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उत्पाद मैनुअल

Textiles — Glass Fibre Chopped
Strand Mat for the Reinforcement of
Epoxy, Vinyl Ester, Phenolic and
Polyester Thermoset Resin
Systems — Specification

IS 11551: 2024 के अनुसार

PRODUCT MANUAL
FOR Textiles — Glass Fibre Chopped
Strand Mat for the Reinforcement of
Epoxy, Vinyl Ester, Phenolic and
Polyester Thermoset Resin
Systems — Specification ACCORDING TO
IS 11551: 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 11551:2024
	शीर्षक Title	:	Textiles – Glass Fibre Chopped Strand Mat for the reinforcement of Epoxy, Vinyl Ester, Phenolic and polyester Thermoset Resin Systems – Specification
	संशोधनों की संख्या No. of amendments	:	0
2.	नमूना दिशानिर्देश Sampling Guidelines		

a)	कच्चा माल Raw material	:	<i>Raw material shall be conforming to the requirements specified in clause 4.1 of IS 11551: 2024.</i> <i>Compliance to the above may be established through supplier test certificate/test report from BIS recognized lab/empanelled lab or any other lab having accreditation as per IS/ISO/IEC17025 or in-house testing/combination thereof</i> Note: This section indicates the requirements for raw material(if specified in the IS)for which compliance is to be established during Grant of Licence/Change in Scope of Licence/Factory Surveillance
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b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	<i>Please refer to Annex-A</i>
c)	नमूने का परिमाण Sample Quantity	:	<i>15 meter roll</i> Note: This section indicates the quantity of the sample of the product and/or the raw material (if applicable), required to be sent to the laboratory for testing, for the purpose of Grant of Licence/Change in Scope of Licence/ Factory Surveillance (in case of market surveillance, effort may be made to procure the required quantity of product sample, as far as possible since raw material sample may not be available in market)
3.	परीक्षण उपकरणों की सूची List of Test Equipment	:	<i>Please refer to Annex-B</i>
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	:	<i>Please refer to Annex-C</i>
5.	एक दिन में संभावित परीक्षण Possible tests in a day		All tests are possible to be carried out in a day except Cross Breaking strength of Laminates and conductivity of water. Note: This section is for the guidance of BIS Certification Officers/Technical Auditors of BIS Authorized Outside Surveillance Agencies(OSAs) during factory inspection to provide ready reference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor.
6.	लाइसेंस का दायरा/Scope of the Licence:		
			"Licence is granted to use Standard Mark as per IS<insert ISNo.> with the following scope:
	Name of the product		Textiles – Glass Fibre Chopped Strand Mat for the reinforcement of Epoxy, Vinyl Ester, Phenolic and

	polyester Thermoset Resin Systems
Type of Glass	E / ECR
Resins Compatibility	Epoxy/Phenolic/ Polyester/Vinyl Ester
GSM	from _____ gsm up to and including _____ gsm

