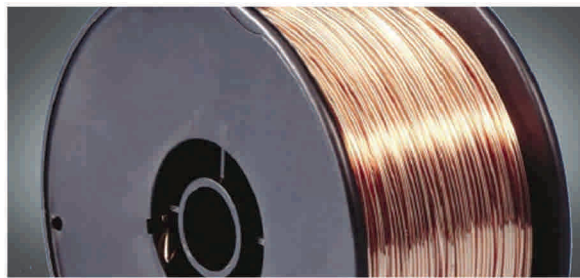
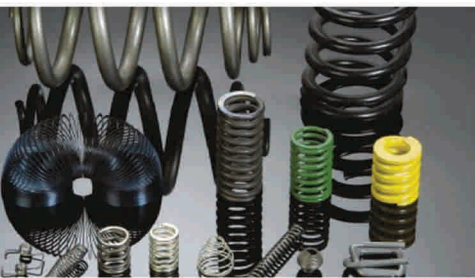




सेल SAIL

Wire Rods from SAIL

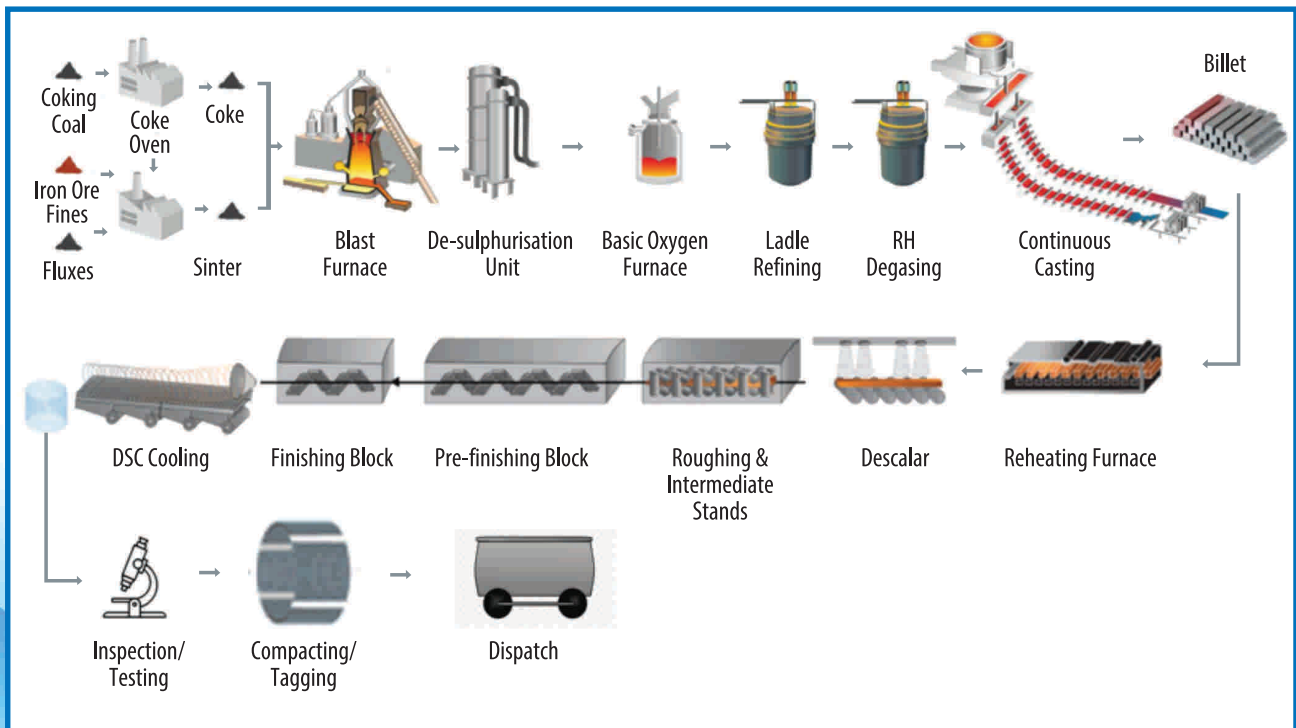


SAIL is one of India's largest and leading steel manufacturer and possesses a robust knowhow and expertise to produce a wide variety of prime steel products such as plates, sheets, coils, bars, structural, rails, pipes etc. for various applications. SAIL has been producing wire rods at the Bhilai Steel Plant since 1980.

