



Tool material

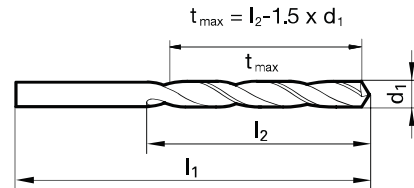
HSCo

Surface



P Steel	•	web thinning $\geq \varnothing 1.000$ • facet split point • Co-alloyed high speed steel • low feed force required • low torque required • for universal application
M Stainless steel	•	
K Cast iron	•	alloyed/unalloyed steels up to 800 N/mm ² • cold/hot work steels • antifriction bearing steels • non-ferrous metals • cast materials • stainless steels • plastics
N Aluminum	•	
S Titanium alloys	•	
H Hardened steel	•	

●=Optimal
○=Limited



Speeds and feeds information on pg. 555

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	34.00	10.50	12.00	9055230010000
0.0402		1.02	34.00	10.47	12.00	9055230010200
0.0409		1.04	34.00	10.44	12.00	9055230010400
0.0421		1.07	36.00	12.40	14.00	9055230010700
0.0429		1.09	36.00	12.37	14.00	9055230010900
0.0433		1.10	36.00	12.35	14.00	9055230011000
0.0465		1.18	36.00	12.23	14.00	9055230011800
0.0469	3/64	1.19	38.00	14.22	16.00	9055230011900
0.0472		1.20	38.00	14.20	16.00	9055230012000
0.0512		1.30	38.00	14.05	16.00	9055230013000
0.0520		1.32	38.00	14.02	16.00	9055230013200
0.0551		1.40	40.00	15.90	18.00	9055230014000
0.0591		1.50	40.00	15.75	18.00	9055230015000
0.0594		1.51	43.00	17.74	20.00	9055230015100
0.0626	1/16	1.59	43.00	17.62	20.00	9055230015900
0.0630		1.60	43.00	17.60	20.00	9055230016000
0.0634		1.61	43.00	17.59	20.00	9055230016100
0.0669		1.70	43.00	17.45	20.00	9055230017000
0.0701		1.78	46.00	19.33	22.00	9055230017800
0.0709		1.80	46.00	19.30	22.00	9055230018000
0.0728		1.85	46.00	19.23	22.00	9055230018500
0.0748		1.90	46.00	19.15	22.00	9055230019000
0.0760		1.93	49.00	21.11	24.00	9055230019300
0.0780	5/64	1.98	49.00	21.03	24.00	9055230019800
0.0783		1.99	49.00	21.02	24.00	9055230019900
0.0787		2.00	49.00	21.00	24.00	9055230020000
0.0811		2.06	49.00	20.91	24.00	9055230020600
0.0819		2.08	49.00	20.88	24.00	9055230020800
0.0827		2.10	49.00	20.85	24.00	9055230021000
0.0858		2.18	53.00	23.73	27.00	9055230021800
0.0866		2.20	53.00	23.70	27.00	9055230022000
0.0890		2.26	53.00	23.61	27.00	9055230022600
0.0906		2.30	53.00	23.55	27.00	9055230023000
0.0933		2.37	57.00	26.45	30.00	9055230023700
0.0937	3/32	2.38	57.00	26.43	30.00	9055230023800
0.0945		2.40	57.00	26.40	30.00	9055230024000
0.0961		2.44	57.00	26.34	30.00	9055230024400
0.0980		2.49	57.00	26.27	30.00	9055230024900
0.0984		2.50	57.00	26.25	30.00	9055230025000
0.0996		2.53	57.00	26.21	30.00	9055230025300
0.1016		2.58	57.00	26.13	30.00	9055230025800
0.1024		2.60	57.00	26.10	30.00	9055230026000

