



INDIAN OFFICES

MUMBAI (HO)

Tata Steel Limited
Wire Division
16th Floor,
R Tech Park Nirlon Complex
Western Express Highway Goregaon
East, Mumbai 400063
Tel: +91 22 66425200

BANGALORE

Tata Steel Limited
Wire Division
Jubilee Bldg, A Wing,
2nd Floor, 45 Museum Road,
Bangalore 560025
Tel: 080 66950000

BHUBANESHWAR

Tata Steel Limited
2/B, Fortune Tower
Chandrasekharpur
Bhubaneswar-751023
Tel: 09040093374

INDORE

Tata Steel Limited
3rd Floor, NRK Business Park,
B -1, Scheme No. 54, Vijayanagar
Square, Indore 452010
Tel: 073 16450191

KOLKATA

Tata Steel Limited
Wire Division
52 Jawaharlal Nehru Road
2nd Floor, Kolkata 700071
Tel: +91 033 22825069

NEW DELHI

Tata Steel Limited
Hindustan Times House, 15th Floor,
10-20, Kasturba, Gandhi Marg,
New Delhi-110001
Tel: 011 23327072 / 73 / 74
011 65544000

AHMEDABAD

Tata Steel Limited
172/2, Premchand House Annexe,
Ashram Road,
Ahmedabad, 380009
Tel: 079 66612600

PUNE

Tata Steel Limited
Office no. 6 & 7, Second Floor
Wing B, Great Eastern plaza
Old Airport road, Yerwada,
Pune - 411 006
Tel: 020 65600554

CHENNAI

Tata Steel Limited
Wire Division
8th Floor, Sigapi Achi Building 1819,
Rukmini Lakshmi pathi Road Egmore,
Chennai 600008
Tel: 044 66960026 / 27

HYDERABAD

Tata Steel Limited
6th Floor, Gummideli Towers,
1-10-39-To-44, Begumpet,
Hyderabad-500016
Tel: 040 66261020

JAIPUR

Tata Steel Limited
G-Business Park, 6th Floor, D-34,
Near Agrasen Circle, C-Scheme,
Subhash Marg, Jaipur - 302001
Tel: 0141 6518572

COIMBATORE

Tata Steel Limited
New No. 97, Race Course Road,
Opp. K G Theatre
Coimbatore 641018
Tel: 042 22309028 / 58

OVERSEAS OFFICES

USA

Tata Sales International
Clo Tata Consultancy Services
379 Thomall Street, 4th Floor Edison
New Jersey 08837, USA
Tel: 201 602 3405
Mr. Anil Bhandari
Email: anil.bhandari@tatasteel.com

USA

Tata Sales International Americas
475, North Martingale Road
Suite 400, Schaumburg
Illinois, 60173, USA
Tel: 847 619 0400 ext. 729
Tel: 847 592 3729 (Direct)
Mobile: 630 886 1172
Mr. Rajiv Ranjan
Email: rajiv.ranjanGT85@tatasteel.com

UK

Tata Sales International
4th Floor, 30 Millbank
London SW1P4WY
Tel +44 7876 390066
Mr. CR Kulkarni
Email: cr.kulkarni@tatasteel.com

DUBAI

Tata Sales International
(Middle East)
FZE P.O. Box 18294,
Jabel Ali, Dubai, UAE
Tel +971 (4) 8873232
Mr. Shuja Haque
Email: shuja.haque@tatasteel.com

MANUFACTURING PLANTS

INDIA

Tata Steel Limited
Tarapur Complex
MIDC Tarapur Industrial Area
Thane 401 506
Tel: 91 (2525) 295000

