



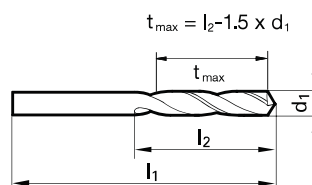
Tool material **Solid Carbide**

Surface



P Steel	○	web thinning $\geq \varnothing 2.060$
M Stainless steel	○	• facet point grinding
		• main cutting edge form straight
K Cast iron	○	
N Aluminum	●	structural and case hardened steels
		• free-cutting steels, heat-treatable steels
S Titanium alloys	○	• grey cast iron • bronze, brass • aluminum and Al-alloys
H Hardened steel		• magnesium

●=Optimal
○=Limited



Speeds and feeds information on pg. 522

Shank diameter = cut diameter

Diameter (d1)			l1 mm	t _{max} mm	l2 mm	EDP #
inch	wire/ltr	mm				
0.0197		0.50	20.00	2.25	3.00	9007300005000
0.0236		0.60	21.00	2.60	3.50	9007300006000
0.0276		0.70	23.00	3.45	4.50	9007300007000
0.0315		0.80	24.00	3.80	5.00	9007300008000
0.0354		0.90	25.00	4.15	5.50	9007300009000
0.0394		1.00	26.00	4.50	6.00	9007300010000
0.0402	#60	1.02	26.00	4.47	6.00	9007300010200
0.0409	#59	1.04	26.00	4.44	6.00	9007300010400
0.0421	#58	1.07	28.00	5.40	7.00	9007300010700
0.0429	#57	1.09	28.00	5.37	7.00	9007300010900
0.0433		1.10	28.00	5.35	7.00	9007300011000
0.0465	#56	1.18	28.00	5.23	7.00	9007300011800
0.0469	3/64	1.19	30.00	6.22	8.00	9007300011900
0.0472		1.20	30.00	6.20	8.00	9007300012000
0.0512		1.30	30.00	6.05	8.00	9007300013000
0.0520	#55	1.32	30.00	6.02	8.00	9007300013200
0.0551	#54	1.40	32.00	6.90	9.00	9007300014000
0.0591		1.50	32.00	6.75	9.00	9007300015000
0.0594	#53	1.51	34.00	7.74	10.00	9007300015100
0.0626	1/16	1.59	34.00	7.62	10.00	9007300015900
0.0630		1.60	34.00	7.60	10.00	9007300016000
0.0634	#52	1.61	34.00	7.59	10.00	9007300016100
0.0669	#51	1.70	34.00	7.45	10.00	9007300017000
0.0701	#50	1.78	36.00	8.33	11.00	9007300017800
0.0709		1.80	36.00	8.30	11.00	9007300018000
0.0728	#49	1.85	36.00	8.23	11.00	9007300018500
0.0748		1.90	36.00	8.15	11.00	9007300019000
0.0760	#48	1.93	38.00	9.11	12.00	9007300019300
0.0780	5/64	1.98	38.00	9.03	12.00	9007300019800
0.0783	#47	1.99	38.00	9.02	12.00	9007300019900
0.0787		2.00	38.00	9.00	12.00	9007300020000
0.0811	#46	2.06	38.00	8.91	12.00	9007300020600
0.0819	#45	2.08	38.00	8.88	12.00	9007300020800
0.0827		2.10	38.00	8.85	12.00	9007300021000
0.0858	#44	2.18	40.00	9.73	13.00	9007300021800
0.0866		2.20	40.00	9.70	13.00	9007300022000
0.0886		2.25	40.00	9.63	13.00	9007300022500
0.0890	#43	2.26	40.00	9.61	13.00	9007300022600
0.0906		2.30	40.00	9.55	13.00	9007300023000
0.0933	#42	2.37	43.00	10.45	14.00	9007300023700
0.0937	3/32	2.38	43.00	10.43	14.00	9007300023800
0.0945		2.40	43.00	10.40	14.00	9007300024000

