

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 1328 (1996): Veneered Decorative Plywood -Specification
[CED 20: Wood and other Lignocellulosic products]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक
परतदार सजावटी प्लाईवुड - विशिष्ट
(तीसरा पुनरीक्षण)
Indian Standard

VENEERED DECORATIVE PLYWOOD-
SPECIFICATION

(Third Revision)

First Reprint DECEMBER 2000

ICS 79.060.10

© BIS 1996

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

Indian Standard

AMENDMENT NO. 1 JUNE 2000 TO IS 1328 : 1996 VENEERED DECORATIVE PLYWOOD — SPECIFICATION

(Third Revision)

(Second cover page, Foreword) — Insert the following after fourth para as a separate para:

'A scheme of labelling environment friendly products to be known as ECO Mark has been introduced at the instance of the Ministry of Environment and Forests (MEF), Government of India. The ECO Mark shall be administered by the Bureau of Indian Standards (BIS) under the *BIS Act*, 1986 as per the Resolution No. 71 dated 21 February 1991 and Resolution No. 425 dated 28 October 1992 published in the Gazette of the Government of India. For a product to be eligible for ECO Mark, it shall also carry the Standard Mark of the BIS besides meeting additional environment friendly requirements. For this purpose, the Standard Mark of BIS would be a single mark being a combination of the ISI Mark and the Eco logo. Requirements to be satisfied for a product to qualify for the BIS Standard Mark for Eco friendliness, will be included in the relevant published Indian Standards through an amendment. These requirements will be optional; manufacturing units will be free to opt for ISI Mark alone also.

The amendment pertaining to Eco criteria is based on the Gazette Notification No. 170 dated 18 May 1996 for Wood Substitutes as Environment Friendly Products published in the Gazette of Government of India'.

(Page 1, clause 5.1.1) — Insert the following at the end of the clause:

'For ECO Mark only species of wood from sources other than natural forests such as wood from rubber, coconut, cashew, industrial and social forestry plantations, etc and shade trees from tea and coffee estates shall be used.'

(Page 1, clause 5.1.2) — Insert the following at the end of the clause:

'For ECO Mark, only species of wood from sources other than natural forests such as wood from rubber, coconut, cashew, industrial and social forestry plantations, etc and shade trees from tea and coffee estates shall be used.'

Amend No. 1 to IS 1328 : 1996

(*Page 1, clause 5.3*) — Insert the following at the end of the clause:

‘For ECO Mark, the plywood shall conform to the requirements specified for MR type in IS 303 : 1989 for ECO Mark purposes.’

(*Page 2, clause 12.2*) — Insert the following at the end of the clause:

‘For ECO Mark, the material used for packaging of the plywood shall be recyclable, reusable or biodegradable.’

(*Page 2, clause 12.2*) — Insert the following new clauses after 12.2 and renumber the subsequent clauses:

‘13 OPTIONAL REQUIREMENTS FOR ECO MARK

13.1 General Requirements

13.1.1 The veneered decorative plywood shall conform to the requirements of quality and performance as specified in this standard.

13.1.2 The manufacturer shall produce to BIS environmental consent clearance from the concerned State Pollution Control Board as per the provisions of the *Water (Prevention and Control of Pollution) Act, 1974* and *Air (Prevention and Control of Pollution) Act, 1981* and *Water (Prevention and Control of Pollution) Cess Act, 1977* alongwith the authorization, if required under the *Environment (Protection) Act, 1986* while applying for ECO Mark appropriate with enforced rules and regulations of Forest Department.

13.2 Specific Requirements

The veneered decorative plywood shall conform to the specific requirements given for ECO Mark under relevant clauses of the standard.

NOTE — The manufacturer shall provide documentary evidence by way of certificate or declaration to the Bureau of Indian Standards while applying for ECO Mark.’

(*Page 2, renumbered clause 14.1*) — Insert the following matter at the end of clause:

‘e) The criteria for which the plywood has been labelled as ECO Mark.’

(CED 20)

**AMENDMENT NO. 2 AUGUST 2002
TO
IS 1328 : 1996 VENEERED DECORATIVE
PLYWOOD — SPECIFICATION
(Third Revision)**

(Page 1, clause 4) — Substitute the following for the existing clause:

‘4 GRADES AND TYPES

4.1 Decorative plywood shall be of two grades, namely, BWR and MR.

4.2 Decorative plywood shall be of two types, namely, Type 1 and Type 2, the two types conforming to the requirements given in 7.’