THAILAND

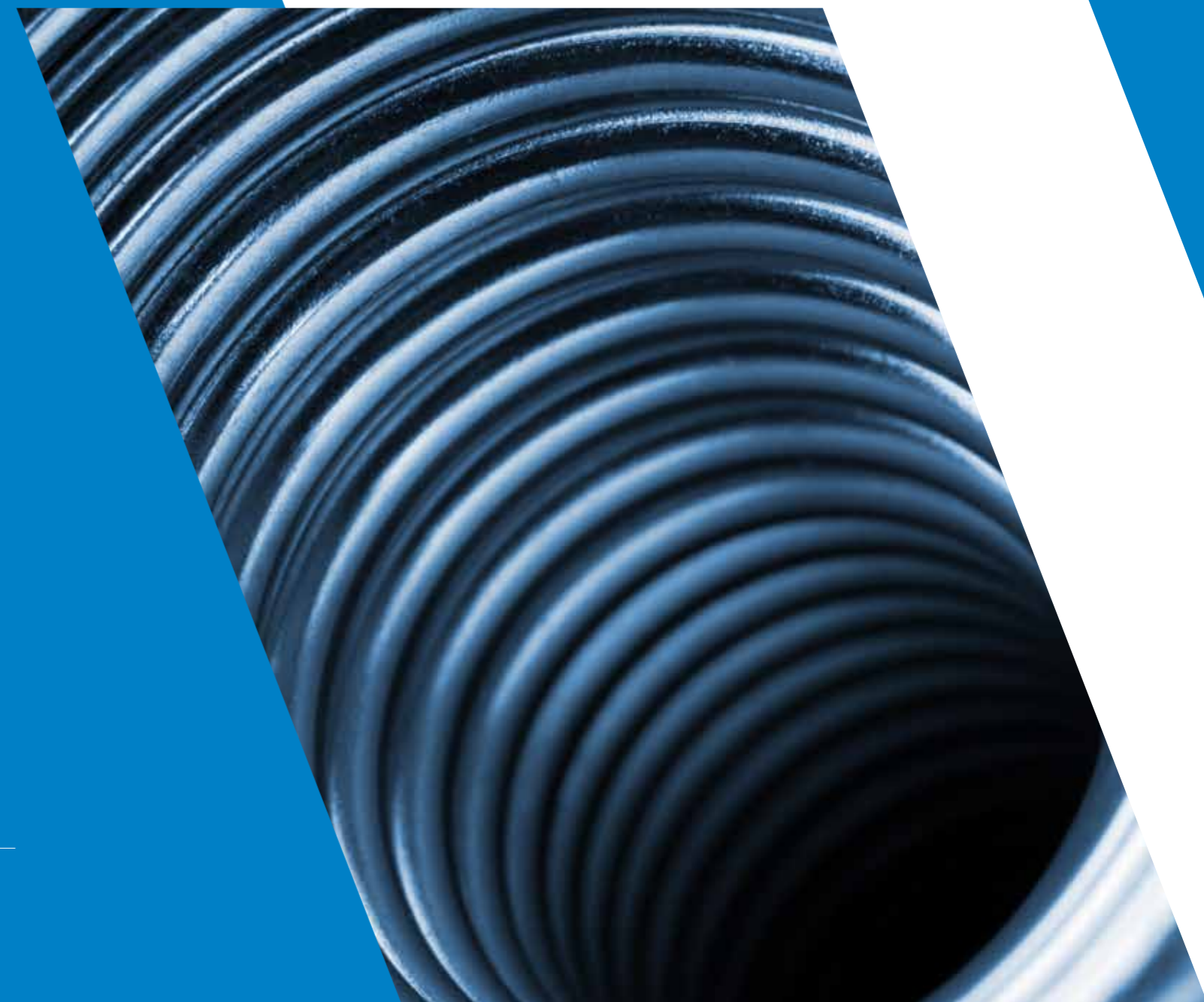
TSN Wires Co. Ltd.
Rasa Tower 1, 14th Floor 555
Phaholyothin Road Chatuchak
Bangkok 10900
Tel: (+66) 2937 0060
Fax: (+66) 2937 0068 2937 0069
Email: tsn_sale@tsnwires.co.th
Website: www.tsnwires.co.th

THAILAND

The Siam Industrial Wire Co. Ltd.
555 Rasa Tower, 14th Floor,
Phaholyothin Road,
Chatuchak, Bangkok 10900
Tel: (66-2) 9370068 / (66-2) 9370069

SPRING WIRE

Reliable Products for the Automotive,
Agriculture and Upholstery Industries





TATA STEEL

Established in 1907, Tata Steel is among the top ten global steel companies with a crude steel production capacity of over 28 million tonnes per annum (mtpa). A Fortune 500 company, the Tata geographically diversified steel producer, employing over 80,000 people across five continents in nearly 50 countries. The Group's vision is to be the world's steel industry benchmark in Value Creation and Corporate Citizenship through the excellence of its people, its innovative approach and overall conduct. Underpinning the vision is a performance culture committed to aspirational targets, safety and social responsibility, continuous improvement, openness and transparency.