Diameter (d1)			l1 mm	t _{max} mm	l2 mm	EDP #
inch	wire/ltr	mm				
0.0961	#41	2.44	43.00	10.34	14.00	9007300024400
0.0980	#40	2.49	43.00	10.27	14.00	9007300024900
0.0984		2.50	43.00	10.25	14.00	9007300025000
0.0996	#39	2.53	43.00	10.21	14.00	9007300025300
0.1016	#38	2.58	43.00	10.13	14.00	9007300025800
0.1024		2.60	43.00	10.10	14.00	9007300026000
0.1039	#37	2.64	43.00	10.04	14.00	9007300026400
0.1063		2.70	46.00	11.95	16.00	9007300027000
0.1067	#36	2.71	46.00	11.94	16.00	9007300027100
0.1094	7/64	2.78	46.00	11.83	16.00	9007300027800
0.1098	#35	2.79	46.00	11.82	16.00	9007300027900
0.1102		2.80	46.00	11.80	16.00	9007300028000
0.1110	#34	2.82	46.00	11.77	16.00	9007300028200
0.1130	#33	2.87	46.00	11.70	16.00	9007300028700
0.1142		2.90	46.00	11.65	16.00	9007300029000
0.1161	#32	2.95	46.00	11.58	16.00	9007300029500
0.1181		3.00	46.00	11.50	16.00	9007300030000
0.1201		3.05	49.00	13.43	18.00	9007300030500
0.1220		3.10	49.00	13.35	18.00	9007300031000
0.1248	1/8	3.17	49.00	13.25	18.00	9007300031700
0.1260		3.20	49.00	13.20	18.00	9007300032000
0.1283	#30	3.26	49.00	13.11	18.00	9007300032600
0.1299		3.30	49.00	13.05	18.00	9007300033000
0.1339		3.40	52.00	14.90	20.00	9007300034000
0.1358	#29	3.45	52.00	14.83	20.00	9007300034500
0.1378		3.50	52.00	14.75	20.00	9007300035000
0.1406	9/64	3.57	52.00	14.65	20.00	9007300035700
0.1417		3.60	52.00	14.60	20.00	9007300036000
0.1441	#27	3.66	52.00	14.51	20.00	9007300036600
0.1457		3.70	52.00	14.45	20.00	9007300037000
0.1469	#26	3.73	52.00	14.41	20.00	9007300037300
0.1496	#25	3.80	55.00	16.30	22.00	9007300038000
0.1520	#24	3.86	55.00	16.21	22.00	9007300038600
0.1535		3.90	55.00	16.15	22.00	9007300039000
0.1539	#23	3.91	55.00	16.14	22.00	9007300039100
0.1563	5/32	3.97	55.00	16.05	22.00	9007300039700
0.1571	#22	3.99	55.00	16.02	22.00	9007300039900
0.1575		4.00	55.00	16.00	22.00	9007300040000
0.1591	#21	4.04	55.00	15.94	22.00	9007300040400
0.1614		4.10	55.00	15.85	22.00	9007300041000
0.1654		4.20	55.00	15.70	22.00	9007300042000
0.1661	#19	4.22	55.00	15.67	22.00	9007300042200