(Page 1, clause 5.2) — Substitute the following for the existing clause:

‘5.2 Adhesive

The adhesive for bonding veneers shall be MR and BWR type synthetic resin adhesive, conforming to IS 848:1974, for MR and BWR grade veneered decorative plywood respectively.’

[Page 1, clause 5.3 (see also Amendment No. 1)] — Substitute the following for the existing clause:

‘5.3 Plywood

Plywood, when used in the manufacture of veneered decorative plywood of MR and BWR grade, shall be MR and BWR type conforming to IS 303:1989.’

(Page 2, clause 8.1) — Insert the following note at the end of the clause:

‘NOTE — Any other dimension as agreed to between the manufacturer and the purchaser may be used.’

(Page 2, clause 11.1.2) — Substitute the following for the existing clause:

‘11.1.2 Water Resistance Test

Veneered decorative plywood of MR and BWR grade, when tested in the manner specified in 11.1.2.1 and 11.1.2.2 respectively, shall not show delamination or blister formation.’

Amend No. 2 to IS 1328 : 1996

(*Page 2, clause 11.1.2.1*) — Insert the following new clause after 11.1.2.1:

'11.1.2.2 Three test specimens of size 250 mm × 100 mm shall be prepared from each of the boards selected and boiled in water for 8 hours and dried for 16 hours at a temperature of $65 \pm 2^{\circ}\text{C}$ and then followed by two more cycles of soaking and drying under the same conditions described above.'

[*Page 2, clause 13.1(d)*] — Substitute 'Grade and Type' for 'Type(see 7)'.

(CED 20)

**AMENDMENT NO. 3 JANUARY 2005
TO
IS 1328 : 1996 VENEERED DECORATIVE
PLYWOOD — SPECIFICATION**

(Third Revision)

(Page 2, clause 8) — Substitute the following for the existing:

8 DIMENSIONS AND TOLERANCES

8.1 The dimensions of plywood boards shall be as follows:

2 400 mm × 1 200 mm	2 100 mm × 900 mm
2 100 mm × 1 200 mm	1 800 mm × 900 mm
1 800 mm × 1 200 mm	

8.2 Thickness

The thickness of plywood board shall be 3 mm, 4 mm, 6 mm, 9 mm, 12 mm, 19 mm and 25 mm.

NOTE — Any other dimensions (length, width and thickness) as agreed to between the manufacturer and the purchaser may also be used.

8.3 Tolerances

Tolerances on the nominal sizes of finished boards shall be as follows:

<i>Dimension</i>	<i>Tolerance</i>
Length	+6 -0 mm
Width	+3 -0 mm
Thickness:	
i) Less than 6 mm	±10 percent
ii) 6 mm and above	±5 percent
Edge straightness	2 mm per 1000 mm or 0.2 percent
Squareness	2 mm per 1000 mm or 0.2 percent

NOTE — Edge straightness and squareness shall be tested as per Annex C.

Amend No. 3 to IS 1328 : 1996

(Page 2, clause 9) — Substitute the following for the existing:

9 FINISH

9.1 The decorative plywood shall be uniform in thickness within the tolerance specified in 8.3.

9.2 The edges of the decorative plywood shall be sanded to a smooth finish, trimmed straight and square. Edge straightness and squareness when tested as per Annex C shall be within the tolerances specified in 8.3.

(Page 3, Annex B) — Insert the following Annex C after Annex B:

ANNEX C
(Clause 9.2)

METHOD OF TEST FOR EDGE STRAIGHTNESS AND SQUARENESS

C-1 PROCEDURE FOR EDGE STRAIGHTNESS

C-1.1 The straightness of the edges and ends of plywood shall be verified against a straight edge not less than the full length of the plywood. If the edge on the end of the plywood is convex, it shall be held against the straight edge in such a way as to give approximately equal gap at each end. The largest gap between the straight edge and the edge shall be measured to the nearest millimetre and recorded.

C-2 PROCEDURE FOR SQUARENESS

C-2.1 The squareness of plywood shall be checked with a 1 200 mm × 1 200 mm square, by applying one arm of the square to the plywood. The maximum width of the gap shall be recorded.

