

GUHRING

SPIROPOINT GRIND



FT 200 U *3-flute high-feed* **CARBIDE DRILL**

GUHRING – YOUR WORLDWIDE PARTNER

FT 200 U

3 - FLUTE

Guhring's 3-flute FT 200 U solid carbide drill offers highly accurate **self-centering** characteristics due to the specially developed **Spiropoint** grind, which incorporates a unique web thin design. Combined with the specialized point geometry, the modified flute profile generates the **ideal chip form**, optimizing chip evacuation and reducing the potential for work hardening of the workpiece.

ADVANTAGES

- Reliable and consistent performance under all operating conditions
- High-feed drilling for reduced cycle times and cost- efficient machining
- Less potential for work hardening
- Reamer quality hole size and finish



pyramid-shaped tip prevents radial deflection while entering the workpiece



maximized coolant ducts for effective chip evacuation and thermal stability





FT200 U 3-flute drills

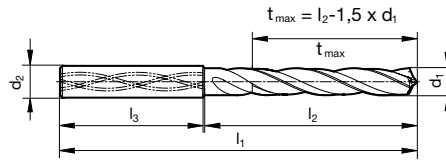
Tool material **Solid carbide**Coating **nano-FIREX**Shank form **HA**

Material	Suitability
P Steel	●
M Stainless steel	○
K Cast iron	●
N Aluminum	○
S Ni / Ti alloys	○
H Hardened steel	○

Spiropoint grind • optimal centering • suitable for interrupted cutting
• maximum performance

structural and case hardened steels • free-cutting steels, heat-treatable steels • steels (alloyed/unalloyed) up to 1400 N/mm² • cast materials

●=Optimal ○=Limited



Series										6590
d1	d1	d1	d1	d2	l1	l2	t _{max}	l3	Code	EDP No.
inch	fract. in	wire/ltr	mm	mm	mm	mm	mm	mm	no.	
0.1575			4.00	6.00	74.00	36.00	30.00	36.00	4.000	9065900040000
0.1591			4.04	6.00	74.00	36.00	29.94	36.00	4.040	9065900040400
0.1614			4.10	6.00	74.00	36.00	29.85	36.00	4.100	9065900041000
0.1654			4.20	6.00	74.00	36.00	29.70	36.00	4.200	9065900042000
0.1693			4.30	6.00	74.00	36.00	29.55	36.00	4.300	9065900043000
0.1720	11/64		4.37	6.00	74.00	36.00	29.45	36.00	4.370	9065900043700
0.1732			4.40	6.00	74.00	36.00	29.40	36.00	4.400	9065900044000
0.1772			4.50	6.00	74.00	36.00	29.25	36.00	4.500	9065900045000
0.1811			4.60	6.00	74.00	36.00	29.10	36.00	4.600	9065900046000
0.1831			4.65	6.00	74.00	36.00	29.03	36.00	4.650	9065900046500
0.1850		#13	4.70	6.00	74.00	36.00	28.95	36.00	4.700	9065900047000
0.1874	3/16		4.76	6.00	82.00	44.00	36.86	36.00	4.760	9065900047600
0.1890		#12	4.80	6.00	82.00	44.00	36.80	36.00	4.800	9065900048000
0.1929			4.90	6.00	82.00	44.00	36.65	36.00	4.900	9065900049000
0.1969			5.00	6.00	82.00	44.00	36.50	36.00	5.000	9065900050000
0.2008			5.10	6.00	82.00	44.00	36.35	36.00	5.100	9065900051000
0.2012			5.11	6.00	82.00	44.00	36.34	36.00	5.110	9065900051100
0.2031	13/64		5.16	6.00	82.00	44.00	36.26	36.00	5.160	9065900051600
0.2047			5.20	6.00	82.00	44.00	36.20	36.00	5.200	9065900052000
0.2087			5.30	6.00	82.00	44.00	36.05	36.00	5.300	9065900053000
0.2126			5.40	6.00	82.00	44.00	35.90	36.00	5.400	9065900054000
0.2130			5.41	6.00	82.00	44.00	35.89	36.00	5.410	9065900054100
0.2165			5.50	6.00	82.00	44.00	35.75	36.00	5.500	9065900055000
0.2185			5.55	6.00	82.00	44.00	35.68	36.00	5.550	9065900055500
0.2189	15/64		5.56	6.00	82.00	44.00	35.66	36.00	5.560	9065900055600
0.2205			5.60	6.00	82.00	44.00	35.60	36.00	5.600	9065900056000
0.2244			5.70	6.00	82.00	44.00	35.45	36.00	5.700	9065900057000
0.2283			5.80	6.00	82.00	44.00	35.30	36.00	5.800	9065900058000
0.2323			5.90	6.00	82.00	44.00	35.15	36.00	5.900	9065900059000
0.2343			5.95	6.00	82.00	44.00	35.08	36.00	5.950	9065900059500
0.2362			6.00	6.00	82.00	44.00	35.00	36.00	6.000	9065900060000
0.2402			6.10	8.00	91.00	53.00	43.85	36.00	6.100	9065900061000
0.2441			6.20	8.00	91.00	53.00	43.70	36.00	6.200	9065900062000
0.2480			6.30	8.00	91.00	53.00	43.55	36.00	6.300	9065900063000
0.2500	1/4	E	6.35	8.00	91.00	53.00	43.48	36.00	6.350	9065900063500
0.2520			6.40	8.00	91.00	53.00	43.40	36.00	6.400	9065900064000