With the installation of a new state of the art wire rods mill along with quality steel production facilities at IISCO Steel Plant, Burnpur, SAIL is now in a position to supply a wide variety of wire rods meeting the stringent requirements of many end-users with high quality and consistent dimension.

SAIL is continuously thriving in its endeavor through investment in technology up gradation, research & development and services to ensure the quality of high performing end products.

MANUFACTURING PROCESS at ISP, Burnpur



FACILITIES

Steel Making

- With Hot Metal Desulphurisation (HMDS), Combined Blown Converter, Secondary refining including Vacuum Degassing (RH-OB), Closed Casting & Electro-Magnetic Stirring (EMS) facilities, clean steel is being produced

Reheating Furnace

- State of the art walking beam furnace with auto control of air fuel ratio
- Capacity 160 t/hr

Mill

- High pressure descaler of 250 bar (max) for removal of primary scales
- Heat retaining hoods to reduce the temperature difference between head and tail of the billets
- Combination of 16 Horizontal & Vertical Stands, 2 pass, 8 pass and 4 pass no twist block for No Twist Rolling (Total 30 stands)

Cooling Conveyor

- 113 mtr long cooling conveyor to cool the wire rod across the transformation range at such a rate as to enable the steel to achieve the desired mechanical and metallurgical characteristics
- Controlled cooling of wire rods loops, fast natural or slow cooling rates can be set using combination of blowers and insulating hoods
- Automatic compacting and strapping of coils with pressing force of 400 kN max

ISP WIRE RODS

Size Range : ISP : 5.5 to 22 mm

Regular Sizes being produced : 5.5, 6, 6.5, 7, 8, 9, 10, 11, 12, 13, 13.5, 14, 16, 20, 22 mm

Dimensional Tolerance

Diameter (mm)	Tolerance (mm)	Ovality (mm)
5.5 to 15	+ / - 0.40	0.60 max
16 to 22	+ / - 0.50	0.75 max
or as per relevant standard		

Stricter tolerances can be supplied on mutual agreement.

Product Attributes:

- Clean steel - Very low tramp elements like Sulphur & Phosphorous
- Gaseous content - Nitrogen 70 ppm max
- De-carburization - 1.0% of diameter (max)
- Material soundness - Free from pits, seams, blow holes, etc
- Fine grain steel or as per client's requirement
- Uniform chemistry and properties

With our Vacuum Degassing (RH-OB) facility, we can adhere to stricter specifications with respect to Hydrogen on mutual agreement.

GRADES & APPLICATIONS

Low Carbon grades

Quality	C	Mn	P	S
IS 7887 GR 2	0.08 max	0.25 to 0.40	0.050 max	0.050 max
IS 7887 GR 3	0.10 max	0.70 max	0.050 max	0.050 max
IS 7887 GR 4	0.08 to 0.13	0.30 to 0.60	0.050 max	0.050 max
IS 7887 GR 6M	0.13 to 0.18	0.60 to 0.90	0.050 max	0.050 max
IS 7887 GR 7M	0.15 to 0.20	0.60 to 0.90	0.050 max	0.050 max
IS 7887 GR 8M	0.18 to 0.23	0.60 to 0.90	0.050 max	0.050 max
SAE 1006	0.08 max	0.25 to 0.40	0.040 max	0.050 max
SAE 1008	0.10 max	0.30 to 0.50	0.040 max	0.050 max
SAE 1010	0.08 to 0.13	0.30 to 0.60	0.040 max	0.050 max
SAE 1015	0.13 to 0.18	0.30 to 0.60	0.040 max	0.050 max
SAE 1018	0.15 to 0.20	0.60 to 0.90	0.040 max	0.050 max

Low carbon grades can also be supplied with Boron of 0.0008% to 0.003% on mutual agreement.

These grades can be supplied with Al Killing also with mutual agreement.

Application : Low carbon mild steel wire rods are used for manufacture of nails, mesh, general purpose wires, industrial wires, agriculture wires, brush wires, galvanized wires and other general engineering purposes etc.