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.1039		2.64	57.00	26.04	30.00	9055230026400
0.1063		2.70	61.00	28.95	33.00	9055230027000
0.1067		2.71	61.00	28.94	33.00	9055230027100
0.1094	7/64	2.78	61.00	28.83	33.00	9055230027800
0.1098		2.79	61.00	28.82	33.00	9055230027900
0.1102		2.80	61.00	28.80	33.00	9055230028000
0.1110		2.82	61.00	28.77	33.00	9055230028200
0.1130		2.87	61.00	28.70	33.00	9055230028700
0.1142		2.90	61.00	28.65	33.00	9055230029000
0.1161		2.95	61.00	28.58	33.00	9055230029500
0.1181		3.00	61.00	28.50	33.00	9055230030000
0.1201		3.05	65.00	31.43	36.00	9055230030500
0.1220		3.10	65.00	31.35	36.00	9055230031000
0.1248	1/8	3.17	65.00	31.25	36.00	9055230031700
0.1260		3.20	65.00	31.20	36.00	9055230032000
0.1283		3.26	65.00	31.11	36.00	9055230032600
0.1299		3.30	65.00	31.05	36.00	9055230033000
0.1339		3.40	70.00	33.90	39.00	9055230034000
0.1358		3.45	70.00	33.83	39.00	9055230034500
0.1378		3.50	70.00	33.75	39.00	9055230035000
0.1406	9/64 #28	3.57	70.00	33.65	39.00	9055230035700
0.1417		3.60	70.00	33.60	39.00	9055230036000
0.1441		3.66	70.00	33.51	39.00	9055230036600
0.1457		3.70	70.00	33.45	39.00	9055230037000
0.1469		3.73	70.00	33.41	39.00	9055230037300
0.1496		3.80	75.00	37.30	43.00	9055230038000
0.1520		3.86	75.00	37.21	43.00	9055230038600
0.1535		3.90	75.00	37.15	43.00	9055230039000
0.1539		3.91	75.00	37.14	43.00	9055230039100
0.1563	5/32	3.97	75.00	37.05	43.00	9055230039700
0.1571		3.99	75.00	37.02	43.00	9055230039900
0.1575		4.00	75.00	37.00	43.00	9055230040000
0.1591		4.04	75.00	36.94	43.00	9055230040400
0.1610		4.09	75.00	36.87	43.00	9055230040900
0.1614		4.10	75.00	36.85	43.00	9055230041000
0.1654		4.20	75.00	36.70	43.00	9055230042000
0.1661		4.22	75.00	36.67	43.00	9055230042200
0.1693		4.30	80.00	40.55	47.00	9055230043000
0.1720	11/64	4.37	80.00	40.45	47.00	9055230043700
0.1728		4.39	80.00	40.42	47.00	9055230043900
0.1732		4.40	80.00	40.40	47.00	9055230044000
0.1772		4.50	80.00	40.25	47.00	9055230045000