Series										6590
d1	d1	d1	d1	d2	l1	l2	t _{max}	l3	Code	EDP No.
inch	fract. in	wire/ltr	mm	mm	mm	mm	mm	mm	no.	
0.2559			6.50	8.00	91.00	53.00	43.25	36.00	6.500	9065900065000
0.2571			6.53	8.00	91.00	53.00	43.21	36.00	6.530	9065900065300
0.2579			6.55	8.00	91.00	53.00	43.18	36.00	6.550	9065900065500
0.2598			6.60	8.00	91.00	53.00	43.10	36.00	6.600	9065900066000
0.2638			6.70	8.00	91.00	53.00	42.95	36.00	6.700	9065900067000
0.2657	17/64		6.75	8.00	91.00	53.00	42.88	36.00	6.750	9065900067500
0.2677			6.80	8.00	91.00	53.00	42.80	36.00	6.800	9065900068000
0.2717			6.90	8.00	91.00	53.00	42.65	36.00	6.900	9065900069000
0.2756			7.00	8.00	91.00	53.00	42.50	36.00	7.000	9065900070000
0.2795			7.10	8.00	91.00	53.00	42.35	36.00	7.100	9065900071000
0.2811	9/32		7.14	8.00	91.00	53.00	42.29	36.00	7.140	9065900071400
0.2835			7.20	8.00	91.00	53.00	42.20	36.00	7.200	9065900072000
0.2874			7.30	8.00	91.00	53.00	42.05	36.00	7.300	9065900073000
0.2913			7.40	8.00	91.00	53.00	41.90	36.00	7.400	9065900074000
0.2953			7.50	8.00	91.00	53.00	41.75	36.00	7.500	9065900075000
0.2969	19/64		7.54	8.00	91.00	53.00	41.69	36.00	7.540	9065900075400
0.2972			7.55	8.00	91.00	53.00	41.68	36.00	7.550	9065900075500
0.2992			7.60	8.00	91.00	53.00	41.60	36.00	7.600	9065900076000
0.3012			7.65	8.00	91.00	53.00	41.53	36.00	7.650	9065900076500
0.3031			7.70	8.00	91.00	53.00	41.45	36.00	7.700	9065900077000
0.3071			7.80	8.00	91.00	53.00	41.30	36.00	7.800	9065900078000
0.3110			7.90	8.00	91.00	53.00	41.15	36.00	7.900	9065900079000
0.3126	21/34		7.94	8.00	91.00	53.00	41.09	36.00	7.940	9065900079400
0.3150			8.00	8.00	91.00	53.00	41.00	36.00	8.000	9065900080000
0.3189			8.10	10.00	103.00	61.00	48.85	40.00	8.100	9065900081000
0.3228			8.20	10.00	103.00	61.00	48.70	40.00	8.200	9065900082000
0.3268			8.30	10.00	103.00	61.00	48.55	40.00	8.300	9065900083000
0.3280	21/64		8.33	10.00	103.00	61.00	48.51	40.00	8.330	9065900083300
0.3307			8.40	10.00	103.00	61.00	48.40	40.00	8.400	9065900084000