Cable Armour Quality (for armour cables)

Quality	C	Mn	P	S	Si
IS 7887 GR 2 (CAQ)	0.08 max	0.25 to 0.40	0.050 max	0.050 max	0.10 max

Resistivity: $13.50 \times 10^{-6} \Omega\text{-cm}$ max

High Carbon grades

Specification: IS 7904

Quality	C	Mn	P	S	Si	Al	Cr
HC38B	0.35 to 0.40	0.60 to 0.90	0.035 max	0.035 max	0.10-0.35	0.04 max	
HC52B	0.50 to 0.55	0.60 to 0.90	0.035 max	0.035 max	0.10-0.35	0.04 max	
HC62A	0.60 to 0.65	0.30 to 0.60	0.035 max	0.035 max	0.10-0.35	0.04 max	
HC62B	0.60 to 0.65	0.60 to 0.90	0.035 max	0.035 max	0.10-0.35	0.04 max	
HC68B	0.65 to 0.70	0.60 to 0.90	0.035 max	0.035 max	0.10-0.35	0.04 max	
HC72B	0.70 to 0.75	0.60 to 0.90	0.035 max	0.035 max	0.10-0.35	0.04 max	
HC78B	0.75 to 0.80	0.60 to 0.90	0.035 max	0.035 max	0.10-0.35	0.04 max	
HC80B	0.78 to 0.83	0.60 to 0.90	0.035 max	0.035 max	0.10-0.35	0.04 max	
HC82B	0.80 to 0.85	0.60 to 0.90	0.035 max	0.035 max	0.10-0.35	0.04 max	
HC78BCr	0.75 to 0.80	0.60 to 0.90	0.035 max	0.035 max	0.10-0.35	0.04 max	0.15-0.30
HC80BCr	0.78 to 0.83	0.60 to 0.90	0.035 max	0.035 max	0.10-0.35	0.04 max	0.15-0.30
HC82BCr	0.80 to 0.85	0.60 to 0.90	0.035 max	0.035 max	0.10-0.35	0.04 max	0.15-0.30

S+P: 0.060 max, Cu: 0.25 max, Cr: 0.15 max, Nb: 0.30 max, V: 0.30 max, Ti: 0.30 max, B: 0.0008 max, Ni: 0.20 max, Mo: 0.05 max, Cr+Nb+V+Ti: 0.30max

Mechanical properties - UTS and RA shall be as per mutual agreement

Specification: IS 7904

Quality	UTS	RA
HCT1130Cr	1130 MPa max	30% min

Specification: JIS G 3506

Quality	C	Mn	P	S	Si
SWRH52B	0.49 to 0.56	0.60 to 0.90	0.030 max	0.030 max	0.15 to 0.30
SWRH62B	0.59 to 0.66	0.60 to 0.90	0.030 max	0.030 max	0.15 to 0.30
SWRH72B	0.69 to 0.76	0.60 to 0.90	0.030 max	0.030 max	0.15 to 0.30
SWRH77B	0.74 to 0.81	0.60 to 0.90	0.030 max	0.030 max	0.15 to 0.30

Application : High carbon wire rods are used for manufacture of Wire rope, Needle wires, Chain Rivets, Umbrella Ribs, Piano Wire, ACSR Core Wire, Prestressed Concrete (PC) and Low Relaxation Prestressed Concrete (LRPC)

Electrode grades

Quality	C	Mn	P	S	Si	Cu	Cr	V	Ni	Mo
IS 2879 EWNr	0.10 max	0.38 to 0.62	0.020 max	0.025 max	0.03 max	0.15 max	0.10 max	0.005 max	0.10 max	0.10 max
AWS A5.18 ER70S-6 (MIG)	0.06 0.15	1.40 to 1.85	0.025 max	0.035 max	0.80 - 1.15	0.50 max	0.15 max max	0.030 max	0.15 max	0.15 max

Application : Electrode quality wire rods are used for manufacturing stick electrodes as well as MIG electrode

Forging quality

Quality	C	Mn	P	S	Si	Al	Cr
EN 8D	0.40 to 0.50	0.60 to 0.90	0.040 max	0.040 max	0.15 to 0.35	0.020 min	0.30 max
EN 8D Cr	0.40 to 0.45	0.60 to 0.90	0.040 max	0.040 max	0.15 to 0.35	0.020 min	0.20 to 0.30
EN 8A Cr	0.33 to 0.38	0.60 to 0.90	0.040 max	0.040 max	0.15 to 0.35	0.020 min	0.20 to 0.30

Cu: 0.25 max, V: 0.05 max, Ni: 0.30 max

Application : Forging quality medium carbon wire rods are used for manufacture of bright bars and auto components

