PRODUCT MANUAL FOR
STEEL WIRE ROPES FOR LIFTS- MINIMUM REQUIREMENTS ACCORDING TO IS 2365:2024/ ISO 4344: 2022

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 2365:2024/ ISO 4344: 2022
	Title	:	Steel Wire Ropes for Lifts- Minimum Requirements
	No. of Amendments	:	Nil
2.	**Sampling Guidelines:**		
a)	**Raw material**	:	Wire- ISO 4101 or ISO 2232 Fiber Core- ISO 4345 Steel Core (CWR)- IS 6594 Lubricant- ISO 4346
b)	**Grouping guidelines**	:	Please refer ANNEX – A
c)	**Sample Size**	:	Mechanical Tests: 4 meter Chemical Tests: 5 pieces
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:**		Dimensions (Cl. 4.4), Minimum Breaking force (Cl. 4.5), Tests on rope for wire tensile strength (Cl. 5.5)
6.	**Scope of the Licence:**		Please refer ANNEX –D

ANNEX-A
Grouping Guidelines

1. IS 2365:2024/ISO 4344: 2022 covers Steel Wire Suspension Ropes for Lifts which are classified into different varieties based on the following:

a) Type of duty of Rope:

- Suspension duty on traction drive and roped hydraulic lifts
- Compensation duty on passenger lifts, freight lifts, service lifts, and man lifts moving between guides
- Governor duty on passenger lifts, freight lifts, service lifts, and man lifts moving between guides

b) Construction (as per Cl. 4.2.8)

c) Rope Grade –

Type of duty	**application**	**Core type**	**Rope grades**
Suspension Ropes	For traction drive lifts	Rope with fiber core	1320/1620, 1370/1770, 1570/1770, 1620/1770, 1570, 1620, 1770, 1960
		Rope with steel core and parallel closed ropes	1370/1770, 1570/1770, 1570, 1770, 1960
	For roped hydraulic lifts	Rope with fiber core	1320/1770, 1370/1770, 1620/1770, 1570, 1620, 1770
		Rope with steel core and parallel closed ropes	1370/1770, 1570/1770, 1570, 1770, 1960
Governor Ropes			1320/1660, 1370/1770, 1620/1770, 1570, 1620, 1770, 1960
Compensating Ropes			as per Cl. 4.2.9.4

or any other Rope grade subject to agreement between purchaser and manufacturer as per Cl. 4.2.9.1

d) Core – Fibre/ Steel/Steel based composite core *or* any other non-metallic core (other than fiber only) as per Cl. 4.1.2.1 of IS 2365/ISO 4344

e) Size (Nominal Diameter)

f) Galvanized/ Ungalvanized (Bright)

2. Considering the above, the following grouping guidelines shall be followed for GoL/CSoL:

   i) Separate samples of Wire Rope of each duty type shall be tested for all the requirements

   ii) Sample of each Construction shall be drawn and 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/Steel based composite core or any other non-metallic core (other than fiber only) as per Cl. 4.1.2.1 of IS 2365/ISO 4344), shall be drawn and tested for all requirements. Firm shall declare the type of core for each variety of wire rope.

   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 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

Sr No	Tests used in with clause reference	Test equipment
1.	Rope size and tolerance, Cl. 4.4.1	Vernier caliper, Micrometer
2.	Minimum breaking force - Cl. 4.5, Annex-B.1 to B.11	Tensile testing machine / Breaking Load Testing Machine as per ISO 3108
3.	Test for lubricant content, Cl. 5.4, Annex-A	Equipment as given in Annex-A of IS 2365/ISO 4344
4.	Test on rope for wire tensile strength, Cl. 4.6 and 5.5	Tensile testing machine as per IS 1608-1
5.	Test for Rope stretch properties, Cl. 4.7, Annex E	Equipment and set up as given in Annex-E of IS 2365/ISO 4344
6.	Length of rope - Cl. 4.4.2	Measuring tape / Length Counter meter

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 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**.

1.3.2 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 withtest 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 2365:2024 /ISO 4344: 2022. 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 Cl. 7 of IS 2365/ISO 4344 in the 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				**Test equipment requirement R: required (or) S: Sub-contracting permitted**	**Levels of Control**		
Cl.	**Requirement**	**Test Method**			**No. of Sample**	**Frequency**	**Remarks**
		Clause	**Reference**				
4.1	Material	4.1	IS 2365/ISO 4344 ISO 4101 ISO 2232 ISO 4345 ISO 4346	S	One	Each consignment	No further testing is required if accompanied with test certificate or is ISI Marked.
4.2.2	Wire Joints	4.2.2	IS 2365/ISO 4344	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		
4.2.3	Fibre Core Joints	4.2.3	IS 2365/ISO 4344	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		
4.2.4	Lubrication	4.2.3, 5.4	IS 2365/ISO 4344	S	One	Once in a month for each variety	
4.2.5	Perforation and postformation	4.2.5	IS 2365/ISO 4344	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		
4.2.7	Rope ends	4.2.7	IS 2365/ISO 4344	R			
4.2.10, 4.2.11	Lay of Ropes	4.2.10, 4.2.11	IS 2365/ISO 4344	R			
4.4	Dimensions	4.4.1, 4.4.2	IS 2365/ISO 4344	R			

4.5	Minimum Breaking force	4.5, Annex B, Annex C	IS 2365/ISO 4344	R	Two	Each continuous length	For finished rope
4.6	Wire tensile strength, if required by purchaser	4.6	IS 2365/ISO 4344 IS 1608-1	As per agreement between manufacturer and purchaser			
4.7	Rope stretch	4.7, Annex-E	IS 2365/ISO 4344	As per agreement between manufacturer and purchaser			

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

Test Certificate (Name of licensee with Address)

Purchaser_____ Certificate No._____

Order No._____ Date _____

We certify that the wire ropes mentioned below conform to IS 2365:2024/ISO 4344: 2022. 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/Drum etc. as applicable

{PLEASE REFER TO IS 2365:2024/ISO 4344: 2022 FOR DETAILS OF SPECIFICATION REQUIREMENTS}

Test Results

Drum/Reel No.	Quantity (Tons)	Type	construction	Coating	Lay	Rope grade	Core	Size, and tolerance grade, if required	Length	Minimum Breaking force

Authorized Signatory of the firm

(Designation)

ANNEX D

Scope of Licence

"Licence is granted to use Standard Mark as per IS 2365:2024/ ISO 4344: 2022 with the following scope:

Name of the product	Steel Wire Ropes for Lifts- Minimum requirements
Type of duty of Rope	
Size, From… mm to…mm	
Construction	
Core	
Rope Grade	
Whether Galvanized or Ungalvanized	