0.3346			8.50	10.00	103.00	61.00	48.25	40.00	8.500	9065900085000
0.3386			8.60	10.00	103.00	61.00	48.10	40.00	8.600	9065900086000
0.3425			8.70	10.00	103.00	61.00	47.95	40.00	8.700	9065900087000
0.3437	11/32		8.73	10.00	103.00	61.00	47.91	40.00	8.730	9065900087300
0.3465			8.80	10.00	103.00	61.00	47.80	40.00	8.800	9065900088000
0.3504			8.90	10.00	103.00	61.00	47.65	40.00	8.900	9065900089000
0.3543			9.00	10.00	103.00	61.00	47.50	40.00	9.000	9065900090000
0.3583			9.10	10.00	103.00	61.00	47.35	40.00	9.100	9065900091000
0.3594	23/64		9.13	10.00	103.00	61.00	47.31	40.00	9.130	9065900091300
0.3622			9.20	10.00	103.00	61.00	47.20	40.00	9.200	9065900092000
0.3642			9.25	10.00	103.00	61.00	47.13	40.00	9.250	9065900092500
0.3661			9.30	10.00	103.00	61.00	47.05	40.00	9.300	9065900093000
0.3677			9.34	10.00	103.00	61.00	46.99	40.00	9.340	9065900093400
0.3701			9.40	10.00	103.00	61.00	46.90	40.00	9.400	9065900094000
0.3740			9.50	10.00	103.00	61.00	46.75	40.00	9.500	9065900095000
0.3748	3/8		9.52	10.00	103.00	61.00	46.72	40.00	9.520	9065900095200
0.3760			9.55	10.00	103.00	61.00	46.68	40.00	9.550	9065900095500
0.3780			9.60	10.00	103.00	61.00	46.60	40.00	9.600	9065900096000
0.3819			9.70	10.00	103.00	61.00	46.45	40.00	9.700	9065900097000
0.3858			9.80	10.00	103.00	61.00	46.30	40.00	9.800	9065900098000
0.3898			9.90	10.00	103.00	61.00	46.15	40.00	9.900	9065900099000
0.3906	25/64		9.92	10.00	103.00	61.00	46.12	40.00	9.920	9065900099200
0.3937			10.00	10.00	103.00	61.00	46.00	40.00	10.000	9065900100000
0.3976			10.10	12.00	118.00	71.00	55.85	45.00	10.100	9065900101000
0.4016			10.20	12.00	118.00	71.00	55.70	45.00	10.200	9065900102000
0.4055			10.30	12.00	118.00	71.00	55.55	45.00	10.300	9065900103000
0.4063	13/32		10.32	12.00	118.00	71.00	55.52	45.00	10.320	9065900103200
0.4094			10.40	12.00	118.00	71.00	55.40	45.00	10.400	9065900104000
0.4134			10.50	12.00	118.00	71.00	55.25	45.00	10.500	9065900105000



