



उत्पाद मैनुअल
आई एस 16532:2017 के अनुसार
एपीपी पॉलिएस्टर सुदृढ़ीकरण के साथ संशोधित बिटुमिनस जल सह
और नमी सह झिल्ली के लिए

दस्तावेज संख्या - पी एम/ आई एस 16532/ 2/ सितम्बर 2021

भारतीय मानक ब्यूरो की स्कीम-1 (अनुरूपता मूल्यांकन) विनियम, 2018 के तहत यह उत्पाद मैनुअल प्रमाणीकरण के प्रचालन में रीति और पारिशिष्ट की सुसंगतता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों और लाइसेंसि द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस प्रमाणीकरण लाइसेंस/ प्रमाणपत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज का उपयोग किया जा सकता है।

PRODUCT MANUAL FOR
APP MODIFIED BITUMINOUS WATERPROOFING AND DAMP-
PROOFING MEMBRANE WITH POLYESTER REINFORCEMENT
ACCORDING to IS 16532:2017

Document No.- PM/ IS 16532/ 2/ Sep 2021

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.

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1.	Product	:	IS 16532 : 2017
	Title	:	APP Modified Bituminous Waterproofing and Damp-Proofing Membrane with Polyester Reinforcement
	No. of Amendments	:	Nil
2.	Sampling Guidelines:		
a)	Raw material	:	Please refer ANNEX – A
b)	Grouping guidelines	:	Please refer ANNEX – B
c)	Sample Size	:	APP Membrane - 10m x 1 m for complete testing
3.	List of Test Equipment	:	Please refer ANNEX - C
4.	Scheme of Inspection and Testing	:	Please refer ANNEX - D
5.	Possible tests in a day:		
	All tests to be done in factory as the licence is operated on Factory Testing basis. 3 days are required for complete testing.		
6.	Scope of the Licence:		
	“Licence is granted to use Standard Mark as per IS 16532:2017 with the following scope:		
	Name of the product	APP Modified Bituminous Waterproofing and Damp-Proofing Membrane with Polyester Reinforcement	
	Type of Finish	Plain / Mineral / Aluminium	
	Thickness (in mm)		
	Any Other Aspect	With or Without Optional Requirement (Puncture Resistance test)	

ANNEX – A**RAW MATERIALS**

Raw Material	Indian Standard
Centre Core	Clause 4.1 of IS 16532:2017
Bitumen	IS 73
Mineral Filler	Clause 4.4 of IS 16532:2017
Finishing Material	Clause 4.1 of IS 16532:2017

ANNEX - B
Grouping Guidelines

1. APP Modified Bituminous Waterproofing and Damp-Proofing Membrane with Polyester Reinforcement as per IS 16532 :2017 are classified as given below:

Type of Finish	Thickness of Membrane (mm)	
	Group-I	Group-II
Plain	1.5, 2	3, 4, 5

Type of Finish	Thickness of Membrane (mm)
Mineral	3, 4, 5
Aluminium	3, 4, 5

2. Considering the above, the following grouping guidelines for GoL/ CSoL have been developed:

- i. For Plain finish, one sample with the highest thickness from each group shall be tested for all requirements to cover all the thicknesses up to and including the thickness tested in that group.
- ii. For Mineral and Aluminium finish, one sample with the highest thickness from each type of finish shall be tested for all requirements to cover all the thicknesses up to and including the thickness tested for that particular type of finish.
- iii. If Mineral or Aluminium finish is tested, Plain finish may also be included in the scope of the licence for the corresponding thicknesses.

3. The Firm shall declare the varieties of APP Membrane they intend to cover in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.

4. During the operation of the Licence, BO shall ensure that all the types and sizes covered in the Licence are tested in rotation, to the extent possible.

