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IS 2202-2 (1983): wooden flush door shutters (solid core type): Part 2 Particle board and hardboard face panels [CED 11: Doors, Windows and Shutter]



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“Knowledge is such a treasure which cannot be stolen”

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IS : 2202 (Part 2) - 1983

(Reaffirmed 2001)

Edition 4.1

(2000-09)

Indian Standard

**SPECIFICATION FOR
WOODEN FLUSH DOOR SHUTTERS
(SOLID CORE TYPE)**

**PART 2 PARTICLE BOARD AND HARDBOARD
FACE PANELS**

(Third Revision)

(Incorporating Amendment No. 1)

UDC 69.028.1.011-419 : 674 : 816-419

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

Price Group 3

Indian Standard
**SPECIFICATION FOR
WOODEN FLUSH DOOR SHUTTERS
(SOLID CORE TYPE)**
**PART 2 PARTICLE BOARD AND HARDBOARD
FACE PANELS**
(Third Revision)

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IS : 2202 (Part 2) - 1983

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AMENDMENT NO. 2 NOVEMBER 2009
TO
IS 2202 (PART 2) : 1983 SPECIFICATION FOR WOODEN
FLUSH DOOR SHUTTERS (SOLID CORE TYPE)

(Third Revision)

(Page 4, Foreword, clause **0.3.1**, last line) — Substitute ‘IS 2202 (Part 1) : 1999*’ for ‘IS 2202 (Part 1) : 1983*’.

(Page 4, clause **3.1**, second sentence) — Substitute the following for the existing:

‘Sizes other than modular sizes, as agreed to between the manufacturer and the purchaser may also be permitted; provided that the thickness of shutters in such cases shall be any of those specified in **3.2** but not less than that specified against the nearest higher modular size given in **3.2**.’

(Page 4, footnote marked *) — Substitute the following for the existing:

‘*Wooden flush door shutters (solid core type) — Specification : Part 1 Plywood face panels (*sixth revision*)’.

(Page 5, clause **3.2**) — Substitute the following for the existing clause:

‘The nominal thickness of the shutters shall be 25 mm, 30 mm and 35 mm corresponding to each of the sizes as given below:

<i>Flush Door Designation</i>	<i>Thickness of Shutter, mm</i>
8 DS 20 and 8 DS 21	25
9 DS 20 and 9 DS 21	30
10 DS 20 and 10 DS 21	35
12 DS 20 and 12 DT 21	35

However, for sizes greater than 12 DT 21, the thickness of such shutters shall be greater than 35 mm and shall be as agreed to between the manufacturer and the purchaser.’

(Page 5, clause **4.1**, last line) — Substitute ‘IS 2201 (Part 1) : 1999*’ for ‘IS 2201 (Part 1) : 1983*’.

(Page 5, footnote) — Substitute the following for the existing:

‘*Wooden flush door shutters (solid core type) — Specification : Part 1 Plywood face panels (*sixth revision*)’.

(Page 7, Table 2, Note 3) — Substitute ‘IS 4021 : 1995† and IS 4351 : 2003‡’ for ‘IS : 4021-1983† and IS : 4351-1976‡’.

(Page 7, Table 2, Note 4, last line) — Substitute ‘IS 2202 (Part 1) : 1999§’ for ‘IS : 2202 (Part 1) - 1983§’.

(Page 7, Table 2, footnotes marked ‘†’ ‘‡’ and ‘§’) — Substitute the following for the existing:

‘†Specification for timber door, window and ventilator frames (*third revision*).

‡Steel door frames — Specification (*second revision*).

§Wooden flush door shutters (solid core type) — Specification : Part 1 Plywood face panels (*sixth revision*).’

(Page 7, clause 4.2) — Substitute the following for the existing clause:

‘The swelling in thickness and length of the particle boards used for core as well as face panels, when tested in accordance with IS 2380 (Part 1) : 1977* shall not exceed 5 percent.’

(Page 7, clause 4.2.1) — Substitute the following for the existing clause:

‘Particle board used for face panel of flush door shutters of BNP and PNP types shall conform to FPT-1 or XPS designation of IS 3087 : 2005†.’

