GARBA 188L

Stainless spring wire

GARBA 188 is a general-purpose austenitic stainless steel, which is used for springs and other components requiring good fatigue resistance. GARBA 188L has a higher formability as compared to GARBA 188 due to its lower carbon content.

Chemical composition

Element	Weight %
C max.	0.07%
Si max.	1.00%
Mn max.	2.00%
P max.	0.045%
S max.	0.015%
Cr	17.50% - 19.50%
Ni	8.0% - 10.5%
N max.	0.1%

Data last verified: 2023-04-13

Mechanical properties

For round wire

Diameter (mm)	Tolerance (mm)	Tensile strength (N/mm^2)
0.30 - 0.50	±0.005	
0.51 - 0.70	±0.008	
0.71 - 0.83	±0.009	
0.84 - 1.00	±0.010	
1.01 - 1.60	±0.011	
1.61 - 2.50	±0.014	
2.51 - 4.00	±0.018	
4.01 - 6.30	±0.022	
6.31 - 8.00	±0.028	
0.30 - 0.40		1785 - 2000
0.41 - 0.70		1700 - 1910
0.71 - 1.00		1650 - 1830
1.01 - 1.50		1530 - 1740
1.51 - 2.00		1445 - 1650
2.01 - 2.80		1360 - 1570

Data last verified: 2023-04-13

Diameter (mm)	Tolerance (mm)	Tensile strength (N/mm^2)
2.81 - 4.00		1275 - 1490
4.01 - 6.00		1190 - 1400
6.01 - 8.00		1105 - 1320

Surface conditions

Surface condition

Surface performance
AC-surface 0.30–8.00 mm Ø. The AC-coating can be removed before heat treatment by using a 10-20% nitric acid pickle at room temperature.

Physical properties

Heat conductivity

Temperature °C	20	100	200	400
W/(m* °C)	15.0	15.5	17.5	20.0

Linear expansion

Pro °C	30-100	30-200	30-300
x10^{-6}	17.0	17.5	18.5

Data last verified: 2023-04-13

Technical specification

Property	Value	
E modulus of elasticity	Abt. 180 kN/mm2 in drawn condition.	Abt. 185 kN/mm2 after heat treatment.
G modulus of shear	Abt. 70 kN/mm2 in drawn condition.	Abt. 73 kN/mm2 after heat treatment.
Density	7.90 kg/dm3	

Steel grades and product standards

Nearest equivalent product standards	ASTM A313	BS 2056 304 S15	JIS G4314
Nearest equivalent steel grades	EN/DIN 1.4301	AISI/SAE 304	JIS SUS 304

Recommendations

Heat treatment

As soon as possible after coiling, the springs should be stress relieved.
Recommended temperature for compression springs or tension springs without initial tension is approx. 350ºC for 0.5 - 3 hours.

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