



उत्पाद मैनुअल

Steel Wire for Spokes

IS 6902:1973 के अनुसार

PRODUCT MANUAL FOR Steel Wire for Spokes ACCORDING TO IS 6902:1973

भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम 2018 की स्कीम-1 के तहत यह उत्पाद मैनुअल प्रमाणीकरण की संचालन रीति में सुसंगतता और पारदर्शिता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों एवं लाइसेन्स धारियों द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस लाइसेन्स/प्रमाण पत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence 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 licence/certificate.

1.	उत्पाद Product	:	IS 6902:1973
	शीर्षक Title	:	Specification for Steel Wire for Spokes
	संशोधन संख्या No. of amendments	:	3
2.	नमूनाकरण दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	No specific requirement <i>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</i>
b)	समूहिकरण दिशानिर्देश Grouping Guidelines	:	Please refer Annex-A <i>Note: This section indicates the grouping of different varieties of the product as per the IS and the type/no. of samples to be tested to cover the groups of varieties specified in the scope of licence, for the purpose of Grant of Licence/Change in Scope of Licence.</i>

c)	नमूने का परिमाण Sample Size	:	For chemical & mechanical test: 3 meters <i>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)</i>
3.	परीक्षण उपकरणों की सूची List of Test Equipment	:	Please refer Annex-B

4.	निरीक्षण व परीक्षण स्कीम Scheme of Inspection and Testing	:	Please refer Annex-C
5.	एक दिन में संभावित परीक्षण Possible tests in a day		
	All tests <i>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.</i>		
6.	लाइसेन्स का कार्यक्षेत्र /Scope of the Licence:		
	"Licence is granted to use Standard Mark as per IS 6902:1973 with the following scope:		
	Name of the product	Steel Wire for Spokes	
	Size	From --mm up to & including –mm Diameter	
	Coating	Bare (bright drawn)/Galvanized	

**BUREAU OF INDIAN STANDARDS
MANAK BHAVAN,9, BAHADUR SHAH ZAFAR MARG,
NEW DELHI-110002**

ANNEX-A

GROUPING GUIDELINES

For the purpose of grant of licence/change in scope of licence, the following grouping guidelines shall apply:

- i) From the range of sizes of wires intended to be covered in the scope of licence, if samples of the **lowest sizes of steel wires from that range** are tested, higher sizes can be included in the scope of licence on that basis
- ii) If sample of galvanized wire is tested, bare wire (bright drawn) can be covered in the scope of licence on that basis.

Scope of licence shall be restricted based on the manufacturing and testing facilities available

During operation of the licence, samples of all varieties covered in the scope of licence shall be tested during surveillance, to the extent possible

ANNEX – B

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

Sl. No.	Tests Used In With Clause Reference	Test Equipment/Chemical
1	Chemical composition, Cl. 4 (C,Mn,P,S)	<u>Instrumental method</u> Spectrometer: atomic-absorption spectrometry, inductively coupled plasma atomic emission, Inductively coupled plasma mass spectrometry techniques, spark source optical emission spectrometry. Spectrophotometer OR
	Carbon and Sulphur	<u>Instrumental method</u> 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 S: Ceramic boats/crucibles – desiccators, Fluxes -Low sulphur copper, tin or iron, Dilute hydrochloric acid, Starch Iodide solution, Potassium iodate
	Phosphorus	<u>Chemical Method (for phosphorus)</u> 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 (KMnO₄), Sodium Nitrite (NaNO₂), Ammonium Molybdate [(NH₄)₂ MoO₇], Ammonium Phosphate [(NH₄)₃ PO₄], Potassium Nitrate (KNO₃), Phenolphthalein Solution, Rectified spirit or methyl alcohol, Sodium Hydroxide (NaOH), Hydrofluoric Acid (HF), Perchloric Acid (HClO₄), Sulphurous Acid, Hydrobromic Acid (HBr) , other chemicals and reagent as applicable
	Manganese	<u>Chemical Method (for manganese)</u> 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
2	Wire Diameter and Tolerances, Cl. 8	Micrometer, Vernier caliper
3	Tensile test, Cl 5	Tensile Testing Machine
4	Bend Test, Cl 6	Bend Test Apparatus
5	Coating, Cl 2.2.1	Reagents for Determination of mass of zinc coating as per IS 6745 Antimony Trioxide or Antimony Trichloride, Hydrochloric acid, analytical balance (accurate to 0.01 g) – For stripping solution Reagents for testing uniformity of coating as per IS 2633 Volatile organic solvent such as ether, trichloroethylene, carbon tetrachloride etc., alcohol, clean cotton cloth, air conditioner/conditioning chamber to maintain temperature at 15 to 20 deg. C, - for cleaning sample Technical Grade copper sulphate crystals, distilled water, copper carbonate or copper hydroxide (laboratory grade), Other apparatus Cutting tools, analytical balance, hot plate with temp. indicator. Laboratory glassware, thermometer
6	Sample preparation	Rough polishing machine, fine polishing machine, cutting machine