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.1799		4.57	80.00	40.15	47.00	9055230045700
0.1811		4.60	80.00	40.10	47.00	9055230046000
0.1819		4.62	80.00	40.07	47.00	9055230046200
0.1850	3/16	4.70	80.00	39.95	47.00	9055230047000
0.1874		4.76	86.00	44.86	52.00	9055230047600
0.1890		4.80	86.00	44.80	52.00	9055230048000
0.1909		4.85	86.00	44.73	52.00	9055230048500
0.1929		4.90	86.00	44.65	52.00	9055230049000
0.1937		4.92	86.00	44.62	52.00	9055230049200
0.1961		4.98	86.00	44.53	52.00	9055230049800
0.1969		5.00	86.00	44.50	52.00	9055230050000
0.1992		5.06	86.00	44.41	52.00	9055230050600
0.2008		5.10	86.00	44.35	52.00	9055230051000
0.2012		5.11	86.00	44.34	52.00	9055230051100
0.2031	13/64	5.16	86.00	44.26	52.00	9055230051600
0.2039		5.18	86.00	44.23	52.00	9055230051800
0.2047		5.20	86.00	44.20	52.00	9055230052000
0.2055		5.22	86.00	44.17	52.00	9055230052200
0.2087		5.30	86.00	44.05	52.00	9055230053000
0.2091		5.31	93.00	49.04	57.00	9055230053100
0.2126		5.40	93.00	48.90	57.00	9055230054000
0.2130		5.41	93.00	48.89	57.00	9055230054100
0.2165	7/32	5.50	93.00	48.75	57.00	9055230055000
0.2189		5.56	93.00	48.66	57.00	9055230055600
0.2205		5.60	93.00	48.60	57.00	9055230056000
0.2209		5.61	93.00	48.59	57.00	9055230056100
0.2244		5.70	93.00	48.45	57.00	9055230057000
0.2280		5.79	93.00	48.32	57.00	9055230057900
0.2283		5.80	93.00	48.30	57.00	9055230058000
0.2323		5.90	93.00	48.15	57.00	9055230059000
0.2339	A	5.94	93.00	48.09	57.00	9055230059400
0.2343		5.95	93.00	48.08	57.00	9055230059500
0.2362		6.00	93.00	48.00	57.00	9055230060000
0.2378	B	6.04	101.00	53.94	63.00	9055230060400
0.2402		6.10	101.00	53.85	63.00	9055230061000
0.2421		6.15	101.00	53.78	63.00	9055230061500
0.2441	C	6.20	101.00	53.70	63.00	9055230062000
0.2461		6.25	101.00	53.63	63.00	9055230062500
0.2480		6.30	101.00	53.55	63.00	9055230063000
0.2500	1/4	6.35	101.00	53.48	63.00	9055230063500
0.2520		6.40	101.00	53.40	63.00	9055230064000
0.2559		6.50	101.00	53.25	63.00	9055230065000
0.2571	F	6.53	101.00	53.21	63.00	9055230065300
0.2598		6.60	101.00	53.10	63.00	9055230066000
0.2610		6.63	101.00	53.06	63.00	9055230066300
0.2638	17/64	6.70	101.00	52.95	63.00	9055230067000
0.2657		6.75	109.00	58.88	69.00	9055230067500
0.2677		6.80	109.00	58.80	69.00	9055230068000
0.2717	I	6.90	109.00	58.65	69.00	9055230069000
0.2756		7.00	109.00	58.50	69.00	9055230070000
0.2768		7.03	109.00	58.46	69.00	9055230070300
0.2795	9/32	7.10	109.00	58.35	69.00	9055230071000
0.2811		7.14	109.00	58.29	69.00	9055230071400
0.2835		7.20	109.00	58.20	69.00	9055230072000
0.2874	L	7.30	109.00	58.05	69.00	9055230073000
0.2902		7.37	109.00	57.95	69.00	9055230073700
0.2913		7.40	109.00	57.90	69.00	9055230074000
0.2949	M	7.49	109.00	57.77	69.00	9055230074900
0.2953		7.50	109.00	57.75	69.00	9055230075000
0.2969		7.54	117.00	63.69	75.00	9055230075400
0.2992	N	7.60	117.00	63.60	75.00	9055230076000
0.3020		7.67	117.00	63.50	75.00	9055230076700

