भारतीय मानक विभिन्न प्रकार के लिग्नोसैल्युलोसिक पैनल के चयन और प्रयोग — रीति संहिता भाग 2 हार्डबोर्डस

Indian Standard SELECTION AND USE OF VARIOUS TYPES OF LIGNOCELLULOSIC PANEL PRODUCTS — CODE OF PRACTICE

PART 2 HARDBOARDS

ICS 79.060.20

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BUREAU OF INDIAN STANDARDS MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG NEW DELHI 110002

Price Group 3

Wood and Other Lignocellulosic Products Sectional Committee, CED 20

FOREWORD

This Indian Standard (Part 2) 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.

Hardboards are used in construction of bus bodies, pre-fabricated houses, paneling, partitions and furniture. In view of the properties of hardboard being different from that of wood, a need was felt to formulate a Code for proper guidance on selection and use of hardboards.

This standard contains recommendations for selection and use of hardboards for a variety of purposes. The standard is based on and may be used in conjunction with IS 1658 : 2006 'Fibre hardboards — Specification'. The information provided in this standard is for guidance. The user should also seek the advice of manufacturer for specific product use. Effective use of hardboards, like any other lignocellulose based panel product, is governed by good and acceptable carpentry techniques and practice.

This standard is published in three parts. The other parts in this series are:

- Part 1 Medium density particle boards (under preparation)
- Part 3 Fibreboards (under preparation)

Annex A contains useful information on various properties of hardboards.

The composition of the Committee responsible for the formulation of this standard is given in Annex B.

Indian Standard

SELECTION AND USE OF VARIOUS TYPES OF LIGNOCELLULOSIC PANEL PRODUCTS — CODE OF PRACTICE

PART 2 HARDBOARDS

1 SCOPE

This standard (Part 2) covers guidelines for use and application of hardboards made from lignocellulosic material by the application of heat and pressure with or without added bonding agents and used in dry and humid conditions. This Code does not cover other types of lignocellulosic boards.

2 REFERENCES

The Indian Standards given below contain provisions which through reference in this text, constitute provisions 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 editions of the standards indicated below:

IS No.	Title	
1658 : 2006	Fibre hardboards — Specification (<i>third revision</i>)	
3348 : 1965	Specification for fibre insulation boards	

3 DEFINITIONS

For the purpose of this standard the definitions given in IS 1658 shall apply.

4 TYPES

This standard governs the use of three types fibre hardboards based on density:

- a) Medium hardboard $(350 800 \text{ kg/m}^3)$;
- b) Standard hardboard $(800 1.025 \text{ kg/m}^3)$; and
- c) Tempered hardboard $(800 1.025 \text{ kg/m}^3)$.

Tempered hardboard may be chosen when high mechanical properties and low water absorption are required.

5 APPLICATIONS OF HARDBOARDS

Hardboards can be put to a variety of uses as such or in combination with metals, plastics and wood products.

Some of the applications of hardboards include their

use in barrels, bins, blackboards, cabinets, caravan linings, car door paneling, display boards, drain boards, exhibition boards, farm buildings, fencing, furniture, garages and sheds, gates, heating equipments, lockers, name plates, packaging, pinup boards, pre-fabricated units, printing equipments, racks, shoe heels, table mats, toys and games, trays, unit furniture, work surfaces, etc.

6 TYPE SELECTION

6.1 The type of panel to be used may be decided based on end use and conditions of use. Adequate consideration to temperature and humidity conditions should be given when hardboards are bonded to metal, plastic or wood products.

6.2 Standard hardboards can be used in applications like in partitions, paneling, domestic fitments, flush doors, joinery, caravans, vehicle bodies, temporary shuttering and display works.

Tempered hardboards can be used in heavy duty applications requiring high strength and toughness and air and moisture resistance like in building construction (flooring), linings in exposed places, exterior work, containers of various types and temporary shuttering to concrete.

Medium hardboards are used where hard surface as in standard hardboard may not be required like in ceiling, paneling, chalk and pinup boards, under lays to floor coverings, cutout lettering, exterior signage and relief carvings.

6.3 Perforated hardboards help in better sound absorption than plain boards.

7 FASTENERS

7.1 Normal hardware used in wood working can be used with hardboards, like clout nails, wire nails, annular ringed shank nails and proprietary gun driven nails. For use with metals and plastics, non-corroding self-tapping screws or proprietary clips or hooks may be chosen.

