



PRODUCT MANUAL FOR MARINE PLYWOOD ACCORDING TO IS 710 : 2010

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 710 : 2010
	Title	:	MARINE PLYWOOD
	No. of Amendments	:	NIL
2.	Sampling Guidelines:		
a)	Raw material	:	a) Face and Core Veneers, Cross-bands – Table 1, Table 2 and Clause 5 of IS 710 b) Adhesive (BWP grade) - IS 848
b)	Grouping guidelines	:	Please refer ANNEX – A
c)	Sample Size	:	a) Marine Plywood – 1 sheet b) Face and Core veneers, Cross-bands – 2 sheets of suitable size for identification of species (clause 4.1.1 of IS 710) and Thickness, Uniformity in thickness and Moisture content (clause 5.1 of IS 710) c) Resin – 5 litres
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	:	Please refer ANNEX – D
6.	Scope of the Licence :		
	“Licence is granted to use Standard Mark as per IS 710 : 2010 with the following scope:		
	Name of the product	Marine Plywood	
	Size	For Thickness upto and including --- mm	

ANNEX A
Grouping Guidelines

1. Marine plywood as per IS 710 : 2010 is classified as below:
 - a) Grade - BWP
 - b) Dimensions : 2400 mm x 1200 mm
2100 mm x 1200 mm
1800 mm x 1200 mm
2100 mm x 900 mm
1800 mm x 900 mm.
 - c) Thickness: 3 mm to 25 mm
 - d) Any dimensions (length, width and thickness) as agreed to between the manufacturer and the purchaser are also permitted in addition to the standard dimensions.
2. For manufacturing marine plywood of higher thickness, manufacturing capacity and infrastructure required is more critical than plywood with less thickness.
3. Considering the above, for GoL/CSoL, one sample of any size with highest thickness shall be tested for all requirements to cover marine plywood of thickness upto and including the tested sample.
4. The Firm shall declare the varieties of Marine plywood they intend to cover in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
5. 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 B
List of Test Equipment

Major test equipment required to test as per the Indian Standard

S. No.	Tests used in with Clause Reference	Test Equipment
1	Dimensions & Thickness (Clause 5.1, 5.2.2, 6)	Measuring Tape
		Steel Scale
		Micrometer
		Squareness
		Straight Edge
		Feeler Gauge (26 Blades)
2.	Adhesion of plies (Clause 9.1.2.2, 9.1.3.1.2)	Knife as per IS 1734 (Part 5) Stout Table
3	Adhesion of plies and Water Resistance test (Clause 9.1.2.2, 9.1.3 and 9.1.3.1.2)	Glue Adhesion Test Water Bath 45" x 12" x 12" with temperature control & pump for water circulation in the chamber Water bath Vacuum steam pressure test apparatus
4	Tensile strength and Static Bending strength and Wet Bending Strength (Clause 9.1.4, 9.1.6 and 9.1.7)	Tensile Testing Machine with load display , variable speed with MOR & MOE , attachment with AC drive
5	Moisture content (Clause 5.1, 5.4, 9.1.1)	Hot Air Oven (18" x 18" x 45") with fan & Temperature control
		Electronic Balance 300 Gm
		Humidity Chamber size 52" x 18" x 18" with temperature controller and Humidity controller
6	Resin Testing (Clause 4.2)	Moisture Meter (Digital)
		Viscosity Cups B-4 Cup /B-6 Cup
		Hydrometer
		Thermometer
		IS Sieve
		pH Meter
7	Mycological Test (Clause 9.1.5)	Enameled Tray with Glass Sheet Fungus with spores
8	General laboratory equipments	Humidity Chamber with thermometer & hygrometer
		Desiccator
		Air Conditioner
		Dry-Wet Thermometer
		Electric Hot Plate
		Chemicals and glassware
		Viscosity Cup

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 requirements of IS 710 : 2010

4. CONTROL UNIT – All marine plywood boards of similar construction pressed under similar conditions on the same day in one press from same roll of film adhesives or mix of adhesives shall constitute a control unit (Boards in which the arrangement of veneers is similar as regards thickness and species of timber for face plies shall be considered to be of similar construction).

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		
Clause	Requirement	Test Methods			No. of Sample	Frequency	Remarks
		Clause	Reference				
4	MATERIALS						
4.1	Timber	4.1.1 to 4.1.3	IS 710	-	One	Each lot received	Record of each lot of timber received shall be maintained
4.2	Adhesive	4.2.1	IS 710 IS 848	R	One	Each lot manufactured/ received	No further testing is required, if material received with test certificate or ISI Marked.
5.1	Veneers	5.1 5.1.1	IS 710	R	One	Each lot	-
5.2	Assembly	5.2	IS 710	-	All	-	-
5.3	Treatment	5.3	IS 710	-	All	-	-
5.4, 9.1.1	Moisture content	5.4, 9.1.1	IS 710	R	Two	Each control unit	In case of failure, control unit shall be suitably reconditioned and re-tested. The control unit shall be accepted if retested sample passes the test.
6	Dimensions & Tolerances	6.1, 6.2, 6.3	IS 710	R	5	For each size from each control unit	Samples shall be drawn at regular interval to cover entire production. In case of failure of any sample, entire production shall be checked and only conforming product shall be marked.
7	Workmanship and finish	7.1 to 7.6	IS 710	-	All	-	-

9.1.2	Glue adhesion in dry state	9.1.2.1 9.1.2.2	IS 710	R	One	Each control unit	In case of failure of sample, twice the number of samples from same control unit shall be tested and control unit shall be accepted if retested sample found passing.
9.1.3	Water Resistance Test	9.1.3, 9.1.3.1 9.1.3.1.1 9.1.3.1.2 9.1.3.2	IS 710	R	One	Each control unit	
9.1.4	Tensile strength	9.1.4	IS 710	R	One	Each control unit	
9.1.5	Mycological test	9.1.5	IS 710	R	One sample in a month from each set of species of timber and each grade of plywood		#
9.1.6	Static Bending Strength	9.1.6	IS 710	R	One	Each control unit	In case of failure of sample, twice the number of samples from same control unit shall be tested and control unit shall be accepted if retested sample found passing.
9.1.7	Wet Bending Strength	9.1.7	IS 710	R	One	Each control unit	
9.1.8	Retention of preservative	9.1.8	IS 710	R	One	Once in week for each type of preservative	In case of failure of sample, twice the number of samples from next two control units shall be tested and control units shall be accepted on passing of retested samples. Original frequency for testing may be resumed on passing of both control units.

Samples may be drawn in such a manner that all thickness of marine plywood manufactured are tested over a period of time. In case of failure of sample in mycological test, a thorough check shall be made about the type of glue used and type of preservative added to the glue.

Note-1: 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 of BO Head.

ANNEX D
Possible Tests in a day

- (i) Thickness of veneers (Clause 5.1)
- (ii) Dimensions and Thickness (Clause 6)
- (iii) Workmanship and Finish (Clause 7)
- (iv) Glue adhesion in Dry state (Clause 9.1.2)
- (v) Tensile Strength (Clause 9.1.4)