TATA STEEL GLOBAL WIRES BUSINESS

With manufacturing facilities in India, Thailand and Sri Lanka, and a global sales network, this Group is among the top wire manufacturers in the world. It manufactures a variety of wires for the Automobile, Construction, Power and General Engineering industries, in single and stranded forms.

Highlights

- Fully integrated manufacturing facilities from Iron Ore Mining to Steel Wires
- A wealth of expertise and experience in wire drawing, with the latest manufacturing facilities
- Equipped to meet

exacting specifications of customers • Established products across India, Thailand, China, Sri Lanka, USA, Europe, Australia and Middle East • Backed by a strong R&D set-up.

TATA STEEL GLOBAL WIRES - INDIA

Tata Steel Global Wires - India is the country's leading producer of Steel Wires and one of the largest in Asia. It is also a leader in the international wire industry, well-established in Europe, USA, Middle East, and Australia. The Company has fully integrated manufacturing cycles, from sourcing of raw materials to in-house steel making and wire rod rolling facilities. This has led to a comprehensive extension of technology support to all the wire units in its fold at Tarapur, Indore and Jamshedpur. All the units of operation adhere to strict quality parameters and are ISO certified. It manufactures a wide range of wire products catering to the needs of various industry segments such as automobile, infrastructure, power and general engineering.

TATA STEEL WIRE DIVISION

The pioneer in establishing Spring Wires as per IS standards in India, we also have a significant presence in the Middle East, Dubai, Thailand and Turkey. We are the largest Carbon Spring Wire manufacturer as well as the largest integrated steel wire supplier in India.

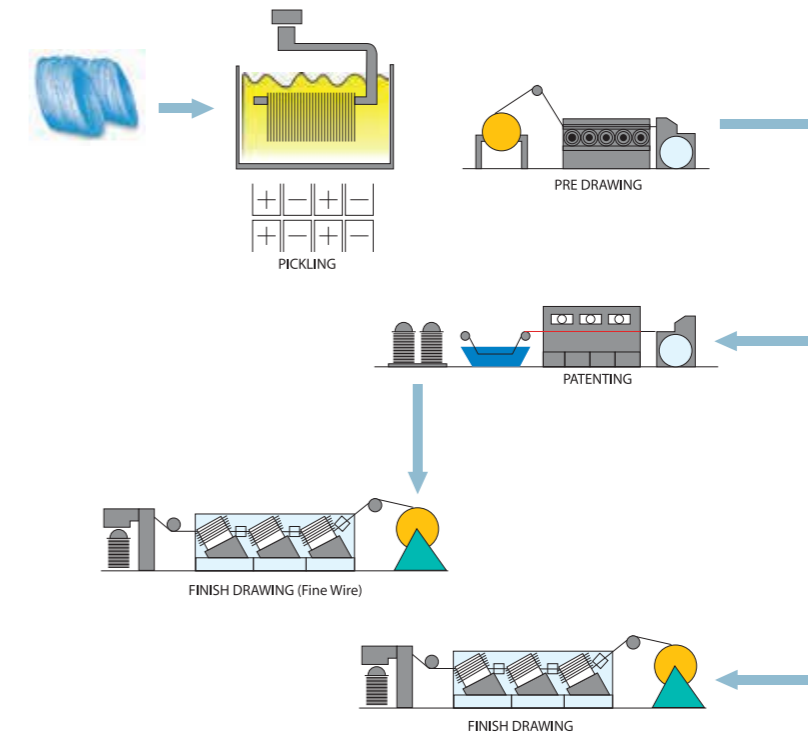


MOST ADVANCED PRODUCTION FACILITY



MANUFACTURING PROCESS

TATA STEEL Wire Division operates multiple plants for the manufacture of Spring Wire



Certifications

First Steel Wire Company in India to get ISO 9002: 1984 certification, with upgraded quality management systems

- TS 16949 - 2009
- EMS 14001:2004



Quality Assurance

- Inbuilt quality checks at all stages of production from steel making to hot rolling and wire drawing
- Carefully designed drawing process to ensure optimum properties
- Uniform coil weight
- Traceability of coils



Test Procedure

Attributes tested - Size, Breaking load, Tensile strength, Bends, torsion and any other customer specific requirements

Quality Report - Each shipment is accompanied by a Mill Test Certificate.



