



PRODUCT MANUAL FOR INSULATING MATS FOR ELECTRICAL PURPOSES ACCORDING TO IS 15652: 2006

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 15652: 2006
	Title	:	Insulation Mats for Electrical Purposes - Specification
	No. of Amendments	:	2
2.	Sampling Guidelines:		
a)	Raw material	:	As per Clause No. 5 of IS 15652: 2006
b)	Grouping guidelines	:	Please refer ANNEX- A
c)	Sample Size	:	4 meter x 1 meter (For mats with width of less than 1 m, manufacturer shall provide test pieces of width 1 m).
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	:	All test except Clause 8.2.1, 8.3, 8.5 & 8.6
6.	Scope of the Licence :		
	“Licence is granted to use Standard Mark as per IS 15652: 2006 with the following scope:		
	Name of the product	Insulating Mats for Electrical Purposes	
	Thickness		
	Class	A/ B/ C	
	Category	I/ II/ III	
	Any other aspect required as per the Standard	Suitable for Extreme Low Temperature (if applicable, Class to be denoted with subscript c)	

ANNEX A

Grouping Guidelines

1. For the purpose of GoL/ CSoL, the following parameters may be considered for grouping of Insulating Mats for Electrical Purposes as per IS 15652:
 - a) Class – Class A/ Class B/ Class C
 - b) Category - Category I/ Category II/ Category III
 - c) Suitability for Extreme Low Temperature
2. Samples of each class and category shall be tested separately for including each in the scope of Licence.
3. However, the following relaxations are permitted:
 - a) If sample of higher class is tested, lower classes may also be covered. For e.g. if Class C is tested, Classes A & B may also be covered without further testing.
 - b) If Category III is tested, then category I and II may also be covered in the scope of license without further testing.
4. For a given Class, for covering mats suitable for Extreme Low Temperature, separate testing is required. However, if higher class of mat, suitable for extreme low temperature is tested, mats of lower classes, suitable for extreme low temperature may also covered.
5. The Firm shall declare the various varieties of Insulating Mats for Electrical Purposes they intend to cover in the license. The Scope of License may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
6. During the operation of the License, BO shall ensure that all the 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*

Sl. No.	Tests used in with Clause Reference	Test Equipment
1.	Shape (Clause 6.1)	Visual examination
2.	Dimensions –Length & Width (Clause 6.2 & 6.2.1)	Measuring Tapes
3.	Thickness (Clause 6.3 & Table 2)	Dial Thickness Gauge/Vernier Calliper/Screw Gauge
4.	Colour (Clause 6.4)	Visual examination
5.	Workmanship and finish (Clause 7.1)	Visual examination
6.	Tensile Strength and Elongation at Break (Clause 8.1 & Table 3)	Tensile Testing Machine, Dumb-bell die
7.	Insulation Resistance with water (Clause 8.2.1)	Insulation Resistance Tester, Adhesives
8.	Leakage current (Clause 8.2.2)	Milli Ammeter
9.	ac Di-electric Strength (Clause 8.2.3 & Table 4)	KV Meter
10.	ac proof voltage (Clause 8.2.4 & Table 5)	KV Meter, Metal Plate, Wet Sponge, Plexiglass Mask
11.	Ageing Properties (Clause 8.3)	Ageing Oven
12.	Flame Retardance (Clause 8.4.1)	Flame retardance test apparatus with burner, Stop Watch
13.	Low Temperature Resistance (Clause 8.4.2)	Deep Freezer for maintaining -10 ± 3 °C, Two Polyethylene Plates of 150x150x5mm, Load monitor/ Load 100 N
14.	Acid/Alkalis and Oil Resistance (Clause 8.5)	Conc. Sulphuric Acid, NaOH LR Grade, HSD, Transformer Oil
15.	Extreme low Temperature (Clause 8.6)	Deep Freezer for maintaining -40 ± 3 °C, Two Polyethylene Plates of 150x150x5mm, Load monitor/ Load 100 N
16.	General Test Equipment Required.	Steel Scale, Cutting Knife, Insulating Oils, Electrodes of Dia. 25 mm and 75 mm, Thermometer, Hygrometer, Air Conditioner, Conditioning Chamber

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 the requirement of IS 15652:2006.

4. CONTROL UNIT – All rolls/ flats of the same class, category and thickness manufactured out of the same elastomer at a time and vulcanized simultaneously 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				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
5	Composition	5.1, 5.2	IS 15652	R	Each Roll/Flat		--
6.1	Shape	6.1	IS 15652	R	Each Roll/Flat		--
6.2	Dimensions – Length & Width	6.2 & 6.2.1	IS 15652	R	5	Each Control unit	--
6.3	Thickness	6.3, 6.3.1, Table 2, C-1	IS 15652	R	5		--
6.4	Colour	6.4	IS 15652	R	5		--
7	Workmanship and finish	7.1	IS 15652	R	Each Roll/Flat		--
8.1	Tensile Strength and Elongation at Break	8.1, C-2, Table3	IS 15652	R	2	Each Control unit	--
8.2.1	Insulation Resistance with water	8.2.1, C-3.1	IS 15652	R	2		--
8.2.2	Leakage current	8.2.2, C-3.2	IS 15652	R	2		--
8.2.3	ac Di-electric Strength	8.2.3, C-3.3	IS 15652	R	2		--
8.2.4	ac proof voltage	8.2.4, C-3.4, Table5	IS 15652	R	2		--
8.2.4	ac proof voltage (routine)	8.2.4, C-3.4, Table5	IS 15652	R	Each Roll/Flat		--

(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				
8.3	Ageing Properties	8.3, C-4	IS 15652	R	1	Every 7 th Control unit	Pl see Note 1
8.4.1	Flame Retardance	8.4.1, C-5.1	IS 15652	R	2	Each Control unit	
8.4.2	Low Temperature Resistance	8.4.2, C-5.2	IS 15652	R	2	Each Control unit	
8.5	Acid/ Alkali and Oil Resistance	8.5, C-6	IS 15652	R	2	Every 3 rd Control unit	Pl see Note 1
8.6	Extreme low Temperature (as applicable)	8.6, C-7	IS 15652	R	2	Each Control unit	

Note-1: In case a sample fails in the requirement, the marking shall be suspended. The marking shall be resumed only when the samples of that type produced show conformity to these requirements. The original frequency shall be restored when five samples taken from five consecutive control units shows conformity to the requirements.

Note-2: The control unit and levels of control as decided by the Bureau are obligatory, to which the licensee shall comply with.