0080 0,0065	0,0080 0,0065				
High speed steels	≤ 43	≤ 402	40	0,0010	0,0025	0,0040	0,0050	0,0065	0,0065				
Spring steels	≤ 38	≤ 354											
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	65 45 55	0,0012 0,0012 0,0012	0,0030 0,0030 0,0030	0,0050 0,0050 0,0050	0,0065 0,0065 0,0065	0,0080 0,0080 0,0080	0,0080 0,0080 0,0080				
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	145 115	0,0017 0,0017	0,0050 0,0050	0,0080 0,0080	0,0100 0,0100	0,0125 0,0125	0,0125 0,0125				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	130 100	0,0017 0,0017	0,0050 0,0050	0,0080 0,0080	0,0100 0,0100	0,0125 0,0125	0,0125 0,0125				
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	225	0,0020	0,0065	0,0100	0,0125	0,0160	0,0160				
Al wrought alloys	-	≤ 200	225	0,0020	0,0065	0,0100	0,0125	0,0160	0,0160				
Al cast alloys ≤ 10 % Si	-	≤ 180	295	0,0020	0,0065	0,0100	0,0125	0,0160	0,0160				
≤ 24 % Si	-	≤ 180	260	0,0017	0,0050	0,0080	0,0100	0,0125	0,0125				
Magnesium alloys	-	≤ 120	260	0,0017	0,0050	0,0080	0,0100	0,0125	0,0125				
Copper, low-alloyed	-	≤ 150	100	0,0015	0,0040	0,0065	0,0080	0,0100	0,0100				
Brass, short-chipping	-	≤ 180	205	0,0015	0,0040	0,0065	0,0080	0,0100	0,0100				
long-chipping	-	≤ 180	130	0,0015	0,0040	0,0065	0,0080	0,0100	0,0100				
Bronze, short-chipping	-	≤ 180	160	0,0012	0,0030	0,0050	0,0065	0,0080	0,0080				
long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	95 130	0,0012 0,0012	0,0030 0,0030	0,0050 0,0050	0,0065 0,0065	0,0080 0,0080	0,0080 0,0080				
Duroplastics			80	0,0012	0,0030	0,0050	0,0065	0,0080	0,0080				
Thermoplastics			80	0,0012	0,0030	0,0050	0,0065	0,0080	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	130 100	0,0017 0,0015	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	155 125	0,0017 0,0017	0,0050 0,0050	0,0080 0,0080	0,0100 0,0100	0,0125 0,0125	0,0125 0,0125				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	100 100 80	0,0017 0,0017 0,0015	0,0050 0,0050 0,0040	0,0080 0,0080 0,0065	0,0100 0,0100 0,0080	0,0125 0,0125 0,0100	0,0125 0,0125 0,0100				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	80 80	0,0012 0,0012	0,0030 0,0030	0,0050 0,0050	0,0065 0,0065	0,0080 0,0080	0,0080 0,0080				
Unalloyed case hardened steels	≤ 25	≤ 255	100	0,0010	0,0025	0,0040	0,0050	0,0065	0,0065				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	60 50	0,0012 0,0010	0,0030 0,0025	0,0050 0,0040	0,0065 0,0050	0,0080 0,0065	0,0080 0,0065				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 50	0,0012 0,0010	0,0030 0,0025	0,0050 0,0040	0,0065 0,0050	0,0080 0,0065	0,0080 0,0065				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	60 50	0,0012 0,0010	0,0030 0,0025	0,0050 0,0040	0,0065 0,0050	0,0080 0,0065	0,0080 0,0065				
High speed steels	≤ 43	≤ 402	50	0,0010	0,0025	0,0040	0,0050	0,0065	0,0065				
Spring steels	≤ 38	≤ 354	30	0,0007	0,0020	0,0030	0,0040	0,0050	0,0050				
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	50 35 50	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	115 90	0,0017 0,0017	0,0050 0,0050	0,0080 0,0080	0,0100 0,0100	0,0125 0,0125	0,0125 0,0125				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	100 80	0,0017 0,0017	0,0050 0,0050	0,0080 0,0080	0,0100 0,0100	0,0125 0,0125	0,0125 0,0125				
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	30	0,0007	0,0020	0,0030	0,0040	0,0050	0,0050				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180	230	0,0020	0,0065	0,0100	0,0125	0,0160	0,0160				
≤ 24 % Si	-	≤ 180	185	0,0017	0,0050	0,0080	0,0100	0,0125	0,0125				
Magnesium alloys	-	≤ 120	205	0,0017	0,0050	0,0080	0,0100	0,0125	0,0125				
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180											
Bronze, short-chipping	-	≤ 180											
long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
Duroplastics													
Thermoplastics													
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													