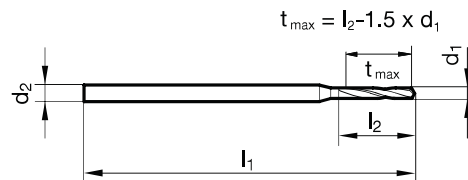


Tool material **Solid Carbide**

Surface



- P** Steel ● web thinning $\geq \varnothing 0.800$ • facet point grinding
 - M** Stainless steel
 - K** Cast iron ● structural and case hardened steels • free-cutting steels, heat-treatable steels • alloyed steels up to 1200 N/mm² • cast materials
 - N** Aluminum
 - S** Titanium alloys
 - H** Hardened steel
- =Optimal
○=Limited



Speeds and feeds information on pg. 542

Micro Drills

Diameter (d ₁)			d2 h6	l ₁	t _{max}	l ₂	EDP #
inch	wire/ltr	mm	mm	mm	mm	mm	
0.0039		0.10	3.00	38.00	1.05	1.20	9038990001000
0.0043		0.11	3.00	38.00	1.04	1.20	9038990001100
0.0047		0.12	3.00	38.00	1.22	1.40	9038990001200
0.0051		0.13	3.00	38.00	1.21	1.40	9038990001300
0.0055		0.14	3.00	38.00	1.19	1.40	9038990001400
0.0059	#97	0.15	3.00	38.00	1.78	2.00	9038990001500
0.0063	#96	0.16	3.00	38.00	1.76	2.00	9038990001600
0.0067	#95	0.17	3.00	38.00	1.75	2.00	9038990001700
0.0071	#94	0.18	3.00	38.00	1.73	2.00	9038990001800
0.0075	#93	0.19	3.00	38.00	1.72	2.00	9038990001900
0.0079	#92	0.20	3.00	38.00	2.20	3.00	9038990002000
0.0083	#91	0.21	3.00	38.00	2.19	3.00	9038990002100
0.0087	#90	0.22	3.00	38.00	2.17	3.00	9038990002200
0.0091	#89	0.23	3.00	38.00	2.16	3.00	9038990002300
0.0094	#88	0.24	3.00	38.00	2.14	3.00	9038990002400
0.0098	#87	0.25	3.00	38.00	2.63	3.00	9038990002500
0.0102		0.26	3.00	38.00	2.61	3.00	9038990002600
0.0106	#86	0.27	3.00	38.00	2.60	3.00	9038990002700
0.0110	#85	0.28	3.00	38.00	2.58	3.00	9038990002800
0.0114	#84	0.29	3.00	38.00	2.57	3.00	9038990002900
0.0118		0.30	3.00	38.00	4.55	5.00	9038990003000
0.0122	#83	0.31	3.00	38.00	4.54	5.00	9038990003100
0.0126	#82	0.32	3.00	38.00	4.52	5.00	9038990003200
0.0130	#81	0.33	3.00	38.00	4.51	5.00	9038990003300
0.0134	#80	0.34	3.00	38.00	4.49	5.00	9038990003400
0.0138		0.35	3.00	38.00	5.48	6.00	9038990003500
0.0142		0.36	3.00	38.00	5.46	6.00	9038990003600
0.0146	#79	0.37	3.00	38.00	5.45	6.00	9038990003700
0.0150		0.38	3.00	38.00	5.43	6.00	9038990003800
0.0154		0.39	3.00	38.00	5.42	6.00	9038990003900
0.0157	1/64	0.40	3.00	38.00	6.40	7.00	9038990004000
0.0161	#78	0.41	3.00	38.00	6.39	7.00	9038990004100
0.0165		0.42	3.00	38.00	6.37	7.00	9038990004200
0.0169		0.43	3.00	38.00	6.36	7.00	9038990004300
0.0173		0.44	3.00	38.00	6.34	7.00	9038990004400
0.0177		0.45	3.00	38.00	6.33	7.00	9038990004500
0.0181	#77	0.46	3.00	38.00	6.31	7.00	9038990004600
0.0185		0.47	3.00	38.00	6.30	7.00	9038990004700
0.0189		0.48	3.00	38.00	6.28	7.00	9038990004800
0.0193		0.49	3.00	38.00	6.27	7.00	9038990004900
0.0197		0.50	3.00	38.00	6.25	7.00	9038990005000
0.0201	#76	0.51	3.00	38.00	6.24	7.00	9038990005100