(Page 4, Annex C) — Rename 'ANNEX C' as 'ANNEX D'.

(Second cover page, Foreword, fifth para) — Substitute 'Annex D' for 'Annex C'.

(CED 20)

**AMENDMENT NO. 4 JUNE 2005
TO
IS 1328 : 1996 VENEERED DECORATIVE
PLYWOOD — SPECIFICATION**

(*Third Revision*)

(*Page 1, clause 6.1, first sentence*) — Substitute the following for existing:

'Decorative veneers shall be rotary cut or sliced and shall have a thickness of not less than 0.3 mm and not more than 1.0 mm.'

CED 20)

Reprography Unit, BIS, New Delhi, India

**AMENDEMNT NO. 5 SEPTEMBER 2006
TO
IS 1328 : 1996 VENEERED DECORATIVE
PLYWOOD — SPECIFICATION**

(*Third Revision*)

*{Page 2, clause 13, Title (see also Amendment No. 1)} — Substitute
'ADDITIONAL' for 'OPTIONAL'.*

(CED 20)

Reprography Unit, BIS, New Delhi, India

**AMENDMENT NO. 6 AUGUST 2007
TO
IS 1328 : 1986 VENEERED DECORATIVE
PLYWOOD — SPECIFICATION**

(Third Revision)

[Page 2, clauses 11.1.2.1 and 11.1.2.2 (see also Amendment No. 2)] —
Insert the following Note at the end of the above clauses:

NOTE: - The cycles of drying or soaking can be made up of a number of shorter periods of drying or soaking. In such instances, the specimen shall be kept in air at $27 \pm 2^{\circ}\text{C}$ in between the shorter periods constituting the drying cycle and be kept submerged in water at $27 \pm 2^{\circ}\text{C}$ in between the shorter periods constituting the soaking cycle.

(CED 20)

Reprography Unit, BIS, New Delhi, India

FOREWORD

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

Decorative plywood is used in panelling work in buildings, interior lining of railway coaches, buses and ships and for furniture and general interior decoration. In view of the wide field of its application, decorative plywood has to be durable, of sound construction and highest quality.

This standard was first published in 1958 and was subsequently revised in 1970 and 1982 wherein modifications in the list of species and provision of Types 1 and 2 of plywood were made. This third revision of the standard is being brought out to incorporate modifications found necessary in the present day context. This revision permits use of any species of timber for cores and backs of veneered decorative plywood. The grade of plywood has been limited to only Moisture Resistant (MR) and recommended definite thicknesses have been included. Also the references to referred Indian Standards have been updated.

In the formulation of this standard due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country.

The Committee responsible for the preparation of the standard is given at Annex C.

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 : 1960 'Rules for rounding off numerical values (*revised*)'. 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 DECORATIVE PLYWOOD — SPECIFICATION

(*Third Revision*)

1 SCOPE

This standard covers types of plywood with ornamental veneers on one or both faces used for decorative purposes, such as furniture making, panelling of all kinds, including panelling for railway coaches, buses and ships.

2 REFERENCES

The Indian Standards listed in Annex A are necessary adjuncts to this standard.

3 TERMINOLOGY

3.1 For the purpose of this standard, the following definition in addition to those given in IS 707 : 1976 shall apply.

3.1.1 *Insect Hole*

Open hole caused by wood boring insects.

4 TYPES

Decorative plywood shall be of two types, namely Type 1 and Type 2, the two types conforming to the requirements given in 7.

5 MATERIALS

5.1 Timber

5.1.1 The species of timber for the decorative face veneer in decorative plywood shall be specified by the purchaser while placing the order. The species of timber commonly used for decorative veneers or decorative plywood are given in Annex B.

5.1.2 Any species of timber may be used for cores and backs of decorative veneered plywood. However, a list of species, given in Annex B of IS 303 : 1989 may be used for guidance. Non-durable timbers and sapwood of all other timbers shall be given a preservative treatment. The preservative used shall be such as not to impart any colour or lasting smell, oiliness or stain to the plywood and shall not adversely affect the glueing of the veneer and the waxing and polishing of the surface.

5.2 Adhesive

The adhesive for bonding of veneers shall be MR type synthetic resin adhesive, conforming to IS 848 : 1974.

5.3 Plywood

Plywood, when used in the manufacture of veneered decorative plywood, shall be of MR type conforming to IS 303 : 1989.

