GARBA 178Mo

Stainless spring wire. Similar to EN 1.4310 with increased tensile strength.

GARBA 178Mo is a general-purpose austenitic stainless steel that is used for springs and other components requiring good fatigue resistance and good resistance against atmospheric corrosion. Addition of molybdenum increases the tensile strength as compared to GARBA 188 and also increases the resistance against localised and general corrosion.

Chemical composition

Element	Weight %
C	0.05% - 0.15%
Si	2.00%
Mn	2.00%
P max.	0.045%
S max.	0.015%
Cr	16.00% - 19.00%
Ni	6.00% - 9.50%
Mo	0.80%

Data last verified: 2023-04-13

Mechanical properties

For round wire

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 - 0.40		2250 - 2590
0.41 - 0.50		2200 - 2530
0.51 - 0.65		2150 - 2470
0.66 - 0.80		2100 - 2420
0.81 - 1.00		2050 - 2360
1.01 - 1.25		2000 - 2300
1.26 - 1.50		1950 - 2240
1.51 - 1.75		1900 - 2190
1.76 - 2.00		1850 - 2130

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Diameter (mm)	Tolerance (mm)	Tensile strength (N/mm^2)
2.01 - 2.50		1750 - 2010
2.51 - 3.00		1700 - 1960
3.01 - 3.50		1650 - 1900
3.51 - 4.25		1600 - 1840
4.26 - 5.00		1550 - 1780
5.01 - 6.00		1500 - 1730
6.01 - 7.00		1450 - 1670
7.01		1400 - 1610

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.

Data last verified: 2023-04-13

Physical properties

Heat conductivity

Temperature °C	20	100	200	400

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W/(m* °C)	15.0	16.0	18.0	20.0

Resistivity

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

Linear expansion

Pro °C	30-100	30-200	30-400
$x10^{-6}$	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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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.

Steel grades and product standards

Nearest equivalent product standards	EN ISO 6931-1	ASTM A313	BS 2056 302 S26
Nearest equivalent steel grades	EN/DIN 1.4310	AISI/SAE 302	

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. 420 ºC for 0.5 - 4 hours.

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