Cold Heading quality

Quality	C	Mn	P	S	Si	Al	Cr	B
IS11169 21C10BT/ SAE10B21	0.18 to 0.23	0.80 to 1.10	0.035 max	0.035 max	0.15 to 0.30	0.020 min	-	0.0005 to 0.0030
IS11169 26C10BT/ SAE15B25	0.23 to 0.29	0.90 to 1.20	0.035 max	0.035 max	0.15 to 0.30	0.020 min	-	0.0005 to 0.0030
SAE 10B33	0.30 to 0.36	0.70 to 1.00	0.040 max	0.050 max	0.15 to 0.35	0.020 to 0.050	0.15 to 0.30	0.0005 to 0.0030
19MnB4(M)	0.23 to 0.29	0.90 to 1.30	0.020 max	0.020 max	0.05 to 0.35	0.020 min	0.30 to 0.50	0.0005 to 0.0030

Mechanical properties as per mutual agreement

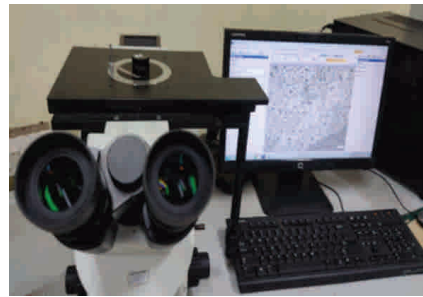
Application : Cold heading quality wire rods are used for manufacture of High tensile Fasteners

TESTING FACILITIES

- Optical Spectrometer
- Universal Testing Machine
- Metallurgical Microscope
- Hardness Tester
- Magnascope
- Micro Ohm Meter
- Cold Upsetting
- Bend/Rebend Machine



Micro Ohm Meter



Metallurgical Microscope



Universal Testing Machine



Optical Spectrometer



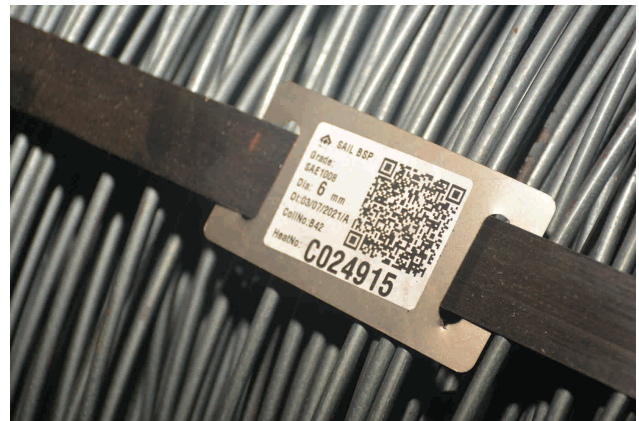
Micro Hardness Tester



Hardness Tester



Bend/Re-bend Machine



BSP WIRE RODS FROM WIRE ROD MILL

Size Range: BSP : 5.5 to 10 mm


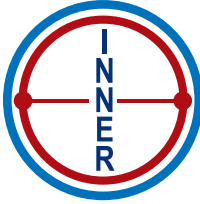
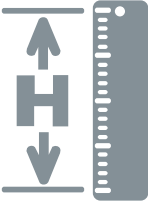
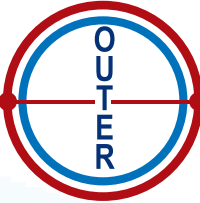

Regular Sizes being produced : 5.5, 6, 7, 8, 10 mm

Quality	C	Mn	P	S
IS 7887 GR 2	0.08 max	0.25 to 0.40	0.050 max	0.050 max
IS 7887 GR 3 (SWR 10)	0.10 max	0.60 max	0.040 max	0.040 max
IS 7887 GR 4	0.08 to 0.13	0.30 to 0.60	0.050 max	0.050 max
IS 7887 GR 7M	0.15 to 0.20	0.60 to 0.90	0.050 max	0.050 max
SAE 1006	0.08 max	0.25 to 0.40	0.040 max	0.050 max
SAE 1008	0.10 max	0.30 to 0.50	0.040 max	0.050 max
SAE 1010	0.08 to 0.13	0.30 to 0.60	0.040 max	0.050 max
IS 2062 E250 : Gr A	0.23 max	1.50 max	0.045 max	0.045 max

Cable Armour Quality (for armour cables)

Quality	C	Mn	P	S	Si
IS 7887 GR 2 (CAQ)	0.08 max	0.25 to 0.40	0.050 max	0.050 max	0.10 max

Resistivity: $13.50 \times 10^{-6} \Omega\text{-cm}$ max

DELIVERY CONDITIONS	ISP Wire Rods	BSP Wire Rods
	<p>Coil Weight 2000 kg approx.</p>	<p>Coil Weight 980 kg approx.</p>
	<p>Coil inner dia 850/900 mm</p>	<p>Coil inner dia 830 - 956 mm</p>
	<p>Height 1500 mm</p>	<p>Height 512 - 620 mm</p>
	<p>Coil outer dia 1250 mm</p>	<p>Coil outer dia 1240 - 1380 mm</p>
	<p>Packing/Strapping 6 metallic straps (including 2 circumferential straps)</p>	<p>Packing/Strapping 4 metallic straps</p>

CERTIFICATIONS

bsi.



Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 9001:2015

This is to certify that:

Steel Authority of India Limited
IISCO Steel Plant (ISP)
PO & PS: Burnpur
Distt. West Bardhaman 713 325
West Bengal
India

Holds Certificate No:

FM 700553

and operates a Quality Management System which complies with the requirements of ISO 9001:2015 for the following scope:

Operation and Maintenance of Integrated Steel Plant - Manufacture and Supply of Bloom, Billet, Beam-blank, Wire Rod in Coils, Thermo Mechanically Treated(TMT) Bars & Coils, Structural Sections, Pig Iron, Coal Chemical By-Products along with Associated Utilities and Service Departments including Security Services.

For and on behalf of BSI:



Chris Cheung, Head of Compliance & Risk - Asia Pacific

Original Registration Date: 2018-10-10

Effective Date: 2021-10-10

Latest Revision Date: 2021-08-23

Expiry Date: 2024-10-09

Page: 1 of 1



...making excellence a habit.™

This certificate was issued electronically and remains the property of BSI and is bound by the conditions of contract.

An electronic certificate can be authenticated [online](https://www.bsi-global.com/ClientDirectory).

Printed copies can be validated at www.bsi-global.com/ClientDirectory or telephone +91 11 2692 9000.

Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2015 requirements may be obtained by consulting the organization.

This certificate is valid only if provided original copies are in complete set.

Information and Contact: BSI, Kitemark Court, Davy Avenue, Knowlhill, Milton Keynes MK5 8PP. Tel: + 44 345 080 9000

BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.

A Member of the BSI Group of Companies.



पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)

निर्माता अनुमोदन वैधता विस्तार/ MANUFACTURER APPROVAL VALIDITY EXTENSION

संदर्भ: : C/QA&I/VA/SAIL/WR/25

दिनांक: 17.12.2020

निर्माता का नाम Name of Manufacturer	SAIL IISCO Steel Plant
निर्माता का पता Address of Manufacturer	Burnpur, Bardhaman, West Bengal
निर्माता कोड Manufacturer Code	NA
नाम और संपर्क विवरण Name & Contact details	Sh. N Banerjee, Mob No.: 9434776242
मद का नाम Item Name	Wire Rods for Bolts & Nuts for POWERGRID Projects
पिछले अनुमोदन का संदर्भ Previous approval letter ref. No. & date	C/QA&I/VA/SAIL dtd 27.09.2019
संचार संदर्भ विवरण Communication reference details	08.12.2020 (email)
वैधता विस्तार अवधि Validity extended Period up to	30.09.2023

Please note that further approval shall be considered based upon performance, quality and supplies during this approval period. Manufacturer shall ensure that request for renewal of above approval should come at least one month before expiry of this approval.

Contractor and Manufacturer shall be fully responsible for satisfactory performance of approved products. Please note that the items supplied shall meet the requirements of POWERGRID Specifications/ Approved Drawing/ Data Sheets/ GTP/MQP, relevant IEC/IS standards and project specific type tests. Manufacturer shall ensure that the above documents are available at the works so that proper inspection is carried out without delay. If, at any point of time, any abnormality is noticed in this regard, we reserve the right to increase our involvement by way of additional inspection and/or additional customer inspection points (CIP) at any stage or withdraw this approval with immediate effect.

Note 1: "The ministry of MSME has launched the "Financial Support to MSMEs in ZED certification scheme" for benefit of MSMEs. MSMEs are requested to avail maximum benefits under the scheme. For more details on ZED, you may please visit this link- (<https://zcd.org.in/>)."

Note 2: Letter regarding- Non-Indulgence in Fraudulent / Unethical Practices attached.

ROHITAV
BAKSHI
रोहिताभ बक्शी
उप प्रबंधक (गुं आं एवं निं)

प्रति: सम्बंधित निरीक्षण कार्यालय
Enclosure: As above



स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED