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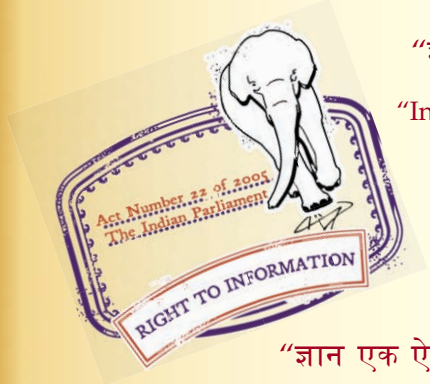
IS 7316 (1974): Specification for decorative plywood using plurality of veneers for decorative faces [CED 20: Wood and other Lignocellulosic products]

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"Knowledge is such a treasure which cannot be stolen"

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IS : 7316 - 1974
(Reaffirmed 2003)

# *Indian Standard*

# SPECIFICATION FOR DECORATIVE PLYWOOD USING PLURALITY OF VENEERS FOR DECORATIVE FACES

Second Reprint FEBRUARY 1988
( Incorporating Amendment No. 1 )

UDC 674-419.32



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

Gr 3

*November* 1974

# *Indian Standard*

# SPECIFICATION FOR DECORATIVE PLYWOOD USING PLURALITY OF VENEERS FOR DECORATIVE FACES

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( *Continued on page* 10 )

# *Indian Standard*

# SPECIFICATION FOR DECORATIVE PLYWOOD USING PLURALITY OF VENEERS FOR DECORATIVE FACES

## 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 8 February 1974, after the draft finalized by the Wood Products Sectional Committee had been approved by the Civil Engineering Division Council.

**0.2** Decorative plywood conforming to IS : 1328-1970* is being increasingly used for panelling work in building; buses and ships; furniture; cabinets and other general interior decorative work. In view of the wide field of its applications, decorative plywood has to be durable, of sound construction and standard quality. However, shortage of naturally decorative timbers, their slow growing nature, combined with increasing demand have resulted in these timbers becoming very costly. Research has been directed to make decorative plywood from more widely available timbers of lower prices and as a result of this decorative plywood using a plurality of veneers of different colours and types has come to be manufactured on a large scale. Manufacture of this type of plywood in India has also come to be well established. This standard has been prepared to guide the consumers in specifying minimum acceptable requirements for decorative plywood made from plurality of veneers.

**0.3** 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.

**0.4** This standard contains clauses **4.1**, **4.2**, **4.3** and **5.5** which permit the purchaser to use his option for selection to suit his requirements at the time of placing orders.

**0.5** 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†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Specification for veneered decorative plywood (*first revision*).
†Rules for rounding off numerical values (*revised*).

## 1. SCOPE

1.1 This standard covers decorative plywood with ornamental faces produced by use of plurality of veneers and for decorative use, such as interior panelling of buildings, buses, ships, etc, and for decorative furniture of all types.

## 2. TERMINOLOGY

2.1 For the purpose of this standard, definitions given in IS : 707-1968* and IS : 1328-1970† shall apply.

## 3. GRADES

3.1 Decorative plywood from plurality of veneers shall be only of one grade conforming to the requirements given in this standard. The pattern of the decorative face shall be as agreed to between the purchaser and the manufacturer.

## 4. MATERIALS

4.1 Timber for cores, backs and face veneers of decorative plywood to this standard shall be either class I, class II or class III timbers specified in IS : 303-1960‡. 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 gluing of the veneer and the waxing and polishing of the surface. For the faces generally it is a plurality of veneers of different species or, if of the same species of different colours, either natural colours or artificially coloured.

4.2 **Adhesive** — The adhesive for bonding of veneers shall be synthetic resin adhesive BWR or WWR conforming to IS : 848-1974§ as may be specified by the purchaser.

4.3 Plywood, when used in the manufacture of veneered decorative plywood shall be of BWR or WWR synthetic resin bonded type conforming to IS : 303-1960‡ as may be specified by the purchaser.