Diameter (d ₁)			d2 h6	l ₁	t _{max}	l ₂	EDP #
inch	wire/ltr	mm	mm	mm	mm	mm	
0.0205		0.52	3.00	38.00	6.22	7.00	9038990005200
0.0209	#75	0.53	3.00	38.00	6.21	7.00	9038990005300
0.0213		0.54	3.00	38.00	6.19	7.00	9038990005400
0.0217		0.55	3.00	38.00	6.18	7.00	9038990005500
0.0220		0.56	3.00	38.00	6.16	7.00	9038990005600
0.0224	#74	0.57	3.00	38.00	6.15	7.00	9038990005700
0.0228		0.58	3.00	38.00	6.13	7.00	9038990005800
0.0232		0.59	3.00	38.00	6.12	7.00	9038990005900
0.0236		0.60	3.00	38.00	6.10	7.00	9038990006000
0.0240	#73	0.61	3.00	38.00	6.09	7.00	9038990006100
0.0244		0.62	3.00	38.00	6.07	7.00	9038990006200
0.0248		0.63	3.00	38.00	6.06	7.00	9038990006300
0.0252	#72	0.64	3.00	38.00	6.04	7.00	9038990006400
0.0256		0.65	3.00	38.00	6.03	7.00	9038990006500
0.0260	#71	0.66	3.00	38.00	6.01	7.00	9038990006600
0.0264		0.67	3.00	38.00	6.00	7.00	9038990006700
0.0268		0.68	3.00	38.00	5.98	7.00	9038990006800
0.0272		0.69	3.00	38.00	5.97	7.00	9038990006900
0.0276		0.70	3.00	38.00	6.95	8.00	9038990007000
0.0280	#70	0.71	3.00	38.00	6.94	8.00	9038990007100
0.0283		0.72	3.00	38.00	6.92	8.00	9038990007200
0.0287		0.73	3.00	38.00	6.91	8.00	9038990007300
0.0291	#69	0.74	3.00	38.00	6.89	8.00	9038990007400
0.0295		0.75	3.00	38.00	6.88	8.00	9038990007500
0.0299		0.76	3.00	38.00	6.86	8.00	9038990007600
0.0303		0.77	3.00	38.00	6.85	8.00	9038990007700
0.0307		0.78	3.00	38.00	6.83	8.00	9038990007800
0.0311	1/32	#68	3.00	38.00	6.82	8.00	9038990007900
0.0315		0.80	3.00	38.00	8.80	10.00	9038990008000
0.0319	#67	0.81	3.00	38.00	8.79	10.00	9038990008100
0.0323		0.82	3.00	38.00	8.77	10.00	9038990008200
0.0327		0.83	3.00	38.00	8.76	10.00	9038990008300
0.0331	#66	0.84	3.00	38.00	8.74	10.00	9038990008400
0.0335		0.85	3.00	38.00	8.73	10.00	9038990008500
0.0339		0.86	3.00	38.00	8.71	10.00	9038990008600
0.0343		0.87	3.00	38.00	8.70	10.00	9038990008700
0.0346		0.88	3.00	38.00	8.68	10.00	9038990008800
0.0350	#65	0.89	3.00	38.00	8.67	10.00	9038990008900
0.0354		0.90	3.00	38.00	8.65	10.00	9038990009000
0.0358	#64	0.91	3.00	38.00	8.64	10.00	9038990009100
0.0362		0.92	3.00	38.00	8.62	10.00	9038990009200
0.0366		0.93	3.00	38.00	8.61	10.00	9038990009300