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NEW DELHI-110002

ANNEX-A

GROUPING GUIDELINES

1. **Based on type of glass, there are 2 types defined in the standard:**
 - a) Type 'E' Glass
 - b) Type 'ECR' glass
2. **Bases on the type of resin, there are 4 types defined in the standard:**
 - a) Epoxy
 - b) Phenolic
 - c) Polyester
 - d) Vinyl Ester
3. **Considering the above, following grouping guidelines for GoL/ CSoL have been developed:**
 - a) Glass Fibre Chopped Strand Mat of each glass type to be tested separately to cover in the scope of licence.
 - b) Glass Fibre Chopped Strand Mat shall be tested for each resin type to include that particular resin type in the scope of licence.
 - c) While drawing samples of different glass type and different resin type as above, the samples shall be drawn in such a way that samples of minimum and maximum gsm for the range of gsm intended to be covered in the scope of licence are tested to cover that entire range of gsm.
 - d) Scope of licence shall be restricted based on the manufacturing and testing facilities available.
 - e) During operation of licence, samples of each variety covered in the scope of licence, shall be 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/Chemical
1.	Width, Clause 4.3 and Table 1, Sl. No.(i)	Measurement equipment, capable of measuring the fabric length with a maximum permissible error not exceeding 1 % of the full length measured
2	Moisture Content, Clause 4.3 and Table 1, Sl. No. (ii)	Sample holder / Crucible Weighing Balance (L.C. = 0.005g) Desiccator Laboratory Oven (L.C. = 3°C)
3.	Loss on Ignition, Clause 4.3 and Table 1, Sl. No. (iii)	Sample holder / Crucible Weighing Balance (L.C. = 0.005g) Desiccator Muffle furnace
4.	Average mass per unit area, Clause 4.3 and Table 1, Sl. No. (iv)	Weighing Balance Measuring Tape
5.	Percentage Variation in mass per unit area, Clause 4.3 and Table 1, Sl. No. (v)	Weighing Balance (L.C.= 0.5g) Template: 400mmX250mm Cutting tool
6.	Cross-breaking Strength of Laminates, Clause 4.3 and Table 1, Sl. No. (vi)	Template: 400mmx250mm Weighing Machine Epoxy Resin, Vinyl Ester Resin, Phenolic Resin Polyester Thermoset Resin. Accelerators and catalyst (as per Annex E) Cutting tools Vernier Caliber (L.C. = 0.02 mm) Arrangement of Test Specimen (Fig 1 & Annexure E-2.1) UTM Muffle Furnace. Desiccator. Hot air Oven Distilled water Burner/heating mantle <u>(I) For Epoxy Resin System -</u> Reactive Diluent Wooden platform/ FRP/ Metallic Mould. Releasing Agent (as per Annex E) Laminating Roller

		<u>(II) For Phenolic Resin System -</u> Wooden platform/ Epoxy Mould. Releasing Agent (as per Annex E) Laminating Roller <u>(III) For Polyester Resin System -</u> Laminating Roller Hot air oven
7.	Conductivity of Water Extract, Clause 4.3 and Table 1, Sl. No. (vii)	Flask with stopper Distilled water Reflux condenser Burner / heating mantle Conductivity meter

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: Glass Fibre Chopped Strand Mats manufactured for particular type of resin compatibility under similar conditions of production using same raw material (E/ECR Glass) in a day.

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 roll of Glass Fibre Chopped Strand Mat provided always that the material so marked conforms to each requirement of the specification.

3.1 Packing and Marking shall be done as per the Indian Standard.

3.2 Additional Marking requirements: The material shall also be marked with the following additional requirement on on each roll of Glass Fibre Chopped Strand Mat:

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

4. REJECTION - All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the 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
(ONLY FOR GUIDANCE PURPOSE)

(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				
4.1	Manufacture	4.1	IS 11551	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity.		
4.2	Defects and impurities	4.2	IS 11551				
4.3 and Table 1	Requirements for Mat						
4.3 and Table 1, Sl. No.(i)	Width	--	IS 17592	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity.		
4.3 and Table 1, Sl. No.(ii)	Moisture Content	Annex-A	IS 11551	R			
4.3 and Table 1, Sl. No.(iii)	Loss on ignition	Annex-B	IS 11551	R	One	Each Control Unit	
4.3 and Table 1, Sl. No.(iv)	Average mass per unit area	Annex-C	IS 11551	R			
4.3 and Table 1, Sl. No.(v)	Percent variation in mass per unit area	Annex-D	IS 11551	R			
4.3 and Table 1, Sl. No.(vi)	Cross-breaking strength of laminates	Annex-E	IS 11551	S			
4.3 and Table 1, Sl. No.(vii)	Conductivity of water extract	Annex-F	IS 11551	R			
4.4	Keeping Properties	--	IS 11551	--			
					One	Once in a year	