



उत्पाद मैनुअल
सामान्य प्रयोजनों के लिए मध्यम घनत्व के रेशा बोर्ड के लिए
आई एस 12406 : 2021 के अनुसार

PRODUCT MANUAL
MEDIUM DENSITY FIBRE BOARDS FOR GENERAL PURPOSE
ACCORDING TO IS 12406:2021

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 12406 : 2021
	शीर्षक Title	:	Medium Density Fibre Boards for General Purpose
	संशोधनों की संख्या No. of amendments	:	Nil
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	Not applicable
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Please refer to Annex-A
c)	नमूने का परिमाण Sample Quantity	:	One Board for all tests
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. Finish (Clause 7) ii. Dimension and tolerance (Clause 8)		
6.	लाइसेंस का दायरा /Scope of the Licence:		
	Licence is granted to use Standard Mark as per IS 12406:2021 with the following scope:		
	Name of the product	Medium Density Fibre Boards for General Purpose	
	Grade	Grade 1/Grade 2	
	Formaldehyde Class	E ₁ /E ₂	
	Thickness (mm)		

भारतीय मानक ब्यूरो
 BUREAU OF INDIAN STANDARDS
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 New Delhi – 110002

ANNEX A

Grouping Guidelines

1. Medium Density Fibre Boards for general purposes are classified as given below:

Grade:

- (i) Grade 1
- (j) Grade 2

2. Each Grade is further sub-classified based on formaldehyde content/emission as Formaldehyde Class *E1* and Formaldehyde Class *E2*.

3. The following are also taken into consideration while evolving the grouping guidelines:

- (a) Any other dimensions (Length, Width and Thickness) as agreed to between the purchaser and the manufacturer may also be used.
- (b) Requirement specified for Modulus of Rupture are different for thickness ranges; $t \leq 9$ mm, $9 < t \leq 12$ mm, $12 < t \leq 19$ mm, $19 < t \leq 30$ mm, $30 < t \leq 45$ mm and $t > 45$ mm. Considering the same, the thickness can be grouped as following:

Group	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Thickness (t) (mm)	$t \leq 9$	$9 < t \leq 12$	$12 < t \leq 19$	$19 < t \leq 30$	$30 < t \leq 45$	$t > 45$

(c) For all tests, Grade 1 is having stringent requirements than Grade 2.

(d) Formaldehyde Class *E1* is stringent than Class *E2*.

4. The following grouping guidelines for GoL/ CSoL shall be followed:

- a) One sample of any thickness from each Formaldehyde Class of each Grade from each thickness groups shall be tested for all requirements in order to cover the complete range of thicknesses covered in that thickness group for that Grade and Class tested.
- b) If sample from Grade 1 is tested corresponding sizes in Grade 2 may also be covered.
- c) If sample of Formaldehyde Class *E1* is tested, then corresponding sizes of Boards of Formaldehyde class *E2* may also be covered.

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

6. During the operation of the Licence, BOs shall ensure that all the varieties covered in the Licence are tested in rotation, to the extent possible.

ANNEX B

List of Test Equipment

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Major test equipment required to test as per the Indian Standard

S. No.	Tests used in with Clause Reference	Test Equipment
1.	Finish (Clause 7) and Dimensions and tolerance (Clause 8 & 11.3)	Stainless Steel Scale Measuring Tape Vernier Caliper Micrometer Right Angle Straightness gauge
2.	Density (Clause 11.4)	Hot air oven Weighing balance
3.	Moisture content (Clause 11.5)	Hot air oven Weighing balance
4.	Water absorption (Clause 11.6)	Water bath Soluble sealant material such as wax
5.	Test for linear expansion (Swelling in water)- Due to general absorption (Clause 11.7.1)	Water bath Soluble sealant material such as wax Arrangement for measurement of change in length
6.	Swelling due to surface absorption (Clause 11.7.2)	Water bath Soluble sealant material such as wax Micrometer
7.	Modulus of Rupture and Modulus of Elasticity (Clause 11.8)	Tensile testing machine with bend facility and with attachment for static bending test and with variable speed Extensometer/Dial gauge
8.	Internal bond (Clause 11.9)	Loading fixture for tension test perpendicular to surface
9	Internal bond (Clause 11.9.1) a) Cyclic test	Loading fixture for tension test perpendicular to surface Hot air oven Water bath
	b) Accelerated water resistance test	Loading fixture for tension test perpendicular to surface Water bath Paper Towel Drying Oven
10	Screw withdrawal test (Clause 11.10)	Screws Tensile testing machine

