IS 2674 (1988): battened plywood cases [CED 9: Timber and Timber Stores]

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AMENDMENT NO. 1 OCTOBER 1992
TO
IS 2674 : 1988 SPECIFICATION FOR BATTENED PLYWOOD CASES

(Second Revision)

(*Page* 1, *clause* 3.1) — Substitute the following for the existing clause:

"**3.1 Plywood** — The plywood shall conform to the requirements of Type AB, Grade MR or BWR of IS 303 : 1989 'Specification for plywood for general purposes (*third revision*)' as agreed to between the purchaser and the supplier."

(CED 33)

Reprography Unit, BIS, New Delhi, India

UDC 621·798·12 [674-419·321]

Wood and Wood Products Containers Sectional Committee, MCPD 16; Crates and Packing Cases Subcommittee, MCPD 16 : 2 [Ref : Doc : MCPD 16 (784)]

Indian Standard

SPECIFICATION FOR BATTENED PLYWOOD CASES

(Second Revision)

1. Scope — Covers the requirements of battened plywood cases for general use for packaging of articles of mass of up to 250 kg.

1.1 This standard does not cover the requirements of cases intended for the packaging of articles which have highly concentrated loads, such as engines, generators, military ammunition and explosives.

2. Terminology — For the purpose of this standard, the definitions given in IS : 707-1976 'Glossary of terms applicable to timber technology and utilization (*second revision*)' and IS : 6703-1972 'Glossary of wooden packaging terms', shall apply.

3. Materials

3.1 *Plywood* — The plywood shall conform to the requirements of Type BC, Grade CWR, WWR or BWR of IS : 303-1975 'Specification for plywood for general purposes (*second revision*)' as agreed to between the purchaser and the supplier.

3.2 *Timber*

3.2.1 The timber used for battens shall be from any of Group I or II timber species given in IS : 6662-1980 'Timber species suitable for wooden packaging (*first revision*)'. Group III timbers may also be used for battens provided the batten size is increased by either 3 mm in thickness or 5 mm in width. Group IV timbers shall not be used for battens. Any other suitable timbers not included in Group I, II or III may be used for battens with the prior approval of the purchaser.

3.2.2 The battens shall be seasoned to a moisture content not exceeding 18 percent. The inclination of grain in timber battens shall not exceed 1 to 10. The timber shall be free from centre heart (pitch), insect attack, any kind of decay (rot), objectionable knots, splits, warping and any other defect which is likely to reduce the strength of the battens. Pinholes (dead infestation) may be permissible provided they are not of powder post beetles and not more than 6 in number (not concentrated).

3.2.3 *Objectionable knots*

a) A sound knot in a batten shall be considered objectionable if its diameter along the major axis exceeds one-third of the width of the batten provided the edge of the knot is away from the edge of the batten by at least 5 mm, and are more than one per 30 cm length of the batten, or is situated within 25 mm from a place through which a nail is to be driven.

b) A dead knot in a batten shall be considered objectionable if its diameter along the major axis exceeds 12 mm provided such knots do not reach the edge of the batten and are not more than one per 20 cm length of the batten or situated within 25 mm from a place through which a nail is to be driven.

3.3 *Nails*

3.3.1 Countersunk head nails conforming to IS : 723-1972 'Specification for steel countersunk head wire nails (*second revision*)', shall be used.

3.3.2 Clout nails, not less than 2·00 mm in shank diameter, shall be used for fastening the plywood panels to the battens. The length of the nail shall be not less than the sum of the thickness of the plywood and batten plus 5 mm. Any projected portion of the nails shall be clinched.

