

भारतीय मानक

IS 3097 : 2025

Indian Standard

मध्यम घनत्व के लकड़ी और अन्य
लिनोसेल्यूलोसिक सामग्री के पृष्ठावरित
पार्टिकल बोर्ड — विशिष्टि

(तीसरा पुनरीक्षण)

Veneered Medium Density Particle
Boards from Wood and other
Lignocellulosic Material —
Specification

(Third Revision)

ICS 79.060.20

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मानक भवन, 9 बहादुर शाह ज़फर मार्ग, नई दिल्ली - 110002

MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG

NEW DELHI - 110002

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Price Group 8

Wood and Other Lignocellulosic Products Sectional Committee, CED 20

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Wood and Other Lignocellulosic Products Sectional Committee had been approved by the Civil Engineering Division Council.

Veneered particle boards natural veneer surfaces for a wooden appearance used in buildings, furniture, etc. Veneered particle boards are of several grades and types, faced with decorative type or general purpose type veneers. Particle boards with decorative veneers are suitable for interior decoration and for making furniture.

This standard was first published in 1965 and subsequently revised in 1980 and 2006. In this revision, the following major changes have been done:

- a) In line with the revision of Indian Standard on medium density particle boards, veneered medium density particle boards have been classified based on service conditions;
- b) Requirements have been modified against each classification of the veneered medium density particle board; and
- c) Marking clause has been modified.

This standard also gives requirements of formaldehyde content and formaldehyde emission. Both formaldehyde content and emission are specified under Class E_1 and Class E_2 . Class E_1 is more stringent than Class E_2 .

The composition of the Committee responsible for the revision of this standard is given in [Annex B](#).

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

**VENEERED MEDIUM DENSITY PARTICLE BOARDS FROM
WOOD AND OTHER LIGNOCELLULOSIC MATERIAL
— SPECIFICATION**

(Third Revision)

1 SCOPE

1.1 This standard covers the requirement of veneered medium density particle boards for general and decorative applications.

1.2 This standard does not cover prelaminated particle boards specified in IS 12823.

2 REFERENCES

The standards listed in [Annex A](#) contain provisions which through reference in the text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards.

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 707 shall apply.

4 CLASSIFICATION

4.1 Veneered particle board shall be classified in four grades as per [Table 1](#). Based on the surface characteristics, each grade shall be further classified in two types as given in [Table 1](#) and as follows:

- a) *Type 1 — Veneered Particle board, General Purpose*

These are veneered particle boards of solid core with faces of veneer of general purpose type.

- b) *Type 2 — Veneered Particle board, Decorative Purpose*

These are veneered particle boards with solid core but faced on one side or on both sides with decorative veneers.

4.2 Formaldehyde Classes

In terms of formaldehyde class, each grade veneered particle board shall be further classified in two classes as follows:

- a) Formaldehyde Class, E_1 ; and
- b) Formaldehyde Class, E_2 .

5 MATERIALS

5.1 Medium Density Particle Board

Particle board used for the manufacture of veneered particle board shall conform to IS 3087.

5.2 Timber

5.2.1 Any species of timber may be used in the manufacture of veneered particle board.

5.2.2 Face veneers of veneered particle boards and cross-bands, where used in manufacturing veneered particle boards, shall be as per IS 303 and IS 1328 as applicable.

5.3 Adhesive for Bonding of Veneer

The adhesive used for bonding of veneers shall be any suitable synthetic resin conforming to the properties of resin adhesive specified in IS 848 as per requisite service conditions.

5.4 Preservative

A suitable preservative may be added to the mix at the mixing stage of adhesive. The following preservatives are regarded as suitable and their percentage is given on the basis of oven dry weight of the particles:

- a) sodium pentachlorophenolate to the extent of 2 percent; and
- b) trichlorophenol to the extent of 5 percent.

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Table 1 Classification of Veneered Particle Board

(Clause 4.1)

Sl No.	Veneered Particle Board Grade	Surface Type
(1)	(2)	(3)
i)	Regular (REG) Grade A	Type 1 Type 2
ii)	Regular (REG) Grade B	Type 1 Type 2
iii)	Moisture Resistance (MR) Grade	Type 1 Type 2
iv)	High Moisture Resistance (HMR) Grade	Type 1 Type 2

6 MANUFACTURE

6.1 Preservative Treatment of Veneers

Veneers of timber shall be given a preservative treatment at the veneer stage as specified in IS 303.

