

STAINLESS STEEL WIRE FOR SPRING

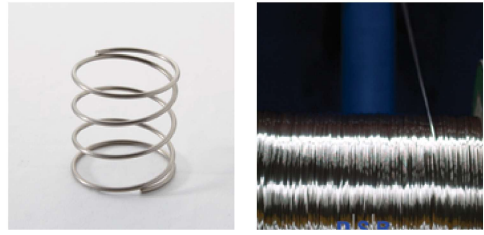
DSR is supplying Stainless Steel Wire for Spring with excellent mechanical properties(advanced surface, cast & helix control) for a uniformity of spring forming, our spring wire is manufactured under the strict quality control from wire rod to final products with suitable coating treatment classified by the usages.

▪ Surface Finish & Applications

Type	Symbol	Grade	Dia. (mm)	Applications
S-Co	WPA	AISI 304, 316	0.20 ~ 15.00	General Spring
	WPB, NS	AISI 302, 304		
	HS	AISI 302, 302H	0.20 ~ 6.00	High TS Spring
	WPC	631J1	0.20 ~ 15.00	Good resistance at elevated temperatures
Bright	WPA	AISI 304, 316	0.15 ~ 4.00	Precision Spring good bright surface & forming processing work
	WPB, NS	AISI 302, 304		
	HS	AISI 302, 302H	0.25 ~ 4.00	Good resistance at elevated temperatures
	WPC	631J1		
Ni-Co	WPA	AISI 304, 316	0.20 ~ 2.30	Precision coiling at high speed
	WPB, NS	AISI 302, 304		
	WPC	631J1		
Ni-Co Bright	WPA	AISI 304, 316		
	WPB, NS	AISI 302, 304		

▪ Nearest equivalent standards

Grade	JIS	ASTM A 580, A 313		EN 10088-1, 10270-3	
	JIS G 4308, 4314	Type	UNS No.	Number	Name
302	SUS302	T-302	S30200	1.4310	X10CrNi18-8
304	SUS304	T-304	S30400	1.4301	X5CrNi18-10
304L	SUS304L	T-304L	S30403	1.4306 1.4307	X2CrNi19-11 X2CrNi18-9
316	SUS316	T-316	S31600	1.4401	X5CrNiMo17-12-2
316L	SUS316L	T-316L	S31603	1.4404	X2CrNiMo17-12-2
316Ti	-	-	-	1.4571	X6CrNiMoTi17-12-2
631J1	SUS631J1	T-631	S17700	1.4568	X7CrNiAl 17-7
904L	-	-	-	1.4539	X1NiCrMoCu25-20-5
Duplex2205	S2914L	T-2205	S32205	1.4462	X2CrNiMoN22-5-3
XM-7	XM-7	-	S30430	1.4567	X3CrNiCu18-9-4
410	SUS410	T-410	S41000	1.4000	X6Cr13
430	SUS430	T-430	S43000	1.4016	X6Cr17



▪ Mechanical Properties (JIS)

Dia. (mm)	Tolerance (mm)	Tensile Strength (N/mm ²)		
		CLASS A SUS 304-WPA SUS 316-WPA	CLASS B SUS 302-WPB SUS 304-WPB	CLASS C SUS 631J1-WPC
0.16	± 0.005	1650 ~ 1900	2150 ~ 2400	1950 ~ 2200
0.18				
0.20				
0.23				
0.26	± 0.008	1600 ~ 1850	2050 ~ 2300	1930 ~ 2180
0.29				
0.32				
0.35				
0.40	± 0.010	1530 ~ 1780	1950 ~ 2200	1850 ~ 2100
0.45				
0.50				
0.55				
0.60	± 0.015	1450 ~ 1700	1850 ~ 2100	1800 ~ 2050
0.65				
0.70				
0.80				
0.90	± 0.020	1400 ~ 1650	1750 ~ 2000	1700 ~ 1950
1.00				
1.20				
1.40				
1.60	± 0.025	1320 ~ 1570	1650 ~ 1900	1600 ~ 1850
1.80				
2.00				
2.30				
2.60	± 0.035	1230 ~ 1480	1550 ~ 1800	1500 ~ 1750
2.90				
3.20				
3.50				
4.00	± 0.050	1100 ~ 1350	1450 ~ 1700	1400 ~ 1650
4.50				
5.00				
5.50				
6.00	-	1000 ~ 1250	1350 ~ 1600	1300 ~ 1550
6.50				
8.00				
9.00				
10.00	-	-	1130 ~ 1380	-
12.00				
12.00	-	-	980 ~ 1230	-
12.00				
12.00	-	-	880 ~ 1130	-
12.00				

