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उत्पाद मैनुअल
होज़ प्रबलन के लिए इस्पात के तार
IS 19464: 2025 के अनुसार

Product Manual for
Steel Wire for Hose Reinforcement
According to IS 19464: 2025

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना- I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification.

1.	भारतीय मानक संख्या IS No.	:	IS 19464:2025
	शीर्षक Title	:	Steel Wire for Hose Reinforcement
	संशोधनों की संख्या No. of amendments	:	0
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	The wire shall be manufactured from steel rod conforming to any of the grade of IS 7904. Note: This section indicates the requirements for raw material (if specified in the IS) for which compliance is to be established during Grant of Licence/Change in Scope of Licence/Factory Surveillance
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Please refer Annex-A

c)	नमूने का परिमाण Sample Quantity	: 25 meter of Steel Wire for Hose Reinforcement Note: This section indicates the quantity of the sample of the product and/or the raw material (if applicable), required to be sent to the laboratory for testing, for the purpose of Grant of Licence/Change in Scope of Licence/ Factory Surveillance (in case of market surveillance, effort may be made to procure the required quantity of product sample, as far as possible since raw material sample may not be available in market)
d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request	: Nominal diameter, Classification, Type of Coating Note: Apart from the above, any other requirements/parameters may also be declared as per the standard, as applicable.
3.	परीक्षण उपकरणों की सूची List of Test Equipment	: Please refer to Annex- B
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	: Please refer to Annex- C
5.	एक दिन में संभावित परीक्षण Possible tests in a day	
	All Test. Note: This section is for the guidance of BIS Certification Officers/Technical Auditors of BIS Authorized Outside Surveillance Agencies (OSAs) during factory inspection to provide ready reference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor.	
6.	लाइसेंस का दायरा /Scope of the Licence:	
	IS 19464: 2025 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेंस निम्नलिखित कार्यक्षेत्र के लिए प्रदान किया जाता है □Licence is granted to use Standard Mark as per IS 19464:2025 with the following scope:	
7.	उत्पाद का नाम Name of the product	Steel Wire for hose reinforcement
	Classification	LT — Low tensile strength NT — Normal tensile strength HT — High tensile strength ST — Super tensile strength UT — Ultra tensile strength
	Nominal Diameter	From xx mm up to and including xx mm
	Type of Coating	Brass coating or any other coating as per agreement between purchaser and supplier

ANNEX-A
TO PRODUCT MANUAL FOR
Steel Wire for Hose Reinforcement
According to IS 19464:2025

GROUPING GUIDELINES

i) Steel Wire for Hose Reinforcement as per IS 19464:2025 is classified according to five classes of tensile strength:

- a) LT — Low tensile strength — $\geq 2\ 150$ MPa to $< 2\ 450$ MPa;
- b) NT — Normal tensile strength — $\geq 2\ 450$ MPa to $< 2\ 750$ MPa;
- c) HT — High tensile strength — $\geq 2\ 750$ MPa to $< 3\ 050$ MPa;
- d) ST — Super tensile strength — $\geq 3\ 050$ MPa to $< 3\ 350$ MPa; and
- e) UT — Ultra tensile strength — $\geq 3\ 350$ MPa to 3650 MPa.

ii) Further, the Steel Wire for Hose Reinforcement can be supplied in with brass coating or any other coating as per agreement between purchaser and supplier.

iii) The mechanical properties of the wire vary depending on its diameter. Accordingly, the following groups shall be considered based on the diameter range ('d', in mm):

- (a) Group-1 ($0.20 \leq d < 0.65$)
- (b) Group-2 ($0.65 \leq d \leq 1.0$)

iv) In view of above, the following grouping guidelines shall be considered for the purpose of GoL/CSoL:-

- (a) One sample of any size (wire diameter) from each classification and each applicable group shall be drawn to cover all sizes within that group included in the scope of the licence.
- (b) Separate samples for each type of coating shall be drawn to include the respective coating type in the scope of the licence.

v) Scope of licence shall be restricted based on the manufacturing and testing arrangements available.

vi) During operation of licence, samples of each variety covered in the scope of licence, shall be tested in rotation, to the extent possible

ANNEX – B

LIST OF TEST EQUIPMENTS
(INDICATIVE LIST, FOR GUIDANCE ONLY)

Major test equipment required to test as per requirements of Indian Standard.

