

**PRODUCT MANUAL FOR
PLIABLE SELF-RECOVERING CONDUITS OF
INSULATING MATERIALS
ACCORDING TO IS 9537(Part 4):1983**

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.

1.	Product	:	IS 9537(Part 4):1983
	Title	:	Conduits for Electrical Installations - Pliable Self-Recovering Conduits of Insulating Materials
	No. of Amendments	:	Nil
2.	Sampling Guidelines:		
a)	Raw material	:	-
b)	Grouping guidelines	:	Please refer ANNEX – A
c)	Sample Size	:	40 metre (one or more lengths)
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 :		
	<ul style="list-style-type: none"> (i) Marking as per Cl. 6.1 (ii) Durability of Marking as per Cl. 6.3 (iii) Dimensions as per Cl. 7.1 (iv) Uniformity of Wall Thickness as per Cl. 7.2 (v) Construction as per Cl. 8 (vi) Bending Test as per Cl. 9.2 (vii) Resistance to Burning as per Cl. 11 		
6.	Scope of the Licence :		
	“Licence is granted to use Standard Mark as per IS 9537(Part 4):1983 with the following scope:		
	Name of the product	Conduits for Electrical Installations- Pliable Self-Recovering Conduits of Insulating Materials	
	Type	Very Light/Light/Medium Mechanical Stress	
	Nominal Sizes	16mm/20mm/25mm/32mm/40mm/50mm/63mm	
	Any other aspect required as per the Standard	Plain / Corrugated Conduits	

ANNEX A

Grouping Guidelines

1. The parameters as given below shall be considered for grouping of Rigid Plain Conduits of Insulating Materials as per IS 9537(Part 4):1983 for GoL/CSoL:
 - i. Nominal size of conduits - 16mm/20mm/25mm/32mm/40mm/50mm/63mm
 - ii. Grade of Mechanical Stress - Very Light/Light/Medium
 - iii. Type - Plain / Corrugated
2. Considering the above, conduits of any nominal size from each Grade of Mechanical Stress shall be tested to cover all the sizes of conduits for that particular Grade of Mechanical Stress.
3. Relaxation shall be given to cover plain conduit if corrugated conduit is tested.
4. The Firm shall declare the grade of mechanical stress and the nominal size of conduits they intend to cover in the Licence.
5. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
6. 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 Equipment***Major test equipment essentially required to test as per the Indian Standard*

S. No.	Test Equipment	Tests used in with Clause Reference
1.	Measuring tape	Cl. 7
2.	Vernier Calliper	Cl.7
3.	Gauges for checking minimum & maximum outside diameter	Cl.7
4.	Gauges for checking minimum inside diameter	Cl.7
5.	Gauges for measuring minimum & maximum inside & outside diameter of socket ends	Cl.7
6.	Micrometre	Cl.7
7.	Bending Device	Cl. 9.2
8.	Bending Aid	Cl. 9.2
9.	Deep Freezer	Cl. 9.2
10.	Compression Test Apparatus	Cl. 9.3
11.	Conditioning Chamber	Cl. 9.3
12.	Gauges for measuring minimum inside diameter of conduits after bending	Cl. 9.5
13.	Straps	Cl. 9.5
14.	Ball Pressure Apparatus	Cl. 10
15.	Heating Cabinet	Cl. 10.2
16.	Bunsen burner	Cl. 11
17.	High Voltage Breakdown Test set	Cl. 12
18.	Million Mega Ohm Meter	Cl. 12
19.	Impact Test Apparatus	Cl. 9.4
20.	Stop Watch	Cl. 10.2
21.	Steel Ball	Cl. 10.2

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 – In addition to the requirements of IS 9537(Part 4):1983, all such information in code or otherwise for traceability shall be given in the label attached to each bundle of conduits.

4. CONTROL UNIT – All conduits of the same classification and size manufactured in a day shall constitute one 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 Standard 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			Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control			
Cl.	Requirement	Test Methods		No. of Sample	Frequency	Remarks	
		Clause	Reference				
8	Construction	8	IS 9537(Part 4)	R	Each Conduit	—	
6.1	Marking	6.1	IS 9537(Part 4)	R			
6.3	Durability of Marking	6.4	IS 9537(Part 1)	R	Ten	Each Control Unit	The sample shall be collected at random from the production line
7	Dimensions	7.1	IS 9537(Part 4)	R	Two	Every Hour	
7.2	Uniformity of wall thickness	7.2	IS 9537(Part 4)	R	Three	Each Control Unit	—
9.2	Bending test (at room temperature)	9.2	IS 9537(Part 4)	R			
9.3	Compression Test	9.3	IS 9537(Part 4)	R	Three	Conduits of same classification & size manufactured in a week	
9.5	Collapse Test	9.5	IS 9537(Part 4)	R			
10	Resistance to Heat	10	IS 9537(Part 4)	R			
11	Resistance to Burning	11 11.2	IS 9537(Part 1) IS 9537(Part 4)	R			
12	Electrical Characteristics	12.1.1, 12.1.2	IS 9537(Part 1)	R	Three	Conduits of same classification & size manufactured in a fortnight	
9.2.2	Bending Test (at low temperature)	9.2.2	IS 9537(Part 3)	R			
9.4	Impact Test	9.4	IS 9537(Part 1)	R	Twelve	Conduits of same classification & size manufactured in three months	Atleast nine samples shall pass

Note-1: 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.