STAINLESS STEEL WIRE FOR SPRING

▪ Mechanical Properties (ASTM A 313- Type 631)

Diameter, inch			Cold Drawn Condition (ksi)	Condition CH-900(ksi)	
Over	Include	Dia Tol.	Nominal	min.	max.
0.010	0.012	±0.0003	295	335	365
0.012	0.015		295	335	365
0.015	0.020	±0.0004	290	330	360
0.020	0.024		285	325	355
0.024	0.029	±0.0005	285	325	355
0.029	0.033		275	320	350
0.033	0.041	±0.0008	275	320	350
0.041	0.044		270	310	340
0.044	0.051		270	310	340
0.051	0.061		265	305	335
0.061	0.071		257	297	327
0.071	0.086		255	292	322
0.086	0.090		245	282	312
0.090	0.100		242	279	309
0.100	0.106		238	274	304
0.106	0.130	±0.0010	236	272	302
0.130	0.138		230	260	290
0.138	0.146		228	258	288
0.146	0.162		226	256	286
0.162	0.180		224	254	284
0.180	0.207		222	252	282
0.207	0.225		218	248	278
0.225	0.306		213	242	272
0.306	0.313		207	235	265
0.313	0.440	±0.0015	207	235	265
0.440	0.500		203	230	260
0.500	0.625	±0.0020	203	230	260

• CH-900: AGED AT 900°F[482°C] FOR 1H AND AIR COOLED.

▪ Mechanical Properties (ASTM A 313- Type 302 and 304)

Diameter, inch		Dia Tol.	Bend Test	Tensile Strength(ksi)	
Over	Include		Min. No. of Bends	min.	max.
-	0.0090	±0.0003	-	325	355
0.0090	0.0100		-	320	350
0.0100	0.0110		-	318	348
0.0110	0.0120		-	316	346
0.0120	0.0130		-	314	344
0.0130	0.0140		-	312	342
0.0140	0.0145	±0.0004	-	310	340
0.0145	0.0160		-	308	338
0.0160	0.0170		-	306	336
0.0170	0.0180		-	304	334
0.0180	0.0200		-	300	330
0.0200	0.0220		-	296	326
0.0220	0.0240	±0.0005	-	292	322
0.0240	0.0260		8	291	320
0.0260	0.0280		8	289	318
0.0280	0.0310		8	285	315
0.0310	0.0330		8	282	310
0.0330	0.0340		8	282	310
0.0340	0.0370	±0.0008	8	280	308
0.0370	0.0410		8	275	304
0.0410	0.0440		8	275	304
0.0440	0.0450		8	272	300
0.0450	0.0500		8	267	295
0.0500	0.0540		8	265	293
0.0540	0.0580	±0.001	7	261	289
0.0580	0.0630		7	258	285
0.0630	0.0700		7	252	281
0.0700	0.0750		7	250	278
0.0750	0.0800		7	246	275
0.0800	0.0870		7	242	271
0.0870	0.0950		7	238	268
0.0950	0.1050		5	232	262
0.1050	0.1150		5	227	257
0.1150	0.1250		5	222	253
0.1250	0.1350		3	217	248
0.1350	0.1480		3	210	241
0.1480	0.1620	±0.0015	3	205	235
0.1620	0.1770		3	198	228
0.1770	0.1920		1	194	225
0.1920	0.2070		1	188	220
0.2070	0.2250		1	182	214
0.2250	0.2500		1	175	205
0.2500	0.2780		1	168	198
0.2780	0.3060		1	161	192
0.3060	0.3125		1	155	186
0.3125	0.3310		1	155	186
0.3310	0.3620		1	150	180
0.3620	0.3940		1	145	175
0.3940	0.4380	±0.002	1	140	170
0.4380	0.5000		1	135	165
0.5000	-	-	-	130	160