(Page 7, footnotes marked * and †) — Substitute the following for the existing:

*Methods of test for wood particle boards and boards from other lignocellulosic materials : Part 17 Determination of swelling in water (*first revision*)

†Particle boards of wood and other lignocellulosic materials (medium density) for general purposes — Specification (*second revision*).’

(Page 8, clause 4.2.2) — Substitute the following for the existing:

‘For BDPV and PDPV types of flush door shutters, face panel of only veneered particle board of SO D-1 type of IS 3097 : 2006* shall be used.’

(Page 8, clause 4.2.3) — Substitute the following for the existing:

‘For BNPV and PNPV types of flush door shutters, face panel of only veneered particle board of SO GP-1 type of IS 3097 : 2006* shall be used.’

(Page 8, clause 4.3) — Substitute the following for the existing:

‘For shutters with fibre hardboard face, only tempered hardboard conforming to IS 1658 : 2006† shall be used.’

(Page 8, clause 4.4) — Substitute the following for the existing clause:

‘Adhesives used for bonding particle board or hardboard face panels to the core shall be phenol formaldehyde synthetic resin conforming to BWP type of IS 848 : 2006‡.’

(Page 8, clause 5.1, line 2) — Substitute ‘IS 2202 (Part 1) : 1999§’ for ‘IS : 2202 (Part 1)-1983§’.

(Page 8, clause 5.2) — Substitute ‘Flush door shutters with particle board beaded type core shall be manufactured with core of particle boards of Types FPT-1 or XPS designation of IS 3087 : 2005|| or veneered particle boards of Type SO GP-1 or SO D-1 of IS 3097 : 2006*’ for the existing in the first sentence, and ‘Annex B of IS 2202 (Part 1) : 1999§’ for ‘Appendix A of IS : 2202 (Part 1)-1983§’ in the second sentence, and ‘IS 848 : 2006‡’ for ‘IS : 848-1974‡’ in the fifth sentence:

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

*Veneered particle boards — Specification (*second revision*).

†Fibre hardboards — Specification (*third revision*).

‡Synthetic resin adhesive for plywood (phenolic and aminoplastic) — Specification (*second revision*).

Amend No. 2 to IS 2202 (Part 2) : 1983

§Wooden flush door shutters (solid core type) — Specification: Part 1 Plywood face panels (*sixth revision*).

||Particle boards of wood and other lignocellulosic materials (medium density) for general purposes — Specification (*second revision*).

(Page 9, *clause 7.3, last line*) — Substitute ‘IS 3087 : 2005* and IS 3097 : 2006†’ for ‘IS : 3087-1965* and IS : 3097-1980†’

(Page 9, *clause 8.1*) — Substitute ‘**10** and **11** of IS 2202 (Part 1) : 1999‡’ for ‘**9** of IS : 2202 (Part 1)-1983‡’.

(Page 9, *clause 9.1, line 2*) — Substitute ‘**12** of IS 2202 (Part 1) : 1999‡’ for ‘**10** of IS : 2202 (Part 1)-1983‡’.

[Page 9, *clause 10 (see also Amendment No. 1)*] — Insert ‘**ADDITIONAL**’ before the existing title.

(Page 9, *footnotes*) — Substitute the following for the existing:

*Particle boards of wood and other lignocellulosic materials (medium density) for general purposes — Specification (*second revision*).

†Veneered particle boards — Specification (*second revision*).

‡Wooden flush door shutters (solid core type) — Specification : Part 1 Plywood face panels (*sixth revision*).

**AMENDMENT NO. 1 SEPTEMBER 2000
TO
IS 2202 (PART 2) : 1983 SPECIFICATION FOR
WOODEN FLUSH DOOR SHUTTERS (SOLID CORE
TYPE)**

PART 2 PARTICLE BOARD AND HARDBOARD FACE PANELS

(Third Revision)

(Page 4, clause 0.3.1) — Insert the following new para after 0.3.1 and renumber the subsequent para:

‘0.4 A scheme of labelling environment friendly products to be known as ECO Mark is being 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 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 optional environment friendly requirements.’

(Page 9, clause 9.1) — Insert the following new clause after 9.1 and renumber the subsequent clauses:

‘10 REQUIREMENTS FOR ECO MARK

10.1 Door shutters shall be manufactured from agricultural or industrial wastes or wood residues or wood from sources other than natural forests such as timber from industrial and social forestry plantations, shade tree from tea and coffee estate etc. as specified in IS 2201 (Part 1) : 1999 and such doors shutters shall conform to the requirements of quality and performance as specified in this standard as well as the requirements for all the referred standards.

NOTES

1 The manufacturers shall provide documentary evidence by way of certificate or declaration to Bureau of Indian Standards while applying for ECO Mark.

Amend No. 1 to IS 2202 (Part 2) : 1983

2 The manufacturers 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* alongwith the authorization, if required under the *Environment (Protection) Act, 1986*, while applying for ECO Mark.'

(Page 10, renumbered clause 11.1) — Insert the following at the end of the clause:

- 'f) Species of timber, in case of ECO Mark; and**
- g) The criteria for which the product has been labelled as ECO Mark.'**

(CED 11)

Indian Standard

SPECIFICATION FOR
WOODEN FLUSH DOOR SHUTTERS
(SOLID CORE TYPE)

PART 2 PARTICLE BOARD AND HARDBOARD
FACE PANELS

(*Third Revision*)

0. FOREWORD

0.1 This Indian Standard (Part 2) (Third Revision) was adopted by the Indian Standards Institution on 30 June 1983, after the draft finalized by the Doors, Windows and Shutters Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 This standard was first published in 1962 and subsequently revised in 1966 and 1980. During this period the standard has undergone modifications relating to grade of doors, species of timber, etc, and the sizes were rationalized.

0.3 Keeping in view the advantages of modular co-ordination, Indian Standards specify the dimensions of components in modular units. In line with this, the dimensions of shutters were also specified in modular units. However, it was repeatedly brought to the notice of the Committee that there was sufficient demand for sizes other than modular sizes and that the manufacturers were meeting such demands at present. This had led to a situation where shutters satisfying the other requirements of the standard, but not the requirements regarding the dimensions were classified as not satisfying the requirements of the standard. This situation also came in the way of satisfying the consumer needs for other quality requirements by a third party inspection system. Therefore, with a view to encouraging production of timber shutters to the quality requirements specified in the standard, the Committee reviewed the relevant clauses of the Indian Standards and decided to relax the dimensional requirements in this third revision by permitting non-modular sizes in addition to the modular sizes specified in the standard at present. However, the relaxation has been made only in the height and width, the thickness remaining unchanged from the present provisions. This relaxation will be for a period of four years from the publication of this standard and it is intended that the manufacturers and consumers organizations can gradually switch-over within this period to the modular sizes, which are the preferred sizes.

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0.3.1 Wooden flush door shutters using particle board and hard board for face panels are generally manufactured in the same way as the doors with plywood face panels. This standard, therefore, covers only the necessary requirements and provisions which are additional or alternative to those covered in IS : 2202 (Part 1)-1983*.

0.4 A scheme of labelling environment friendly products to be known as ECO Mark is being 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 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 optional environment friendly requirements.

0.5 This edition 4.1 incorporates Amendment No. 1 (September 2000). Side bar indicates modification of the text as the result of incorporation of the amendments.

0.6 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.

1. SCOPE

1.1 This standard (Part 2) lays down the requirements regarding material, grade, type, sizes, construction, finishes and tests of wooden flush door shutters of solid core type with particle board face panels (both veneered and unveneered) and hard-board face panels.

2. TYPES AND DESIGNATION

2.1 Solid core flush door shutters with particle board face panels may be of the decorative type or non-decorative (paintable) type. The designation of various types of shutters shall be based on the type of core and the type of face panel as given in Table 1.

3. SIZES AND TOLERANCES

3.1 Sizes of the door shutters shall generally conform to the modular sizes specified in Table 2 (*see also* Fig. 1). Sizes other than modular sizes, as agreed to between the manufacturer and the purchaser, may also be permitted; however, the thickness of shutters in such cases shall not be less than that specified against the nearest higher modular size given in **3.2**.