6.2 Trimmed and cut ends of the finished veneered particle board shall be given a protective treatment by coating with any of the following preservatives:

- sodium pentachlorophenate or trichlorophenol to a retention level of 6 kg/m³ or 8 kg/m³ respectively;
- 10 percent solution of copper naphthenate in mineral spirit; and
- shellac in spirit or phenol formaldehyde.

NOTE — Other type and method of preservative treatment may also be done as per agreement between manufacturer and purchaser and shall be declared by the manufacturer.

6.3 Particle boards used as core can be treated as and when required.

6.4 The construction shall be well-balanced around the central line. When only one side is provided with decorative face, the back face shall be so designed with material and thickness as to balance the stress likely to be developed in the face veneers.

6.5 The veneers used shall have moisture content not exceeding 15 percent and the veneered particle board after pressing shall be conditioned to a moisture content of not less than 5 percent and not more than 15 percent.

6.6 Veneered particle boards are made either by gluing particle boards between the veneer or alternatively, between two sheets of plywood. The thickness of the two skins shall be equal and uniform if the same species is used and no other provision is made for balanced construction.

7 FINISH

All veneered particle boards shall be flat, squarely cut and if required, shall be sanded to a smooth even surface.

8 DIMENSIONS AND TOLERANCES

8.1 Any dimensions (length and width) as agreed to between the manufacturer and the purchaser may be used and shall be declared by the manufacturer. The dimensions shall be measured as per IS 2380 (Part 2). Prevailing dimensions (length × width) of veneered particle boards are as given below:

Length, mm : 5 490, 4 880, 3 660, 3 050, 2 745, 2 440, 2 135, 1 830, 1 525, 1 220, 1 000 and 915

Width, mm : 1 830, 1 525, 1 220, 1 000, 915, 610 and 305

8.2 Thickness

The thickness of the veneered particle board shall be 3 mm, 4 mm, 6 mm, 9 mm, 12 mm, 15 mm, 16 mm, 17 mm, 18 mm, 22 mm, 25 mm, 30 mm, 35 mm, 40 mm, 44 mm and 45 mm.

NOTE — Any other thickness as agreed to between the manufacturer and the purchaser may also be used.

8.3 Squareness and Edge Straightness

Edge straightness and squareness shall be measured as per IS 2380 (Part 2).

8.4 Tolerances

The tolerances on the dimensions of finished veneered particle boards shall be as given in [Table 2](#).

9 REQUIREMENTS

9.1 The veneered particle boards shall conform to the requirements given in [Table 3](#) to [Table 8](#), as per the respective grades.

9.2 The method of preparation and conditioning of specimens for tests shall be as specified in IS 2380 (Part 1). The test specimens shall be cut out from

portions 150 mm away from the edges for the tests as mentioned in [9](#).

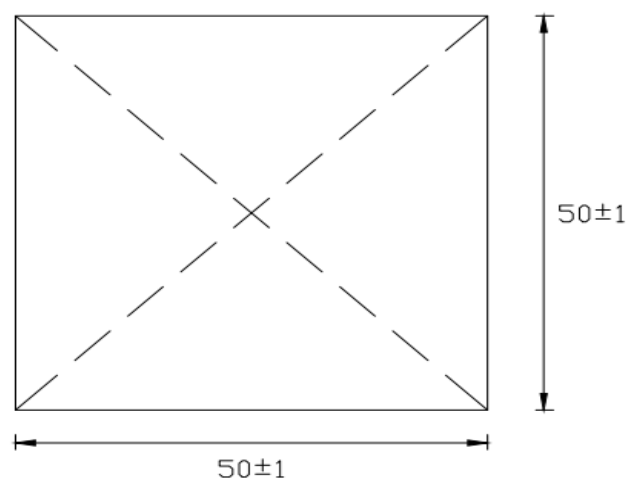
9.2.1 Three number of test specimens shall be taken for each of the tests for density, moisture content, thickness swelling, internal bond, internal bond (after cyclic test or boil test), modulus of elasticity, modulus of rupture and screw withdrawal test. However, for formaldehyde content and steady-state formaldehyde emission test, specimens shall be taken as per IS 13745 and IS/ISO 12460 (Part 1) respectively.