The list above is indicative only and may not be considered as exhaustive

ANNEX C

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan 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 defining the control unit (i.e. lot/batch etc.) and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with para 2.4.

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, the entire quantity of steel wire of the same size, and type manufactured from the same input material under similar conditions in a day shall be taken as one 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**.

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. Alternatively, the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.

1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

2. ENSURING COMPLIANCE THROUGH TESTING- It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer and testing parameters/requirements which can only be performed in the factory.

2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. Column 2 of Table 1 indicates routine tests where test equipment is required in house as “R” or other tests which can be subcontracted as “S”. Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as “R” in Column 2 of Table 1) is also optional.

2.2.1 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities or get testing done from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as “R” in Column 2 of Table 1), where different tests given in the specification shall be carried out in accordance with the method given in the specification. They shall also implement a calibration plan for the in-house test equipment.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize the provisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.4 TEST RECORDS- The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on the product and on the test certificate accompanied along with each consignment provided always that the material so marked conforms to each requirement of the specification.

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

4. TEST CERTIFICATE: For each consignment of BIS Certified material conforming to IS **6902:1973** there shall be a test certificate which shall contain the Standard Mark, the batch/cast/Control Unit number and the corresponding test results (as given in Annexure-I enclosed)

5. REJECTION - All 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 (ONLY FOR GUIDANCE PURPOSE)

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or)S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Methods Clause Reference			No. of Sample	Frequency	Remarks
2.2.1	Galvanized Coating on Steel Wire		IS 4826	R	One	Each Control Unit	Applicable for Galvanized Wires
4	Chemical Composition		IS 228/Any other established instrumental or chemical method	R	One	Each cast	No testing is required if input material is ISI marked and received with test certificate
5	Tensile Test		IS 1608 (Part 1)	R	One	Each control unit	
6	Bend Test		IS 1716	R	One	-do-	
7	Freedom from defects	7	IS 6902	R	Firm shall exercise adequate in-process controls to ensure that the material is free from harmful defects		
8.1	Wire Diameter and Tolerances	8.1	IS 6902	R	One Each coil Adequate inspection to ensure that each coil conforms to the requirements of the specification		
8.2	Variation on diameter of wire	8.2	IS 6902	R	Adequate inspection to ensure that each coil conforms to the requirements of the specification		

ANNEXURE IISI
MARK**XYZ STEEL COMPANY
TEST CERTIFICATE FOR
STEEL WIRE FOR SPOKES**

TEST CERTIFICATE NO. _____

DATE: _____

TO M/S _____

We certify that the material described below fully conforms to 6902:1973,
Chemical and physical 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 6902:1973 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

(TEST RESULTS)

Order No. and Date	Size/Type	Cast number and/or Coil Number and/or Batch Number	Chemical Composition (%C, %Mn, %S,%P)	Tensile Strength	Bend Test	Dimension and Tolerances	Freedom from defects

REMARKS

WAGONNO./ TRUCK NO.

FOR XYZ IRON AND STEEL COMPANY

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