*Specification for wooden flush door shutters (solid core type): Part 1 Plywood face panels (*fourth revision*).

†Rules for rounding off numerical values (*revised*).

TABLE 1 DESIGNATION OF WOODEN FLUSH DOOR SHUTTERS, SOLID CORE TYPE WITH PARTICLE BOARD FACE PANELS

(Clause 2.1)

CORE	TYPE	DESIGNATION
Blockboard	Decorative with skins of decorative veneered particle boards	B D PV
	Non-decorative (paintable) with skins of particle boards unveneered	B N P
	Non-decorative (paintable) with skins of particle boards veneered with commercial veneers	B N PV
Particle board with or without block-board	Decorative with skins of decorative veneered particle boards	P D PV*
	Non-decorative with skins of particle boards unveneered	P N P*
	Non-decorative with skins of particle boards with commercial veneers	P N PV*

*Where particle board beaded core is used, the designations will be PE D PV, PE N P and PE N PV respectively.

3.2 Nominal thickness of shutters shall be 25, 30 or 35 mm.

NOTE — It is recommended that, as far as possible, the thickness adopted for flush doors should be as given below:

FLUSH DOOR DESIGNATION	THICKNESS OF SHUTTER
	mm
8 DS 20 and 8 DS 21	25
9 DS 20 and 9 DS 21	30 or 35
10 DS 20 and 10 DS 21	35
12 DT 20 and 12 DT 21	35

3.3 Tolerances — Tolerance on nominal width and height shall be $+3_{-0}$ mm and the tolerance on nominal thickness shall be ± 1.2 mm. The thickness of the door shutter shall be uniform throughout with a permissible variation of not more than 0.8 mm when measured at any two points.

4. MATERIAL

4.1 Timber — Species of timber, moisture content and permissible defects therein and preservative treatment required for use in the core and lipping shall conform to the relevant requirements laid down in IS : 2202 (Part 1)-1983*.

*Specification for wooden flush door shutters (solid core type): Part 1 Plywood face panels (fourth revision).

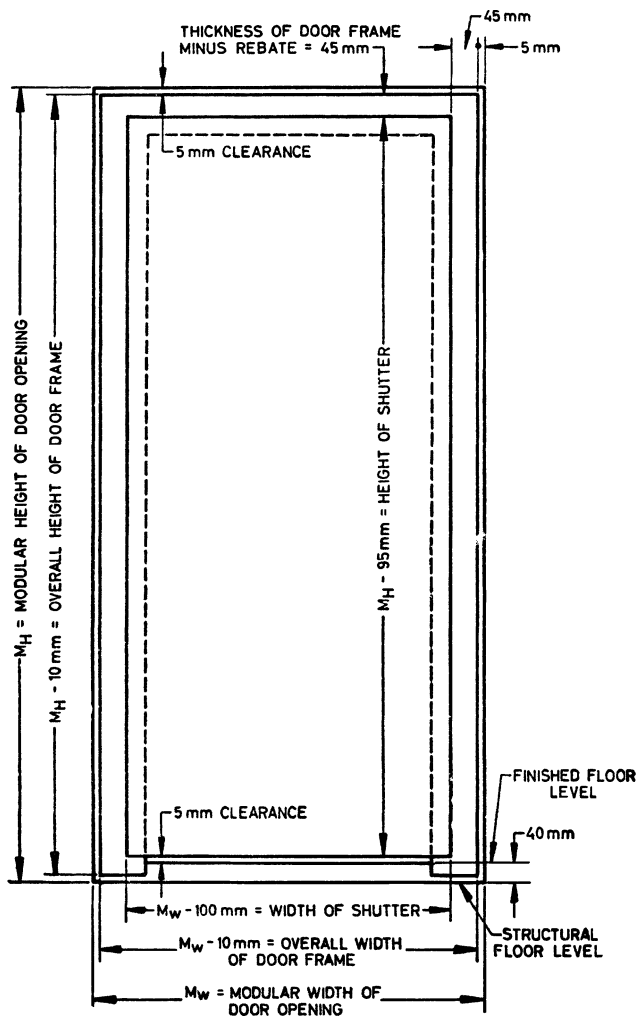


FIG. 1 SKETCH ILLUSTRATING DIMENSIONS OF SHUTTER

TABLE 2 DIMENSIONS OF FLUSH DOOR SHUTTERS

(Clause 3.1)