Diameter (d ₁)			d2 h6	l ₁	t _{max}	l ₂	EDP #
inch	wire/ltr	mm	mm	mm	mm	mm	
0.0370	#63	0.94	3.00	38.00	8.59	10.00	9038990009400
0.0374		0.95	3.00	38.00	8.58	10.00	9038990009500
0.0378		0.96	3.00	38.00	8.56	10.00	9038990009600
0.0382	#62	0.97	3.00	38.00	8.55	10.00	9038990009700
0.0386		0.98	3.00	38.00	8.53	10.00	9038990009800
0.0390	#61	0.99	3.00	38.00	8.52	10.00	9038990009900
0.0394		1.00	3.00	38.00	8.50	10.00	9038990010000
0.0398		1.01	3.00	38.00	8.49	10.00	9038990010100
0.0402	#60	1.02	3.00	38.00	8.47	10.00	9038990010200
0.0406		1.03	3.00	38.00	8.46	10.00	9038990010300
0.0409	#59	1.04	3.00	38.00	8.44	10.00	9038990010400
0.0413		1.05	3.00	38.00	8.43	10.00	9038990010500
0.0417		1.06	3.00	38.00	8.41	10.00	9038990010600
0.0421	#58	1.07	3.00	38.00	8.40	10.00	9038990010700
0.0425		1.08	3.00	38.00	8.38	10.00	9038990010800
0.0429	#57	1.09	3.00	38.00	8.37	10.00	9038990010900
0.0433		1.10	3.00	38.00	8.35	10.00	9038990011000
0.0437		1.11	3.00	38.00	8.34	10.00	9038990011100
0.0441		1.12	3.00	38.00	8.32	10.00	9038990011200
0.0445		1.13	3.00	38.00	8.31	10.00	9038990011300
0.0449		1.14	3.00	38.00	8.29	10.00	9038990011400
0.0453		1.15	3.00	38.00	8.28	10.00	9038990011500
0.0457		1.16	3.00	38.00	8.26	10.00	9038990011600
0.0461		1.17	3.00	38.00	8.25	10.00	9038990011700
0.0465	#56	1.18	3.00	38.00	8.23	10.00	9038990011800
0.0469	3/64	1.19	3.00	38.00	8.22	10.00	9038990011900
0.0472		1.20	3.00	38.00	8.20	10.00	9038990012000
0.0476		1.21	3.00	38.00	8.19	10.00	9038990012100
0.0480		1.22	3.00	38.00	8.17	10.00	9038990012200
0.0484		1.23	3.00	38.00	8.16	10.00	9038990012300
0.0488		1.24	3.00	38.00	8.14	10.00	9038990012400
0.0492		1.25	3.00	38.00	8.13	10.00	9038990012500
0.0496		1.26	3.00	38.00	8.11	10.00	9038990012600
0.0500		1.27	3.00	38.00	8.10	10.00	9038990012700
0.0504		1.28	3.00	38.00	8.08	10.00	9038990012800
0.0508		1.29	3.00	38.00	8.07	10.00	9038990012900
0.0512		1.30	3.00	38.00	8.05	10.00	9038990013000
0.0516		1.31	3.00	38.00	8.04	10.00	9038990013100
0.0520	#55	1.32	3.00	38.00	8.02	10.00	9038990013200
0.0524		1.33	3.00	38.00	8.01	10.00	9038990013300
0.0528		1.34	3.00	38.00	7.99	10.00	9038990013400
0.0531		1.35	3.00	38.00	7.98	10.00	9038990013500
0.0535		1.36	3.00	38.00	7.96	10.00	9038990013600
0.0539		1.37	3.00	38.00	7.95	10.00	9038990013700
0.0543		1.38	3.00	38.00	7.93	10.00	9038990013800
0.0547		1.39	3.00	38.00	7.92	10.00	9038990013900
0.0551	#54	1.40	3.00	38.00	7.90	10.00	9038990014000
0.0555		1.41	3.00	38.00	7.89	10.00	9038990014100
0.0559		1.42	3.00	38.00	7.87	10.00	9038990014200
0.0563		1.43	3.00	38.00	7.86	10.00	9038990014300
0.0567		1.44	3.00	38.00	7.84	10.00	9038990014400
0.0571		1.45	3.00	38.00	7.83	10.00	9038990014500
0.0575		1.46	3.00	38.00	7.81	10.00	9038990014600
0.0579		1.47	3.00	38.00	7.80	10.00	9038990014700
0.0583		1.48	3.00	38.00	7.78	10.00	9038990014800
0.0587		1.49	3.00	38.00	7.77	10.00	9038990014900
0.0591		1.50	3.00	38.00	7.75	10.00	9038990015000
0.0594		1.51	3.00	38.00	7.74	10.00	9038990015100
0.0598		1.52	3.00	38.00	7.72	10.00	9038990015200
0.0602		1.53	3.00	38.00	7.71	10.00	9038990015300
0.0606		1.54	3.00	38.00	7.69	10.00	9038990015400
0.0610		1.55	3.00	38.00	7.68	10.00	9038990015500
0.0614		1.56	3.00	38.00	7.66	10.00	9038990015600
0.0618		1.57	3.00	38.00	7.65	10.00	9038990015700