WHY SPRING WIRE FROM TATA STEEL

Control from Ore to Wire

Tata Steel uses high quality primary steel, carefully refined and cast under controlled conditions. Since scrap is not used in steel melting, there are no chances of residual tramp elements that interfere with drawing, as well as heat treatment of steel. Steel is rolled into wire rods in our own state-of-the-art wire rod mills with features such as automatic size control through the Orbis gauge and Optiflex cooling for uniform tensile strength. Thus, we are in a position to customise the raw material for spring wires to suit performance requirements.

State-of-the-art Pickling Technology

Complete scale removal is key to defect free wire drawing. We do not use mechanical descaling to make spring wires. We have also taken away the manual controls and consequent variability in chemical pickling by installing a fully automatic tunnel pickling plant – the first of its kind in Asia! This means highly reliable scale removal and consistent carrier coatings that ensure uniformity in surface characteristics of wire, lot after lot.

Customising Wires for Spring Coiling Application

For lay persons, wire drawing is wire drawing – be it for making springs or screws. However, we have mastered the art of customising wires for specific applications. We know that the irritants of spring makers – like variation in spring length, changes in spring OD, etc. that need repeated settings – arise from uniformity of cast and helix characteristics in wires. Therefore we have replaced an entire battery of old 'bull block' machine with state-of-the-art large drum straight through wire drawing machines.

These machines provide wire coils of large inner diameter and lowest strain ageing. With heavy duty killing rollers, perfectly dead cast with lowest rise – straight wire getting coiled into springs of exact length, it is a spring maker's dream come true!

Time lost in setting up springs for every wire coil is a loss to the spring maker. We aim for minimum variation in tensile strength between coils by careful selection of steel chemistry, control over rolling parameters, scientifically designed wire drawing reduction schedules and controlled drawing speeds.

Larger coils, less downtime

We offer spring wire in coils of 1 MT for sizes 6 mm and above, and up to 500 kg for sizes 3 to 5 mm. This means long runs of the spring coiling machine with less stoppages, lesser time lost in set-up and thus, lower variability in springs.