7.2 The length and thickness of screws and nails may be decided in relation to the type and thickness of panels used.

7.3 The fasteners used should be rust resistant.

8 STORAGE AND HANDLING

8.1 Hardboards should be stacked flat and well supported on closely spaced bearers. These may also be stacked vertically along the long edges and adequately supported to avoid bending or warping. The boards should not be stored in termite infested areas and on wet or loose ground. Storage under cover for protection against rain or high humidity is necessary to retain dimensional stability of the boards. Any protective packing or wrapping should be retained till the time of use.

8.2 Adequate care should be taken while handling the boards to avoid damage to the edges. The boards are to be packed tight with adequate edge protection during transport.

9 CONDITIONING

The boards are to be conditioned to avoid warping by moistening the back side with water (approximately 0.5 to 1 litre per board of nominal size 2 440 mm \times 1 220 mm and 3 mm thick) and stacking them back to back for at least 24 h prior to fixing. It is desirable to fix the boards immediately after conditioning.

10 CUTTING

The hardboards should be laid with the board face side up and cut with an ordinary panel saw. A fibreboard cutter may be used to obtain a clean edge and a fibreboard plane for grooving, beveling or otherwise scoring the boards.

A fine saw may be used for hand sawing. The saw should be held at a low angle to cut the board which should be supported with the wanted face uppermost. Circular saw blades may be used for machine sawing, cutting into the wanted face and should be set as low as possible consistent with maintaining the correct cutting angle.

11 JOINING AND FIXING

Hardboards can be bonded with a variety of

adhesives used in wood working. Surface preparation of both the substrates is necessary especially when bonding to plastics or metal. Careful choice of metal should be made taking into consideration the end use and service conditions while making store fixtures and displays using hardboards.

NOTE — The dimensional stability with temperature of wood products is greater than that of steel, which is greater than that of aluminium, which is greater than that of plastics.

12 PARTITIONS AND PANELING

In partitioning and paneling, the hardboards can be fitted to wooden, metallic or plastic framework. The frame should run through the length and width of the board, evenly spaced with fixings near board edges at approximately 12 mm from the edges.

13 SCREWING AND NAILING

Nailing and screwing should be from centre outward and should not be forced into place. Spacing of screws and nails should be 100 to 150 mm apart, with rails on the adjoining edges paired and not staggered.

14 MOULDING OF FIBRE HARDBOARDS

Hardboards can be moulded to shapes with radii 20 to 80 mm by the application of heat and pressure. Pre-heating and keeping the wire side as convex surface aid better mouldability (pre-treatment and mould temperature of 300 to 400 °C with moulding time of 5 to 150 s).

15 FINISHING

Hardboards can be finished with usual paints and finishes used with timber. Water based finishes should be avoided, if the painted panels cannot be dried quickly.

Manufacturer's recommendations should be sought regarding primer to be used, the number of coats to be applied and the drying time.

ANNEXA

(Foreword)

USEFUL INFORMATION ON HARDBOARDS

a)	Thermal conductivity of standard hardboard: 0.124 k.cal/h/°C/m		2) 4 mm : 60-80 3) 6 mm : 70-85	
b)) Continuous thermal resistance of standard hardboard : 150 °C (<i>min</i>)		Sound absorbtic hardboard of 3.2	
c)	Screw holding strength, kg:		dance with IS 334	
	1) Standard hardboard : 250-320		Hz	
	2) Tempered hardboard : 300-350		250	
-1\			500	
a)	Nall nolding strength, kg:		1 000	

1) Standard hardboard : 130-150

2) Tempered hardboard : 140-150

e) Hardness, HRR scale:

1) 3 mm : 50-60

otion coefficient of perforated 3.2 mm (when tested in accor-3348):

Hz	Value
250	0.21
500	0.32
1 000	0.41
2 000	0.34

Average sound reduction at 100-3 200 Hz for 3 mm thick hardboard: 27 dB

ANNEX B

(Foreword)

COMMITTEE COMPOSITION

Wood and Other Lignocellulosic Products Sectional Committee, CED 20

Organization	<i>Representative(s)</i>		
Indian Plywood Industries Research & Training Institute, Bangalore	Dr C. N. PANDEY (<i>Chairman</i>)		
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Ministry of Defence (R&D), New Delhi Ministry of Railways, Lucknow

National Mission on Bamboo Application, New Delhi National Test House, Kolkata

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Nuchem Limited, New Delhi

Bangalore

Permalli Wallace Limited, Bhopal

Rajiv Gandhi Rural Housing Corporation Ltd, Bangalore

The South Indian Plywood Manufacturers Association, Chennai

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