Diameter (d ₁)			d2 h6	l ₁	t _{max}	l ₂	EDP #
inch	wire/ltr	mm	mm	mm	mm	mm	
0.0622		1.58	3.00	38.00	7.63	10.00	9038990015800
0.0626	1/16	1.59	3.00	38.00	7.62	10.00	9038990015900
0.0630		1.60	3.00	38.00	9.60	12.00	9038990016000
0.0634	#52	1.61	3.00	38.00	9.59	12.00	9038990016100
0.0638		1.62	3.00	38.00	9.57	12.00	9038990016200
0.0642		1.63	3.00	38.00	9.56	12.00	9038990016300
0.0646		1.64	3.00	38.00	9.54	12.00	9038990016400
0.0650		1.65	3.00	38.00	9.53	12.00	9038990016500
0.0654		1.66	3.00	38.00	9.51	12.00	9038990016600
0.0657		1.67	3.00	38.00	9.50	12.00	9038990016700
0.0661		1.68	3.00	38.00	9.48	12.00	9038990016800
0.0665		1.69	3.00	38.00	9.47	12.00	9038990016900
0.0669	#51	1.70	3.00	38.00	9.45	12.00	9038990017000
0.0673		1.71	3.00	38.00	9.44	12.00	9038990017100
0.0677		1.72	3.00	38.00	9.42	12.00	9038990017200
0.0681		1.73	3.00	38.00	9.41	12.00	9038990017300
0.0685		1.74	3.00	38.00	9.39	12.00	9038990017400
0.0689		1.75	3.00	38.00	9.38	12.00	9038990017500
0.0693		1.76	3.00	38.00	9.36	12.00	9038990017600
0.0697		1.77	3.00	38.00	9.35	12.00	9038990017700
0.0701		1.78	3.00	38.00	9.33	12.00	9038990017800
0.0705		1.79	3.00	38.00	9.32	12.00	9038990017900
0.0709		1.80	3.00	38.00	9.30	12.00	9038990018000
0.0713		1.81	3.00	38.00	9.29	12.00	9038990018100
0.0717		1.82	3.00	38.00	9.27	12.00	9038990018200
0.0720		1.83	3.00	38.00	9.26	12.00	9038990018300
0.0724		1.84	3.00	38.00	9.24	12.00	9038990018400
0.0728	#49	1.85	3.00	38.00	9.23	12.00	9038990018500
0.0732		1.86	3.00	38.00	9.21	12.00	9038990018600
0.0736		1.87	3.00	38.00	9.20	12.00	9038990018700
0.0740		1.88	3.00	38.00	9.18	12.00	9038990018800
0.0744		1.89	3.00	38.00	9.17	12.00	9038990018900
0.0748		1.90	3.00	38.00	9.15	12.00	9038990019000
0.0752		1.91	3.00	38.00	9.14	12.00	9038990019100
0.0756		1.92	3.00	38.00	9.12	12.00	9038990019200
0.0760	#48	1.93	3.00	38.00	9.11	12.00	9038990019300
0.0764		1.94	3.00	38.00	9.09	12.00	9038990019400
0.0768		1.95	3.00	38.00	9.08	12.00	9038990019500
0.0772		1.96	3.00	38.00	9.06	12.00	9038990019600
0.0776		1.97	3.00	38.00	9.05	12.00	9038990019700
0.0780	5/64	1.98	3.00	38.00	9.03	12.00	9038990019800
0.0783	#47	1.99	3.00	38.00	9.02	12.00	9038990019900
0.0787		2.00	3.00	38.00	9.00	12.00	9038990020000
0.0807		2.05	3.00	38.00	8.93	12.00	9038990020500
0.0827		2.10	3.00	38.00	8.85	12.00	9038990021000
0.0846		2.15	3.00	38.00	8.78	12.00	9038990021500
0.0866		2.20	3.00	38.00	8.70	12.00	9038990022000
0.0886		2.25	3.00	38.00	8.63	12.00	9038990022500
0.0906		2.30	3.00	38.00	8.55	12.00	9038990023000
0.0925		2.35	3.00	38.00	8.48	12.00	9038990023500
0.0945		2.40	3.00	38.00	8.40	12.00	9038990024000
0.0965		2.45	3.00	38.00	8.33	12.00	9038990024500
0.0984		2.50	3.00	38.00	8.25	12.00	9038990025000
0.1004		2.55	3.00	38.00	8.18	12.00	9038990025500
0.1024		2.60	3.00	38.00	8.10	12.00	9038990026000
0.1043		2.65	3.00	38.00	8.03	12.00	9038990026500
0.1063		2.70	3.00	38.00	7.95	12.00	9038990027000
0.1083		2.75	3.00	38.00	7.88	12.00	9038990027500
0.1102		2.80	3.00	38.00	7.80	12.00	9038990028000
0.1122		2.85	3.00	38.00	7.73	12.00	9038990028500
0.1142		2.90	3.00	38.00	7.65	12.00	9038990029000
0.1161	#32	2.95	3.00	38.00	7.58	12.00	9038990029500
0.1181		3.00	3.00	38.00	7.50	12.00	9038990030000

Micro Drills

Material group	Hardness		SFM	Feed Rate - IPR										
	HRc	Bhn		.0039 in. .10 mm	.0063 in. .16 mm	.0098 in. .25 mm	.0118 in. .30 mm	.0197 in. .50 mm	.0248 in. .63 mm	.0315 in. .8 mm	.0394 in. 1.0 mm	.0591 in. 1.5 mm	.0787 in. 2.0 mm	.1181 in. 3.0 mm
Common structural steels	-	≤ 150	330	0.0003	0.0005	0.0008	0.0009	0.0016	0.0024	0.0031	0.0047	0.0063	0.0079	0.0094
Free-cutting steels	≤ 25	≤ 255	330	0.0003	0.0005	0.0008	0.0009	0.0016	0.0024	0.0031	0.0047	0.0063	0.0079	0.0094
Unalloyed heat-treatable steels	≤ 20	≤ 220	295	0.0003	0.0005	0.0008	0.0009	0.0016	0.0024	0.0031	0.0047	0.0063	0.0079	0.0094
Alloyed heat-treatable steels	≤ 32	≤ 301	295	0.0003	0.0004	0.0007	0.0008	0.0014	0.0020	0.0028	0.0039	0.0055	0.0067	0.0083
Unalloyed case hardened steels	≤ 25	≤ 255	330	0.0003	0.0004	0.0007	0.0008	0.0014	0.0020	0.0028	0.0039	0.0055	0.0067	0.0083
Alloyed case hardened steels	≤ 32	≤ 301	280	0.0003	0.0004	0.0007	0.0008	0.0014	0.0020	0.0028	0.0039	0.0055	0.0067	0.0083
Nitriding steels	≤ 32	≤ 301	230	0.0002	0.0004	0.0006	0.0007	0.0012	0.0016	0.0016	0.0035	0.0047	0.0059	0.0071
Tool steels	≤ 25	≤ 255	165	0.0002	0.0004	0.0006	0.0007	0.0012	0.0016	0.0016	0.0035	0.0047	0.0059	0.0071
High speed steels	≤ 43	≤ 402	195	0.0002	0.0004	0.0006	0.0007	0.0012	0.0016	0.0016	0.0035	0.0047	0.0059	0.0071
Spring steels	≤ 38	≤ 354												
Hardened steels	≤ 48	≤ 460												
Stainless steels, sulphured austenitic	≤ 28	≤ 273												
Stainless steels, martensitic	≤ 36	≤ 337												
Cast iron	≤ 23	≤ 242	425	0.0004	0.0007	0.0011	0.0013	0.0022	0.0031	0.0043	0.0063	0.0087	0.0106	0.0130
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	425	0.0004	0.0007	0.0011	0.0013	0.0022	0.0031	0.0043	0.0063	0.0087	0.0106	0.0130
Chilled cast iron	≤ 38	≤ 354	395	0.0004	0.0006	0.0010	0.0020	0.0020	0.0031	0.0039	0.0059	0.0083	0.0102	0.0122
New cast materials GGV	≤ 20	≤ 220												
New cast materials ADI	≤ 32	≤ 301												
Special alloys	≤ 54	≤ 549												
Ti and Ti-alloys	≤ 25	≤ 255												
Aluminium and Al-alloys	-	≤ 120												
Al wrought alloys	-	≤ 200												
Al cast alloys ≤ 10 % Si	-	≤ 180												
Al cast alloys ≤ 24 % Si	-	≤ 180												
Magnesium alloys	-	≤ 120												
Copper, low-alloyed	-	≤ 150												
Brass, short-chipping	-	≤ 180												
Brass, long-chipping	-	≤ 180												
Bronze, short-chipping	≤ 25	≤ 180												
Bronze, long-chipping	≤ 25	≤ 255												
Duroplastics	≤ 32	≤ 301												
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	425				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Free-cutting steels	≤ 32	≤ 301	360				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Unalloyed heat-treatable steels	≤ 25	≤ 255	425				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Alloyed heat-treatable steels	≤ 32	≤ 301	360				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Unalloyed case hardened steels	≤ 20	≤ 220	425				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Alloyed case hardened steels	≤ 25	≤ 255	410				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Nitriding steels	≤ 32	≤ 301	360				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Tool steels	≤ 32	≤ 301	345				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