Sl. No.	Test Equipment/Chemicals and Identification Numbers (Where applicable)	Tests Used in with Clause Reference
1	Instrumental methods Spectrometer: atomic-absorption spectrometry, inductively coupled plasma atomic emission, inductively coupled plasma mass spectrometry techniques, spark source optical emission spectrometry. Spectrophotometer	Chemical Composition (Cl 6.1) for C, S, P, Mn, Si, Ni, Cu, Cr, N Mn, S, P, Si
2	Strohlein or Leco apparatus with all attachments Barometer with chart, Hot plate, Muffle furnace, Complete range of glass wares, measuring cylinders, Desiccator, porcelain boats or ceramic crucibles, Thermometer, Electronic Balance, Distilled Water, Hot air oven, Oxygen - 99.5 percent minimum purity, ether or acetone Standard Reference Material (NML) with certificate Reagents for C: tin granules or pure iron fillings, acidulated water/brine water, methyl red, caustic potash Reagents for S: Ceramic boats/crucibles – desiccators, Fluxes - Low sulphur copper, tin or iron, Dilute hydrochloric acid, Starch Iodide solution, Potassium iodate	Chemical Composition (Cl 6.1) –C& S (chemical method, alternative to instrumental method)
3	Weighing balance, Heater/ Heating element along with energy regulator, Ice water bath, Vol Flask Cap – 1 litre, (Whatman) filter paper No. 040, Suction Filtration Facility, Filter paper pulp pad, Standard Reference Material (NML) with certificate Potassium Permanganate (KMnO ₄), Sodium Nitrite (Na ₂ NO ₃), Ammonium Molybdate [(NH ₄) ₂ Mo ₂ O ₇], Ammonium Phosphate [(NH ₄) ₃ PO ₄], Potassium Nitrate (K ₂ NO ₃), Phenolphthalein Solution, Rectified spirit or methyl alcohol, Sodium Hydroxide (NaOH), Hydrofluoric Acid (HF), Perchloric Acid (HClO ₄), Sulphurous Acid, Hydrobromic Acid (HBr) , other chemicals and reagent as applicable	Phosphorus (P) (chemical method, alternative to instrumental method)
4	Hot plate, Conical flask Reagents: silver nitrate, ammonium persulphate sodium arsenite solution, Dilute Nitric Acid, Phosphoric Acid, Dilute Sulphuric Acid, Concentrated Nitric Acid, NaCl Solution, Permanganic acid	Manganese (Mg) (chemical method, alternative to instrumental method)