Series										6590
d1	d1	d1	d1	d2	l1	l2	t _{max}	l3	Code	EDP No.
inch	fract. in	wire/ltr	mm	mm	mm	mm	mm	mm	no.	
0.4173			10.60	12.00	118.00	71.00	55.10	45.00	10.600	9065900106000
0.4213			10.70	12.00	118.00	71.00	54.95	45.00	10.700	9065900107000
0.4220	27/64		10.72	12.00	118.00	71.00	54.92	45.00	10.720	9065900107200
0.4252			10.80	12.00	118.00	71.00	54.80	45.00	10.800	9065900108000
0.4291			10.90	12.00	118.00	71.00	54.65	45.00	10.900	9065900109000
0.4331			11.00	12.00	118.00	71.00	54.50	45.00	11.000	9065900110000
0.4370			11.10	12.00	118.00	71.00	54.35	45.00	11.100	9065900111000
0.4374	7/16		11.11	12.00	118.00	71.00	54.34	45.00	11.110	9065900111100
0.4409			11.20	12.00	118.00	71.00	54.20	45.00	11.200	9065900112000
0.4449			11.30	12.00	118.00	71.00	54.05	45.00	11.300	9065900113000
0.4488			11.40	12.00	118.00	71.00	53.90	45.00	11.400	9065900114000
0.4528			11.50	12.00	118.00	71.00	53.75	45.00	11.500	9065900115000
0.4531	29/64		11.51	12.00	118.00	71.00	53.74	45.00	11.510	9065900115100
0.4547			11.55	12.00	118.00	71.00	53.68	45.00	11.550	9065900115500
0.4567			11.60	12.00	118.00	71.00	53.60	45.00	11.600	9065900116000
0.4606			11.70	12.00	118.00	71.00	53.45	45.00	11.700	9065900117000
0.4646			11.80	12.00	118.00	71.00	53.30	45.00	11.800	9065900118000
0.4685			11.90	12.00	118.00	71.00	53.15	45.00	11.900	9065900119000
0.4689	15/32		11.91	12.00	118.00	71.00	53.14	45.00	11.910	9065900119100
0.4724			12.00	12.00	118.00	71.00	53.00	45.00	12.000	9065900120000
0.4764			12.10	14.00	124.00	77.00	58.85	45.00	12.100	9065900121000
0.4803			12.20	14.00	124.00	77.00	58.70	45.00	12.200	9065900122000
0.4843	31/64		12.30	14.00	124.00	77.00	58.55	45.00	12.300	9065900123000
0.4882			12.40	14.00	124.00	77.00	58.40	45.00	12.400	9065900124000
0.4921			12.50	14.00	124.00	77.00	58.25	45.00	12.500	9065900125000
0.4961			12.60	14.00	124.00	77.00	58.10	45.00	12.600	9065900126000
0.5000	1/2		12.70	14.00	124.00	77.00	57.95	45.00	12.700	9065900127000
0.5039			12.80	14.00	124.00	77.00	57.80	45.00	12.800	9065900128000
0.5079			12.90	14.00	124.00	77.00	57.65	45.00	12.900	9065900129000
0.5118			13.00	14.00	124.00	77.00	57.50	45.00	13.000	9065900130000
0.5157	33/64		13.10	14.00	124.00	77.00	57.35	45.00	13.100	9065900131000
0.5197			13.20	14.00	124.00	77.00	57.20	45.00	13.200	9065900132000
0.5236			13.30	14.00	124.00	77.00	57.05	45.00	13.300	9065900133000
0.5276			13.40	14.00	124.00	77.00	56.90	45.00	13.400	9065900134000
0.5311			13.49	14.00	124.00	77.00	56.77	45.00	13.490	9065900134900
0.5315			13.50	14.00	124.00	77.00	56.75	45.00	13.500	9065900135000
0.5354			13.60	14.00	124.00	77.00	56.60	45.00	13.600	9065900136000
0.5394			13.70	14.00	124.00	77.00	56.45	45.00	13.700	9065900137000
0.5433			13.80	14.00	124.00	77.00	56.30	45.00	13.800	9065900138000
0.5469			13.89	14.00	124.00	77.00	56.17	45.00	13.890	9065900138900
0.5472			13.90	14.00	124.00	77.00	56.15	45.00	13.900	9065900139000
0.5512			14.00	14.00	124.00	77.00	56.00	45.00	14.000	9065900140000
0.5551			14.10	16.00	133.00	83.00	61.85	48.00	14.100	9065900141000
0.5591			14.20	16.00	133.00	83.00	61.70	48.00	14.200	9065900142000
0.5626	9/16		14.29	16.00	133.00	83.00	61.57	48.00	14.290	9065900142900
0.5630			14.30	16.00	133.00	83.00	61.55	48.00	14.300	9065900143000
0.5669			14.40	16.00	133.00	83.00	61.40	48.00	14.400	9065900144000
0.5709			14.50	16.00	133.00	83.00	61.25	48.00	14.500	9065900145000
0.5748			14.60	16.00	133.00	83.00	61.10	48.00	14.600	9065900146000
0.5780			14.68	16.00	133.00	83.00	60.98	48.00	14.680	9065900146800
0.5787			14.70	16.00	133.00	83.00	60.95	48.00	14.700	9065900147000
0.5827			14.80	16.00	133.00	83.00	60.80	48.00	14.800	9065900148000
0.5866			14.90	16.00	133.00	83.00	60.65	48.00	14.900	9065900149000
0.5906			15.00	16.00	133.00	83.00	60.50	48.00	15.000	9065900150000
0.5937			15.08	16.00	133.00	83.00	60.38	48.00	15.080	9065900150800
0.5945			15.10	16.00	133.00	83.00	60.35	48.00	15.100	9065900151000
0.5984			15.20	16.00	133.00	83.00	60.20	48.00	15.200	9065900152000
0.6024			15.30	16.00	133.00	83.00	60.05	48.00	15.300	9065900153000



