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

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

MECHANICAL PROPERTIES

FOR ROUND WIRE

GARBA 178MO

Diameter (mm)	Tolerance (mm)	Tensile Strength (N/mm²)
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
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 - 8.00		1400 - 1610

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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^2 in drawn condition.
Abt. 185 kN/mm^2 after heat treatment.

E AND G MODULUS OF SHEAR

Abt. 70 kN/mm^2 in drawn condition.
Abt. 73 kN/mm^2 after heat treatment.

HEAT CONDUCTIVITY

Temperature °C	20	100	200	400
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 CAPACTITY

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

GARBA 178MO

STANDARDS

NEAREST EQUIVALENT STEEL GRADES

EN/DIN 1.4310, AISI/SAE 302

NEAREST EQUIVALENT STANDARDS

EN 10270-3, ASTM A313, BS 2056 302 S26

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.