5	Medium textured filter paper, Porcelain casserole, platinum crucible, filter paper pulp, hot plate, hot air oven, muffle furnace Reagents: Silver nitrate solution, concentrated nitric acid, concentrated sulphuric acid, Dilute Hydrochloric Acid, Dilute Sulphuric Acid, Perchloric Acid, Tartaric acid and hydrofluoric acid	Silicon (Si) (chemical method, alternative to instrumental method)
6	Plate, Muffle Furnace, porcelain or silica crucible, Reagents: HotWash Solution(dilute sulphuric acid solution 1 : 99 v/v with hydrogen sulphide), dilute sulphuric acid, hydrogen sulphide, Dilute Nitric Acid, Sodium Fluoride, solid, Dilute Ammonium Hydroxide, Acetic Acid, Potassium Iodide, Starch Solution, Sodium Thiosulphate Solution, Ammonium Bifluoride Solution	Copper (Cu) (chemical method, alternative to instrumental method)
7	Ashless paper pulp, paper pulp pad, hot plate, dessicator, Reagents: ammonium nitrate, methyl red, dilute ammonium hydroxide, concentrated hydrochloric acid Concentrated nitric acid, Perchloric acid, Hydrofluoric Acid	Nickel (Ni) (chemical method, alternative to instrumental method)
8	Hot plate, stop watch Reagents: dilute sulphuric acid and phosphoric acid mixture, concentrated nitric acid, ammonium persulphate, silver nitrate, dilute hydrochloric acid, ferrous ammonium sulphate, standard potassium permanganate solution	Chromium (Cr) (chemical method, alternative to instrumental method)
9	Equipment for Determination of Nitrogen by Thermal Conductivity Method / Inert gas fusion followed by thermal conductivity detection / Steam Distillation Method.	Nitrogen (N) (Cl 6.1)
10	a) WDXRFS or EDXRFS; b) Weighing balance, which can be read to nearest 0.001 g; c) Dispenser, with the accuracy of 25.00 ml $\pm$ 0.05 ml; and d) X/Y shaker, with variable frequency. Reagents: Acetone or diethyl ether, ammonium persulphate (>98 percent), ammonia (>25 percent, density not more than 0.91g/cc' at temperature 20 °C) and distilled water (corresponding Indian standard). Laboratory glassware	Coating material (cl 6.1.4) Coating test (cl 7.3.5)
11	UTM	Tensile Test (Cl 7.3.1, Table 1)
12	Torsion Testing Machine	Torsion Test (Cl 7.3.2, Table 1)
13	Reverse bend test apparatus	Reverse Bend Test (Cl 7.3.2, Table 1)

14	Flat Table	Cast and Tip Rise/ Dead Cast (Cl 7.3.4)
15	Micrometer with a precision of ± 0.001 mm.	Diameter and Out of Roundness (Cl 7.3.3)

Note: The above is an indicative list for the purpose of guidance only

ANNEX- C SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that during operation of BIS licence, manufacturers will implement a Quality Assurance Plan (QAP) i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan (QAP) defining the control unit (i.e. lot/batch etc.), the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and declare the arrangement for testing i.e. whether in-house or subcontracting/sharing for each applicable test and submit the same to BIS Branch Office for information. The manufacturer shall comply with the QAP and maintain test records in accordance with para 2.1.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is: For the purpose of this scheme, all steel wire drawn to same nominal size, level of tensile strength, coating and manufactured under essentially similar conditions using steel of one cast shall constitute a control unit.

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in Table 1. Manufacturer has the discretion of declaring their own levels of control or accept the levels of control given in this document.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan.

2. ENSURING COMPLIANCE THROUGH TESTING- manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard for which they may have in-house test facilities. However, there is no obligation to maintain in-house laboratory. Licensee may use alternative arrangements for tests of the production as per the declared QAP. Various alternatives are available for operation of BIS certification as given below and the relevant guidelines for availing such relaxations by the manufacturers, as amended from time to time, are to be referred:

- i) Shared testing resources like common facility,
- ii) Cluster based testing facility,
- iii) Sub-contracting to outside laboratories which may either be:
 - a) BIS recognised/empanelled laboratories, or
 - b) Any accredited laboratory as per ISO/IEC 17025

2.1 TEST RECORDS- The manufacturers shall maintain test records for the tests carried out (either in-house or at a sub-contracted or at shared test facility) to establish conformity of the product to the Standard for operation of licence. For the tests being subcontracted or conducted at a shared test facility, test results issued by the laboratories or test facilities, shall be made available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark as given in the Schedule of the license and Licence Number (i.e. CM/L...) shall be incorporated suitably on each coil of wire and on the Test Certificate issued along with each Consignment, provided always that the product thus marked and packed conforms to all the requirement of the specification.