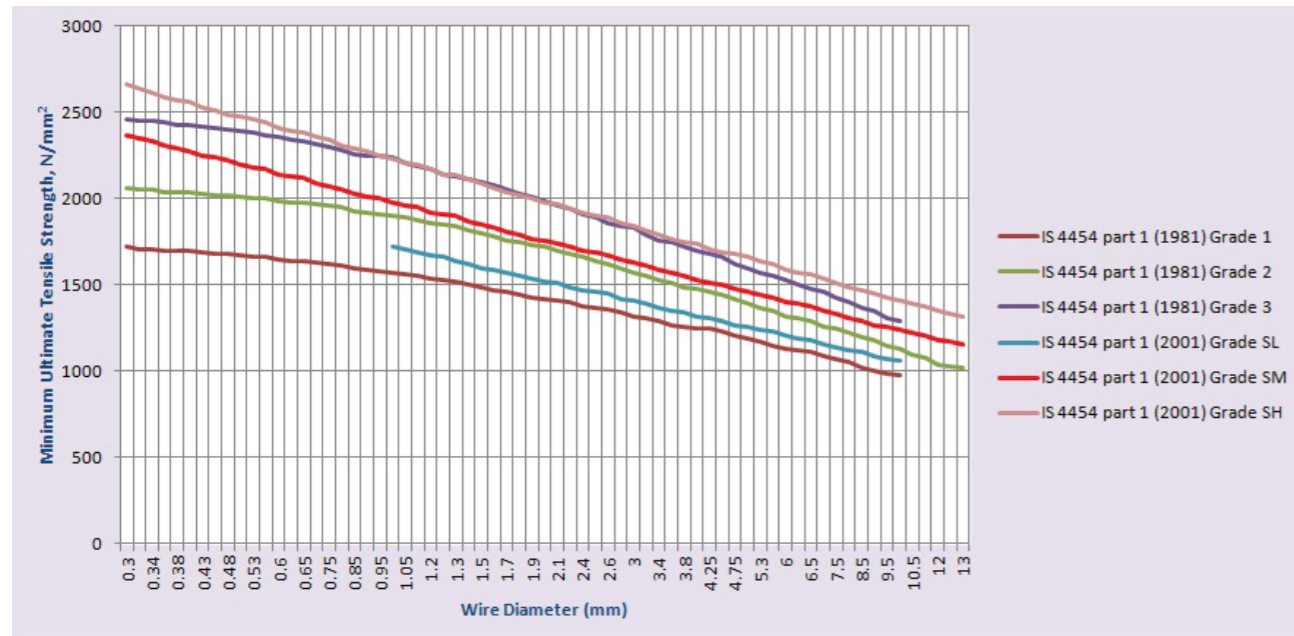
Better tool life

With the best pickling technology and advanced lubrication used in drawing, our wires have an optimum layer of residual lubricant on the surface. Coupled with the rust preventive oil used, this provides lowest friction during wire payoff and coiling, thus minimising tool wear, increasing tool life and reducing tool changes

Value for Money

More springs per ton of wire. We maintain wire diameters in the negative range of tolerance applicable. Thus, our customers get more length of wire and therefore, a higher number of springs per ton of wire.

ULTIMATE TENSILE STRENGTHS OF STEEL SPRING WIRES



Standards

	IS		BS	DIN	JIS 3521
Spring steel	4454-Part-1		5216	DIN:17223 - Part-1	
Year	1981	2001		1998 1984	
	Grade 1, 2, 3	SL, SM, SH, DM, DH	Grand 1, 2, 3	Grade A, B, C	

IS 4454 2001

Chemical Composition

Grade	C	Si	Min (Max)	SP (Max)	P (Max)	Cu
SL, SM, SH	0.35 - 1.00	0.10 - 0.30	0.30 - 1.20	0.03	0.03	0.2
DM, DH	0.45 - 1.00	0.10 - 0.30	0.30 - 1.50	0.02	0.025	0.12

Nominal Diameter / Number of Twists

Nominal Diameter of Wire (mm)		Minimum Number of Twists for Grades	
Over	Upto and Including	SL, SM and SH	DM and DH
0.69	1.4	20	25
1.4	2	18	22
2	3.5	16	20
3.5	6	14	18
5	8	7	9
8	10	5	7

CONVERSION TABLE

Sizes in (mm) for various wire gauges (swg) & weight per meter - length per ton for various size

GAUGE NO. BWG	Size (mm)	Weight (Kg/m)	Length (m/tonne)	GAUGE NO. BWG	Size (mm)
17	1.42	0.0121	82600	17	1.47
16	1.63	0.0158	63300	16	1.65
15	1.83	0.0200	50000	15	1.83
14	2.03	0.0207	40500	14	2.1
13	2.34	0.0310	32300	13	2.41
12	2.64	0.0385	26000	12	2.77
11	2.95	0.0484	20700	11	3.05
10	3.25	0.0612	16350	10	3.4
9	3.66	0.0778	12850	9	3.76
8	4.06	0.0989	10100	8	4.19
7	4.47	0.1250	8000	7	4.57

FROM	TO	MULTIPLY BY
1 inch	mm	25.4
1 pound (lbs)	Kg	0.4536
1 Ton	Pound (lbs)	2240
1psi (lb/inch ²)	Kg/mm ²	0.0007031
1000 psi Kg	Kg/mm ²	0.7031
1 N/mm ²	Kg/mm ²	0.1019
1 MN/mm ²	Kg/mm ²	0.1019
1 MPA	Kg/mm ²	0.109
1 Ton/inch ²	Kg/mm ²	1.5749
1 oz/ft ²	g/m ²	205.152

IS 4454 2001

Tensile Strength Requirements

Nominal Diameter (mm)	Tensile Strength (Mpa)				
	Grade SL	Grade SM	Grade DM	Grade SH	Grade DH
1	2	3	4	5	6
0.6		2140 - 2400	2140 - 2400	2410 - 2670	2410 - 2670
0.63		2130 - 2380	2130 - 2380	2390 - 2650	2390 - 2650
0.65		2120 - 2370	2120 - 2370	2380 - 2640	2380 - 2640
0.7		2090 - 2350	2090 - 2350	2360 - 2610	2360 - 2610
0.75		2070 - 2330	2070 - 2330	2340 - 2580	2340 - 2580
0,8		2050 - 2300	2050 - 2300	2310 - 2560	2310 - 2560
0.85		2030 - 2280	2030 - 2380	2290 - 2640	2380 - 2640
0.9		2010 - 2260	2010 - 2260	2270 - 2510	2270 - 2510
0.95		2000 - 2240	2000 - 2240	2250 - 2490	2250 - 2490
1	1720 - 1970	1980 - 2370	1980 - 2220	2380 - 2470	2380 - 2470
1.05	1710 - 1950	1960 - 2220	1960 - 2220	2210 - 2450	2210 - 2450
1.1	1690 - 1940	1950 - 2190	1950 - 2190	2200 - 2430	2200 - 2430
1.2	1670 - 1910	1920 - 2160	1920 - 2160	2170 - 2400	2170 - 2400
1.25	1660 - 1900	1910 - 2130	1910 - 2130	2140 - 2380	2140 - 2380
1.3	1640 - 1890	1900 - 2130	1900 - 2130	2140 - 2370	2140 - 2370
1.4	1620 - 1860	1870 - 2100	1870 - 2100	2110 - 2340	2110 - 2340
1.5	1600 - 1840	1850 - 2080	1850 - 2080	2090 - 2310	2090 - 2310
1.6	1590 - 1820	1830 - 2050	1830 - 2050	2060 - 2290	2060 - 2290
1.7	1570 - 1800	1810 - 2030	1810 - 2030	2040 - 2260	2040 - 2260
1.8	1550 - 1780	1790 - 2010	1790 - 2010	2020 - 2240	2020 - 2240
1.9	1540 - 1760	1770 - 1990	1770 - 1990	2000 - 2220	2000 - 2220
2	1520 - 1750	1760 - 1970	1760 - 1970	1980 - 2220	1980 - 2280
2.1	1510 - 1730	1740 - 1960	1740 - 1960	1970 - 2180	1970 - 2180
2.25	1490 - 1710	1720 - 1930	1720 - 1930	1940 - 2150	1940 - 2150
2.4	1470 - 1690	1700 - 1910	1700 - 1910	1920 - 2130	1920 - 2130
2.5	1460 - 1680	1690 - 1890	1690 - 1890	1900 - 2110	1900 - 2110
2.6	1450 - 1660	1670 - 1880	1670 - 1880	1890 - 2100	1890 - 2100
2.8	1420 - 1640	1650 - 1850	1650 - 1850	1860 - 2070	1860 - 2070

