



उत्पाद मैनुअल
आई एस 1855: 2024 के अनुसार
खानों में वेष्टन द्वारा और व्यक्ति- रोहन द्वारा ढुलाई के लिए लडदार इस्पात के तार के रस्से के लिए
दस्तावेज़ संख्या – पी एम/आई एस 1855/3/फरवरी 2025

भारतीय मानक ब्यूरो की स्कीम-I (अनुरूपता मूल्यांकन) क्तवक्तनयम , 2018 के तहत यह उत्पाद मैनुअल प्रमाणीकरण के प्रचालन में रीति और पारदर्शिता की सुसंगतता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों और लाइसेंसी द्वारा सन्दर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस प्रमाणीकरण लाइसेंस/ प्रमाणपत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग किया जा सकता है

PRODUCT MANUAL FOR
STRANDED STEEL WIRE ROPES FOR WINDING
AND MAN-RIDING HAULAGES IN MINES
ACCORDING to IS 1855:2024

Document No.- PM/IS 1855/3/February 2025

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.

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PRODUCT MANUAL FOR STRANDED STEEL WIRE ROPES FOR WINDING AND MAN-RIDING HAULAGES IN MINES ACCORDING TO IS 1855:2024

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1.	Product	:	IS 1855:2024
	Title	:	Stranded Steel Wire Ropes for Winding and Man-riding Haulages in Mines
	No. of Amendments	:	Nil
2.	Sampling Guidelines:		
a)	Raw material	:	Wire- as per Cl. 6.1 of IS 1855: 2022 Core - as per Cl. 6.2 of IS 1855: 2022
b)	Grouping guidelines	:	Please refer ANNEX – <u>A</u>
c)	Sample Size	:	Mechanical Tests: 4 meter Chemical Tests: 5 pieces of 5cm x 5cm
3.	List of Test Equipment	:	Please refer ANNEX – <u>B</u>
4.	Scheme of Inspection and Testing	:	Please refer ANNEX – <u>C</u>
5.	Possible tests in a day:		Rope Size and Tolerance (Cl. 4), General requirements (Cl. 6), Tests on wires from Rope (Cl. 5.2 of IS 13917), Galvanizing (Cl. 7)
6.	Scope of the Licence:		Please refer ANNEX – <u>D</u>
7.	Declarations for testing of sample		a) Construction (as per Cl. 1) or any other construction such as special developed ropes like compacted ropes, cushion core ropes, plastic valley filled ropes. as per agreement between manufacturer and purchaser as per Cl. 1 of IS 1855



		a) Type b) Rope Grade c) Core d) Size (Nominal Diameter) e) Galvanized/ Ungalvanized Note: In addition to the above parameters, any other parameter as deemed necessary for testing as per the Standard, shall also be declared in the test request of sample
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ANNEX-A

GROUPING GUIDELINES

2. IS 1855: 2024 covers Stranded Steel Wire Ropes for winding and Man-riding Haulages in Mines which are classified into different varieties based on the following:
 - a) Construction (as per Cl. 1)

or any other construction such as special developed ropes like compacted ropes, cushion core ropes, plastic valley filled ropes. as per agreement between manufacturer and purchaser as per Cl. 1 of IS 1855
 - b) Type – Round/ Multi strand/ Rotation resistant/ Flattened strand
 - c) Rope Grade – 1230/1420/1570/ 1770/ 1960
 - d) Core – Fibre/ Steel
 - e) Size (Nominal Diameter)

In addition to the size ranges given in Table 1 to 7 of IS 1855, other sizes of ropes may also be manufactured as agreed between manufacturer and purchaser as per Cl. 4 of IS 1855
 - f) Galvanized/ Ungalvanized
3. Considering the above, the following grouping guidelines shall be followed for GoL/CSoL:
 - i) Sample of each Construction shall be drawn and tested for all the requirements.
 - ii) Separate samples of Wire Rope of each type shall be tested for all the requirements
 - iii) Separate samples of Wire Rope of each rope grade shall be tested for all the requirements.
 - iv) Sample of highest size (nominal diameter) from the offered size range shall be drawn to cover all sizes below the tested size.
 - v) Separate samples of Wire Rope with each core type (Fibre/ Steel), shall be drawn and tested for all requirements.
 - vi) However, ungalvanized steel wire rope may be covered if galvanized steel wire rope of that particular variety is tested.
4. The Firm shall declare the Varieties of various Stranded Steel Wire Ropes they intend to cover in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
5. During the operation of license, it shall be ensured that all varieties covered in the license are tested in rotation, to the extent possible

ANNEX--B**List of Test Equipment***Major test equipment required to test as per the Indian Standard*