DESIGNATION OF DOORS	WIDTH mm	HEIGHT mm
8 DS 20	700	1 905 (1 945)
8 DS 21	700	2 005 (2 045)
9 DS 20	800	1 905 (1 945)
9 DS 21	800	2 005 (2 045)
10 DS 20	900	1 905 (1 945)
10 DS 21	900	2 005 (2 045)
12 DT 20	1 100*	1 905 (1 945)
12 DT 21	1 100*	2 005 (2 045)

NOTE 1 — D = Door, S = Single shutter, and T = Double shutter.

NOTE 2 — The designation indicates the size of door opening, the first number referring to width in modules of 100 mm and the last number the height in modules.

NOTE 3 — Standard sizes of door frames are covered in IS : 4021-1983† and IS : 4351-1976‡.

NOTE 4 — In arriving at the standard widths and heights for flush doors, an allowance of 60 mm has been made for door frames, 40 mm for floor finish and 5 mm for clearance all round (*see also* Fig. 1) between the door opening and door frame and 15 mm for rebate all round the shutter into the frame. In case, the modular height is taken from the finished floor level, the height of the flush door shall be the one given in the bracket. In the case of double shutters, the rebate and clearance between the shutters shall be as given in 6.7 of IS : 2202 (Part 1)-1983§.

*Combined width of two shutters in closed position.

†Specification for timber door, window and ventilator frames (*second revision*).

‡Specification for steel door frames (*first revision*).

§Specification for wooden flush door shutters (solid core type): Part 1 Plywood face panels (*fourth revision*).

4.2 Particle boards used for core as well as face panels of flush doors shall be made with phenol formaldehyde adhesive and the swelling in thickness and length when tested in accordance with IS : 2380 (Part 17)-1977* shall not exceed 5 percent.

4.2.1 Unveneered particle board used for face panel of flush door shutters of B N P and P N P types shall conform to Types FPSI or FPTH of IS : 3087-1965†, and shall be manufactured using Type BWR synthetic resin adhesives conforming to IS : 851-1978‡ and out of naturally durable timbers listed on Appendix A of IS : 1659-1979§.

*Methods of test for wood particle boards and boards from other lignocellulosic materials : Part 17 Determination of swelling in water (*first revision*).

†Specification for wood particle boards (medium density) for general purposes.

‡Specification for synthetic resin adhesives for construction work (non-structural) in wood (*first revision*).

§Specification for blockboards (*second revision*).

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4.2.2 For B D P V and P D P V types of flush door shutters, face panel of only veneered particle board of Type ESD of IS : 3097-1980* shall be used.

4.2.3 For flush door shutters of B N P V and P N P V (veneered) the particle board with commercial veneers conforming to type ESC of IS : 3097-1980* shall be used.

4.3 For shutters with fibre hardboard face, only tempered hardboard conforming to IS : 1658-1977† shall be used.

4.4 Adhesive — Adhesive used for bonding particle board or hardboard face panels to the core shall be phenol formaldehyde synthetic resin conforming to BWP type specified in IS : 848-1974‡.

5. CONSTRUCTION

5.1 The construction of flush doors shall be in accordance with the relevant requirements laid down in IS : 2202 (Part 1)-1983§ with modification as given in **5.1.1** and **5.2**.

5.1.1 Face Panel — The face panel shall be formed by gluing by the hot press process on both faces of the core particle boards or veneered particle boards or hardboard. The thickness of each of the face panels of particle board shall be not less than 4 mm and of hardboard not less than 3 mm.