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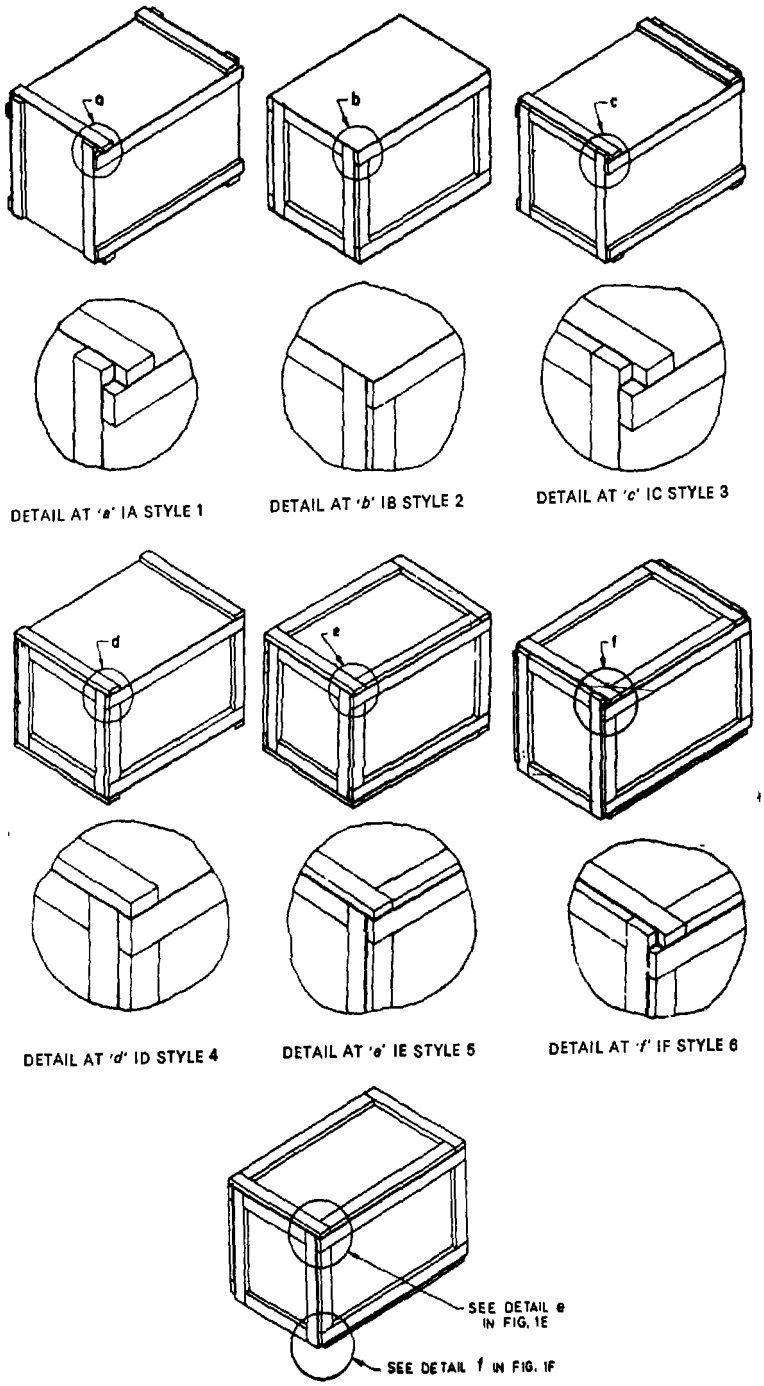

FIG. 1 STYLES OF BATTENED PLYWOOD PACKING CASES

3.4 *Staples* — Staples, made of steel wire not less than 0 900 mm in diameter shall be used for fastening plywood panels to battens. The length of crown of the staples shall be not less than the sum of the thickness of the plywood and the batten plus 3 mm

4. Styles, Sizes and Construction

4.1 There shall be seven styles of plywood cases as shown in Fig 1

4.2 *Sizes* — The sizes of plywood cases denoted by their internal dimensions shall be as given in Table 1 Sizes other than those given in Table 1 shall be according to the agreement between the purchaser and the supplier

4.3 The choice of a style depends on several factors, for example, mass and nature of contents, type of load, means of handling, modes of transportation ultimate designation etc but generally the mass of contents and the type of load (*see* Appendix A) are the governing factors Table 2 gives the recommended styles of plywood cases for carrying different mass of contents along with their construction details.

TABLE 1 INTERNAL DIMENSIONS OF PLYWOOD CASES

Cross Section	Length*
cm × cm	cm
20 × 20	20 30 40 50
30 × 30	30 40 50 60 70
40 × 40	40 50 60 70 80 90 100
50 × 50	50 60 70 80 90 100 110 120

*The length shall be limited to a maximum of 2 5 times width or depth of the plywood case

TABLE 2 STYLES AND CONSTRUCTION OF PLYWOOD CASES

Mass of Contents	Style	Thickness of Plywood			Batten Width × Thickness
		Easy Load	Average Load	Difficult Load	
kg		mm	mm	mm	mm × mm
Up to 25	1 and 2	4	4	4	40 × 12
Over 25 and up to 50	2 3 and 4	4	4	6	40 × 16
Over 50 and up to 100	3 4 and 5	4	4	5	50 × 20
Over 100 and up to 150	4 5 and 6	6	6	6	60 × 20
Over 150 and up to 250	6 and 7	6	8	9	75 × 25

