

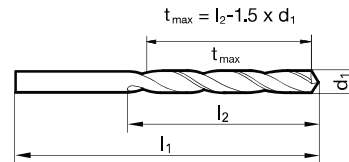
Tool material **HSC**

Surface **S**



P Steel	○	web thinning $\geq \varnothing 1.000$ • relieved cone split point • Co-alloyed high speed steel
M Stainless steel	●	• increased wear resistance
K Cast iron		
N Aluminum		Titanium and Titanium alloys • stainless/acid-/heat-resistant austenitic steels • high tensile/short chipping steels over 900 N/mm ² • antifriction bearing steels • Hastelloy, Inconel, Nimonic
S Titanium alloys	●	
H Hardened steel		

●=Optimal
○=Limited



Speeds and feeds information on pg. 521

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	9006690010000
0.0551	#54	1.40	70.00	42.90	45.00	9006690014000
0.0591		1.50	70.00	42.75	45.00	9006690015000
0.0626	1/16	1.59	76.00	47.62	50.00	9006690015900
0.0630		1.60	76.00	47.60	50.00	9006690016000
0.0650		1.65	76.00	47.53	50.00	9006690016500
0.0669	#51	1.70	76.00	47.45	50.00	9006690017000
0.0709		1.80	80.00	50.30	53.00	9006690018000
0.0748		1.90	80.00	50.15	53.00	9006690019000
0.0780	5/64	1.98	85.00	53.03	56.00	9006690019800
0.0787		2.00	85.00	53.00	56.00	9006690020000
0.0827		2.10	85.00	52.85	56.00	9006690021000
0.0866		2.20	90.00	55.70	59.00	9006690022000
0.0906		2.30	90.00	55.55	59.00	9006690023000
0.0937	3/32	2.38	95.00	58.43	62.00	9006690023800
0.0945		2.40	95.00	58.40	62.00	9006690024000
0.0984		2.50	95.00	58.25	62.00	9006690025000
0.1024		2.60	95.00	58.10	62.00	9006690026000
0.1063		2.70	100.00	61.95	66.00	9006690027000
0.1094	7/64	2.78	100.00	61.83	66.00	9006690027800
0.1102		2.80	100.00	61.80	66.00	9006690028000
0.1142		2.90	100.00	61.65	66.00	9006690029000
0.1181		3.00	100.00	61.50	66.00	9006690030000
0.1220		3.10	106.00	64.35	69.00	9006690031000
0.1248	1/8	3.17	106.00	64.25	69.00	9006690031700
0.1260		3.20	106.00	64.20	69.00	9006690032000
0.1280		3.25	106.00	64.13	69.00	9006690032500
0.1299		3.30	106.00	64.05	69.00	9006690033000
0.1339		3.40	112.00	67.90	73.00	9006690034000
0.1378		3.50	112.00	67.75	73.00	9006690035000
0.1406	9/64 #28	3.57	112.00	67.65	73.00	9006690035700
0.1417		3.60	112.00	67.60	73.00	9006690036000
0.1457		3.70	112.00	67.45	73.00	9006690037000
0.1496	#25	3.80	119.00	72.30	78.00	9006690038000
0.1535		3.90	119.00	72.15	78.00	9006690039000
0.1563	5/32	3.97	119.00	72.05	78.00	9006690039700
0.1575		4.00	119.00	72.00	78.00	9006690040000
0.1614		4.10	119.00	71.85	78.00	9006690041000
0.1654		4.20	119.00	71.70	78.00	9006690042000
0.1693	#18	4.30	126.00	75.55	82.00	9006690043000
0.1732		4.40	126.00	75.40	82.00	9006690044000
0.1772	#16	4.50	126.00	75.25	82.00	9006690045000
0.1850	#13	4.70	126.00	74.95	82.00	9006690047000
0.1874	3/16	4.76	132.00	79.86	87.00	9006690047600
0.1890	#12	4.80	132.00	79.80	87.00	9006690048000