## 5. MANUFACTURE

5.1 **Decorative Face Veneers** — Decorative face veneers shall be rotary cut or sliced from a wooden flitch made by laminations of veneers of

*Glossary of terms applicable to timber and timber products (*first revision*).

†Specification for veneered decorative plywood (*first revision*).

‡Specification for plywood for general purposes (*revised*).

§Specification for synthetic resin adhesive for plywood (phenolic and aminoplastic) (*first revision*).

different colours in pre-determined pattern and either rectangular or in a pre-determined moulded shape. These veneers shall not be more than 1 mm in thickness and shall be suitably matched and spliced.

**5.2** Decorative plywood shall be manufactured either by bonding the various layers of veneers in one operation or by bonding decorative veneers on to BWR or WWR synthetic resin bonded plywood of suitable thickness.

**5.3** Where decorative veneer is used on one side of the plywood only, a suitable back of required thickness balancing the strength of the decorative face veneer shall be provided.

**5.4** 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.

**5.5** If the purchaser requires boards with the decorative veneers matched to a particular design, for example, quartered, centred, serial, diamond or V-matched, 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.

## 6. PERMISSIBLE DEFECTS

**6.1** 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 BWR or WWR adhesive, as the case may be, and further provided that the insert matches with the surrounding veneer in colour and in figure.

**6.2** Decorative veneered surface shall be free from torn, grain, dote, worm hole, discolouration or other visual defects.

**6.3** Decorative veneer 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 **6.1**. All veneers shall be matched or mis-matched to achieve a decorative effect in colour, figure and grain.

## 7. DIMENSIONS AND TOLERANCES

**7.1** The dimensions of plywood boards shall be quoted in the following order, the first dimension shall represent the length, the second the width and the third the thickness.

**7.2 Standard Dimensions** — Unless otherwise specified, plywood boards shall be manufactured in the following sizes:

| | |
|---|---|
| Length | 240, 210, 180, 150, 120 and 90 cm |
| Width | 120 and 90 cm |
| Thickness | 3, 4, 6, 9, 12, 19 and 25 mm |

**7.3 Tolerances**

**7.3.1** *Length and Width* — The following tolerances shall be permitted on length and width:

| | | |
|---|---|---|
| Length | up to 120 cm | +3 mm<br>−0 mm |
| | above 120 cm | +6 mm<br>−0 mm |
| Width | up to 90 cm | +3 mm<br>−0 mm |
| | above 90 cm | +6 mm<br>−0 mm |

**7.3.1.1** The rectangular panels shall have their diagonals not varying in length beyond 9 mm.

**7.3.2** *Thickness* — The following tolerances shall be permitted on thickness:

Positive = 0·2 mm + 5 percent of nominal thickness

Negative = 0·1 mm + 2·5 percent of nominal thickness

**8. FINISH**

**8.1** Decorative plywood shall be uniform in thickness within the tolerance limits specified under **7.3.**

**8.2** Decorative plywood shall be trimmed square and sanded to a smooth finish.

**8.3** Decorative surface shall be smooth and of the desired decorative pattern and have good pleasing locks, texture and feel.

**9. TESTS**

**9.1** Boards selected as described under **11.1** shall be subjected to the tests specified under **9.1.1** and **9.1.2.**

**9.1.1** *Moisture content* — Decorative veneered plywood conforming to the standard when tested in accordance with IS : 1734 ( Part I )-1972* shall have a moisture content of not less than 5 percent and not more than 15 percent.

**9.1.2** *Water Resistance Test* — Decorative veneered plywood conforming to the grade specified in this standard shall not show delamination or blister formation, when tested in the manner specified under **9.1.2.1.**

**9.1.2.1** Three test specimens of size 15 × 15 cm shall be prepared from each of the boards selected and submerged in water at room temperature for a period of 48 hours and dried for 8 hours at a temperature of 65 ± 2°C and then followed by two cycles of soaking each for 16 hours and drying for 8 hours under conditions described above.

## 10. INSPECTION AND DELIVERY

**10.1 Inspection** — Boards shall be visually inspected to ensure that decorative veneered sides conform to the requirements specified under **6.** They shall also be inspected for dimensions, delamination, blisters or surface defects.

