

# GARBA 188L

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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. GARBA 188L has a higher formability as compared to GARBA 188 due to its lower carbon content.

### CHEMICAL COMPOSITION

<b>C (%)</b>	<b>Si (%)</b>	<b>Mn (%)</b>	<b>P max. (%)</b>	<b>S max. (%)</b>	<b>Cr (%)</b>	<b>Ni (%)</b>
0.08	1.00	2.00	0.040	0.015	18.00 - 20.00	8.50 - 10.00

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## MECHANICAL PROPERTIES

### FOR ROUND WIRE

Diameter (mm)	Tolerance (mm)	Tensile Strength (N/mm <sup>2</sup> )
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
2.81 - 4.00		1275 - 1490
4.01 - 6.00		1190 - 1400
6.01 - 8.00		1105 - 1320

## 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.

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## 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

### LINEAR EXPANSION

Pro °C	30-100	30-200	30-300
x10 <sup>-6</sup>	17.0	17.5	18.5

## STANDARDS

### NEAREST EQUIVALENT STEEL GRADES

EN/DIN 1.4301, AISI/SAE 304, JIS SUS 304

### NEAREST EQUIVALENT STANDARDS

ASTM A313, BS 2056 304 S15, 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.