High speed steels	≤ 43	≤ 402	230				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
Spring steels	≤ 25	≤ 255	195				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Hardened steels	≤ 43	≤ 402	180				0.0065	0.0065	0.0080	0.0100	0.0125	0.0125	0.0155
Stainless steels, sulphured austenitic	≤ 43	≤ 402	180				0.0050	0.0050	0.0065	0.0080	0.0100	0.0100	0.0125
Stainless steels, martensitic	≤ 28	≤ 273	180				0.0050	0.0050	0.0065	0.0080	0.0100	0.0100	0.0125
Cast iron	≤ 36	≤ 337	130				0.0050	0.0050	0.0065	0.0080	0.0100	0.0100	0.0125
Spheroidal graphite iron and malleable cast iron	≤ 46	≤ 435	115				0.0050	0.0050	0.0065	0.0080	0.0100	0.0100	0.0125
Chilled cast iron	≤ 23	≤ 242	330				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
New cast materials GGV	≤ 38	≤ 354	295				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
New cast materials ADI	≤ 23	≤ 242	395				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Special alloys	≤ 38	≤ 354	330				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Ti and Ti-alloys	≤ 20	≤ 220	260				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Aluminium and Al-alloys	≤ 32	≤ 301	260				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Al wrought alloys	≤ 43	≤ 402	260				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195
Al cast alloys ≤ 10 % Si	≤ 54	≤ 549	80				0.0040	0.0040	0.0050	0.0065	0.0080	0.0080	0.0100
Al cast alloys ≤ 24 % Si	≤ 25	≤ 255	130				0.0050	0.0050	0.0065	0.0080	0.0100	0.0100	0.0125
Magnesium alloys	≤ 43	≤ 402	115				0.0040	0.0040	0.0050	0.0065	0.0080	0.0080	0.0100
Copper, low-alloyed	-	≤ 120	655				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Brass, short-chipping	-	≤ 200	590				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Brass, long-chipping	-	≤ 180	490				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Bronze, short-chipping	-	≤ 180	395				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Bronze, long-chipping	-	≤ 120	590				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Duroplastics	-	≤ 150	230				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Thermoplastics	-	≤ 180	590				0.0125	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Reinforced plastics - Kevlar	-	≤ 180	395				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Reinforced plastics - GFK / CFK	-	≤ 180	230				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
Tool steels	≤ 25	≤ 255	165				0.0100	0.0100	0.0125	0.0155	0.0195	0.0195	0.0250
High speed steels	≤ 32	≤ 301	115				0.0080	0.0080	0.0100	0.0125	0.0155	0.0155	0.0195