**10.2** 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.

## 11. SAMPLING

**11.1 Lot** — All plywood boards/sheets of the same type, grade, size and manufactured in the same batch of production shall constitute a lot.

**11.1.1** Samples shall be selected and tested separately from each lot for determining its conformity or otherwise to the requirements of the specification.

**11.2 Scale of Sampling and Method of Selection** — The number of boards/sheets to be selected from a lot shall depend upon the size of the lot and shall be in accordance with Table 1.

**11.2.1** Boards/sheets to be selected from the lot shall be chosen by the method of simple random sampling following the procedure given in **3.1** of IS : 4905-1968†. As an alternative the method of systematic sampling explained in **11.3** may be followed.

**11.3** Starting from any board in a lot, the boards shall be counted as 1, 2, ....., $r$ and so on in one order. Every $r$th board thus counted shall be

*Methods of test for plywood: Part I Determination of density and moisture content (*first revision*).

†Methods for random sampling.

withdrawn to constitute the sample, where $r$ is the integral part of $N/n$ ( $N$ and $n$ being the lot size and the corresponding sample size respectively ). This procedure shall be stopped as soon as the required number of boards is obtained.

**11.3.1** For example, if a total sample of 32 boards is to be selected from a lot of 1 330 boards, then the value of $r$ is obtained as the integral part of 1 330/32 ( = 41·6 ), which is 41. Starting from any board, the boards shall be counted in one order and every 41st board shall be withdrawn.

**TABLE 1 SCALE OF SAMPLING AND PERMISSIBLE NUMBER OF DEFECTIVES**

( *Clause* 11.2 )

| No. of Boards/Sheets in the Lot ($N$) | Sample Size ($n$) | Acceptance Number ($a$) |
|---|---|---|
| (1) | (2) | (3) |
| Up to 300 | 5 | 0 |
| 301 to 500 | 8 | 0 |
| 501 to 1 000 | 13 | 0 |
| 1 001 and above | 20 | 1 |

**11.4 Testing of Samples and Criteria for Conformity** — All boards/sheets in the sample shall be inspected for the dimensional requirements and tested for moisture content and water resistance test. A board shall be considered as defective if it fails to satisfy the requirements of any one or more of the characteristics. The lot shall be declared as conforming to the requirements of the specification if the number of defective boards/sheets in the sample is less than or equal to the corresponding acceptance number given in col 3 of Table 1.

## 12. MARKING

**12.1** Decorative veneered plywood shall be clearly marked in a suitable position with the following information:

a) Manufacturer's name or trade-mark,

b) Approved pattern mark, and

c) BWR or WWR.

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

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the produce.. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

## 13. PARTICULARS TO BE SUPPLIED BY THE PURCHASER

**13.1** The purchaser shall supply the following particulars at the time of ordering:

a) Number of panels, sizes and thickness;

b) Whether one side decorative or both sides decorative and the pattern of decorative face from among the approved patterns of the manufacturer's line;

c) Whether required in group matching and if so the number of sheets in a group; and

d) The packing desired.

( *Continued from page* 2 )

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Reprography Unit, BIS, New Delhi, India

# AMENDMENT NO. 2 JUNE 1992
# TO
# IS 7316 : 1974 SPECIFICATION FOR DECORATIVE PLYWOOD USING PLURALITY OF VENEERS FOR DECORATIVE FACES

( *Page* 3, *clause* **0.2** ) — Substitute 'IS 1328 : 1982' *for* 'IS : 1328 - 1970'.

( *Page* 3, *foot-note marked with* '*' *mark* ) — Substitute the following for the existing foot-note:

'*Specification for veneered decorative plywood ( *second revision* ).'

( *Page* 4, *clause* **2.1** ) — Substitute 'IS 707 : 1976' *for* 'IS : 707 - 1968' and 'IS 1328 : 1982' *for* 'IS : 1328 - 1970'.

( *Page* 4, *clause* **4.1**, *first sentence* ) — Substitute 'according to IS 303 : 1989' *for* 'either class I, class II or class III timbers specified in IS : 303 - 1960'.

