

GARBA 188

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Stainless spring wire

GARBA 188 is a general-purpose austenitic stainless steel, which is used for springs and other components requiring good fatigue resistance. The formability is excellent and the corrosion resistance is good against atmospheric corrosion

CHEMICAL COMPOSITION

C (%)	Si (%)	Mn (%)	P max. (%)	S max. (%)	Cr (%)	Ni (%)
0.05 - 0.15	2.00	2.00	0.045	0.015	16.00 - 19.00	6.00 - 9.50

MECHANICAL PROPERTIES

FOR ROUND WIRE

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Diameter (mm)	Tolerance (mm)	Tensile Strength (N/mm ²)
0.30 - 0.65	±0.008	-
0.66 - 1.01	±0.010	-
1.02 - 2.26	±0.015	-
2.27 - 4.01	±0.020	-
4.02 - 6.26	±0.025	-
6.27 - 8.00	±0.030	-
0.30 - 0.30		2150 - 2470
0.31 - 0.40		2100 - 2420
0.41 - 0.50		2050 - 2360
0.51 - 0.65		2000 - 2300
0.66 - 0.80		1950 - 2240
0.81 - 1.00		1900 - 2190
1.01 - 1.25		1850 - 2130
1.26 - 1.50		1800 - 2070
1.51 - 1.75		1750 - 2010
1.76 - 2.00		1700 - 1960
2.01 - 2.50		1650 - 1900
2.51 - 3.00		1600 - 1840
3.01 - 3.50		1550 - 1780
3.51 - 4.25		1500 - 1730
4.26 - 5.00		1450 - 1670
5.01 - 6.00		1400 - 1610
6.01 - 7.00		1350 - 1550
7.01 - 8.00		1300 - 1500

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SURFACE CONDITIONS

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

E AND G MODULUS OF ELASTICITY

Abt. 180 kN/mm² in drawn condition.
Abt. 185 kN/mm² after heat treatment.

E AND G MODULUS OF SHEAR

Abt. 70 kN/mm² in drawn condition.
Abt. 73 kN/mm² after heat treatment.
Density: 7.90 kg/dm³.

HEAT CONDUCTIVITY

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

RESISTIVITY

Temperature °C	20	100	200	300
nΩm	700	750	800	950

LINEAR EXPANSION

Pro °C	30-100	30-200	30-300
x10 ⁻⁶	17.0	17.5	18.5

SPECIFIC HEAT CAPACITY

Temperature °C	20	100	200	400
J/(kg*°C)	440	480	520	560

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STANDARDS

NEAREST EQUIVALENT STEEL GRADES

EN/DIN 1.4310, AISI/SAE 302, JIS SUS 302

NEAREST EQUIVALENT STANDARDS

EN 10270-3, ASTM A313, AMS 5688, BS 2056 302 S26, JIS G4314

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. 350°C for 0.5 - 3 hours.