9.2.2 For 24 h thickness swelling, each test specimens of size 50 mm x 50 mm shall be taken. The thickness shall be measured of each test piece to an accuracy of 0.01 mm at the intersection of the diagonals, (see [Fig. 1](#)).

Table 2 Requirements for Dimensions

(Clause [8.4](#))

SI No.	Properties	Tolerance
(1)	(2)	(3)
i)	Length	± 5 mm/m
ii)	Width	± 5 mm/m
iii)	Thickness	± 5 mm
iv)	Squareness, <i>Max</i>	2 mm/m or 0.2 percent
v)	Edge straightness, <i>Max</i>	2 mm/m or 0.2 percent



All dimensions in millimetre.

FIG. 1 TYPICAL SKETCH OF SPECIMEN

Table 3 Requirements for Density and Moisture Content

(Clause [9.1](#))

Sl No.	Properties	Requirements	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Density, kg/m ³	500 – 900	} IS 2380 (Part 3)
ii)	Variation from mean density, percent	± 10	
iii)	Moisture content, percent	5 - 15	

Table 4 Requirements for Regular (REG) — Grade A Veneered Particle Board

(Clause [9.1](#))

Sl No.	Properties	Requirements (Average)									Method of Test, Ref to
		Nominal Thickness (mm)									
		≤ 3.0	> 3.0 to ≤ 4.0	> 4.0 to ≤ 6.0	> 6.0 to ≤ 13.0	> 13.0 to ≤ 20.0	> 20.0 to ≤ 25.0	> 25.0 to ≤ 32.0	> 32.0 to ≤ 40.0	> 40.0	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	Modulus of rupture (MoR), N/mm ² , <i>Min</i>	13.0	13.0	12.0	11.0	11.0	10.5	9.5	8.5	7.0	IS 2380 (Part 4)
ii)	Modulus of elasticity (MoE), N/mm ² , <i>Min</i>	1 800	1 800	1 800	1 800	1 600	1 500	1 350	1 200	1 050	
iii)	Internal bond strength, N/mm ² , <i>Min</i>	0.45	0.45	0.45	0.40	0.30	0.30	0.25	0.20	0.20	IS 2380 (Part 5)
iv)	Screw withdrawal strength (face), N, <i>Min</i>	1 250									IS 2380 (Part 14)
v)	Screw withdrawal strength (edge), N, <i>Min</i>	—				700					

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Table 5 Requirements for Regular (REG) — Grade B Veneered Particle Board

(Clause [9.1](#))

SI No.	Properties	Requirements (Average)									Method of Test, Ref to
		Nominal Thickness (mm)									
		≤ 3.0	> 3.0 to ≤ 4.0	> 4.0 to ≤ 6.0	> 6.0 to ≤ 13.0	> 13.0 to ≤ 20.0	> 20.0 to ≤ 25.0	> 25.0 to ≤ 32.0	> 32.0 to ≤ 40.0	> 40.0	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	Modulus of rupture (MoR), N/mm ² , <i>Min</i>	11.5	11.5	11.5	10.5	10.0	9.5	8.5	7.0	5.5	IS 2380 (Part 4)
ii)	Internal bond strength, N/mm ² , <i>Min</i>	0.31	0.31	0.31	0.28	0.24	0.20	0.17	0.14	0.14	IS 2380 (Part 5)
iii)	Screw withdrawal strength (face), N, <i>Min</i>	1 250									IS 2380 (Part 14)
iv)	Screw withdrawal strength (edge), N, <i>Min</i>	—				700					

Table 6 Requirements for Moisture Resistance (MR) Grade Veneered Particle Board

(Clause [9.1](#))

SI No.	Properties	Requirements (Average)									Method of Test, Ref to
		Nominal Thickness (mm)									
		≤ 3.0	> 3.0 to ≤ 4.0	> 4.0 to ≤ 6.0	> 6.0 to ≤ 13.0	> 13.0 to ≤ 20.0	> 20.0 to ≤ 25.0	> 25.0 to ≤ 32.0	> 32.0 to ≤ 40.0	> 40.0	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	Modulus of rupture (MoR), N/mm ² , <i>Min</i>	13.0	13.0	13.0	13.0	13.0	12.0	11.0	8.0	7.5	IS 2380 (Part 4)
ii)	Modulus of elasticity (MoE), N/mm ² , <i>Min</i>	1 800	1 800	1 800	1 800	1 700	1 400	1 400	1 200	1 200	