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.1929		4.90	132.00	79.65	87.00	9006690049000
0.1969		5.00	132.00	79.50	87.00	9006690050000
0.2008		5.10	132.00	79.35	87.00	9006690051000
0.2031	13/64	5.16	132.00	79.26	87.00	9006690051600
0.2047		5.20	132.00	79.20	87.00	9006690052000
0.2087		5.30	132.00	79.05	87.00	9006690053000
0.2165		5.50	139.00	82.75	91.00	9006690055000
0.2189	7/32	5.56	139.00	82.66	91.00	9006690055600
0.2205		5.60	139.00	82.60	91.00	9006690056000
0.2244		5.70	139.00	82.45	91.00	9006690057000
0.2283		5.80	139.00	82.30	91.00	9006690058000
0.2323		5.90	139.00	82.15	91.00	9006690059000
0.2362		6.00	139.00	82.00	91.00	9006690060000
0.2402		6.10	148.00	87.85	97.00	9006690061000
0.2441		6.20	148.00	87.70	97.00	9006690062000
0.2480		6.30	148.00	87.55	97.00	9006690063000
0.2500	1/4 E	6.35	148.00	87.48	97.00	9006690063500
0.2520		6.40	148.00	87.40	97.00	9006690064000
0.2559		6.50	148.00	87.25	97.00	9006690065000
0.2598		6.60	148.00	87.10	97.00	9006690066000
0.2638		6.70	148.00	86.95	97.00	9006690067000
0.2657	17/64 H	6.75	156.00	91.88	102.00	9006690067500
0.2677		6.80	156.00	91.80	102.00	9006690068000
0.2717	I	6.90	156.00	91.65	102.00	9006690069000
0.2756		7.00	156.00	91.50	102.00	9006690070000
0.2795		7.10	156.00	91.35	102.00	9006690071000
0.2811	9/32 K	7.14	156.00	91.29	102.00	9006690071400
0.2874		7.30	156.00	91.05	102.00	9006690073000
0.2913		7.40	156.00	90.90	102.00	9006690074000
0.2953		7.50	156.00	90.75	102.00	9006690075000
0.2969	19/64	7.54	165.00	97.69	109.00	9006690075400
0.2992		7.60	165.00	97.60	109.00	9006690076000
0.3031		7.70	165.00	97.45	109.00	9006690077000
0.3071		7.80	165.00	97.30	109.00	9006690078000
0.3110		7.90	165.00	97.15	109.00	9006690079000
0.3126	5/16	7.94	165.00	97.09	109.00	9006690079400
0.3150		8.00	165.00	97.00	109.00	9006690080000
0.3228	P	8.20	165.00	96.70	109.00	9006690082000
0.3307		8.40	165.00	96.40	109.00	9006690084000
0.3346		8.50	165.00	96.25	109.00	9006690085000
0.3437	11/32	8.73	175.00	101.91	115.00	9006690087300
0.3543		9.00	175.00	101.50	115.00	9006690090000
0.3740		9.50	175.00	100.75	115.00	9006690095000
0.3748	3/8	9.52	184.00	106.72	121.00	9006690095200
0.3937		10.00	184.00	106.00	121.00	9006690100000

