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**उत्पाद मैनुअल
आई एस 5509:2021 के अनुसार
अग्निरोधी प्लाईवुड के लिए**

दस्तावेज संख्या - पी एम/ आई एस 5509/ 2/ फ़रवरी 2021

भारतीय मानक ब्यूरो की स्कीम-I (अनुरूपता मूल्यांकन) विनियम , 2018 के तहत यह उत्पाद मैनुअल प्रमाणीकरण के प्रचालन में रीति और पारिश्रिता की सुसंगतता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों और लाइसेंसी 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
FIRE RETARDANT PLYWOOD
ACCORDING TO IS 5509: 2021**

Document No.- PM/ IS 5509/ 2/ Feb 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 5509 : 2021
	Title	:	FIRE RETARDANT PLYWOOD
	No. of Amendments	:	Nil
2.	Sampling Guidelines:		
a)	Raw material	:	Plywood – BWR grade conforming to IS 303
b)	Grouping guidelines	:	Please refer ANNEX – A
c)	Sample Size	:	1 full size sheet for all tests
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 :		
	- Dimension and tolerance (Clause 8) - Workmanship and finish (Clause 9) - Moisture content (Clause 12.1) - Glue Adhesion test (Water Resistance test) and Static Bending strength (Clause 12.2)		
	Scope of the Licence :		
	Licence is granted to use Standard Mark as per IS 5509 : 2021 with the following scope:		
	Name of the product	FIRE RETARDANT PLYWOOD	
	Type of fire retardant	Type 1/ Type 2 / Type 3/ Type 4/ Type 5/ Type 6 (Name of Chemical Compound shall be declared for Type 6)	
	Preservative treatment		
	Thickness	Upto and including --- mm	

ANNEX A**Grouping Guidelines**

1. Fire Retardant Plywood as per IS 5509 : 2021 is classified as given below:
 - a) ***Type of Flame Retardant Chemical:***
 - Type 1 – Ammonium phosphate
 - Type 2 – Ammonium sulphate
 - Type 3 – Boron compound
 - Type 4 – Combination of ammonium phosphate and boron compound
 - Type 5 – Combination of ammonium sulphate and ammonium phosphate
 - Type 6 – Chemicals other than those given in Types 1 to 5, which meet fire retardance requirements [Name of the chemical compound shall be declared by the manufacturer]
 - b) ***Method of Preservative Treatment:***
 - Treatment of plywood by pressure impregnation after manufacture
 - Soaking treatment
 - c) ***Choice of Treatment:***
 - Treated with fire retardant chemical only
 - Treated with fire retardant chemical and preservative
 - d) Thickness based on number of Ply: 3 mm to 25 mm
 - e) 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. Considering the above, following grouping guidelines for GoL/CSoL have been developed:
 - a) Fire Retardant Plywood with highest thickness treated with each type of flame retardant chemical shall be tested for all the requirements to cover Fire Retardant Plywood of the particular type tested and with thickness upto and including the thickness of the tested sample.
 - b) Separate sample of Plywood shall be tested for each method of preservative treatment and choice of treatment.
3. The Firm shall declare the varieties of Plywood intended to be covered in the Licence. The Scope of Licence may be restricted based on the Manufacturing capability and Testing facilities of the Manufacturer.
4. During the operation of the Licence, BO shall ensure that all the 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*

S. No.	Tests used in with Clause Reference	Test Equipment
1	Dimensions, Squareness and Edge Straightness (Clause 8)	Measuring Tape
		Steel Scale
		Micro Meter
		Vernier Caliper
		Squareness Gauge
		Straight Edge
2	Moisture content (Clause 12.1)	Feeler Gauge
		Hot Air Oven - thermostatically controlled and fitted with thermometer
3	Flammability (Clause 12.1)	Moisture Meter
		Flammability test setup
4	Flame penetration (Clause 12.1)	Bunsen burner
		Flame penetration test setup with arrangement for rotation of sample at 75 RPM
5	Rate of burning (Clause 12.1)	Test apparatus with sample holding arrangement
		Gas burner
		Top pan balance
6	Other tests (Clause 12.2)	
	Static bending test	Tensile Testing Machine attached with MOE and MOR attachments and 100 mm. dial gauge
	Water resistance test	Water Bath fitted with digital temperature controller, Knife as per ISS, Stout Table
7	General test equipments required	Humidity Chamber with thermometer & hygrometer
		Desiccator
		Air Conditioner
		Dry-Wet Thermometer

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 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 5509: 2021

4. CONTROL UNIT – All Fire Retardant Plywood boards of similar construction and type treated with same type of fire retardant with same method of treatment shall constitute a control unit (Plywood Boards in which the arrangement of veneers is similar as regards thickness and species of timber on both sides of central ply 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 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 Methods			No. of Sample	Frequency	Remarks
		Clause	Reference				
4.2	Preservative treatment	4.2	IS 5509 IS 12120	R	1	Each lot of preservative treatment done at a time from same type of preservative chemical.	
8	Dimensions and Tolerances	8.1, 8.2 and 8.3 Annex-A	IS 5509	R	Each Board	-	-
9	Workmanship and finish	9	IS 5509	-	Each Board	-	-
12.1	Moisture Content	12.1	IS 5509 IS 1734 (Part 1)	R	1	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.
12.1	Flammability	12.1	IS 5509 IS 1734 (Part 3)	R	1	Each control unit	
12.1	Flame penetration	12.1	IS 5509 IS 1734 (Part 3)	R	1	Each control unit	
12.1	Rate of burning	12.1	IS 5509 IS 1734 (Part 3)	R	1	Each control unit	

12.2	Other Tests						
	Water Resistance Test	12.2	IS 5509 IS 303	R	1	Each control unit	In case of failure of sample, additional sample from same control unit shall be tested and control unit shall be accepted if retested sample passes the test.
	Static Bending Strength	12.2	IS 5509 IS 303	R	1	Each control unit	In case of failure of sample, additional sample from same control unit shall be tested and control unit shall be accepted if retested sample passes the test.

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.