11	Formaldehyde content/Emission Fc (Clause 11.11)	Precision balance Hot air oven Extraction apparatus Volumetric flask Precision burette Pipette Measuring cylinder Toulene Sulphuric acid Sodium thiosulfate Sodium hydroxide Starch solution
		Test chamber as per clause 6.1 of IS/ISO 12460-1 Equipments for monitoring test conditions Air sampling system Washing bottles Silica absorber Gas flow valve Gas flow meter Spectrophotometer Water bath Volumetric flask Bulb pipette Micro burette Flasks Weighing balance Acetyl-acetone solution Ammonium acetate solution Iodine solution Sodium thiosulphate solution Sodium hydroxide solution Sulphuric acid Starch solution
12	Adhesive test	Hot water bath Hot air oven Knife as per IS 1734 (Part 5) pH meter
13	General test equipments	Stop watch Thermometer Air conditioner Drill machine umidity chamber Weighing balance

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

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 : Medium Density Fibre Boards for general purpose of the same designation (Grade) and Formaldehyde Class, manufactured with the same batch of adhesive compound during a shift of eight hours subject to a maximum 1000 Boards shall constitute a control unit.

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 marked on each MDF board provided always that the product so marked conforms to each requirement of the specification.

3.1 Packing and Marking shall be done as per the Indian Standard IS 12406 : 2021

3.2 **Additional Marking requirements:** Each MDF board shall also be marked with the following additional requirement:

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)*****TABLE 1**

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Recommended Levels of Control		
Clause	Requirement	Test Methods Clause Reference			No. of Sample	Frequency	Remarks
5.2	Adhesive	5.2	IS 12406	-	-	Each consignment	Compliance may be ensured for each consignment as per respective Clauses of the Indian Standard
5.3	Sizing material	5.3	IS 12406	-	-	Each consignment	
5.4	Preservative	5.4	IS 12406	-	-	Each consignment	
7	Finish	7	IS 12406	R	Each board	-	-
8	Dimensions and Tolerances	8	IS 12406 IS 2380 (Part 2)	R	Three	Every hour production	In case of failure in dimensions, all Boards manufactured during the hour shall be checked and only those conforming shall be marked.
9	Density	9, Table 3 (i) & 4 (i)	IS 12406 IS 2380 (Part 3)	R	Two	Each control unit	##
9	Moisture content	9, Table 3 (iii) & 4 (iii)	IS 12406 IS 2380 (Part 3)	R	Two	Each control unit	

9	Linear expansion Due to general absorption after 24 h soaking	9, Table 3 (v) & 4 (v)	IS 12406 IS 2380 (Part 17)	R	Two	Each control unit	
9	Modulus of Rupture and Modulus of Elasticity	9, Table 3 (vii & ix) & 4 (vii & ix)	IS 12406 IS 2380 (Part 4)	R	Two	Each control unit	##
9	Internal bond strength	9, Table 3 (vi) & 4 (vi)	IS 12406 IS 2380(Part 5)	R	Two	Each control unit	##
9	Internal bond strength - a) After cyclic test	9, Table 3 (vii.a) & 4 (vii.a)	IS 12406 IS 2380(Part 5)	S	Two	Once in three months for each type, grade and sub-classification.	@@
	b) After accelerated water resistance test			R	Two	Every alternate control unit	##
9	Screw withdrawal test a) Face b) Edge	9, Table 3 (x) & 4 (x)	IS 12406 IS 2380(Part 14)	R	Two	Each control unit	##
9	Formaldehyde content, Fc, mg/100 gm for oven dry board	9, Table 3 (xi) & 4 (xi)	IS 12406 IS 13745	R	Two	Each control unit	
9	Steady-state Formaldehyde emission, Fc, mg/m3 (optional requirement)	9, Table 3 (xii) & 4 (xii)	IS 12406 IS/ISO 12460-1	S	-	-	-

If both the samples fail, the control unit shall be rejected and shall not be marked. If one sample fails, then two additional samples shall be taken from the same control unit for retesting. If any retested sample fails, the control unit shall be rejected and shall not be marked.

@@ If any sample fails, marking shall be stopped. Marking shall be resumed only after passing of improved lots produced after taking corrective actions. Frequency of testing shall be maintained as once in a month for each type, grade/subclass of boards till three consecutive samples pass and there after original frequency of testing shall be resumed.