Diameter (d1)			l1 mm	t _{max} mm	l2 mm	EDP #
inch	wire/ltr	mm				
0.1693	#18	4.30	58.00	17.55	24.00	9007300043000
0.1720	11/64	4.37	58.00	17.45	24.00	9007300043700
0.1728	#17	4.39	58.00	17.42	24.00	9007300043900
0.1732		4.40	58.00	17.40	24.00	9007300044000
0.1772	#16	4.50	58.00	17.25	24.00	9007300045000
0.1799	#15	4.57	58.00	17.15	24.00	9007300045700
0.1811		4.60	58.00	17.10	24.00	9007300046000
0.1819	#14	4.62	58.00	17.07	24.00	9007300046200
0.1850	#13	4.70	58.00	16.95	24.00	9007300047000
0.1874	3/16	4.76	62.00	18.86	26.00	9007300047600
0.1890	#12	4.80	62.00	18.80	26.00	9007300048000
0.1909	#11	4.85	62.00	18.73	26.00	9007300048500
0.1929		4.90	62.00	18.65	26.00	9007300049000
0.1937	#10	4.92	62.00	18.62	26.00	9007300049200
0.1961	#9	4.98	62.00	18.53	26.00	9007300049800
0.1969		5.00	62.00	18.50	26.00	9007300050000
0.1992	#8	5.06	62.00	18.41	26.00	9007300050600
0.2008		5.10	62.00	18.35	26.00	9007300051000
0.2012	#7	5.11	62.00	18.34	26.00	9007300051100
0.2031	13/64	5.16	62.00	18.26	26.00	9007300051600
0.2039	#6	5.18	62.00	18.23	26.00	9007300051800
0.2047		5.20	62.00	18.20	26.00	9007300052000
0.2055	#5	5.22	62.00	18.17	26.00	9007300052200
0.2087		5.30	62.00	18.05	26.00	9007300053000
0.2091	#4	5.31	66.00	20.04	28.00	9007300053100
0.2126		5.40	66.00	19.90	28.00	9007300054000
0.2130	#3	5.41	66.00	19.89	28.00	9007300054100
0.2165		5.50	66.00	19.75	28.00	9007300055000
0.2189	7/32	5.56	66.00	19.66	28.00	9007300055600
0.2205		5.60	66.00	19.60	28.00	9007300056000
0.2244		5.70	66.00	19.45	28.00	9007300057000
0.2280	#1	5.79	66.00	19.32	28.00	9007300057900
0.2283		5.80	66.00	19.30	28.00	9007300058000
0.2323		5.90	66.00	19.15	28.00	9007300059000
0.2339		5.94	66.00	19.09	28.00	9007300059400
0.2343	15/64	5.95	66.00	19.08	28.00	9007300059500
0.2362		6.00	66.00	19.00	28.00	9007300060000
0.2378		6.04	70.00	21.94	31.00	9007300060400
0.2402		6.10	70.00	21.85	31.00	9007300061000
0.2421	C	6.15	70.00	21.78	31.00	9007300061500
0.2441		6.20	70.00	21.70	31.00	9007300062000
0.2461	D	6.25	70.00	21.63	31.00	9007300062500
0.2480		6.30	70.00	21.55	31.00	9007300063000
0.2500	1/4	6.35	70.00	21.48	31.00	9007300063500
0.2520		6.40	70.00	21.40	31.00	9007300064000
0.2559		6.50	70.00	21.25	31.00	9007300065000
0.2571		6.53	70.00	21.21	31.00	9007300065300
0.2598		6.60	70.00	21.10	31.00	9007300066000
0.2610	G	6.63	70.00	21.06	31.00	9007300066300
0.2638		6.70	70.00	20.95	31.00	9007300067000
0.2657	17/64	6.75	74.00	23.88	34.00	9007300067500
0.2677		6.80	74.00	23.80	34.00	9007300068000
0.2717	I	6.90	74.00	23.65	34.00	9007300069000
0.2756		7.00	74.00	23.50	34.00	9007300070000
0.2768	J	7.03	74.00	23.46	34.00	9007300070300
0.2795		7.10	74.00	23.35	34.00	9007300071000
0.2811	9/32	7.14	74.00	23.29	34.00	9007300071400
0.2835		7.20	74.00	23.20	34.00	9007300072000
0.2874		7.30	74.00	23.05	34.00	9007300073000
0.2902	L	7.37	74.00	22.95	34.00	9007300073700
0.2913		7.40	74.00	22.90	34.00	9007300074000
0.2949	M	7.49	74.00	22.77	34.00	9007300074900
0.2953		7.50	74.00	22.75	34.00	9007300075000
0.2969	19/64	7.54	79.00	25.69	37.00	9007300075400
0.2992		7.60	79.00	25.60	37.00	9007300076000

