



**PRODUCT MANUAL
FOR
STEEL WIRE ROPES
FOR GENERAL ENGINEERING PURPOSES
ACCORDING TO IS 2266 : 2024**

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.	Product	:	IS 2266 : 2024
	Title	:	Steel Wire Ropes for General Engineering Purposes
	No. of Amendments	:	Nil
2.	Sampling Guidelines:		
a)	Raw material	:	i) Fibre Core - IS 1804 ii) Steel Core - IS 6594
b)	Grouping guidelines	:	Please refer ANNEX – A
c)	Sample Size	:	i) Mechanical Tests: 4 m ii) Chemical Tests: 5 pieces of 5cm x 5cm
3.	List of Test Equipment	:	Please refer ANNEX – B
4.	Scheme of Inspection and Testing	:	Please refer ANNEX – C
5.	Possible tests in a day :		i) Size and Tolerance (Cl. 7) ii) General requirements (Cl. 6) iii) Tests on wire prior to rope manufacture (Cl. 10.1 of IS 6594)
6.	Scope of the Licence :		Please refer ANNEX –D

ANNEX--A**GROUPING GUIDELINES**

1. IS 2266 : 2024 covers “Steel Wire Ropes for General Engineering Purposes” which are classified into different varieties based on the following:
 - a) Construction- as per Table 1 to 15
or any other construction such as special developed ropes like compacted ropes, cushion core ropes, plastic valley filled ropes, swaged ropes, combination rope, parallel closed etc. as per agreement between manufacturer and purchaser as per Cl. 7 of IS 2266
 - b) Type – Round/ Oval/ Flattened strand
 - c) Rope Grade – 1570/ 1770/ 1960/2160
or any other intermediate grade (up to and including 2160) subject to agreement between purchaser and manufacturer as per Cl. 1 of IS 2266
 - d) Core – Fibre/ Steel
or any other core type such as Composites (Steel plus fiber or steel plus polymers) or solid polymer as per agreement between manufacturer and purchaser as per Cl. 8 of IS 2266
 - e) Size (Nominal Diameter)
In addition to the size ranges given in Table 1 to 15 of IS 2266, other sizes of ropes may also be manufactured as agreed between manufacturer and purchaser as per Cl. 4 of IS 2266
 - f) Galvanized/ Ungalvanized (Bright)
2. 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 or any other core type as per Cl. 8 of IS 2266), 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.
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**

Indicative list of major test equipment required to test as per the Indian Standard (For guidance only)

Sr No	Tests used in with clause reference	Test equipment
1	Minimum breaking force - Cl. 5, Table 1 to 15	Tensile testing machine / Breaking Load Testing Machine
2	Torsion test - Cl. 6 (Cl. 10.3.2 of IS 6594, 12.3 of IS 1835)	Torsion testing machine
3	Measurement of mass - Table 1 to 13	Weighing balance
4	Reverse Bend Test (Cl. 12.4 of IS 1835, 10.3.4 of IS 6594)	Bend testing machine
5	Rope size and Tolerance Dimensions - (Cl. 4 of IS 2266, Cl. 5 & Annex A of IS 6594)	Vernier caliper, Micrometer
6	Length of rope - Cl. 6	Measuring tape / Length Counter meter
7	Shape and dimensions	Snap gauge / Profile projector
8	Tests for Galvanizing (Cl. 11 , 12.6 of IS 1835)	Weighing balance, Chemicals, mandrels of suitable size etc.
9	Wrapping test (Cl. 12.5 of IS 1835)	Suitable fixture

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 steel 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 2266:2024. 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	Size and Tolerance	4	IS 2266	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 15 10.2, Annex B	IS 2266 IS 6594	R	One	Each Control Unit	
6	General Requirements						
-	Material	4.1	IS 6594	S	One	Each heat	No testing is required if the material is ISI Marked or accompanied with a test certificate.
-	Length	6.4	IS 6594	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		
-	Approximate Mass	Table 1 to Table 13 6.5	IS 2266 IS 6594	R			
-	Lay of rope	6.7	IS 6594	R			

-	Joints	9 6.8	IS 2266 IS 6594	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		
-	Freedom from defects	7	IS 6594	R			
-	Performing	8	IS 6594	R	One	Every loading length subject to a max. of 5 T	-
-	Lubrication	9	IS 6594	R	Each rope	-	-
-	Tests on wire prior to Rope Manufacture	10.1	IS 6594	-			
-	a) Diameter	10.1	IS 1835	R	One	Each coil from which a construction and size is made	For individual wires one sample from one end of each coil wound round the bobbins for each size shall be tested for all the tests laid down. If a sample fails in any of the requirements, the particular coil shall be rejected
-	b) Tensile strength	12.2	IS 1835	R	One		
-	c) Torsion test	12.3	IS 1835	R	One		
-	d) Reverse bend test	12.4	IS 1835	R	One		
-	e) Wrapping test*	12.5	IS 1835	R	One		
-	f) Galvanizing test	11, 12.6	IS 1835	R	One		

	Tests on individual Wires*	10.3	IS 6594	-			
-	a) Tensile strength	10.3.2	IS 6594	R	As per Cl. 10.3.1.1 & 10.3.1.2 of IS 6594 (as applicable)	Each coil from which a construction and size is made	
-	b) Torsion test	10.3.3	IS 6594	R			
-	c) Reverse bend test	10.3.4	IS 6594	R			
-	d) Galvanizing test	10.3.5	IS 6594	R			
-	e) Diameter of wire	10.3.6	IS 6594	R			
8	Core	8	IS 2266				
8.1	Fibre Core	All requirements of IS 1804		S	Two	One batch of fibre core received	No testing is required if the material is ISI Marked or accompanied with a test certificate.
8.2	Steel Core	All applicable requirements as per IS 6594 as outlined in this SIT					
8		For other cores as per Cl. 8 of IS 2266, levels of control will be as agreed between manufacturer and purchaser					

* To be done only when specified by purchaser.

ANNEXURE- I
(Para 3.1 of Scheme of Inspection and Testing)

Test Certificate (Name of licensee with Address)

BIS STANDARD
MARK

Purchaser_____

Certificate No._____

Order No._____

Date _____

We certify that the wire ropes mentioned below conform to IS 2266:2024. 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 against each reel.

{PLEASE REFER TO IS 2266:2024 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 2266:2024 with the following scope:

Name of the product	Steel Wire Ropes for General Engineering Purposes
Type	Round/ Oval/ Flattened Strand
Size	
Construction	
Core	
Rope Grade	
Whether Galvanized or Ungalvanized	