STAINLESS STEEL WIRE FOR SPRING

▪ Mechanical Properties(EN 10270-3)

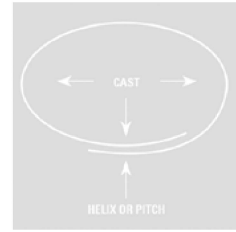
(N/mm²)

Diameter, mm		Dia Tol. mm		1.4310				1.4401	
				Normal tensile strength(NS)		High tensile strength(HS)		min.	max.
Over	Include	T14	T15	min.	max.	min.	max.		
-	0.20	±0.005	±0.004	2200	2530	2350	2710	1725	1990
0.20	0.25			2150	2480	2300	2650	1700	1960
0.25	0.30	±0.008	±0.005	2150	2480	2300	2650	1700	1960
0.30	0.40			2100	2420	2250	2590	1675	1930
0.40	0.50			2050	2360	2200	2530	1650	1900
0.50	0.64			2000	2300	2150	2480	1625	1870
0.64	0.65	±0.010	±0.008	2000	2300	2150	2480	1625	1870
0.65	0.80			1950	2250	2100	2420	1600	1840
0.80	1.00			1900	2190	2050	2360	1575	1820
1.00	1.25	±0.015	±0.010	1850	2130	2000	2300	1550	1790
1.25	1.50			1800	2070	1950	2250	1500	1730
1.50	1.60			1750	2020	1900	2190	1450	1670
1.60	1.75			1750	2020	1900	2190	1450	1670
1.75	2.00			1700	1960	1850	2130	1400	1610
2.00	2.25			1650	1900	1750	2020	1350	1560
2.25	2.50	±0.020	±0.015	1650	1900	1750	2020	1350	1560
2.50	3.00			1600	1840	1700	1960	1300	1500
3.00	3.19			1550	1790	1650	1900	1250	1440
3.19	3.50			1550	1790	1650	1900	1250	1440
3.50	4.00	±0.025	±0.020	1500	1730	1600	1840	1225	1410
4.00	4.25			1500	1730	1600	1840	1225	1410
4.25	4.50			1450	1670	1550	1790	1200	1380
4.50	5.00			1450	1670	1550	1790	1200	1380
5.00	6.00			1400	1610	1500	1730	1150	1330
6.00	6.25			1350	1560	1450	1670	1125	1300
6.25	7.00	±0.030	±0.025	1350	1560	1450	1670	1125	1300
7.00	8.50			1300	1500	1400	1610	1075	1240
8.50	9.00			1250	1440	1350	1560	1050	1210
9.00	10.00	±0.035	±0.030	1250	1440	1350	1560	1050	1210

▪ Mechanical Properties(EN 10270-3)

(N/mm²)