6 MANUFACTURE

6.1 Decorative Veneers

Decorative veneers shall be rotary cut or sliced and shall be not more than 1.0 mm in thickness. The veneers shall be spliced or taped at the edges. The veneers may have end grain joints in cases of special matching like centre-matching, V-matching, etc.

6.2 Veneers forming any one ply and the corresponding ply on the opposite side of the central plane of plywood shall be of the same species of timber and of the same nominal thickness, except in case of faces where they shall be of such thickness and strength as to balance each other.

7 REQUIREMENTS

7.1 Type 1

Type 1 veneered decorative plywood shall comply with the requirements specified in 7.1.1 to 7.1.4.

7.1.1 Open splits, checks or open joints not more than 150 mm in length and 0.5 mm in width shall be permissible provided the same are rectified with a veneer insert bonded with synthetic resin adhesive, as the case may be, and further provided that the insert matches with the surrounding veneer in colour as well as in figure.

7.1.2 The decorative veneered surface shall be free from torn grain, dead knots, wote, discolouration and sapwood.

7.1.3 The decorative veneered surface shall be selected for figure, texture, colour and grain characteristics. It shall be free from all manufacturing and wood defects except to the extent permitted under 7.1.1. All veneers shall be matched or mismatched to achieve a decorative effect in colour, figure and grain.

7.1.4 If the purchaser requires boards with the decorative veneers matched to a particular design,

for example, quartered, centred, diamond or V-matched or where it is required that there should be complete absence of pin knots, it shall be so specified. If certain number of decorative matched plywood panels are required to form a group to give an overall general effect it shall be so specified by the purchaser giving the number of panels in each such group.

7.2 Type 2

Type 2 veneered decorative plywood shall comply with the requirements specified in 7.2.1 to 7.2.3.

7.2.1 Open splits, checks, or open joints not more than 200 mm in length and 1 mm in width shall be permissible, provided these are rectified in the manner specified under 7.1.1. Tight knots and patches not more than 25 mm in diameter, and pin knots not more than 4 mm in diameter, shall be permissible.

7.2.2 The decorative veneer shall be free from the torn grain, dead knots, dots and discolouration. Sapwood, if it does not affect the appearance, shall be permissible.

7.2.3 The decorative veneered surface shall be selected for figure, texture, colour and grain characteristics. It shall be free from all manufacturing and wood defects, except to the extent permitted in 7.2.1 and 7.2.2. All veneers shall be matched or mis-matched to achieve a decorative effect in colour, figure and grain.

8 DESIGNATION OF DIMENSIONS AND TOLERANCES

8.1 The dimensions and tolerances (including on thickness) of plywood shall be as given in IS 12049 : 1987.

8.2 Thickness

Unless otherwise specified, thickness of the plywood boards shall be 3 mm, 4 mm, 6 mm, 9 mm, 12 mm, 19 mm or 25 mm.

9 FINISH

9.1 The decorative plywood shall be uniform in thickness within the tolerance limits specified in 8.1.

9.2 The edges of the decorative plywood shall be trimmed square within 3 mm and sanded to a smooth finish.

10 SAMPLING AND CRITERIA FOR CONFORMITY

The method of drawing representative samples and criteria for conformity shall be as per IS 7638 : 1986.

11 TESTS

11.1 Test boards selected as described in 10 shall be subjected to the test specified in 11.1.1 and 11.1.2.

11.1.1 Moisture Content

Decorative veneered plywood of either type when tested in accordance with IS 1734 (Part 1) : 1983 shall have a moisture content of not less than 5 percent and not more than 15 percent.

11.1.2 Water Resistance Test

Decorative veneered plywood of either type, when tested in the manner specified in 11.1.2.1, shall not show delamination or blister formation.

11.1.2.1 Three test specimens of size 250 mm × 100 mm shall be prepared from each of the boards selected and submerged in water at $60 \pm 2^\circ\text{C}$ for a period of 3 hours and dried for 8 hours at a temperature of $65 \pm 2^\circ\text{C}$ and then followed by two more cycles of soaking and drying under the same conditions described above.

12 INSPECTION AND DELIVERY

12.1 Inspection

All boards shall be visually inspected to ensure that the decorative veneered sides conform to the requirements specified in 7. They shall also be inspected for delamination, blisters or surface defects.

