

# 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 ( $\pm$ mm)	Tensile Strength (N/mm <sup>2</sup> )
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/mm<sup>2</sup> in drawn condition.  
Abt. 185 kN/mm<sup>2</sup> after heat treatment.

### E AND G MODULUS OF SHEAR

Abt. 70 kN/mm<sup>2</sup> in drawn condition.  
Abt. 73 kN/mm<sup>2</sup> after heat treatment.  
Density: 7.90 kg/dm<sup>3</sup>.

### 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 <sup>-6</sup>	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.