Diameter, mm		Dia Tol. mm		1.4401		1.4568		1.4301		
				min.	max.	min.	max.	Normal tensile strength(NS)	High tensile strength(HS)	max.
Over	Include	T14	T15					min.	min.	
-	0.20			1725	1990	1975	2280	2000	2150	2300
0.20	0.25	±0.005	±0.004	1700	1960	1950	2250	1975	2050	2280
0.25	0.30	±0.008	±0.005	1700	1960	1950	2250	1975	2050	2280
0.30	0.40			1675	1930	1925	2220	1925	2050	2220
0.40	0.50			1650	1900	1900	2190	1900	1950	2190
0.50	0.64			1625	1870	1850	2130	1850	1950	2130
0.64	0.65			1625	1870	1850	2130	1850	1950	2130
0.65	0.80	±0.010	±0.008	1600	1840	1825	2100	1800	1850	2070
0.80	1.00			1575	1820	1800	2070	1775	1850	2050
1.00	1.25			1550	1790	1750	2020	1725	1750	1990
1.25	1.50			1500	1730	1700	1960	1675	1750	1930
1.50	1.60			1450	1670	1650	1900	1625	1650	1870
1.60	1.75	±0.015	±0.010	1450	1670	1650	1900	1625	1650	1870
1.75	2.00			1400	1610	1600	1840	1575	1650	1820
2.00	2.25			1350	1560	1550	1790	1525	1550	1760
2.25	2.50			1350	1560	1550	1790	1525	1550	1760
2.50	3.00			1300	1500	1500	1730	1475	1550	1700
3.00	3.19	±0.020	±0.015	1250	1440	1450	1670	1425	1450	1640
3.19	3.50			1250	1440	1450	1670	1425	1450	1640
3.50	4.00			1225	1410	1400	1610	1400	1450	1610
4.00	4.25			1225	1410	1400	1610	1400	1450	1610
4.25	4.50			1200	1380	1350	1560	1350	1350	1560
4.50	5.00	±0.025	±0.020	1200	1380	1350	1560	1350	1350	1560
5.00	6.00			1150	1330	1300	1500	1300	1350	1500
6.00	6.25			1125	1300	1250	1440	1250	1300	1440
6.25	7.00			1125	1300	1250	1440	1250	1300	1440
7.00	8.50			±0.030	±0.025	1075	1240	1250	1440	1200
8.50	9.00	1050	1210			1250	1440	1175	1250	1360
9.00	10.00	±0.035	±0.030			1050	1210	1250	1440	1175



▪ Packing

SPOOL

Dia. (mm)	Packing (F x B x W)	App.W/T (Kg)
0.14 ~ 0.44	DIN160	5
	DIN200	12
	DIN250	20
	DIN355	40
	SH390	15
	SH460	35
0.45 ~ 0.80	SH460	35
	560 (Steel & Wooden) Reel	150
0.65 ~ 1.90	760 (Steel & Wooden) Reel	350
1.91 ~ 4.20	760 x 430 x 240 (Wooden Reel)	300
	760 x 430 x 360 (Wooden Reel)	400
1.5 ~ 3.0	Z2 Coil	400 ~ 500
2.0 ~ 4.0	Z3 Coil	700 ~ 1000

COIL

Dia. (mm)	Coil I.D (Inch)	App.W/T (Kg)
0.18 ~ 0.30	8	6 ~ 10
0.30 over ~ 0.40	10	10 ~ 25
0.40 over ~ 0.50	10 / 12	25 ~ 40
0.50 ~ 0.80	12	30 ~ 40
0.80 ~ 0.90	16	40 ~ 70
0.90 over ~ 1.00	16	50 ~ 100
1.0 over ~ 1.90	16 / 20	50 ~ 150
1.90 over ~ 2.30	24	100 ~ 200
2.30 over ~ 3.20	24	100 ~ 200
3.20 over ~ 6.00	30	200 ~ 500
6.00 over ~ 15.00	40	200 ~ 750

CARRIER

Dia. (mm)	Coil I.D (Inch)	App.W/T (Kg)
1.50 ~ 1.90	24	500
1.91 ~ 3.20	24	910
3.21 ~ 6.00	30	1000
6.01 ~ 15.00	40	1000 ~ 1500

▪ Cast & Helix

The most important thing to make high quality spring wire is how to control cast & helix. As our specifications are based on lots of customers demands, we have ever made control of it as follows.

Dia. (mm)	Coil I.D (Inch)	Cast (mm)	Helix (mm)
0.18 ~ 0.29	8	200 ~ 300	30 under
0.30 ~ 0.44	10	250 ~ 370	
0.45 ~ 0.79	12	300 ~ 450	
0.80 ~ 1.49	16	400 ~ 600	50 under
1.50 ~ 1.99	18/20	500 ~ 700	
2.00 ~ 3.10	24	600 ~ 900	60 under
3.11 ~ 5.90	30	760 ~ 1150	100 under
5.91 ~ 15.00	40	1000 ~ 1500	130 under