12.2 Delivery

The decorative plywood shall be supplied in a clean and dry condition and shall be suitably packed according to approved trade practice, unless otherwise specified by the purchaser.

13 MARKING

13.1 Each plywood board shall be legibly and indelibly marked or stamped with the following on the face of board near one corner:

- Indication of the source of manufacture.
- Year of manufacture,
- Batch No., and
- Type (see 7).

13.2 BIS Certification Marking

The decorative veneered plywood may also be marked with the Standard Mark.

13.2.1 The use of the Standard Mark is governed by the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

ANNEX A

(Clause 2)

LIST OF REFERRED INDIAN STANDARDS

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
303 : 1989	Specification for plywood for general purposes (<i>third revision</i>)	1734 (Part 1) : 1983	Methods of test for plywood: Part 1 Determination of density and moisture content (<i>second revision</i>)
707 : 1976	Glossary of terms applicable to timber technology and utilization (<i>second revision</i>)	7638 : 1986	Methods of sampling for plywood, fibre hardboard, insulation boards and particle boards (<i>first revision</i>)
848 : 1974	Specification for synthetic resin adhesive for plywood (phenolic and aminoplastic) (<i>first revision</i>)	12049 : 1987	Dimensions and tolerances relating to wood based panel materials

ANNEX B

(Clause 5.1.1)

SPECIES OF TIMBER COMMONLY USED FOR DECORATIVE VENEERS OR DECORATIVE PLYWOOD

<i>Standard Trade Name</i>	<i>Botanical Name</i>	<i>Abbreviation</i>
Champ	<i>Michelia</i> spp.	CHM
Chaplash	<i>Artocarpus chapalsha</i>	CHP
Chickrassy	<i>Chukrasia tabularis</i>	CHI
Dipika (Lapse)	<i>Mansonia dipikae</i>	DIP
Kanju	<i>Holoptelea integrifolia</i>	KAN
Kokko	<i>Albizia lebbek</i>	KOK
Laurel	<i>Terminalia tomentosa</i>	LAU
Mahogany	<i>Swietenia</i> spp.	MAG
Malai	<i>Shorea assamica</i>	MAK
Maple	<i>Acer</i> spp.	MAP
Padauk	<i>Pterocarpus dalbergioides</i>	PAA
Poon	<i>Calophyllum</i> spp.	POO
Rosewood	<i>Dalbergia latifolia</i>	ROS
Silver grey	<i>Terminalia bialata</i> (Heartwood)	SGR
Silver oak	<i>Grevillea robusta</i>	SOA
Siris	<i>Albizia chinensis</i> (syn. <i>A. stipulata</i>)	SIR
Sissoo	<i>Dalbergia sisso</i>	SIS
Teak	<i>Tectona grandis</i>	TEA
Walnut	<i>Juglans</i> spp.	WAL
White cedar	<i>Dysoxylum malabaricum</i>	WCE