3.1 Packing and Marking shall be done as per the Indian Standard.

3.2 Additional Marking requirements: Additionally, the following shall also be marked on each package of the material:

- a) “For BIS certification details please visit www.bis.gov.in”
- b) Any other requirement not specified in the Indian Standard

4. TEST CERTIFICATE – For each consignment of BIS Certified material conforming to IS 19464:2025 there shall be a test certificate which shall contain the Standard Mark, the cast/Control Unit number and the corresponding test results (as given in Annexure-I enclosed).

5. REJECTION - The production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark. Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act,2016.

TABLE 1
(Recommended Levels of Control by BIS- For Guidance Only)

(1)				(3)			(4)
TEST DETAILS				LEVELS OF CONTROL			REMARKS
Clause	Requirements	Test Method		No. of Samples	Frequency		
		Clause	Reference				
6.1	Chemical Composition						
	Ladle Analysis	6.1.2	IS 19464/IS 7904 IS 228 (Various Parts) or IS 8811	One	Each Heat	Applicable for manufacturers with steel making facilities.	
	Product Analysis	6.1.2	Or any other established Chemical/ Instr. Method.	(i) Nil	(i) Nil	i) Applicable for manufacturers with steel making facilities	
				(ii) One	(ii) Each Cast	ii) Applicable for manufacturers with wire drawing facilities only. No further testing is required if the wire rods fed to drawing dies are ISI marked and are received with test certificate.	
6.2	Mechanical Properties						
	Tensile Strength	7.3.1, Table 1	IS 19464 IS 1608 (Part 1)	One	Each Unit	Control	—
	Breaking Load			One	Each Unit	Control	—
	Elongation			One	Each Unit	Control	—
	Reverse Bend Test	7.3.2, Table 1	IS 19464 IS 1716	One	Each Unit	Control	—
	Torsion Test	7.3.2, Table 1	IS 19464 IS 1717	One	Each Unit	Control	—

6.3	Surface Quality					
	General	6.3.1	IS 19464	Adequate inspection to ensure that the material is free from defects and conform to the requirements of the specification.		
	Coating Mass	6.3.2 7.3.5, Table 2 & Annex-B	IS 19464	One	Each Unit Control	—
	Cast and tip rise/dead cast	6.3.3 7.3.4 Table 3	IS 19464	One	Each Unit Control	—
6.4	Dimension and Tolerances					
	Tolerance of Diameter	6.4.1 Table 4	IS 19464	Adequate inspection to ensure that wires conform to the requirements of the specification		
	Out of Roundness	6.4.2	IS 19464			
6.5	Delivery Conditions (i) Unit Package (ii) Welds	6.5.1 6.5.2	IS 19464	Adequate inspection to ensure that wires conform to the requirements of the specification		

Annexure-I
(Para 4 of the Scheme of Inspection and Testing)
XYZ IRON AND STEEL COMPANY
(Registered office Address and works address)

ISI Mark
With IS No.
and CM/L
no.

Test Certificate for Steel Wire for Hose Reinforcement
According to IS 19464:2025
TEST CERTIFICATE NO. _____

To M/s _____ Dated _____

We certified that the material described below fully conforms to IS 19464:2025 Chemical Composition and Mechanical Properties of the product as tested in accordance with the Scheme of Inspection and Testing contained in the BIS Certification Marks Licence No. CM/L _____ are as indicated below against each order No.

(PLEASE REFER TO IS 19464:2025 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	Nominal Diameter	Control Unit No.	Classification	Qty. (in tonnes)	Chemical Composition (in %)										Mechanical Properties					Surface Quality		Cast and tip rise/dead cast	Remarks	
					C	S	P	Si	Mn	Cr	Ni	Cu	Al	N	Micro Alloying	TS	Breaking Load	Elongation at Rupture (%)	Reverse Bend	Torsion	General			Coating Mass

Remarks
Wagon No.
Truck No.

FOR XYZ IRON AND STEEL COMPANY

(It is suggested that size A4 paper be used for this test Certificate)