Nominal Diameter (mm)	Tensile Strength (Mpa)				
	Grade SL	Grade SM	Grade DM	Grade SH	Grade DH
3	1410 - 1620	1630 - 1830	1630 - 1830	1840 - 2040	1840 - 2040
3.2	1390 - 1600	1610 - 1810	1610 - 1810	1820 - 2020	1820 - 2020
3.4	1370 - 1580	1590 - 1780	1590 - 1780	1790 - 1990	1790 - 1990
3.6	1350 - 1560	1570 - 1760	1570 - 1760	1770 - 1970	1770 - 1970
3.8	1340 - 1540	1550 - 1740	1550 - 1740	1750 - 1950	1750 - 1950
4	1320 - 1520	1530 - 1730	1530 - 1730	1740 - 1930	1740 - 1930
4.25	1310 - 1500	1510 - 1700	1510 - 1700	1710 - 1900	1710 - 1900
4.5	1290 - 1490	1500 - 1680	1500 - 1680	1690 - 1880	1690 - 1880
4.75	1270 - 1470	1480 - 1670	1480 - 1670	1680 - 1840	1680 - 1840
5	1260 - 1450	1460 - 1650	1460 - 1650	1660 - 1830	1660 - 1830
5.3	1240 - 1430	1440 - 1630	1440 - 1630	1640 - 1820	1640 - 1820
5.6	1210 - 1390	1430 - 1610	1430 - 1610	1620 - 1800	1620 - 1800
6	1190 - 1340	1400 - 1580	1400 - 1580	1590 - 1700	1590 - 1700
6.3	1670 - 1910	1390 - 1560	1390 - 1560	1570 - 1750	1570 - 1750
6.5	1180 - 1370	1380 - 1550	1380 - 1550	1560 - 1740	1560 - 1740
7	1160 - 1340	1350 - 1530	1350 - 1530	1540 - 1710	1540 - 1710
7.5	1140 - 1320	1330 - 1500	1330 - 1500	1510 - 1680	1510 - 1680
8	1120 - 1300	1310 - 1480	1310 - 1480	1490 - 1660	1490 - 1660
8.5	1110 - 1280	1290 - 1460	1290 - 1460	1470 - 1630	1470 - 1630
9	1090 - 1260	1270 - 1440	1270 - 1440	1450 - 1610	1450 - 1610
9.5	1070 - 1250	1260 - 1420	1260 - 1420	1430 - 1590	1430 - 1590
10	1060 - 1230	1240 - 1400	1240 - 1400	1410 - 1570	1410 - 1570
10.5		1220 - 1380	1220 - 1380	1390 - 1550	1390 - 1550
11		1210 - 1370	1210 - 1370	1380 - 1530	1380 - 1530
12		1801 - 1340	180 11340	1350 - 1500	1350 - 1500
12.5		1701 - 1320	170 11320	1330 - 1480	1330 - 1480
13		1601 - 1310	160 11310	1320 - 1470	1320 - 1470
14		1301 - 1280	130 11280	1290 - 1440	1290 - 1440

IS 4454-Part-I-1981

Size	Grade I		Grade II		Grade III		Grade IV	
	Tol mm	UTS Kg/mm ²	Tol mm	UTS Kg/mm ²	Tol mm	UTS Kg/mm ²	Tol mm	UTS Kg/mm ²
0.63	±0.020	167	±0.015	202	±0.01	238	±0.01	259
0.65	±0.020	167	±0.015	202	±0.01	238	±0.01	258
0.70	±0.020	166	±0.015	201	±0.01	237	±0.01	258
0.75	±0.020	165	±0.015	200	±0.01	235	±0.01	255
0.80	±0.020	164	±0.015	199	±0.01	233	±0.01	253
0.85	±0.030	163	±0.02	197	±0.015	231	±0.015	251
0.90	±0.030	162	±0.02	196	±0.015	230	±0.015	249
0.95	±0.030	161	±0.02	195	±0.015	229	±0.015	247
1.00	±0.030	160	±0.02	194	±0.015	228	±0.015	245
1.05	±0.030	159	±0.02	193	±0.015	225	±0.015	243
1.10	±0.030	159	±0.02	193	±0.015	223	±0.015	242
1.20	±0.030	157	±0.02	190	±0.015	221	±0.015	239
1.25	±0.030	156	±0.02	189	±0.015	218	±0.015	237
1.30	±0.030	155	±0.02	188	±0.015	217	±0.015	235
1.40	±0.030	153	±0.02	188	±0.015	215	±0.015	234
1.50	±0.04	152	±0.03	184	±0.02	214	±0.02	231
1.60	±0.04	150	±0.03	182	±0.02	212	±0.02	229
1.70	±0.04	149	±0.03	180	±0.02	209	±0.02	226
1.80	±0.04	147	±0.03	178	±0.02	207	±0.02	224
1.90	±0.04	146	±0.03	176	±0.02	205	±0.02	222
2.00	±0.05	145	±0.035	175	±0.025	203	±0.025	220
2.10	±0.05	144	±0.035	173	±0.025	200	±0.025	217
2.25	±0.05	143	±0.035	171	±0.025	200	±0.025	214
1.40	±0.05	141	±0.035	169	±0.025	195	±0.025	211
2.50	±0.05	140	±0.035	167	±0.025	193	±0.025	209
2.60	±0.05	139	±0.035	165	±0.025	190	±0.025	207
2.80	±0.05	137	±0.035	163	±0.025	188	±0.025	204
3.00	±0.06	135	±0.035	160	±0.025	187	±0.025	202

IS 4454-Part-I-1981

Size	Grade I		Grade II		Grade III		Grade IV	
	Tol mm	UTS Kg/mm ²	Tol mm	UTS Kg/mm ²	Tol mm	UTS Kg/mm ²	Tol mm	UTS Kg/mm ²
3.20	0.05	134	0.035	158	0.025	183	0.025	200
3.40	0.06	132	0.04	156	0.03	180	0.03	196
3.60	0.06	130	0.04	154	0.03	178	0.03	193
3.80	0.06	129	0.04	152	0.03	175	0.03	190
4.00	0.06	128	0.04	151	0.03	173	0.03	188
4.25	0.06	127	0.04	149	0.03	171	0.03	186
4.50	0.06	125	0.04	147	0.03	169	0.03	184
4.75	0.06	123	0.04	145	0.03	165	0.03	181
5.00	0.06	121	0.04	142	0.03	163	0.03	178
5.30	0.05	119	0.04	140	0.03	160	0.03	175
5.60	0.06	117	0.04	138	0.03	158	0.03	172
6.00	0.07	115	0.045	135	0.035	156	0.035	170
6.30	0.07	114	0.045	134	0.035	153	0.035	167
6.50	0.07	113	0.045	132	0.035	152	0.035	165
7.00	0.07	111	0.045	129	0.035	149	0.035	164
7.50	0.07	109	0.045	127	0.035	146	0.035	160
8.00	0.07	107	0.045	124	0.035	143	0.035	157
8.50	0.07	104	0.045	122	0.035	140	0.035	153
9.00	0.07	102	0.045	120	0.035	138	0.035	151
9.50	0.08	101	0.05	117	0.04	134	0.04	
10.00	0.08	100	0.05	115	0.04	132	0.04	
10.50			0.10	112				
1.00			0.10	110				
12.00			0.10	106				
12.50			0.10	105				
13.00			0.10	104				
14.00			0.10	101				

COIL SPECIFICATIONS

Size (mm)	Coil Weight (Kg)	Min. Coil ID (mm)	Max. Coil OD (mm)	Packing
1.6 to 3	350 to 1100	500	900	Oil Dipped + Stretched Film + Jute or HDPE
3.1 to 6	350 to 100	650	1200	
6.2 to 14	500 to 100	700	1400	Rusto Paper + Stretched Film + Jute or HDPE
6.2 to 14	500 to 100	700	1400	

Information Required While Ordering Tata Wiron Spring Wire

Kindly use the following checklist while sending your enquiries and placing orders

- 1) Diameter (mm)
- 2) Coil Weight by size
- 3) Tolerance allowed on coil weight



Spring Wire is coiled under high tension. Ensure adequate safety measures while uncoiling.



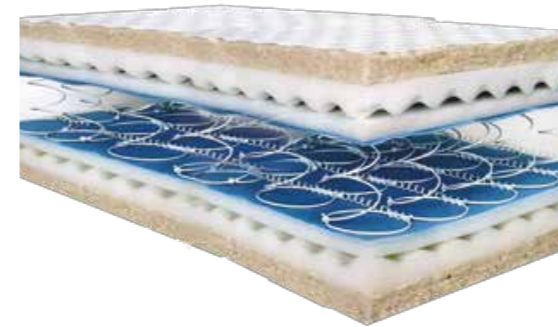
Tata Steel Global Wires Division is committed to protecting the environment. Any suggestions from our customers to help us do so are welcome

SPRING WIRE APPLICATIONS

Automotive springs



Bedding mattress springs



Crimping Screen wire for Construction & Mining



Springs for agricultural equipments



Key Customers