Table 6 (Concluded)

Sl No.	Properties	Requirements (Average)									Method of Test, Ref to
		Nominal Thickness (mm)									
		≤ 3.0	> 3.0 to ≤ 4.0	> 4.0 to ≤ 6.0	> 6.0 to ≤ 13.0	> 13.0 to ≤ 20.0	> 20.0 to ≤ 25.0	> 25.0 to ≤ 32.0	> 32.0 to ≤ 40.0	> 40.0	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
iii)	Internal bond strength, N/mm ² , <i>Min</i>	0.50	0.50	0.45	0.45	0.40	0.35	0.30	0.25	0.25	IS 2380 (Part 5)
iv)	24h thickness swelling, (due to general absorption), percent, <i>Max</i>	25	23	20	16	14	13	13	12	12	IS 2380 (Part 17)
v)	Screw withdrawal strength (face), N, <i>Min</i>	1 250									IS 2380 (Part 14)
vi)	Screw withdrawal strength (edge), N, <i>Min</i>	—				850					
vii)	Moisture resistance:										
	a) Option 1, cyclic test: 1) Internal bond strength, N/mm ² , <i>Min</i> OR	0.18	0.18	0.18	0.15	0.13	0.12	0.10	0.09	0.08	IS 2380 (Part 5) See Note 1
	b) Option 2, boil test: 1) Internal bond strength, N/mm ² , <i>Min</i>	0.09	0.09	0.09	0.08	0.07	0.07	0.07	0.06	0.06	IS 2380 (Part 5) See Note 2

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Table 7 Requirements for High Moisture Resistance (HMR) Grade Veneered Particle Board

(Clause 9.1)

SI No.	Properties	Requirements (Average)									Method of Test, Ref to
		Nominal Thickness (mm)									
		≤ 3.0	> 3.0 to ≤ 4.0	> 4.0 to ≤ 6.0	> 6.0 to ≤ 13.0	> 13.0 to ≤ 20.0	> 20.0 to ≤ 25.0	> 25.0 to ≤ 32.0	> 32.0 to ≤ 40.0	> 40.0	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	Modulus of rupture (MoR), N/mm², <i>Min</i>	20.0	18.0	17.0	16.0	15.0	13.0	12.0	10.0	8.0	IS 2380 (Part 4)
ii)	Modulus of elasticity (MoE), N/mm², <i>Min</i>	2 300	2 200	2 100	2 000	1 900	1 700	1 600	1 600	1 400	
iii)	Internal bond strength, N/mm², <i>Min</i>	0.50	0.50	0.45	0.45	0.40	0.35	0.30	0.25	0.25	IS 2380 (Part 5)
iv)	24h thickness swelling, (due to general absorption), percent, <i>Max</i>	18	16	14	12	12	10	10	9	8	IS 2380 (Part 17)
v)	Screw withdrawal strength (face), N, <i>Min</i>	1 250									IS 2380 (Part 14)
vi)	Screw withdrawal strength (edge), N, <i>Min</i>	—				850					
vii)	Moisture resistance:										
	a) Option 1, cyclic test: 1) Internal bond strength, N/mm², <i>Min</i> OR	0.25	0.24	0.23	0.22	0.18	0.16	0.14	0.12	0.10	IS 2380 (Part 5) See Note 1
	b) Option 2, boil test: 1) Internal bond	0.16	0.15	0.15	0.14	0.12	0.09	0.08	0.07	0.06	IS 2380 (Part 5) See Note 2

Table 7 (*Concluded*)

SI No.	Properties	Requirements (Average)									Method of Test, Ref to
		Nominal Thickness (mm)									
		≤ 3.0	> 3.0 to ≤ 4.0	> 4.0 to ≤ 6.0	> 6.0 to ≤ 13.0	> 13.0 to ≤ 20.0	> 20.0 to ≤ 25.0	> 25.0 to ≤ 32.0	> 32.0 to ≤ 40.0	> 40.0	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	strength, N/mm ² , <i>Min</i>										

