



उत्पाद मैनुअल
बिजली की तारों के लिए लचीले स्टील कान्ड्यूइट
आईएस 3480: 2024 के अनुसार

PRODUCT MANUAL FOR
Flexible Steel Conduits for Electrical Wiring
as per IS 3480: 2024

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 uniformity 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.

1.	मानक संख्या IS No.	:	IS 3480: 2024
	शीर्षक Title	:	Flexible Steel Conduits for Electrical Wiring
	संशोधनों की संख्या No. of amendments	:	None
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	Strip Steel as per Cl. 4.1 of IS 3480
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Please refer ANNEX – A
c)	नमूने का परिमाण Sample Quantity	:	15 m
d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request		• Type of material • Nominal Internal Diameter • Length
3.	परीक्षण उपकरणों की सूची	:	Please refer ANNEX – B

	List of Test Equipment		
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	:	Construction and Workmanship – Cl. 5 Dimension – Cl. 6 and Cl. 9.3 Tensile Strength – Cl. 7.1 and Cl. 9.4 Flexibility – Cl. 7.2 and Cl. 9.5 Crushing Test – Cl. 7.3 and Cl. 9.7 Bend Fracture Test – Cl. 9.6
6.	लाइसेंस का दायरा /Scope of the Licence:		
“License is granted to use Standard Mark as per IS 3480: 2024 with the following scope:			
Name of the product		Flexible Steel Conduits for Electrical Wiring	
Material		Steel (as per IS 513 (Part 1) / Any suitable equivalent grade of steel as declared by the manufacturer	
Nominal Internal Diameter		 to upto and including mm	
Coating of Steel		Electro-galvanized / Electro-tinned / As declared by the manufacturer	
Length of Conduit		(to be declared by the manufacturer)	

ANNEX -A
Grouping Guidelines

1. Flexible Steel Conduits for Electrical Wiring as per IS 3480 are classified:

Material	Steel (as per IS 513 (Part 1) / Any suitable equivalent grade of steel as declared by the manufacturer)
Nominal Internal Diameter	 to upto and including mm
Length of Conduit	(to be declared by the manufacturer)

2. Further, the Flexible Steel Conduits for Electrical Wiring are further classified on the basis of their Nominal Internal Diameter as below:

Group	Nominal Internal Diameter
I	6.5mm, 10mm, 16mm, 25mm
II	40mm, 63mm, 100mm

3. For considering GoL/CSoL, the following grouping guidelines shall be followed:
- i. Flexible Steel Conduits for Electrical Wiring of the largest nominal internal diameter of any length in each group (Sl. No. 2 above) shall be drawn for testing to cover all the sizes of conduits in that group for which firm is having complete manufacturing and testing facilities.
 - ii. Sample from each of the type of material is to be tested
4. Firm shall declare the varieties 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 the Licence, BO shall ensure that all the varieties covered in the Licence are tested in rotation 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
1.	Thickness of coating - Cl 3.1	Coating Thickness Gauge
2.	Dimensions - Cl 5.1 and Table 1	Vernier Calliper, Micrometer
3.	Tensile Strength - Cl 6.1, 8.4	Measuring Scale, Measuring Tape, Tensile Testing Machine
4.	Flexibility - Cl 6.2, 8.5	Formers
5.	Bend fracture test - Cl 8.6	Compression Test Apparatus
6.	Crushing Strength - Cl 6.3, 8.7	Compression Test Apparatus
7.	Linear Breaking Test - Cl 8.4	Tensile Testing Machine, Digital Stop Watch

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: *Flexible Steel Conduits for Electrical Wiring of same Nominal Sizes manufactured from the same consignment of raw material under similar condition in a day shall constitute a 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/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. PACKING AND MARKING - The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on each Flexible Steel Conduits for Electrical Wiring provided always that the conduits so marked conforms to each requirement of the specification.

3.1 Marking on the Flexible Steel Conduits for Electrical Wiring shall be done as per Cl. 8 of IS 3480: 2024

3.2 **Additional Marking requirements:** The packaging of Steel Conduits shall also be marked with the following additional requirement:

a) “For BIS certification details please visit www.bis.gov.in”

3.3 All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark.

4. HYGIENIC CONDITIONS (if applicable) – NA.

5. REJECTION - 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 Methods			No. of Sample	Frequency	Remarks
		Cl.	Ref				
4	Material – Strip Steel	4.1	IS 3480	S	--	Each Consignment	No further testing is required, if accompanied with test certificate or ISI marked
5	Construction and Workmanship	5.1, 5.2, 5.3		R	Firm to have adequate in-process controls to check compliance for this parameter as specified in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity.		
6.1	Dimensions	6.1 & 6.2 9.3 and Table 1		R			
7.1	Tensile Strength	7.1 & 9.4		R	One	Each Control Unit	
7.2	Flexibility	7.2 & 9.5		R	One	Each Control Unit	
7.3	Crushing Strength	7.3 & 9.7		R	One	Each Control Unit	
9.6	Bend Fracture Test	9.6		R	One	Each Control Unit	