Sr No	Tests used in with clause reference	Test equipment
1.	Rope size and tolerance, Cl. 4, Table 1 to Table 7, Wire diameter (5.2.2 of IS 13917)	Vernier caliper, Micrometer
2.	Minimum breaking force - Cl. 5, Table 1 to Table 7 Tensile test- Cl. 5.2.3 of IS 13917	Tensile testing machine / Breaking Load Testing Machine
3.	Torsion test, Cl. 6 (Cl. 5.2.5 of IS 13917)	Torsion testing machine
4.	Measurement of mass, Cl. 6.5- Table 1 to 7	Weighing balance
5.	Reverse Bend Test, Cl.6 (Cl. 5.2.4 of IS 13917)	Bend testing machine
6.	Length of rope - Cl. 6 (Cl. 4.1.2, 5.1.2 of IS 13917)	Measuring tape / Length Counter meter
7.	Shape and dimensions	Snap gauge / Profile projector
8.	Tests for Galvanizing, Cl.7 (Cl. 5.2.6 of IS 13917)	Weighing balance, Chemicals etc as per IS 6745
9.	Tests for fibre core, Cl. 6.2.1	Weighing balance, Xylene/benzole, Methylene chloride, Extraction sleeve, Drying cabinet, dessicator, Soxhlet apparatus, chemicals and glassware as required

The above list is indicative only and may not be treated 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. Batch 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 below.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 **Control Unit:** For the guidance of manufacturers, the recommended definition of Control Unit is quantity of the wire ropes of the same nominal diameter, type and grade manufactured using the same set of strands and same type of core under identical condition of production.

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 sub-contracted 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. LABELLING AND MARKING – As per the requirement of IS 1855:2024. The Standard Mark, as given in the Schedule of the licence, shall be marked on a metal tag attached to each reel or drum on which ropes are coiled, provided always that the product thus marked conforms to all the requirement of the specification. In addition, the licence no. CM/L-_____ and details of BIS website shall be marked at an appropriate place on product or package as follows: “For details of BIS certification please visit www.bis.gov.in”.

3.1 TEST CERTIFICATE: In addition a certificate of conformance shall also be supplied along with each consignment of wire ropes as per format given in *Annexure- I*, copies of all such certificates be preserved for future reference.

4. REJECTION - All the production which conforms to the Indian Standard and covered under scope of the licence shall be marked with 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

(1)				(2)	(3)		
Test Details					Levels of Control		
Clause	Requirement	Test Methods		Test equipment requirement Required (R) or Sub-contracting permitted (S)	No. of Sample	Frequency	Remarks
		Clause	Reference				
4	Rope Size and Tolerance	4 5.1	IS 1855 IS 13917	R	Manufacturer shall exercise adequate levels of control to ensure that entire production should conform to the Standard. Appropriate records of testing indicating conformity shall be maintained		
5	Minimum Breaking Force	5, Table 1 to 7 4.1.4	IS 1855 IS 13917	R	One	Each Control Unit	
6	General Requirements						
	Requirements as per IS 13917						
	Rope length	4.1.2, 5.1.2	IS 13917	R	Manufacturer shall exercise adequate levels of control to ensure that entire production should conform to the Standard. Appropriate records of testing indicating conformity shall be maintained		
	Tests on round wires from Rope						
	Measurement of wire dia	5.2.2	IS 13917	R	Two	Each consignment for each dia	

	Wire tensile test	5.2.3	IS 13917 IS 1608	R	Nine	Every 25 tonnes or part thereof of finished rope	
	Reverse Bend test	5.2.4	IS 13917 IS 1716	R			
	Torsion test	5.2.5	IS 13917 IS 1717	R			
	Tests on galvanized coating	7 5.2.6	IS 1855 IS 13917 IS 6475	R	One	Each coil from which a construction and size is made	
	Shaped wires from completed rope	4.3	IS 13917	R	The tests, requirements and the methods of testing shall be as agreed to between the manufacturer or the supplier of the rope and the purchaser		
6.1	Wire	6.1	IS 1855 IS 1835	S	One	Each heat	No testing is required if the material is ISI Marked or accompanied with a test certificate.

6.2.1	Fibre core		IS 1804	S	One	Each consignment	No testing is required if the material is ISI Marked or accompanied with a test certificate.
6.2.2	Steel Core	6.2.2	IS 1855	R	Two	Each Coil	
6.5	Mass	Table 1 to Table 7 5.1.3	IS 1855 IS 13917	R	Manufacturer shall exercise adequate levels of control to ensure that entire production should conform to the Standard. Appropriate records of testing indicating conformity shall be maintained		
6.4	Lay of rope	6.4	IS 1855	R			
6.3	Joints	6.2	IS 1855	R			
8	Lubrication	8	IS 1855	R			
9	Freedom from defects	9	IS 1855	R			
10	Performing	10		R	One	Every loading length subject to a max. of 5 T	-

Annexure- I
(Para 3.1 of Scheme of inspection and Testing)

Template of test certificate
Name and address of BIS licensed manufacturer



Purchaser_____

Certificate No._____

Order No._____

Date _____

We certify that the wire ropes mentioned below conform to IS 1855:2024. Properties of the Product as tested in accordance with scheme of Inspection & Testing contained in BIS Certification Marks License No.CM/L_____are as indicated againsteach reel.

{PLEASE REFER TO IS 1855:2024 FOR DETAILS OF SPECIFICATION REQUIREMENTS}

Test Results

Reel No.	Quantity (Tons)	Type	construction	Coating	Lay	Rope grade	Core	Size	Length	Breaking Load

Authorized Signatory of the firm

(Designation)

ANNEX D**Scope of Licence**

“Licence is granted to use Standard Mark as per IS 1855:2024 with the following scope:

Name of the product	Stranded Steel Wire Ropes for winding and Man-riding Haulages in Mines
Size	
Construction	
Type	
Core	
Rope Grade	
Whether Galvanized or Ungalvanized	