Series										6590
d1	d1	d1	d1	d2	l1	l2	t _{max}	l3	Code	EDP No.
inch	fract. in	wire/ltr	mm	mm	mm	mm	mm	mm	no.	
0.6063			15.40	16.00	133.00	83.00	59.90	48.00	15.400	9065900154000
0.6094			15.48	16.00	133.00	83.00	59.78	48.00	15.480	9065900154800
0.6102			15.50	16.00	133.00	83.00	59.75	48.00	15.500	9065900155000
0.6122			15.55	16.00	133.00	83.00	59.68	48.00	15.550	9065900155500
0.6142			15.60	16.00	133.00	83.00	59.60	48.00	15.600	9065900156000
0.6181			15.70	16.00	133.00	83.00	59.45	48.00	15.700	9065900157000
0.6220			15.80	16.00	133.00	83.00	59.30	48.00	15.800	9065900158000
0.6248	5/8		15.87	16.00	133.00	83.00	59.20	48.00	15.870	9065900158700
0.6260			15.90	16.00	133.00	83.00	59.15	48.00	15.900	9065900159000
0.6299			16.00	16.00	133.00	83.00	59.00	48.00	16.000	9065900160000
0.6406			16.27	18.00	143.00	93.00	68.60	48.00	16.270	9065900162700
0.6417			16.30	18.00	143.00	93.00	68.55	48.00	16.300	9065900163000
0.6496			16.50	18.00	143.00	93.00	68.25	48.00	16.500	9065900165000
0.6563			16.67	18.00	143.00	93.00	68.00	48.00	16.670	9065900166700
0.6575			16.70	18.00	143.00	93.00	67.95	48.00	16.700	9065900167000
0.6654			16.90	18.00	143.00	93.00	67.65	48.00	16.900	9065900169000
0.6693			17.00	18.00	143.00	93.00	67.50	48.00	17.000	9065900170000
0.6720			17.07	18.00	143.00	93.00	67.40	48.00	17.070	9065900170700
0.6874			17.46	18.00	143.00	93.00	66.81	48.00	17.460	9065900174600
0.6890			17.50	18.00	143.00	93.00	66.75	48.00	17.500	9065900175000
0.6909			17.55	18.00	143.00	93.00	66.68	48.00	17.550	9065900175500
0.6969			17.70	18.00	143.00	93.00	66.45	48.00	17.700	9065900177000
0.7031			17.86	18.00	143.00	93.00	66.21	48.00	17.860	9065900178600
0.7087			18.00	18.00	143.00	93.00	66.00	48.00	18.000	9065900180000
0.7189			18.26	20.00	153.00	101.00	73.61	50.00	18.260	9065900182600
0.7283			18.50	20.00	153.00	101.00	73.25	50.00	18.500	9065900185000
0.7362			18.70	20.00	153.00	101.00	72.95	50.00	18.700	9065900187000
0.7441			18.90	20.00	153.00	101.00	72.65	50.00	18.900	9065900189000
0.7480			19.00	20.00	153.00	101.00	72.50	50.00	19.000	9065900190000
0.7500	3/4		19.05	20.00	153.00	101.00	72.43	50.00	19.050	9065900190500
0.7579			19.25	20.00	153.00	101.00	72.13	50.00	19.250	9065900192500
0.7598			19.30	20.00	153.00	101.00	72.05	50.00	19.300	9065900193000
0.7657			19.45	20.00	153.00	101.00	71.83	50.00	19.450	9065900194500
0.7677			19.50	20.00	153.00	101.00	71.75	50.00	19.500	9065900195000
0.7697			19.55	20.00	153.00	101.00	71.68	50.00	19.550	9065900195500
0.7756			19.70	20.00	153.00	101.00	71.45	50.00	19.700	9065900197000
0.7795			19.80	20.00	153.00	101.00	71.30	50.00	19.800	9065900198000
0.7811			19.84	20.00	153.00	101.00	71.24	50.00	19.840	9065900198400
0.7874			20.00	20.00	153.00	101.00	71.00	50.00	20.000	9065900200000



