



**PRODUCT MANUAL FOR  
STRANDED STEEL WIRE ROPES FOR WINDING  
AND MAN-RIDING HAULAGES IN MINES  
ACCORDING TO IS 1855:2003**

*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 license/certificate.*

1.	<b>Product</b>	:	IS 1855:2003
	<b>Title</b>	:	Stranded Steel Wire Ropes for Winding and Man-riding Haulages in Mines
	<b>No. of Amendments</b>	:	One
2.	<b>Sampling Guidelines:</b>		
a)	<b>Raw material</b>	:	Wire- as per Cl. 6.1 of IS 1855: 2003 Core - as per Cl. 6.2 of IS 1855: 2003
b)	<b>Grouping guidelines</b>	:	Please refer ANNEX – <a href="#">A</a>
c)	<b>Sample Size</b>	:	Mechanical Tests: 4 meter Chemical Tests: 5 pieces of 5cm x 5cm
3.	<b>List of Test Equipment</b>	:	Please refer ANNEX – <a href="#">B</a>
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer ANNEX – <a href="#">C</a>
5.	<b>Possible tests in a day:</b>		Rope Size and Tolerance (Cl. 4) General requirements (Cl. 6) Tests on wires from Rope (Cl. 5.2 of IS 13917)
6.	<b>Scope of the Licence:</b>		Please refer ANNEX – <a href="#">D</a>

**ANNEX-A****GROUPING GUIDELINES**

1. IS 1855: 2003 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)
  - b) Type – Round/ Multi strand rotation resistant/ Flattened strand
  - c) Rope Grade – 1230/1420/1570/ 1770/ 1960
  - d) Core – Fibre/ Steel
    - Fibre Core shall be made from either manila (abaca) or sisal.
    - Steel Core shall be Independent Wire rope Core (CWR) except for multistrand rotation resistant ropes where wire strand cores (CWS) shall be used.
  - e) Size (Nominal Diameter)
  - f) Galvanized/ Ungalvanized
2. Considering the above, the following grouping guidelines shall be followed for GoL/CSoL:
  - i) Separate samples of Stranded Steel Wire Rope with Fibre Core and Steel Core of any Type, Construction and Size (Nominal Diameter), preferably the largest size, shall be drawn and tested for all the requirements.
  - ii) However, the following relaxation may be given when a particular variety is tested for all the requirements:

<b>Variety Tested</b>	<b>Additional Variety that may be covered</b>	<b>Remarks</b>
Rope Grade – 1960 Rope Grade - 1770	Rope Grade – 1770 and 1570 Rope Grade - 1570	For all constructions enlisted at Tables 1, 2, 3, 6 and 7 of IS 1855
Rope Grade – 1960 Rope Grade – 1770 Rope Grade- 1570 Rope Grade- 1420	Rope Grade – 1770, 1570,1420 and1230 Rope Grade – 1570, 1420 and 1230 Rope Grade- 1420 and 1230 Rope Grade- 1230	For all constructions enlisted at Tables 4 & 5 of IS 1855
Galvanized Stranded Steel Wire Rope	Ungalvanized Stranded Steel Wire Rope	For all constructions

3. The Firm shall declare the Varieties of various 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.
4. 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*

<b>Sr No</b>	<b>Tests used in with clause reference</b>	<b>Test equipment</b>
1.	Rope size and tolerance, Cl. 4, Table 1 to Table 7	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.6 (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. LABORATORY** - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

**1.1** The manufacturer shall prepare a calibration plan for the test equipment.

**2. TEST RECORDS** – The manufacturer shall maintain test records for the tests carried out to establish conformity.

**3. LABELLING AND MARKING** – As per requirements of IS 1855: 2003.

**4. CONTROL UNIT** – All the steel wire ropes of the same nominal diameter, construction, type and grade manufactured under identical conditions of production shall constitute a control unit.

**5. LEVELS OF CONTROL** - The tests as indicated in column 1 of [Table 1](#) and the levels of control in column 3 of [Table 1](#), shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

**5.1** All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

**6. REJECTIONS** – 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	Each Rope	--	-
5	Minimum Breaking Force	5, Table 1 to 7 4.1.4	IS 1855 IS 13917	R	Two	Every 25 tonnes or part thereof of finished rope	
<b>6</b>	<b>General Requirements</b>						
	<b>Requirements as per IS 13917</b>						
	Rope length	4.1.2, 5.1.2	IS 13917	R	Each length		
	<b>Tests on round wires from Rope</b>						
	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	5.2.6	IS 13917 IS 6475	R	One	Each fifth coil of galvanized wire	
	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		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	Each length	-	-
6.4	Lay of rope	6.4	IS 1855	R	Each rope	-	-
6.3	Joints	6.2	IS 1855	R	Each rope	-	-
8	Lubrication	8	IS 1855	R	Each rope	-	-
9	Freedom from defects	9	IS 1855	R	Each rope	-	-
10	Performing	10		R	One	Every loading length subject to a max. of 5 T	-

**Note-1:** Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

**Note-2:** Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.

**ANNEX D****Scope of Licence**

“Licence is granted to use Standard Mark as per IS 1855:2003 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	