4 4 *Framing of Panels* — Only one piece of plywood shall be used to complete each panel The battens shall be fixed to each panel by either nails or staples at the option of the supplier The nails or staples shall be staggered in two parallel rows, spaced not less than 10 mm between the rows, not less than 10 mm from either edge, and not less than 25 mm from the ends of the battens. The nails or staples shall be spaced as indicated in Table 3 and shall pass through the plywood into the batten and then clinched

TABLE 3 SPACING OF NAILS AND STAPLES

Maximum Mass of Contents	Spacing of Nails and Staples (Centre to Centre)	
	For Easy and Average Load	For Difficult Load
kg	cm	cm
Up to 50	10	7 5
Over 50	7 5	5 0

4.4.1 *Additional battens*

4.4.1.1 When one or both dimensions of a panel of a case, measured between ths inside edges of the battens (the unframed area) exceed 50 cm, additional battens or load diffusing paddings may be used. For longer cases, the distance between the regular and additional battens shall not exceed 50 cm as described above. Such additional battens shall be evenly spaced

4 4.1.2 When a concentrated load bears on the faces of the case near the centre of the unframed area, an additional batten of the same size as the edge battens shall be used to reinforce the top, bottom and the sides of the case.

4.5 *Assembly of Cases*

4 5.1 In assembling the cases, nails shall be driven so that neither the head nor the point protrudes from the surface on which they appear. Overdriving of nails shall be avoided, and in no case shall it exceed 1 mm

4.5.2 The size of the nails for assembling cases shall be as given in Table 4

TABLE 4 SIZE OF NAILS FOR ASSEMBLING CASES

Size of Batten			Size of Nails		
Width	×	Thickness	Length	×	Diameter
mm	×	mm	mm	×	mm
40	×	12	40	×	2 00
40	×	15	40	×	2 24
50	×	20	50	×	2 80
60	×	20	60	×	2 80
75	×	25	75	×	3 15

5. Workmanship and Finish

5.1 The battens shall be of even thickness, reasonably smooth and trimmed square at the ends All edges of the case shall be smooth.

5.2 The nails shall be well clinched and the clinching shall be done along the grain of timber.

6. Delivery

6.1 Assembled cases shall be delivered with the lid fixed to the body of the case with one nail at each end.

6.2 Unassembled cases shall be bundled and bound with string or metal bending (iron hoop) in a manner consistent with safe carriage. The mass of a bundle shall not exceed 40 kg.

6.2.1 A bundle shall consist of one type of component, that is, all sides, all ends, all tops and bottoms.

7. Marking

7.1 Unless otherwise specified, each case shall be legibly and indelibly marked with the following information:

a) Manufacturer's name or initials or trade-mark, if any;

b) Year of manufacture; and

c) Style and size.

7.2 *Standard Marking* — Details available with the Bureau of Indian Standards.

APPENDIX A

(*Clause* 4.3)

TYPES OF LOADS

A-1. Factors

A-1.1 The prime factors influencing the proper wooden packing cases design are the physical attributes of the load. This includes the mass, size, fragility, shape and capacity for supporting the packing case. For the purpose of classifying the contents which may be packed in wooden packing case, three types of load categories have been defined These are easy load, average load and difficult load

A-2. Easy Load

A-2.1 Easy load consists of contents having low to moderate density and filling the inside of the packing case completely The contents also consist of articles of sufficient strength to withstand the forces encountered in handling and transportation, and are of such a shape as to fully contact all faces of the packing case Such items as boxed articles, chests or kits of tools, and wooden cabinets are examples of this type of load

A-3. Average Load

A-3.1 Average load consists of items which are moderately dense and which require a reasonable amount of protection Items of this type may either be packed directly into the outer container or in an intermediate package which aids in supporting the faces of the outer container The items themselves or their packages must provide a moderate amount of support for all faces of the packing case in order to be classified as an average load In this group fall items in metal cans bottles individually cushioned, hardware and numerous other items which are first packed in individual cartons

A-4. Difficult Load

A-4.1 Difficult load consists of items which are highly concentrated or require a high degree of protection Items in this category furnish no support to the faces of the packing case but rather in many instances, tend to apply concentrated forces to the packing case's surfaces Bolts, nuts and other dense items which are free to shift or flow as well as delicate instruments, machined parts, valves and fittings, machine assemblies and accessories which have to be held in place by bracing and bolting, heavy wrenches which exert highly concentrated forces on two opposite faces of the packing case and others which do not completely fill the packing case fall into this class

EXPLANATORY NOTE

This standard, first published in 1964 and subsequently revised in 1980, has been revised to incorporate some editorial changes The section of battens, that is, thickness×width has been rounded to the nearest metric size without affecting the strength of the cases. Tables 2, 3 and 4 have been thoroughly revised to bring them in line with the latest manufacturing practices

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