ANNEX C
(Foreword)
COMMITTEE COMPOSITION

Wood Products Sectional Committee, CED 20

<i>Chairman</i> DR P. M. GANAPATHY	<i>Representing</i> Indian Plywood Industries Research and Training Institute, Bangalore
<i>Members</i> SHRI B. S. ASWATHANARAYANA SHRI P. D. AGARWAL SHRI V. S. SINGH (<i>Alternate</i>) SHRI K. K. BARUAH SHRI T. K. DAS (<i>Alternate</i>) MAJ S. S. BISHT SHRI B. S. NARULA (<i>Alternate</i>) SHRI N. M. CHACHAN SHRI B. B. ROY (<i>Alternate</i>) SHRI A. K. CHATTERJEE SHRI O. P. SHARMA (<i>Alternate</i>) SHRI P. G. DESHMUKH SHRI P. L. NAGARSEKHAR (<i>Alternate</i>) SHRI HARISH KHATTAN SHRI J. L. BOTHRA (<i>Alternate</i>) SHRI A. K. KADERKUTTY SUPERINTENDING ENGINEER (S&S) EXECUTIVE ENGINEER (SRS) (<i>Alternate</i>) SHRI RAVINDER KUMAR SHRI D. K. KANUNGO DR YOGESH CHANDRA NIJHAVAN (<i>Alternate</i>) SHRI K. S. LAULY SHRI P. T. S. MENON (<i>Alternate</i>) SHRIMATI P. MEENAKSHI LT-COL PRADEEP KUMAR (<i>Alternate</i>) DR A. N. NAYAR PRESIDENT EXECUTIVE DIRECTOR (<i>Alternate</i>) SHRI S. K. SANGANERIA SHRI K. SANKARAKRISHNAN SHRI S. N. SANYAL SHRI N. K. SHUKLA (<i>Alternate</i>) SHRI S. N. SANYAL SHRI K. S. SHUKLA (<i>Alternate</i>) SHRI H. V. SARDA SHRI AMAR KUMAR (<i>Alternate</i>) SHRI F. C. SHARMA SHRI N. M. WALECHA (<i>Alternate</i>) DR Y. SINGH SHRI L. K. AGGARWAL (<i>Alternate</i>) SHRI J. K. SINHA SHRI RAMA CHANDRA (<i>Alternate</i>) DR N. SRIRAM SHRI N. K. UPADHAYAY SHRI M. ZAFRULLA SHRI TRIDIB SEN (<i>Alternate</i>) SHRI VINOD KUMAR, Director (SG) and Head (Civ Engg)	 Indian Plywood Industries Research and Training Institute, Bangalore Indian Plywood Industries Research and Training Institute, Bangalore Public Works Department, Uttar Pradesh Forest Department, Government of Assam, Guwahati Directorate of Standardization, Ministry of Defence, New Delhi Plywood Manufacturers' Association of West Bengal, Calcutta Directorate General of Technical Development, New Delhi Indian Institute of Packaging, Bombay Andaman Chamber of Commerce and Industry, Port Blair The Western Indian Plywood Ltd, Baliapatam Central Public Works Department, New Delhi Ministry of Defence (R&D), New Delhi National Test House, Calcutta The Indian Plywood Manufacturing Company Ltd, Bombay Engineer-in-Chief's Branch, Army Headquarters, New Delhi In personal capacity (C-29 Inderpuri, New Delhi 110012) Federation of Indian Plywood and Panel Industry, New Delhi Assam Plywood Manufacturers' Association, Tinsukhia South Indian Plywood Manufacturers' Association, Trivandrum Forest Products Division, FRI, Dehra Dun Indian Academy of Wood Science, Bangalore Mangalam Timber Products Ltd, Calcutta Directorate General of Civil Aviation, New Delhi Central Building Research Institute (CSIR), Roorkee Ministry of Defence (DGQA), Kanpur NUCHEM Ltd, Faridabad Directorate General of Supplies and Disposals, New Delhi Sitapur Plywood Manufacturers Ltd, Sitapur Director General, BIS (<i>Ex-officio Member</i>) <i>Secretary</i> SHRIMATI RACHNA SEHGAL Assistant Director (Civ Engg), BIS

(Continued on page 5)

(Continued from page 4)

Plywood and Veneers Subcommittee, CED 20 : 1

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Institute of Wood Science and Technology, Bangalore

Public Works Department, Uttar Pradesh

Andaman Chamber of Commerce and Industry, Port Blair

Plywood Manufacturers' Association of West Bengal, Calcutta

Directorate General of Civil Aviation, New Delhi

Directorate General of Technical Development, New Delhi

Sarda Plywood Industries Ltd, Calcutta

Indian Institute of Packaging, Bombay

Indian Plywood Industries Research and Training Institute, Bangalore

Kerala Forest Research Institute, Peechi

Forest Research Institute, Forest Products Division, (Timber Mechanics),
Dehra Dun

Veneers and Laminations (India) Ltd, Cochin

The Western India Plywood Ltd, Cannanore

Andamans Timber Industries Ltd, Calcutta

Kerala State Wood Industries Ltd, Nilampur

The Indian Plywood Manufacturing Co Ltd, Bombay

Kitply Industries Ltd, Tinsukhia

Directorate of Standardization, New Delhi

Assam Plywood Manufacturers' Association, Tinsukhia

Forest Research Institute, Forest Products Division (Composite Wood),
Dehra Dun

Central Public Works Department, New Delhi

Directorate General of Supplies and Disposals, New Delhi

South Indian Plywood Manufacturers' Association, Kottayam

Central Food Technological Research Institute (CSIR), Mysore

Sitapur Plywood Manufacturers Ltd, Sitapur

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

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