NOTE — For [Table 6](#) and [Table 7](#), procedure for cyclic test and boil test shall be as follows:

1 Cyclic test — Specimens are immersed in water at $27\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for a period of 72 h, followed by drying in air at $27\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for 24 h and then heating in dry air at $70\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for 72 h. Three such cycles shall be followed and then the specimens are tested for internal bond strength; and

2 Boil test (Accelerated water resistance test) — Specimens are immersed in water at $27\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ and water is brought to boiling and kept at boiling temperature for 2 h. After $120\text{ min} \pm 5\text{ min}$ remove the test pieces and immerse them in water at $27\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for $60\text{ min} \pm 5\text{ min}$. The test pieces shall have their faces vertical and be separated from each other and from the sides and the bottom of the water bath by at least 15 mm. Remove the test pieces from the water, dry them with a paper towel and place them, with their faces horizontal, in the drying oven at $70\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for $960\text{ min} \pm 15\text{ min}$. Remove the test pieces from the oven, allow them to cool to approximately room temperature and bond the loading blocks to the faces (if the surfaces of the test pieces are rough or uneven, they may be smoothed before bonding to the blocks by rubbing on a piece of abrasive paper which is held on a flat surface) and then tested for internal bond strength.

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Table 8 Requirements for Formaldehyde Content and Steady-State Formaldehyde Emission

(Clause [9.4](#))

SI No.	Properties	Requirements	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Formaldehyde content F_c , mg/100 g for oven dry board	For Formaldehyde Class, $E_1: F_c \leq 8$ For Formaldehyde Class, $E_2: 8 < F_c \leq 30$	IS 13745
ii)	Steady-state formaldehyde emission, F_c , mg/m ³ (optional test)	For Formaldehyde Class, $E_1: F_c \leq 0.124$ For Formaldehyde Class, $E_2: F_c > 0.124$	

9.3 Surface Requirements of Veneered Particle Board

9.3.1 Adhesion of Plies

Three test specimens of 200 mm × 100 mm shall be taken for test. The adhesion of the face veneers to the particle board core and the other veneers, where these exist, shall be such that when tested by forceful opening with a knife, these shall show appreciable resistance and the exposed surface of veneer shall show signs of some adherent fibres distributed more or less uniformly. The knife test is an empirical test and is only indicative and it should, therefore, be carried out with utmost care.

9.4 Formaldehyde Requirements

The veneered particle boards shall conform to the requirements formaldehyde content and steady-state formaldehyde emission given in [Table 8](#).

10 SAMPLING AND CRITERIA FOR CONFORMITY

10.1 Sampling

10.1.1 Lot

In any consignment, all the veneered particle boards of same classification, type, formaldehyde class, dimensions, and manufactured under similar conditions of production shall be grouped together to constitute a lot.

10.1.2 The conformity of a lot, to the requirements of this standard, shall be ascertained on the basis of tests on veneered particle boards selected from it.

10.1.3 These veneered particle boards shall be selected at random (see IS 4905 for reference). For method of sampling refer IS 7638.

10.2 Criteria for Conformity

10.2.1 All the veneered particle boards selected in accordance with [10.1.3](#) shall be measured for length, width, thickness, edge straightness, and squareness tests. These dimensions shall comply with the requirements specified in [8](#), before proceeding with further testing.

10.2.2 If all the boards in [10.2.1](#) are found to be conforming, then from each of the veneered particle boards, the test specimens shall be cut out from portions 150 mm away from the edges for the tests as mentioned in [9](#).

10.2.3 A lot shall be considered as conforming to the requirements of this standard, if all the samples and test specimens pass the conditions as prescribed in [8](#) and [9](#).

10.2.4 If any sample fails to conform to the requirements, further samples shall be taken from the lot, double in number, and the lot shall be considered to have passed, if these samples conform to the requirements prescribed.

11 MARKING

11.1 Each veneered particle board shall be legibly marked with the following particulars, either by direct printing or by an adhesive label.

- Manufacturer's name and initials or recognized trade mark, if any;
- Grade, type and formaldehyde class of veneered particle board;
- Nominal dimensions (length, width and thickness);
- Batch number; and
- Date of manufacture.