Diameter (d1)			l1 mm	t _{max} mm	l2 mm	EDP #
inch	wire/ltr	mm				
0.3020		7.67	79.00	25.50	37.00	9007300076700
0.3031		7.70	79.00	25.45	37.00	9007300077000
0.3071		7.80	79.00	25.30	37.00	9007300078000
0.3110		7.90	79.00	25.15	37.00	9007300079000
0.3126	5/16	7.94	79.00	25.09	37.00	9007300079400
0.3150		8.00	79.00	25.00	37.00	9007300080000
0.3161	O	8.03	79.00	24.96	37.00	9007300080300
0.3189		8.10	79.00	24.85	37.00	9007300081000
0.3228	P	8.20	79.00	24.70	37.00	9007300082000
0.3268		8.30	79.00	24.55	37.00	9007300083000
0.3280	21/64	8.33	79.00	24.51	37.00	9007300083300
0.3307		8.40	79.00	24.40	37.00	9007300084000
0.3319	Q	8.43	79.00	24.36	37.00	9007300084300
0.3346		8.50	79.00	24.25	37.00	9007300085000
0.3386		8.60	84.00	27.10	40.00	9007300086000
0.3390	R	8.61	84.00	27.09	40.00	9007300086100
0.3425		8.70	84.00	26.95	40.00	9007300087000
0.3437	11/32	8.73	84.00	26.91	40.00	9007300087300
0.3465		8.80	84.00	26.80	40.00	9007300088000
0.3480	S	8.84	84.00	26.74	40.00	9007300088400
0.3504		8.90	84.00	26.65	40.00	9007300089000
0.3543		9.00	84.00	26.50	40.00	9007300090000
0.3579		9.09	84.00	26.37	40.00	9007300090900
0.3583		9.10	84.00	26.35	40.00	9007300091000
0.3594	23/64	9.13	84.00	26.31	40.00	9007300091300
0.3622		9.20	84.00	26.20	40.00	9007300092000
0.3661		9.30	84.00	26.05	40.00	9007300093000
0.3677	U	9.34	84.00	25.99	40.00	9007300093400
0.3701		9.40	84.00	25.90	40.00	9007300094000
0.3740		9.50	84.00	25.75	40.00	9007300095000
0.3748	3/8	9.52	89.00	28.72	43.00	9007300095200
0.3772	V	9.58	89.00	28.63	43.00	9007300095800
0.3780		9.60	89.00	28.60	43.00	9007300096000
0.3819		9.70	89.00	28.45	43.00	9007300097000
0.3858	W	9.80	89.00	28.30	43.00	9007300098000
0.3898		9.90	89.00	28.15	43.00	9007300099000
0.3906	25/64	9.92	89.00	28.12	43.00	9007300099200
0.3937		10.00	89.00	28.00	43.00	9007300100000
0.3969	X	10.08	89.00	27.88	43.00	9007300100800
0.4016		10.20	89.00	27.70	43.00	9007300102000
0.4039	Y	10.26	89.00	27.61	43.00	9007300102600
0.4055		10.30	89.00	27.55	43.00	9007300103000
0.4063	13/32	10.32	89.00	27.52	43.00	9007300103200
0.4130	Z	10.49	89.00	27.27	43.00	9007300104900
0.4134		10.50	89.00	27.25	43.00	9007300105000
0.4220	27/64	10.72	95.00	30.92	47.00	9007300107200
0.4331		11.00	95.00	30.50	47.00	9007300110000
0.4374	7/16	11.11	95.00	30.34	47.00	9007300111100
0.4528		11.50	95.00	29.75	47.00	9007300115000
0.4531	29/64	11.51	95.00	29.74	47.00	9007300115100
0.4689	15/32	11.91	102.00	33.14	51.00	9007300119100
0.4724		12.00	102.00	33.00	51.00	9007300120000
0.4843	31/64	12.30	102.00	32.55	51.00	9007300123000
0.5000	1/2	12.70	102.00	31.95	51.00	9007300127000
0.5118		13.00	102.00	31.50	51.00	9007300130000
0.5311	17/32	13.49	107.00	33.77	54.00	9007300134900
0.5512		14.00	107.00	33.00	54.00	9007300140000
0.5626	9/16	14.29	111.00	34.57	56.00	9007300142900
0.5906		15.00	111.00	33.50	56.00	9007300150000
0.6299		16.00	115.00	34.00	58.00	9007300160000

