

Raajratna Austenitic Stainless Steel Spring

Wire (316 -1.4401/X5CrNiMo17-12-2)

DESCRIPTION

Raajratna manufactures high quality stainless steel 316 (1.4401) & 316L (1.4404) spring wires in bright as well as in stearate coated surface finish. It has high corrosion resistance properties in chloride containing atmospheres because of addition of Molybdenum (Mo). 316L is with low carbon to enhance corrosion resistance properties.

Stainless steel spring wires can be supplied in ½ hard, ¾ hard & full hard conditions as well. We are using drawing lubricants from CONDAT and also of Japanese origin.

APPLICATIONS

Stainless steel spring wires are used for producing various types of springs like Aerosol spring, Compression spring, Extension spring, and Torsion spring as well as for wire form, Straight Pin etc.

STANDARDS

The stainless steel wires are manufactured as per **ASTM A 313, EN 10270-3, JIS G4314, BS 2056 & DIN 17224** and other equivalent international standards.

SURFACE FINISH

Size (mm)	Finish
0.10 – 0.80	Bright
0.20 – 16.00	Coated
0.15 – 2.00	Ni Coated

CHEMICAL ANALYSIS

Element	EN 10270-3 (Requirement)	Typical values
%C	0.07 Max	0.045
%Mn	2.00 Max	1.300
%Si	1.00 Max	0.400
%P	0.045 Max	0.030
%S	0.015 Max	0.005
%Cr	16.50 - 18.50	16.800
%Ni	10.00 – 13.00	10.600
%Mo	2.00 – 2.50	2.100
%N	0.11 Max	0.040

PHYSICAL PROPERTIES

Density (20°C)	8.0 g/cm ³
Thermal conductivity (20°C)	14.6 W/m.K.
Specific heat (20°C)	500 J/Kg.K
Electrical resistivity (20°C)	0.75 Ωmm ² /m
Shear modulus	
As drawn: 68 GPa approx	Tempered: 71 GPa approx
Modulus of elasticity	
As drawn: 175 GPa approx	Tempered: 180 GPa approx
Thermal expansion coefficient	
20° – 200°C	16.5
20° – 400°C	17.5
20° – 600°C	18.5

- Data shown are typical, and should not be construed as max & min values for specification. Data on any particular piece of material may vary from those shown herein.

MECHANICAL PROPERTIES

Mechanical properties of supplied wire (As drawn condition) as per **EN 10270-3** are mentioned below.

Tensile strength as per EN 10270-3		
Sizes (mm)		Min. Tensile strength
From	To	(MPa)
	0.20	1725
>0.20	0.30	1700
>0.30	0.40	1675
>0.40	0.50	1650
>0.50	0.65	1625
>0.65	0.80	1600
>0.80	1.00	1575
>1.00	1.25	1550
>1.25	1.50	1500
>1.50	1.75	1450
>1.75	2.00	1400
>2.00	2.50	1350
>2.50	3.00	1300
>3.00	3.50	1250
>3.50	4.25	1225
>4.25	5.00	1200
>5.00	6.00	1150
>6.00	7.00	1125
>7.00	8.50	1075
>8.50	10.00	1050

- Maximum tensile strength = min value + 15% of min value.
- After straightening, TS may be reduced by up to 10%.
- 1 MPa = 1 N/mm², 1 GPa = 1 KN/mm².
- When better formability required or in case of thicker sizes, Tensile strength values may be agreed upon.

HEAT TREATMENT

Tensile strength values of drawn wire may be increased by about 50 – 150 MPa by tempering at 350°C / 3 – 20 Minutes. Tempering effect will be more if greater holding time is used. In case of very short holding periods temperature may be raised up to 420°C.