

Wire



Stainless steel spring wire

Stainless steel spring wire is a kind of steel wire produced by cold drawing process, and often works as the raw material for producing various kinds of springs.

As a professional stainless steel spring wire manufacturer, all our stainless steel spring wires are produced by high quality standards to deliver high tensile strength, high elasticity and fatigue resistance.

We supply a wide range of stainless steel spring wires and all our products are manufactured in accordance with JIS and ASTM standards.

Specification

- Material: stainless steel.
- Wire diameter: 0.30–6.00 mm.
- Surface: bright finish, dull finish.

Table 1: Raw Materials & Chemical Components

Grade	Chemical Components (%)										Tensile Strength N/mm ² (MPa)
Type	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Other	
SUS302	0.15	1.00	2.00	0.045	0.030	8.0–10.0	17.0–19.0	–	–	–	JIS standard
SUS304	0.08	1.00	2.00	0.045	0.030	8.0–10.0	18.0–20.0	–	–	–	JIS standard
SUS316	0.08	1.00	2.00	0.045	0.030	10.0–14.0	16.0–18.0	2.0–3.0	–	–	JIS standard
321	0.08	1.00	2.00	0.045	0.030	9.0–13.0	17.0–19.0	–	–	Ti≥5×C%	ASTM standard
347	0.08	1.00	2.00	0.045	0.030	9.0–13.0	17.0–19.0	–	–	Nb≥10×C%	ASTM standard
SUS631(J1)	0.09	1.00	1.00	0.040	0.030	6.50–8.50	16.0–18.0	–	–	Al: 0.75–1.5	JIS standard

Note: The single value represents the maximum value in the table above.

Table 2: SUS302, SUS304, SUS316 & SUS631(J1)
Stainless Steel Spring Wires –JIS Standard

Wire Diameter	Tensile Strength N/mm2 (MPa)			
D (mm)	Class A	Class B	Class C	Class D
	SUS302-WPA SUS304-WPA SUS316-WPA	SUS302-WPB SUS304-WPB SUS304-WPBS ^{a)(c)}	SUS631J1-WPC ^{b)}	SUS304-WPDS ^{c)}
0.29 ≤ D ≤ 0.40	1600–1850	2050–2300	1930–2180	1700–2000
0.40 < D ≤ 0.60		1950–2200	1850–2100	1650–1950
0.60 < D ≤ 0.70	1530–1780	1850–2100	1800–2050	1550–1850
0.70 < D ≤ 0.90				1550–1800
0.90 < D ≤ 1.00				1500–1750
1.00 < D ≤ 1.20	1450–1700	1750–2000	1700–1950	1470–1720
1.20 < D ≤ 1.40				1420–1670
1.40 < D ≤ 1.60	1400–1650	1650–1900	1600–1850	1370–1620
1.60 < D ≤ 2.00				–
2.00 < D ≤ 2.60	1320–1570	1550–1800	1500–1750	
2.60 < D ≤ 4.00	1230–1480	1450–1700	1400–1650	
4.00 < D ≤ 6.00	1100–1350	1350–1600	1300–1550	

Notes:

^{a)}: Range of applicable wire diameter of SUS304-WPBS shall be 0.29 mm to 1.6 mm.

^{b)}: In the case of evaluating the tensile strength of SUS631J1-WPC after precipitation hardening treatment upon agreement between the manufacturer and the purchaser, the test piece taken from the production shall be heat treated by heating at 470 °C ± 10°C for 1h followed by air cooling, and the increase of tensile strength of the test piece due to this heat treatment shall be not less than 250 N/mm².

^{c)}: The letter “S” at the tail of the symbols indicates wires requiring straightness.

Applicable Wire Diameter D (mm)

- WPA: 0.080 ≤ D ≤ 8.00
- WPB: 0.080 ≤ D ≤ 12.00
- WPC: 0.10 ≤ D ≤ 6.00
- WPBS, WPDS: 0.29 ≤ D ≤ 1.60

Table 3: 321 & 347^{d)}

Stainless Steel Spring Wires – ASTM Standard

Wire Diameter D (mm)	Tensile Strength N/mm ² (MPa)
0.25 < D ≤ 0.38	1655–1860
0.38 < D ≤ 0.61	1620–1825
0.61 < D ≤ 1.04	1620–1825
1.04 < D ≤ 1.19	1585–1790
1.19 < D ≤ 1.37	1550–1760
1.37 < D ≤ 1.57	1515–1725
1.57 < D ≤ 1.83	1480–1690
1.82 < D ≤ 2.03	1450–1655
2.03 < D ≤ 2.34	1415–1620
2.34 < D ≤ 2.67	1380–1585
2.67 < D ≤ 3.05	1345–1550
3.05 < D ≤ 3.76	1275–1480
3.76 < D ≤ 4.22	1240–1450
4.22 < D ≤ 4.50	1170–1380
4.50 < D ≤ 5.26	1105–1310
5.26 < D ≤ 5.72	1070–1275
5.72 < D ≤ 6.35	1035–1240

Note:

^{d)}When wire is specified in straightened and cut lengths, the minimum tensile strength shall be 90 % of the values listed in the table.

Manufacturing & Testing Standards

- JIS G 4314 Stainless steel wires for springs.
- ASTM A313 Standard specification for stainless steel spring wire.

Application

- Torsion spring
- Extension spring
- Compression spring
- Mattress spring
- Mechanical spring
- Aerosol valve spring