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	90 70	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065						
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	90 70	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065						
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	90 70 50	0.0012 0.0012 0.0010	0.0030 0.0030 0.0025	0.0050 0.0050 0.0040	0.0065 0.0065 0.0050						
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	45 30	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040						
Unalloyed case hardened steels	≤ 25	≤ 255	90	0.0015	0.0040	0.0065	0.0080						
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	35 30	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040						
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	30 25	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040						
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	35 25	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040						
High speed steels	≤ 43	≤ 402	25	0.0007	0.0020	0.0030	0.0040						
Spring steels	≤ 38	≤ 354	15	0.0005	0.0015	0.0025	0.0030						
Hardened steels	≤ 48 ≤ 66	≤ 460 -											
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	30 25 30	0.0010 0.0007 0.0007	0.0025 0.0020 0.0020	0.0040 0.0030 0.0030	0.0050 0.0040 0.0040						
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	90 70	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080						
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	80 55	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080						
Chilled cast iron	≤ 38	≤ 354	15	0.0007	0.0020	0.0030	0.0040						
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						
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	25 15	0.0005 0.0005	0.0015 0.0015	0.0025 0.0025	0.0030 0.0030						
Aluminium and Al-alloys	-	≤ 120	225	0.0017	0.0050	0.0080	0.0100						
Al wrought alloys	-	≤ 200	225	0.0017	0.0050	0.0080	0.0100						
Al cast alloys ≤ 10 % Si ≤ 24 % Si	-	≤ 180 ≤ 180	180 145	0.0017 0.0015	0.0050 0.0040	0.0080 0.0065	0.0100 0.0080						
Magnesium alloys	-	≤ 120	225	0.0015	0.0040	0.0065	0.0080						
Copper, low-alloyed	-	≤ 150	90	0.0012	0.0030	0.0050	0.0065						
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	115	0.0012	0.0030	0.0050	0.0065						
Bronze, short-chipping	-	≤ 180	90	0.0010	0.0025	0.0040	0.0050						
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	80 70 55	0.0010 0.0010 0.0010	0.0025 0.0025 0.0025	0.0040 0.0040 0.0040	0.0050 0.0050 0.0050						
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			45 70	0.0010 0.0012	0.0025 0.0030	0.0040 0.0050	0.0050 0.0065						

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	260 225	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	260 225	0.0015 0.0012	0.0040 0.0030	0.0065 0.0050	0.0080 0.0065	0.0100 0.0080	0.0100 0.0080				
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	260 225 195	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				
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	195	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Unalloyed case hardened steels	≤ 25	≤ 255	260	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	195	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	160	0.0012	0.0030	0.0050	0.0065	0.0080	0.0080				
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	160	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354	80	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Hardened steels	≤ 48 ≤ 66	≤ 460 -	65	0.0010	0.0025	0.0040	0.0050	0.0065	0.0065				
Stainless steels, sulphured austenitic martensitic	≤ 28 ≤ 36 ≤ 46	≤ 273 ≤ 337 ≤ 435	80 80 80	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	295 260	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	225 260	0.0012 0.0012	0.0030 0.0030	0.0050 0.0050	0.0065 0.0065	0.0080 0.0080	0.0080 0.0080				
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	45	0.0007	0.0020	0.0030	0.0040	0.0050	0.0050				
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	65 45	0.0010 0.0007	0.0025 0.0020	0.0040 0.0030	0.0050 0.0040	0.0065 0.0050	0.0065 0.0050				
Aluminium and Al-alloys	-	≤ 120	655	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al wrought alloys	-	≤ 200	655	0.0020	0.0065	0.0100	0.0125	0.0160	0.0160				
Al cast alloys ≤ 10 % Si ≤ 24 % Si	-	≤ 180 ≤ 180	490 390	0.0017 0.0017	0.0050 0.0050	0.0080 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125				
Magnesium alloys	-	≤ 120	590	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Copper, low-alloyed	-	≤ 150	260	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Brass, short-chipping long-chipping	- -	≤ 180 ≤ 180	590 590	0.0015 0.0015	0.0040 0.0040	0.0065 0.0065	0.0080 0.0080	0.0100 0.0100	0.0100 0.0100				
Bronze, short-chipping	-	≤ 180	390	0.0015	0.0040	0.0065	0.0080	0.0100	0.0100				
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301	390 160	0.0015 0.0010	0.0040 0.0025	0.0065 0.0040	0.0080 0.0050	0.0100 0.0065	0.0100 0.0065				
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			160 130 260	0.0012 0.0010	0.0030 0.0025	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065				