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उत्पाद मैनुअल

**Specification for Steel Wire
for Umbrella Ribs**

IS 4223:1975 के अनुसार

**PRODUCT MANUAL
FOR Specification for Steel Wire for
Umbrella Ribs ACCORDING TO IS
4223:1975**

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 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.	मानक संख्या IS No.	:	IS 4223:1975
	शीर्षक Title	:	Specification for Steel Wire for Umbrella Ribs
	संशोधनों की संख्या No. of amendments	:	1
2.	नमूना 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)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Please refer Annex-A

c)	नमूने का परिमाण Sample Size	:	For chemical & mechanical test: 5pcs of 5 cm x 5 cm+ 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 और परीक्षण की 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.	लाइसेंस का दायरा /Scope of the Licence:		
	“Licence is granted to use Standard Mark as per IS 4223:1975 with the following scope:		
	Name of the product	Steel Wire for Umbrella ribs	
	Size	From --mm up to & including –mm Diameter	
	Type of Wire	Hardened/Tempered/As- Drawn	
	Grade	1,2,3	

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

ANNEX-A

GROUPING GUIDELINES

IS 4223:1975 classifies steel wire for umbrella ribs according to

- i) Shape: Round Wire/Flat Wire
- ii) Size: Diameter for round/width for flat wire
- iii) Grade: 1/2/3
- iv) Type: As drawn (grade 2 and 3) and Hardened/Tempered (grade 1)

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

- i) Separate samples of **each shape of wire (round/flat)** intended to be covered in the scope of licence shall be tested
- ii) For each shape, one sample of the **lowest size (diameter or width) from the range of sizes** intended to be covered in the scope of licence shall be tested, based on which the higher sizes can be covered in the scope
- iii) One sample of **each grade and type** shall be tested. However, in case sample of grade 3/as drawn type is tested, grade 2/as drawn type 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. 6	Instrumental methods Spectrometer: atomic-absorption spectrometry, inductively coupled plasma atomic emission, Inductively coupled plasma mass spectrometry techniques, spark source optical emission spectrometry. Spectrophotometer OR 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 OR Chemical Method (for phosphorus) 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 (Na₂NO₃), Ammonium Molybdate [(NH₄)₂ Mo₂O₇], Ammonium Phosphate [(NH₄)₃ PO₄], Potassium Nitrate (K₂NO₃), 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

2	Sizes, Cl. 8	Micrometer, Vernier caliper
3	Tensile test, Cl 10.1	Tensile Testing Machine
4	Torsion Test, Cl 10.2	Torsion Testing Apparatus
5	Reverse Bend Test, Cl 10.3	Bend Test Apparatus
6	Straightness Test, Cl 10.4	Table with flat surface, spirit level
7	Deflection Test, Cl 10.5	Steel Scale, Table with flat surface, spirit level
8	Sample preparation	Rough polishing machine, fine polishing machine, cutting machine

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, all Zinc ingots, slabs, tiles or plates produced continuously from the same cast at one time 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/empaneled 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 tag attached each coil and/or bundle of wire and/or the wrapping and/or the test certificate 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.

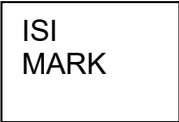
4. TEST CERTIFICATE: For each consignment of BIS Certified Material as per IS 4223:1975, the manufacturer shall issue a test certificate as per the format given at Annexure-I.

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
(FOR GUIDANCE PURPOSE ONLY)

(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
6	Chemical Composition						
6.1	Ladle Analysis		IS 228/Any other instrumental or chemical method	R	One	Each cast	Only applicable for manufacturers with steel making/steel melting facilities
6.2	Product Analysis		-do-	R	One	Each cast	No further testing is required if input material is ISI marked and received with test certificate
7	Freedom from defects	7	IS 4223	R	Firm shall exercise adequate in process controls to ensure that the material is free from harmful defects.		
8,9	Sizes/Tolerances	8,9	IS 4223	R	Adequate inspection to ensure that each item conforms to the requirements of the specification		
10	PHYSICAL PROPERTIES						
10.1	Tensile Test		IS 1608 (Part 1)	R	One	Each Control Unit	

10.2	Torsion Test		IS 1717	R	One	Each control Unit	----
10.3	Reverse Bend Test		IS 1716	R	One	Each control Unit	
10.4	Straightness Test	10.4	IS 4223	R	One	Each control Unit	
10.5	Deflection test	10.5	IS 4223	R	One	-do-	



ANNEXURE I

XYZ STEEL COMPANY
TEST CERTIFICATE FOR
STEEL WIRE FOR UMBRELLA RIBS

TEST CERTIFICATE NO. _____ DATE: _____

TO M/S _____

We certify that the material described below fully conforms to 4223:1975,
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 4223:1975 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

(TEST RESULTS)

Order No. and Date	Shape/Size/Grade/Type	Cast number and/or Coil Number and/or Batch Number	Chemical Composition (%S,%P)	Tensile Strength	Torsion Test	Reverse Bend Test	Dimension and Tolerances	Freedom from defects	Straightness	Deflection

REMARKS
WAGONNO./ TRUCK NO.

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

FOR XYZ IRON AND STEEL COMPANY