OPERATING PARAMETERS FT 200 U

Material group	Hardness		SFM	Feed Rate - IPR						
	HRC	BHN		1/8 in. 3.17 mm	1/4 in. 6.35 mm	3/8 in. 9.52 mm	1/2 in. 12.70 mm	5/8 in. 15.87 mm	3/4 in. 19.05 mm	1 in. 25.40 mm
Common structural steels	- ≤ 32	≤ 150 ≤ 301	590 525	0.0050 0.0065	0.0080 0.0100	0.0125 0.0155	0.0125 0.0155	0.0155 0.0195	0.0195 0.0250	0.0250 0.0315
Free-cutting steels	≤ 25 ≤ 32	≤ 255 ≤ 301	525 525	0.0065 0.0065	0.0100 0.0100	0.0155 0.0155	0.0155 0.0155	0.0195 0.0195	0.0250 0.0250	0.0315 0.0315
Unalloyed heat-treatable steels	≤ 20 ≤ 25 ≤ 32	≤ 220 ≤ 255 ≤ 301	525 525 425	0.0065 0.0065 0.0065	0.0100 0.0125 0.0100	0.0155 0.0155 0.0155	0.0155 0.0195 0.0155	0.0195 0.0250 0.0195	0.0250 0.0250 0.0250	0.0315 0.0315 0.0315
Alloyed heat-treatable steels	≤ 32 ≤ 43	≤ 301 ≤ 402	460 360	0.0065 0.0065	0.0125 0.0100	0.0155 0.0155	0.0195 0.0155	0.0250 0.0195	0.0250 0.0250	0.0315 0.0315
Unalloyed case hardened steels	≤ 25	≤ 255	525	0.0065	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Alloyed case hardened steels	≤ 32 ≤ 43	≤ 301 ≤ 402	460 360	0.0065 0.0065	0.0125 0.0100	0.0155 0.0155	0.0195 0.0155	0.0250 0.0195	0.0250 0.0250	0.0315 0.0315
Nitriding steels	≤ 32 ≤ 43	≤ 301 ≤ 402	360 330	0.0065 0.0040	0.0100 0.0065	0.0155 0.0100	0.0155 0.0100	0.0195 0.0125	0.0250 0.0155	0.0315 0.0195
Tool steels	≤ 25 ≤ 43	≤ 255 ≤ 402	295 215	0.0065 0.0050	0.0100 0.0080	0.0155 0.0125	0.0155 0.0125	0.0195 0.0155	0.0250 0.0195	0.0315 0.0250
High speed steels	≤ 43	≤ 402	195	0.0040	0.0065	0.0100	0.0100	0.0125	0.0155	0.0195
Spring steels	≤ 38	≤ 354	195	0.0040	0.0065	0.0100	0.0100	0.0125	0.0155	0.0195
Hardened steels	≤ 48 ≤ 66	≤ 460 -	165	0.0030	0.0050	0.0080	0.0080	0.0100	0.0125	0.0155
Stainless steels, sulphured austenitic	≤ 28 ≤ 36	≤ 273 ≤ 337	195	0.0030	0.0050	0.0080	0.0080	0.0100	0.0125	0.0155
Stainless steels, martensitic	≤ 46	≤ 435	165	0.0030	0.0050	0.0080	0.0080	0.0100	0.0125	0.0155
Cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	460 425	0.0065 0.0065	0.0125 0.0125	0.0155 0.0155	0.0195 0.0195	0.0250 0.0250	0.0250 0.0250	0.0315 0.0315
Spheroidal graphite iron and malleable cast iron	≤ 23 ≤ 38	≤ 242 ≤ 354	395 395	0.0065 0.0065	0.0125 0.0100	0.0155 0.0155	0.0195 0.0155	0.0250 0.0195	0.0250 0.0250	0.0315 0.0315
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	80	0.0030	0.0050	0.0080	0.0080	0.0100	0.0125	0.0155
Ti and Ti-alloys	≤ 25 ≤ 43	≤ 255 ≤ 402	115 100	0.0030 0.0025	0.0050 0.0040	0.0080 0.0065	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0155 0.0125
Aluminium and Al-alloys	-	≤ 120	655	0.0065	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Al wrought alloys	-	≤ 200	590	0.0065	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Al cast alloys ≤ 10 % Si	-	≤ 180	560	0.0065	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Al cast alloys ≤ 24 % Si	-	≤ 180	460	0.0065	0.0125	0.0155	0.0195	0.0250	0.0250	0.0315
Magnesium alloys	-	≤ 120	655	0.0065	0.0100	0.0155	0.0155	0.0195	0.0250	0.0315
Copper, low-alloyed	-	≤ 150								
Brass, short-chipping	-	≤ 180								
Brass, long-chipping	-	≤ 180								
Bronze, short-chipping	- ≤ 25	≤ 180 ≤ 255	655	0.0065	0.0100	0.0155	0.0155	0.0195	0.0250	0.0315
Bronze, long-chipping	≤ 25 ≤ 32	≤ 255 ≤ 301								
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK										



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