Taper Length

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	-	≤ 150											
	≤ 32	≤ 301											
Free-cutting steels	≤ 25	≤ 255											
	≤ 32	≤ 301											
Unalloyed heat-treatable steels	≤ 20	≤ 220											
	≤ 25	≤ 255											
	≤ 32	≤ 301											
Alloyed heat-treatable steels	≤ 32	≤ 301	45	0,0010	0,0025	0,0040	0,0050	0,0065					
	≤ 43	≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32	≤ 301	40	0,0010	0,0025	0,0040	0,0050	0,0065					
	≤ 43	≤ 402											
Nitriding steels	≤ 32	≤ 301	30	0,0010	0,0025	0,0040	0,0050	0,0065					
	≤ 43	≤ 402											
Tool steels	≤ 25	≤ 255	30	0,0010	0,0025	0,0040	0,0050	0,0065					
	≤ 43	≤ 402											
High speed steels	≤ 43	≤ 402	30	0,0010	0,0025	0,0040	0,0050	0,0065					
Spring steels	≤ 38	≤ 354	25	0,0007	0,0020	0,0030	0,0040	0,0050					
Hardened steels	≤ 48	≤ 460	5	0,0005	0,0015	0,0025	0,0030	0,0040					
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273	45	0,0012	0,0030	0,0050	0,0065	0,0080					
austenitic	≤ 36	≤ 337	30	0,0010	0,0025	0,0040	0,0050	0,0065					
martensitic	≤ 46	≤ 435	40	0,0010	0,0025	0,0040	0,0050	0,0065					
Cast iron	≤ 23	≤ 242											
	≤ 38	≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242											
	≤ 38	≤ 354											
Chilled cast iron	≤ 38	≤ 354	15	0,0010	0,0025	0,0040	0,0050	0,0065					
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549	15	0,0005	0,0015	0,0025	0,0030	0,0040					
Ti and Ti-alloys	≤ 25	≤ 255	30	0,0007	0,0020	0,0030	0,0040	0,0050					
	≤ 43	≤ 402	15	0,0007	0,0020	0,0030	0,0040	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											
	≤ 25	≤ 255											
Bronze, long-chipping	≤ 25	≤ 255											
	≤ 32	≤ 301	80	0,0012	0,0030	0,0050	0,0065	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	-	≤ 150	90	0,0015	0,0040	0,0065	0,0080	0,0100					
	≤ 32	≤ 301	70	0,0012	0,0030	0,0050	0,0065	0,0080					
Free-cutting steels	≤ 25	≤ 255	90	0,0015	0,0040	0,0065	0,0080	0,0100					
	≤ 32	≤ 301	70	0,0012	0,0030	0,0050	0,0065	0,0080					
Unalloyed heat-treatable steels	≤ 20	≤ 220	90	0,0012	0,0030	0,0050	0,0065	0,0080					
	≤ 25	≤ 255	70	0,0012	0,0030	0,0050	0,0065	0,0080					
	≤ 32	≤ 301	50	0,0010	0,0025	0,0040	0,0050	0,0065					
Alloyed heat-treatable steels	≤ 32	≤ 301	45	0,0010	0,0025	0,0040	0,0050	0,0065					
	≤ 43	≤ 402	30	0,0007	0,0020	0,0030	0,0040	0,0050					
Unalloyed case hardened steels	≤ 25	≤ 255	90	0,0015	0,0040	0,0065	0,0080	0,0100					
Alloyed case hardened steels	≤ 32	≤ 301	35	0,0010	0,0025	0,0040	0,0050	0,0065					
	≤ 43	≤ 402	30	0,0007	0,0020	0,0030	0,0040	0,0050					
Nitriding steels	≤ 32	≤ 301	30	0,0010	0,0025	0,0040	0,0050	0,0065					
	≤ 43	≤ 402	25	0,0007	0,0020	0,0030	0,0040	0,0050					
Tool steels	≤ 25	≤ 255	35	0,0010	0,0025	0,0040	0,0050	0,0065					
	≤ 43	≤ 402	25	0,0007	0,0020	0,0030	0,0040	0,0050					
High speed steels	≤ 43	≤ 402	25	0,0007	0,0020	0,0030	0,0040	0,0050					
Spring steels	≤ 38	≤ 354	15	0,0005	0,0015	0,0025	0,0030	0,0040					
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Stainless steels, sulphured	≤ 28	≤ 273	30	0,0010	0,0025	0,0040	0,0050	0,0065					
austenitic	≤ 36	≤ 337	25	0,0007	0,0020	0,0030	0,0040	0,0050					
martensitic	≤ 46	≤ 435	30	0,0007	0,0020	0,0030	0,0040	0,0050					
Cast iron	≤ 23	≤ 242	90	0,0015	0,0040	0,0065	0,0080	0,0100					
	≤ 38	≤ 354	70	0,0015	0,0040	0,0065	0,0080	0,0100					
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	80	0,0015	0,0040	0,0065	0,0080	0,0100					
	≤ 38	≤ 354	55	0,0015	0,0040	0,0065	0,0080	0,0100					
Chilled cast iron	≤ 38	≤ 354	15	0,0007	0,0020	0,0030	0,0040	0,0050					
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549	15	0,0005	0,0015	0,0025	0,0030	0,0040					
Ti and Ti-alloys	≤ 25	≤ 255	25	0,0005	0,0015	0,0025	0,0030	0,0040					
	≤ 43	≤ 402	15	0,0005	0,0015	0,0025	0,0030	0,0040					
Aluminium and Al-alloys	-	≤ 120	225	0,0017	0,0050	0,0080	0,0100	0,0125					
Al wrought alloys	-	≤ 200	225	0,0017	0,0050	0,0080	0,0100	0,0125					
Al cast alloys ≤ 10 % Si	-	≤ 180	180	0,0017	0,0050	0,0080	0,0100	0,0125					
≤ 24 % Si	-	≤ 180	145	0,0015	0,0040	0,0065	0,0080	0,0100					
Magnesium alloys	-	≤ 120	225	0,0015	0,0040	0,0065	0,0080	0,0100					
Copper, low-alloyed	-	≤ 150	90	0,0012	0,0030	0,0050	0,0065	0,0080					
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180	115	0,0012	0,0030	0,0050	0,0065	0,0080					
Bronze, short-chipping	-	≤ 180	90	0,0010	0,0025	0,0040	0,0050	0,0065					
	≤ 25	≤ 255	80	0,0010	0,0025	0,0040	0,0050	0,0065					
Bronze, long-chipping	≤ 25	≤ 255	70	0,0010	0,0025	0,0040	0,0050	0,0065					
	≤ 32	≤ 301	55	0,0010	0,0025	0,0040	0,0050	0,0065					
Duroplastics			45	0,0010	0,0025	0,0040	0,0050	0,0065					
Thermoplastics			70	0,0012	0,0030	0,0050	0,0065	0,0080					
Reinforced plastics - Kevlar													
Reinforced plastics - GFK / CFK													