11.2 In case of veneered particle boards supplied in bundles to other manufacturers and not supplied in the retail market, the marking may be done on the bundles/packages. In such cases, whenever required, the traceability of the veneered particle boards to the original manufacturer, along with the batch number of the product, shall be ensured.

11.3 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

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ANNEX A

(Clause 2)

LIST OF REFERRED STANDARDS

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
IS 303 : 2024	Plywood for general purposes — Specification (fourth revision)	(Part 17) : 1977	Determination of swelling in water (first revision)
IS 707 : 2011	Timber technology and utilization of wood, bamboo and cane — Glossary of terms (third revision)	IS 3087 : 2025	Medium density particle boards of wood and other lignocellulosic materials for general purpose — Specification (third revision) (under preparation)
IS 848 : 2025	Synthetic resin adhesives for plywood (phenolic, aminoplastic and bio-materials based) — Specification (third revision)	IS 12823 : 2025	Prelaminated medium density particle boards from wood and other lignocellulosic material specification (second revision) (under preparation)
IS 1328 : 2025	Veneered decorative plywood — Specification (third revision)	IS 4905 : 2015/ISO 24153 : 2009	Random sampling and randomization procedures (first revision)
IS 2380	Methods of test for wood particle boards and boards from other lignocellulosic materials:	IS 13745 : 2020	Method for determination of formaldehyde content in wood-based panels by extraction method called perforator method (first revision)
(Part 1) : 1977	Preparation and conditioning of test specimens (first revision)	IS 3400 (Part 2/Sec 2) : 2023/ISO 48-2 : 2018	Methods of test for rubber, vulcanized or thermoplastic: Part 2 Determination of hardness, Section 2 hardness between 10 IRHD and 100 IRHD (fifth revision)
(Part 2) : 1977	Accuracy of dimensions of boards (first revision)	IS/ISO 12460 (Part 1) : 2007	Wood-based panels — Determination of formaldehyde release: Part 1 Formaldehyde emission by the 1-cubic meter chamber method
(Part 3) : 1977	Determination of moisture content and density (first revision)		
(Part 4) : 1977	Determination of static bending strength (modulus of rupture and modulus of elasticity in bending) (first revision)		
(Part 5) : 1977	Determination of tensile strength perpendicular to surface (first revision)		
(Part 14) : 1977	Screw and nail withdrawal test (first revision)		

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ANNEX B

(Foreword)

COMMITTEE COMPOSITION

Wood and Other Lignocellulosic Products Sectional Committee, CED 20

<i>Organization</i>	<i>Representative(s)</i>
Institute of Wood Science & Technology, Bengaluru	SHRI RAJESH S. KALLAJE (Chairperson)
Association of Furniture Manufacturers and Traders India, Mumbai	SHRI RAJESH CHHABRIA SHRI DHANESH BHATIA (<i>Alternate I</i>) SHRI AMIT VAZE (<i>Alternate II</i>)
Balaji Action Buildwell, New Delhi	SHRI RAJESHWAR NAIR SHRI VIVEK JAIN (<i>Alternate I</i>) SHRI RISHABH JAIN (<i>Alternate II</i>)
Bamboo Society of India, Bengaluru	SHRI PUNATI SRIDHAR DR S. R. SHUKLA (<i>Alternate I</i>) DR JAGADISH VENGALA (<i>Alternate II</i>)
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Central Institute of Coir Technology, Bengaluru	DR O. L. SHANMUGASUNDARAM SHRIMATI SUMY SEBASTIAN (<i>Alternate</i>)
Century Plyboard India Ltd, Kolkata	SHRI AJAY BALDAWA SHRI JAGANNATH DAS (<i>Alternate</i>)
CSIR - Advance Materials and Processes Research Institute(AMPRI), Bhopal	DR ASOKAN PAPPU
CSIR - Central Building Research Institute, Roorkee	SHRIMATI HEMALATA DR JEESHAN KHAN (<i>Alternate I</i>) SHRI PRASANTA KAR (<i>Alternate II</i>)
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Mutha Industries, Agartala	SHRI NEERAJ MUTHA SHRI ANIL MUTHA (<i>Alternate</i>)

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In Personal Capacity (F 106 Anjan Apartment Coconut Garden, PO Nagarbhavi, Bengaluru)	DR S. K. NATH
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