



उत्पाद मैनुअल
Textiles — Glass Fibre Rovings for
the Reinforcement of Polyester,
Phenolic, Vinyl Ester and of Epoxide
Thermoset Resin Systems — Specification
IS 11320: 2024 के अनुसार

PRODUCT MANUAL
FOR Textiles — Glass Fibre Rovings for
the Reinforcement of Polyester,
Phenolic, Vinyl Ester and of Epoxide
Thermoset Resin Systems — Specification
ACCORDING TO IS 11320: 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 11320: 2024
	शीर्षक Title	:	Textiles — Glass Fibre Rovings for the Reinforcement of Polyester, Phenolic, Vinyl Ester and of Epoxide Thermoset Resin Systems —Specification
	संशोधनों की संख्या No. of amendments	:	0
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	No Specific Requirement. 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.

b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Please refer to Annex-A
c)	नमूने का परिमाण Sample Quantity	:	5kg 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 (incase of market surveillance, effort may be made to procure therequired 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	:	Please refer to Annex-B
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	:	Please refer to Annex-C
5.	एक दिन में संभावित परीक्षण Possible tests in a day		
	<i>All tests are possible to be carried out in a day except Cross breaking strength and Conductivity of water extract.</i> 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 readyreference 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 11320: 2024 with the following scope:		
	Name of the product	Textiles — Glass Fibre Rovings for the Reinforcement of Polyester, Phenolic, Vinyl Ester and of Epoxide Thermoset Resin Systems — Specification	
	Type of Glass	E/ECR	
	Type of roving	Single end/Multi End	
	Tex Count	150/300/640/1120/2240/2400/4800	
	Filament Diameter	6-25	

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. Based on the type of rovings, 2 types have been defined:**
 - a) Single End Roving
 - b) Multi End Roving
- 3. Further, stratification based on the requirements of Tex Count and Filament Diameter have been done.**
- 4. Considering the above, following grouping guidelines for GoL/ CSoL have been developed:**
 - a) Glass fibre roving of each glass type and each type of roving to be tested separately to cover in the scope of licence.
 - b) Sample of minimum and maximum tex count shall be tested to cover all tex counts falling in the range (minimum - maximum) under the scope of licence.
 - c) Sample of minimum and maximum filament diameter shall be tested to cover all filament diameters falling in the range (minimum - maximum) under the scope of licence.
 - 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	Filament Diameter, cl 5.1	Projection Microscope Mounting Medium(For example 50 percent concentration of ethylene glycol in water) Microscope Slide and Cover Glass Micrometer Scale
2	Tex Count, Cl 5.2	Weighing balance (L.C. = 0.005g) Cutting tool
3	Tensile Breaking load, Cl 5.4	Universal tensile testing machine having a grip of distance of 250 mm and at a drawing of 300 mm per minute $\pm$ 20 mm per minute.
4	Moisture content, Cl 5.6 and Table 4, Sl. No. (i)	Sample holder / Crucible Weighing Balance (L.C. = 0.005g) Desiccator Laboratory Oven (L.C. = 3°C)
5	Loss on Ignition, Cl 5.6 and Table 4, Sl. No. (ii)	Sample holder / Crucible Weighing Balance (L.C. = 0.005g) Desiccator Muffle furnace
6	Cross breaking strength, Cl 5.6 and Table 4, Sl. No. (iii)	PREPARATION OF TEST SPECIMENS OF GLASS REINFORCED POLYESTER RODS: Glass tubing with nominal internal diameter 6mm$\pm$0.25mm and length 300mm Ventilated Oven capable of maintaining 105 °C $\pm$ 2 °C Polyester Resin complying to IS 6746 Distilled water Burner / heating mantle Support as per Fig.1 of IS 11320: 2023. Tensile testing machine PREPARATION OF TEST SPECIMENS OF GLASS REINFORCED EPDIXIDE TEST RODS OF CIRCULAR CROSS SECTION: Polytetrafluoroethylene (PTFE) tubing with nominal internal diameter 6mm$\pm$0.25mm and length 300mm Ventilated Oven capable of maintaining 105 °C $\pm$ 2 °C Epoxy resin of diglycidyl ether of bisphenol A (DGEBA) with a epoxy value of 5.2 eq/kg to 5.5 eq/kg. Hardener- hexahydrophthalic anhydride Accelerator- benzyl dimethyl amine (BDMA)

		Distilled water Burner / heating mantle Support as per Fig.1 of IS 11320: 2023. Tensile testing machine
7	Conductivity of water extract, CI 5.6 and Table 4, Sl. No. (iv)	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 rovings of same type and tex count manufactured 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 bobbin, 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 each bobbin:

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				
5.1	Filament Diameter	Annex B	IS 11320	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.		
5.2	Tex Count	Annex C		R			
5.4	Tensile Breaking load	5.4		R	One	Each Control Unit	
Cl 5.6 and Table 4, Sl. No. (i)	Moisture content	Annex D		R	One	Each Control Unit	
Cl 5.6 and Table 4, Sl. No. (ii)	Loss on Ignition	Annex E		R	One	Each Control Unit	
Cl 5.6 and Table 4, Sl. No. (iii)	Cross breaking strength	Annex F		S	One	Once in a month or whenever there is change in raw material, whichever is earlier.	
Cl 5.6 and Table 4, Sl. No. (iv)	Conductivity of water extract	Annex G		R	One		
5.7	Keeping Properties	--		--	one	Once in a year	