

Raajratna Austenitic Stainless Steel Spring Wire (304H/S30400)

DESCRIPTION

Raajratna manufactures high quality stainless steel spring wire from 0.10 – 16.00 mm in bright as well as in stearate coated surface finish.

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	Requirement	Typical values
%C	0.08 Max	0.070
%Mn	2.00 Max	1.150
%Si	1.00 Max	0.400
%P	0.045 Max	0.025
%S	0.030 Max	0.002
%Cr	18.00 - 20.00	18.300
%Ni	8.00 – 10.50	8.100
%N	0.10 Max	0.040

PHYSICAL PROPERTIES

Density (20°C)	7.9 g/cm ³
Thermal conductivity (20°C)	14.6 W/m.K.
Specific heat (20°C)	500 J/Kg.K
Electrical resistivity (20°C)	0.73 mm ² /m
Permeability (μ _{max})	10 Approx.
Shear modulus	
As drawn: 71 GPa approx	Tempered: 73 GPa approx
Modulus of elasticity	
As drawn: 185 GPa approx	Tempered: 193 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 **ASTM A 313/A 313M** are mentioned below. It can also be supplied as per **EN 10270-3**.

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

Tensile strength as per ASTM A313			
Sizes (mm)		Tensile strength (MPa)	
From	To	Minimum	Maximum
	0.23	2240	2450
0.23	0.25	2205	2415
0.25	0.28	2190	2400
0.28	0.30	2180	2385
0.30	0.33	2165	2370
0.33	0.36	2150	2360
0.36	0.38	2135	2345
0.38	0.41	2125	2330
0.41	0.43	2110	2315
0.43	0.46	2095	2300
0.46	0.51	2070	2275
0.51	0.56	2040	2250
0.56	0.61	2015	2220
0.61	0.66	2005	2205
0.66	0.71	1995	2190
0.71	0.79	1965	2170
0.79	0.86	1945	2135
0.86	0.94	1930	2125
0.94	1.04	1895	2095
1.04	1.14	1875	2070
1.14	1.27	1840	2035
1.27	1.37	1825	2020
1.37	1.47	1800	1990
1.47	1.60	1780	1965
1.60	1.78	1735	1935
1.78	1.90	1725	1915
1.90	2.03	1695	1895
2.03	2.21	1670	1870
2.21	2.41	1640	1850
2.41	2.67	1600	1804
2.67	2.92	1565	1770
2.92	3.17	1530	1745
3.17	3.43	1495	1710
3.43	3.76	1450	1660
3.76	4.11	1415	1620
4.11	4.50	1365	1570
4.50	4.88	1335	1550
4.88	5.26	1295	1515
5.26	5.72	1255	1475
5.72	6.35	1205	1415
6.35	7.06	1160	1365
7.06	7.77	1110	1325
7.77	8.41	1070	1280
8.41	9.19	1035	1240
9.19	10.00	1000	1205
10.00	11.12	965	1170
11.12	12.70	930	1140
12.70		895	1105

HEAT TREATMENT

Tensile strength values of drawn wire may be increased by about 100 – 200 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.

This tempering treatment also affects the Yield strength/Tensile strength ratio. In as drawn condition this ratio is about 0.80 & after tempering treatment, the same would be around 0.85.