( *Page* 4, *clause* **4.2**, *line* 2 ) — Substitute 'MR' *for* 'WWR'.

( *Page* 4, *clause* **4.3** ) — Substitute 'MR' *for* 'WWR' in line 2 and 'IS 303 : 1989' *for* 'IS : 303 - 1960' in line 3.

( *Page* 4, *foot-notes marked with* '*', '†' *and* '‡' *marks* ) — Substitute the following for the existing footnotes:

'* Glossary of terms applicable to timber terminology and utilization ( *second revision* ).

† Specification for veneered decorative plywood ( *second revision* ).

‡ Specification for plywood for general purposes ( *third revision* ).

( *Page* 5, *clause* **5.2**, *line* 3 ) — Substitute 'MR' *for* 'WWR'.

( *Page* 5, *clause* **6.1**, *line* 3 ) — Substitute 'MR' *for* 'WWR'.

( *Page* 7, *clause* **9.1.1** ) — Substitute 'IS 1734 ( Part 1 ) : 1983' *for* 'IS 1734 (Part I) - 1972'.

( *Page* 7, *foot-note marked with* '*' *mark* ) — Substitute the following for the existing foot-note:

'*Methods of test for plywood : Part 1 Determination of density and moisture content ( *second revision* ).'

[ *Page* 8, *clause* 12.1 (c)] — Substitute 'MR' *for* 'WWR'.

( CED 20 )

Reprography Unit, BIS, New Delhi, India

# AMENDMENT NO. 3 NOVEMBER 1998
# TO
# IS 7316 : 1974 SPECIFICATION FOR DECORATIVE PLYWOOD USING PLURALITY OF VENEERS FOR DECORATIVE FACES

( *Page* 7, *clause* **9.1.2.1** ) — Substitute the following for the existing:

'**9.1.2.1** Three test specimens of size 150 mm × 150 mm shall be prepared from each of the boards selected and submerged in water at 60 ± 2°C for a period of 3 hours and dried for 8 hours at a temperature of 60 ± 2°C and then followed by two more cycles of soaking and drying under same conditions described above.'

( CED 20 )

Reprography Unit, BIS, New Delhi, India

# AMENDMENT NO. 4 JANUARY 2005
# TO
# IS 7316 : 1974 SPECIFICATION FOR DECORATIVE PLYWOOD USING PLURALITY OF VENEERS FOR DECORATIVE FACES

( *Page* 5 *and* 6, *clause* **7** ) — Substitute the following for the existing:

## 7 DIMENSIONS AND TOLERANCES

**7.1** The dimensions of plywood boards shall be as follows:

| | |
|---|---|
| 2 400 mm × 1 200 mm | 2 400 mm × 900 mm |
| 2 100 mm × 1 200 mm | 2 100 mm × 900 mm |
| 1 800 mm × 1 200 mm | 1 800 mm × 900 mm |
| 1 500 mm × 1 200 mm | 1 500 mm × 900 mm |
| 1 200 mm × 1 200 mm | 1 200 mm × 900 mm |
| 900 mm × 900 mm | |

### 7.2 Thickness

The thickness shall be 3 mm, 4 mm, 5 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.

### 7.3 Tolerances

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

| *Dimension* | *Tolerance* |
|---|---|
| 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 1 000 mm or 0.2 percent |
| Squareness | 2 mm per 1 000 mm or 0.2 percent |

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

( *Page* 9, *clause* **13.1** ) — Insert the following Annex A after clause **13.1**:

## ANNEX A
## (*Clause* 7.3)

## METHOD OF TEST FOR EDGE STRAIGHTNESS AND SQUARENESS

### A-1 PROCEDURE FOR EDGE STRAIGHTNESS

**A-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.

### A-2 PROCEDURE FOR SQUARENESS

**A-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.

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

### 7.3 Tolerances

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

| *Dimension* | *Tolerance* |
|---|---|
| Length | $^{+6}_{-0}$ mm |
| Width | $^{+3}_{-0}$ mm |
| Thickness: | |
| i) Less than 6 mm | ±10 percent |
| ii)6 mm and above | ±5 percent |