



PRODUCT MANUAL FOR BAMBOO MAT BOARD FOR GENERAL PURPOSES ACCORDING TO IS 13958: 1994

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 13958: 1994
	Title	:	BAMBOO MAT BOARD FOR GENERAL PURPOSES
	No. of Amendments	:	4
2.	Sampling Guidelines:		
a)	Raw material	:	Adhesive – BWR type of IS 848
b)	Grouping guidelines	:	Please refer ANNEX – A
c)	Sample Size	:	1 Bamboo mat board
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 tests except Mycological test (cl. 9.3.3 and cl.9.4.3)		
6.	Scope of the Licence:		
	“Licence is granted to use Standard Mark as per IS 13958:1994 with the following scope:		
	Name of the product	BAMBOO MAT BOARD FOR GENERAL PURPOSES	
	Size and Thickness		

ANNEX A

Grouping Guidelines

1. Bamboo Mat Boards for General Purposes as per IS 13958: 1994 are categorized as given below:

(a) Sizes

- 2400 mm × 1200 mm
- 2100 mm × 1200 mm
- 2100 mm × 900 mm
- 1800 mm × 1200 mm
- 1800 mm × 900 mm

(Any other dimension as agreed to between the manufacturer and the purchaser is permitted)

(b) Thickness

Thickness of bamboo mat boards shall be specified depending upon the number of plies.

2. Considering the above and considering that manufacturing of Boards of higher thickness is more critical, following grouping guidelines is developed for GoL/CSoL:

- One sample of Bamboo Mat Board of any size of highest thickness shall be tested for all requirements to cover Boards of all sizes, with thickness upto and including the thickness tested.

3. The Firm shall declare the varieties 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 varieties covered in the Licence 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	Adhesive (Clause 4.2)	<ul style="list-style-type: none"> - Sample preparation hot press with veneers as required - Thermostatically controlled water bath - Hot air oven - Knife - pH meter - Distilled water - Glass sheet - Grinding mill - Test sieves 450 micron - Glass flask.
2	Manufacture (Clause 5)	<ul style="list-style-type: none"> - Micrometer/ Vernier caliper - Moisture meter - Hot air oven - Thermometer
3	Dimensions and tolerances (Clause 6)	<ul style="list-style-type: none"> - Micrometer, Vernier Caliper - Measuring tape. - Square of adequate length - Steel rule of full length - Filler gauges
4	Workmanship and finish (Cl 7)	<ul style="list-style-type: none"> - Vernier Caliper.
5	Internal Bond Strength in dry state (Clause 9.3.1) Internal Bond Strength in Wet state (Clause 9.3.2) Mycological test (Clause 9.3.3)	<ul style="list-style-type: none"> - Loading Blocks (Steel/Aluminium) - Moisture meter - Weighing balance - Measuring cylinder - Stop watch - Glass sheet - Thermostatically controlled water bath - Hot air oven - BOD incubator - Flat rectangular disc (enameled iron, glass or porcelain) - Conditioning chamber - Modeling clay.
6	Surface Strength Test in Dry State (Clause. 9.4.1) Surface Strength Test in Wet State (Clause 9.4.2) Mycological test (Clause 9.4.3)	<ul style="list-style-type: none"> - Loading blocks - Hot air oven, water bath - Adhesive (PVA) - Conditioning chamber - Torque wrench/ - Arrangement for surface glueability test as per Fig 2 of IS 2380 (Part 22) :1981 - Moisture meter. - BOD incubator - Flat rectangular disc (enameled iron, glass or porcelain) - Conditioning chamber - Modeling clay.

7	Modulus of Rupture (MOR) and Modulus of Elasticity (MOE) (Clause 9.5)	<ul style="list-style-type: none">- Static bending load testing machine with variable rate of loading and dial gauge for measurement of deflection at centre- Steel scale- Vernier caliper- Hot air oven- Moisture meter
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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 equipments.

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 13958: 1994

4. CONTROL UNIT – All Boards of same construction produced from one lot of raw material and adhesive in one press 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 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		
CI	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
4	Material						
	Bamboo	4.1	IS 13958	-	-	-	-
	Adhesive	4.2	IS 13958 IS 848	S	One	Each batch received/ Cattle produced	Further testing is not required if received with test certificate or ISI marked
5	Manufacture	5.1 to 5.7	IS 13958	R	All boards	-	#
6	Dimensions and tolerances	6.1 to 6.4	IS 13958	R	All boards	-	@ @
7	Workmanship and finish	7	IS 13958	R	Each board	-	@ @
9.3	Internal bond strength test						
9.3.1	Internal Bond Strength in dry state	9.1, 9.2, 9.3.1	IS 13958 IS 2380 (Part 5)	R	One	Each Control Unit	If the samples selected are not meeting any of the requirements, two more samples from the same control unit shall be subjected to these tests. If any of the samples in the second set fails in any of the requirements, all the materials in the control unit represented by these samples shall be rejected.
9.3.2	Internal Bond Strength in Wet state	9.1, 9.2, 9.3.2	IS 13958 IS 2380 (Part 5)	R	One	Each Control Unit	
9.3.3	Mycological test	9.1, 9.2, 9.3.3	IS 13958 IS 2380 (Part 5)	R	One	Once in a month	

9.4		Surface Strength Test					
9.4.1	Surface Strength Test in Dry State	9.1, 9.2, 9.4.1	IS 13958 IS 2380 (Part 22)	R	One	Each Control Unit	If the samples selected are not meeting any of the requirements, two more samples from the same control unit shall be subjected to these tests. If any of the samples in the second set fails in any of the requirements, all the materials in the control unit represented by these samples shall be rejected.
9.4.2	Surface Strength Test in Wet State	9.1, 9.2, 9.4.2	IS 13958 IS 2380 (Part 22)	R	One	Each Control Unit	
9.4.3	Mycological test	9.1, 9.2, 9.4.3	IS 13958 IS 2380 (Part 22)	R	One	Once in a month	
9.5	Modulus of Rupture and Modulus of Elasticity	9.5	IS 13958 IS 2380 (Part 5)	R	One	Each Control Unit	-

A moisture meter may be used for the routine testing of moisture content. In that case the readings obtained for moisture content should not exceed 13%. At least once in a week the method given in the specification may be employed for checking the results obtained with the moisture meter and the error of the moisture meter may be determined accordingly. A record of all these observations shall be kept.

@@ The Bamboo Matt Boards found defective as per Clause 6 and 7 above may, however, be dimensioned to the next smaller size to remove the defects. Such boards when examined again shall satisfy the requirements of visual defects, finish and dimensions.

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