Diameter (d ₁)			l ₁ mm	t _{max} mm	l ₂ mm	EDP #
inch	wire/ltr	mm				
0.3031		7.70	117.00	63.45	75.00	9055230077000
0.3071		7.80	117.00	63.30	75.00	9055230078000
0.3110		7.90	117.00	63.15	75.00	9055230079000
0.3126	5/16	7.94	117.00	63.09	75.00	9055230079400
0.3150		8.00	117.00	63.00	75.00	9055230080000
0.3161		8.03	117.00	62.96	75.00	9055230080300
0.3189	P	8.10	117.00	62.85	75.00	9055230081000
0.3228		8.20	117.00	62.70	75.00	9055230082000
0.3268		8.30	117.00	62.55	75.00	9055230083000
0.3280	21/64	8.33	117.00	62.51	75.00	9055230083300
0.3307		8.40	117.00	62.40	75.00	9055230084000
0.3319		8.43	117.00	62.36	75.00	9055230084300
0.3346	Q	8.50	117.00	62.25	75.00	9055230085000
0.3386		8.60	125.00	68.10	81.00	9055230086000
0.3390		8.61	125.00	68.09	81.00	9055230086100
0.3425	R	8.70	125.00	67.95	81.00	9055230087000
0.3437		8.73	125.00	67.91	81.00	9055230087300
0.3465		8.80	125.00	67.80	81.00	9055230088000
0.3480	S	8.84	125.00	67.74	81.00	9055230088400
0.3504		8.90	125.00	67.65	81.00	9055230089000
0.3543		9.00	125.00	67.50	81.00	9055230090000
0.3579	T	9.09	125.00	67.37	81.00	9055230090900
0.3583		9.10	125.00	67.35	81.00	9055230091000
0.3594		9.13	125.00	67.31	81.00	9055230091300
0.3622	23/64	9.20	125.00	67.20	81.00	9055230092000
0.3661		9.30	125.00	67.05	81.00	9055230093000
0.3677		9.34	125.00	66.99	81.00	9055230093400
0.3701	U	9.40	125.00	66.90	81.00	9055230094000
0.3740		9.50	125.00	66.75	81.00	9055230095000
0.3748		9.52	133.00	72.72	87.00	9055230095200
0.3772	V	9.58	133.00	72.63	87.00	9055230095800
0.3780		9.60	133.00	72.60	87.00	9055230096000
0.3819		9.70	133.00	72.45	87.00	9055230097000
0.3858	W	9.80	133.00	72.30	87.00	9055230098000
0.3898		9.90	133.00	72.15	87.00	9055230099000
0.3906		9.92	133.00	72.12	87.00	9055230099200
0.3937	25/64	10.00	133.00	72.00	87.00	9055230100000
0.3969		10.08	133.00	71.88	87.00	9055230100800
0.3976		10.10	133.00	71.85	87.00	9055230101000
0.4016	Y	10.20	133.00	71.70	87.00	9055230102000
0.4039		10.26	133.00	71.61	87.00	9055230102600
0.4055		10.30	133.00	71.55	87.00	9055230103000
0.4063	13/32	10.32	133.00	71.52	87.00	9055230103200
0.4094		10.40	133.00	71.40	87.00	9055230104000
0.4130		10.49	133.00	71.27	87.00	9055230104900
0.4134	Z	10.50	133.00	71.25	87.00	9055230105000
0.4220		10.72	142.00	77.92	94.00	9055230107200
0.4331		11.00	142.00	77.50	94.00	9055230110000
0.4374	7/16	11.11	142.00	77.34	94.00	9055230111100
0.4528		11.50	142.00	76.75	94.00	9055230115000
0.4531		11.51	142.00	76.74	94.00	9055230115100
0.4689	15/32	11.91	151.00	83.14	101.00	9055230119100
0.4724		12.00	151.00	83.00	101.00	9055230120000
0.4843		12.30	151.00	82.55	101.00	9055230123000
0.4921	31/64	12.50	151.00	82.25	101.00	9055230125000
0.5000		12.70	151.00	81.95	101.00	9055230127000
0.5118		13.00	151.00	81.50	101.00	9055230130000
0.5157	33/64	13.10	151.00	81.35	101.00	9055230131000
0.5311		13.49	160.00	87.77	108.00	9055230134900
0.5315		13.50	160.00	87.75	108.00	9055230135000
0.5512	9/16	14.00	160.00	87.00	108.00	9055230140000
0.5626		14.29	169.00	92.57	114.00	9055230142900

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 ≤ 24 % Si	- -	≤ 180 ≤ 180	230 185	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 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											
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301											
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	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	130 100 65	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	55 35	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	100	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	50 35	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 35	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	55 30	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	30	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	50 35 45	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	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											
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402											
Aluminium and Al-alloys	-	≤ 120	180	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al wrought alloys	-	≤ 200	180	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al cast alloys ≤ 10 % Si ≤ 24 % Si	- -	≤ 180 ≤ 180	230 185	0.0020 0.0017	0.0065 0.0050	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125				
Magnesium alloys	-	≤ 120	205	0.0017	0.0050	0.0080	0.0100	0.0125	0.0125				
Copper, low-alloyed	-	≤ 150	80	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Brass, short-chipping	-	≤ 180	165	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
long-chipping	-	≤ 180	100	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Bronze, short-chipping	-	≤ 180	130	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	75 75	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 Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			65 65	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				