5.2 Flush door shutters with particle board beaded type core shall be manufactured with core of particle boards of Types FPSI or FPTH conforming to IS : 3087-1965|| or veneered particle board of Types EXSOD or EXSOGP conforming to IS : 3097-1980*. The beading shall be of solid timber of any of the species mentioned in Appendix A of IS : 2202 (Part 1)-1983§. The beading shall be to the full thickness of the door. The depth of beading all round shall be not less than 25 mm excluding the tongue for the joint. The beading shall be provided all round and shall be fixed by tongue and brew joint using BWP type adhesives conforming to IS : 848-1974‡, and the beading shall be further secured by additional screws of adequate length. The tongue shall not be less than 12 mm deep, and its width shall not be less than 1/3 of the finished thickness of the shutter. The timber used for beading for flush doors with decorative face shall preferably be of the same species as the face veneers unless otherwise agreed to between the purchaser and the supplier.

*Specification for veneered particle boards (*first revision*).

†Specification for fibre hardboards (*second revision*).

‡Specification for synthetic resin adhesives for plywood (phenolic and aminoplast) (*first revision*).

§Specification for wooden flush door shutters (solid core type): Part 1 Plywood face panels (*fourth revision*).

|| Specification for wood particle boards (medium density) for general purposes.

6. FITTINGS

6.1 Locks — Shutters shall be shop-prepared for taking mortice locks or latches as may be ordered. In case of doors with particle board core suitable blocks of wood of size 150 × 50 mm shall be provided in the thickness of core at a height of about 1 mm above the bottom edge. For other hardware, suitable blocks of wood may be provided where the purchaser so desires.

6.2 Where special blocks are provided for fixing hardware, these portions shall be so marked in indelible ink.

7. WORKMANSHIP AND FINISH

7.1 All the four edges of the door shutter shall be square. The shutter shall be free from twist or warp in its plane.

7.2 Both faces of the door shutter shall be sanded to a smooth even texture. If required by the purchaser, all surfaces of shutters which are required to be painted ultimately shall be covered evenly by brush painting with suitable priming coat as may be ordered by the purchaser.

7.3 Workmanship and finish of face panels shall conform to the requirements specified for the respective grades and types of particle boards in IS : 3087-1965* and IS : 3097-1980†.

8. TESTS

8.1 The various tests for flush door shutters shall be as laid down in 9 of IS : 2202 (Part 1)-1983‡.

9. SAMPLING AND CRITERIA FOR CONFORMITY

9.1 The sampling and criteria for conformity for flush door shutters shall be as laid down in 10 of IS : 2202 (Part 1)-1983‡.

10. REQUIREMENTS FOR ECO MARK

10.1 Door shutters shall be manufactured from agricultural or industrial wastes or wood residues or wood from sources other than natural forests such as timber from industrial and social forestry plantations, shade tree from tea and coffee estate etc. as specified in IS 2201 (Part 1) : 1999 and such doors shutters shall conform to the

*Specification for wood particle boards (medium density) for general purposes.

†Specification for veneered particle boards (*first revision*).

‡Specification for wooden flush door shutters (solid core type) : Part 1 Plywood face panel (*fourth revision*).

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requirements of quality and performance as specified in this standard as well as the requirements for all the referred standards.

NOTES

1 The manufacturers shall provide documentary evidence by way of certificate or declaration to Bureau of Indian Standards while applying for ECO Mark.

2 The manufacturers 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 alongwith the authorization, if required under the *Environment (Protection) Act*, 1986, while applying for ECO Mark.

11. MARKING

11.1 Each shutter shall be legibly and indelibly marked on any of its edges with the following information:

- a) Name of the manufacturer or trade-mark, if any;
- b) Abbreviation indicating the nature of construction of the shutter (*see 2.1*).
- c) Whether the size of the shutter is 'Modular' or 'Non-modular';
- d) Designation as specified in Table 2 of the standard for modular sizes; or the actual size (width and height) for non-modular sizes along with appropriate symbols for door shutters as given in Table 2; and
- e) Thickness of door shutters (*see 3.2*).
- f) Species of timber, in case of ECO Mark; and
- g) The criteria for which the product has been labelled as ECO Mark.

11.2 BIS Certification Marking

The product may also be marked with Standard Mark.

11.3.1 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 details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

Bureau of Indian Standards

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