ANNEX- C**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
Requirement for Non-Woven Polyester Mat & Mineral Filler		
1.	Mass, g/m ² (Clause 4.1.1)	Weighing Balance
		Cutting apparatus (Die/ Template/ Steel Rule)
2.	Tensile Strength (Clause 4.1.1)	Tensile testing machine (CRT type) with Clamps
3.	Elongation (Clause 4.1.1)	
4.	Mineral filler fineness (Clause 4.4)	75u Sieve
Requirements for APP Membrane		
5.	Dimensions Width & Length (Clause 5.1)	Measuring Tape
		Measuring Scale
6.	Thickness (Clause 5.1)	Apparatus as per Clause B-1.2.1 or fig 1 of IS 16532
		Cutter
7.	Weight (Clause 5.2)	Weighing Balance
8.	Cold Flexibility (Clause 6)	Mandrels
		Deep Freezer
		Temp. controller
9.	Softening Point (Clause 6)	Ring and Ball apparatus (fig 1 of IS 1205)
		Hot Plate
		Digital Thermometer
		Glass Thermometer
		Stirrer
		Glycerin
10.	Tensile Strength & Elongation (Clause 6)	Dextrin
		Tensile testing machine (CRT type)
		Conditioning Chamber with temp. and humidity control
11.	Tear Strength (Clause 6)	Cutting tools for test specimen (fig.3 of IS 7193)
		Elmendorf apparatus
12.	Heat Resistance (Clause 6)	Hot air Oven with digital controller and vertical specimen holding clips

13.	Penetration (Clause 6)	Penetration apparatus with needle setup as per Cl 3.2 & 3.5 of IS 1203:1978
		Conditioning Chamber with temp. and humidity control
		Water Bath
		Metal or glass container
		Stop Watch
		Transfer Dish
		Thermometer
		Water Bath
		Thermometer
14.	Water absorption (Clause 6)	Weighing Balance
		Conditioning Chamber with temp. and humidity control
		Distilled water
		Cutting tools for test specimen
		Immersion trough
15.	Dimension Stability (Clause 6)	Measuring Tape
		Cutter
		Air Conditioner
		Drying Oven
		Measuring Scale Steel
16.	Pressure Head Test (Clause 6)	Pressure Head test apparatus with 300mm water head [fig.1 of IS 13826 (Part 4)]
		Conditioning Chamber with temp. and humidity control
		Hot air over with temperature controller
17.	Puncture resistance test (Optional) (Clause 6)	Square Mounting Frame
18.		Steel Cylinder
19.		Conventional Straight edges or Rules or Dials (arrangement as per fig.2 of IS 16532)
20.		Air Conditioner & Hygrometer
21.		Humidity Chamber

The above list is indicative only and may not be treated as exhaustive.

ANNEX D

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 requirements of IS 16532:2017.

4. CONTROL UNIT – APP Membranes of the same classification i.e. type of finish and thickness manufactured from the same batch of Bitumen produced in a day 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 2.0 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 Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
4.1.1	Mass, g/m ² (Non-oven Polyester Mat)	Annex-B	IS 16532	R	One	Each Consignment	
4.1.1	Tensile Strength (Non-oven Polyester Mat)	Annex-B	IS 16532	R	One	Each Consignment	
4.1.1	Elongation (Non-oven Polyester Mat)	Annex-B	IS 16532	R	One	Each Consignment	
4.3	Bitumen	-	IS 73	S	One	Each Consignment	No further testing is required, if material received with test certificate or ISI marked.
4.4	Mineral filler fineness	-	IS 460 (Part-1)	R	One	Each Consignment	
4.5	Finishing Material	-	IS 16532	R	One	Each Control Unit	
5.1	Dimensions (Width & Length)	Annex-B	IS 16532	R	Physical checking of one roll out of every twenty rolls manufactured shall be done and recorded.		
5.1	Thickness	Cl B-1, Annex-B	IS 16532	R	Ten	Each Control Unit	
5.2	Weight	5.3	IS 16532	R	Ten	Each Control Unit	
6	Cold Flexibility	-	IS 13826 (Part-2)	R	One	Each Control Unit	
6	Softening Point	IS 1205	IS 1205	R	One	Every Alternate Control Unit	*

6	Tensile Strength & Elongation	-	IS 13826 (Part-1)	R	Two	Once in a week	
6	Tear Strength	B-4	IS 7193	R	One	Each Control Unit	
6	Heat Resistance	-	IS 13826 (Part-5)	R	Two	Each Control Unit	
6	Penetration	-	IS 1203	R	One	Each Control Unit	
6	Water absorption	-	IS 13826 (Part-6)	R	One	Once in a week	*
6	Dimension Stability	-	IS 16532	R	One	Once in a week	
6	Pressure Head Test	-	IS 13826 (Part-4)	R	One	Once in a week	*
6	Puncture resistance test (Optional)	Annex-C	IS 16532	R	One	As required	

* In case of failure, a sample from each control unit shall be tested and original frequency resumed if five consecutive samples pass.

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-2: 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.