
INTERNATIONAL STANDARD



2426

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Plywood — Veneer plywood with rotary cut veneer for general use — General rules for classification by appearance

Contreplaqué — Contreplaqué à plis, avec placages déroulés, pour usage général — Règles générales de classification selon l'aspect

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Descriptors : plywood, classification, defects, visual inspection.

FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 2426 was drawn up by Technical Committee ISO/TC 139, *Plywood*, and circulated to the Member Bodies in September 1971.

It has been approved by the Member Bodies of the following countries :

Belgium	Ireland	Romania
Czechoslovakia	Israel	Sweden
Egypt, Arab Rep. of	Italy	South Africa, Rep. of
Finland	Netherlands	Spain
Germany	New Zealand	Thailand
Hungary	Norway	U.S.S.R.
India	Poland	
Iran	Portugal	

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

Canada
France
Turkey
United Kingdom
U.S.A.

Plywood — Veneer plywood with rotary cut veneer for general use — General rules for classification by appearance

1 SCOPE

This International Standard establishes general rules for the classification by appearance of veneer plywood defined in ISO 2074, *Plywood — Vocabulary*.

2 FIELD OF APPLICATION

This International Standard applies to veneer plywood for general use, consisting of a least three rotary cut veneers. It does not apply to panels covered with decorative veneers, coated panels or panels for special use.

3 PRINCIPLE OF CLASSIFICATION

Veneer plywood for general use is classified by appearance according to its surface grades, which are determined by the number of categories of defects inherent in wood, and by manufacturing defects visible on finished panels.

4 CLASSIFICATION BY APPEARANCE OF SURFACES

4.1 The quality of the surface of veneer plywood for general use should be divided into three well defined principal grades : I, II, and III. There is also veneer plywood

with surfaces of higher quality (Grade E) and veneer plywood with surfaces of lower quality (Grade IV).

4.2 Each of the surfaces of veneer plywood for general use belongs to one of these five grades, according to the permissible defects.

NOTE — These five grades of appearance correspond approximately to the following intended final use :

- Grade E : natural surface remaining visible;
- Grade I : surface which may remain visible;
- Grade II : surface which may be overlaid, painted or coated;
- Grade III : surface generally intended to be unseen, painted or coated. Open defects are permitted according to the requirements of each species or group of species;
- Grade IV : surface with no requirements for appearance.

In all above grades faces may be sanded or unsanded.

4.3 The permissible defects for each of these grades are related to the characteristics of the species (or category of species) of wood used for the outer plies of the veneer plywood.

These conditions are indicated in the ISO documents relating to classification by appearance of panels with outer plies of different species (or categories of species) of wood.

5 DEFECTS TAKEN INTO CONSIDERATION FOR THE CLASSIFICATION OF SURFACES OF PANELS

The categories or varieties of defect indicated in the following clauses should be taken into consideration for the determination of the grade based on the appearance of the panel surfaces.

NOTE — Defects in veneer plywood are defined in ISO 2074.

5.1 Defects inherent in wood

When irregularities of grain result in roughness, this shall be considered as one category of defects only.

TABLE 1

Category	Type
5.1.1 Pin knots	
5.1.2 Sound intergrown knots	
5.1.3 a) Unsound knots b) Non-adhering and partially adhering knots c) Holes except those due to borers and parasitic plants	1) Dog holes 2) Knotholes
5.1.4 Irregularities in the structure of the wood	1) Angle grain 2) Curly grain 3) Interlocked grain 4) Spiral grain
5.1.5 a) Splits b) Checks	1) Open 2) Closed
5.1.6 a) Resin pockets b) Resin streaks c) Inbark	
5.1.7 Defects due to borers and parasitic plants	1) Small worm holes 2) Large worm holes 3) Marine borer holes 4) Marks of parasitic plants
5.1.8 Sound discoloration	1) Blue stain 2) Coloured sapstains 3) False heartwood 4) Other discoloration such as chemical stain and colour streaks
5.1.9 a) Unsound discoloration b) Decay	Red heartwood 1) Rot 2) Mould
5.1.10 Other defects	

5.2 Manufacturing defects

TABLE 2

Category	Type
5.2.1 Open joints	
5.2.2 Overlaps	
5.2.3 Blisters	
5.2.4 a) Hollows b) Imprints c) Bumps	
5.2.5 Roughness	
5.2.6 Sanding through	
5.2.7 Glue penetration	
5.2.8 Metallic particles	
5.2.9 Inserts	1) Patches 2) Shims 3) Synthetic filling
5.2.10 Defects at the edges of the panel	1) Sanding defects 2) Sawing defects
5.2.11 Other defects	

5.3 The permissible defects are indicated in the ISO documents for the classification by appearance of veneer plywood with outer veneers of the various species (or categories of species) of wood.

Defects inherent in wood and manufacturing defects are restricted according to the grade of the panel surfaces.

5.3.1 Defects which are limited in number, size or extent are enumerated or evaluated per square metre calculated as an average of their incidence over the total surface of the panel, with the exception of checks, splits and open joints which are related to 1 m of panel width.

5.3.2 The number and size of defects shall be rounded off to the nearest unit according to the relevant ISO documents.

5.3.3 The permissible knots, holes, checks, splits and open joints for any particular grade of plywood are determined as follows :

a) For knots and holes

- 1) by maximum individual diameter;
- 2) by maximum sum of the individual diameters per square metre of panel surface.

NOTE — For appearance purposes the diameter of a knot or hole is conventionally defined as the average value of the smallest and the largest diameter.

For structural purposes the diameter of a knot or hole is conventionally defined as the diameter across the grain of the veneer.

The diameters of knots or holes are determined by the perpendicular distance between the tangents of the contour line of the knot or hole.

b) For checks, splits and open joints

- 1) by maximum individual length;
- 2) by maximum individual opening;
- 3) by maximum number per metre of panel width.

5.4 Defects of inner plies should be visible on the surface of the panel only within the limits permitted for each grade of appearance.

6 JOINTS

6.1 The surface of veneer plywood in grade E shall be composed of smoothly cut veneers.

Up to a panel width of 1 530 mm the outer ply shall be of one or two veneers, the joint being well made and approximately at the centre of the panel. For panels wider than 1 530 mm the outer plies may consist of a maximum of three veneers approximately equal in width.

Veneers forming an outer ply of grade E shall be well matched for colour and of similar grain.

6.2 In grades I to IV the number of veneers which form the outer plies of a panel is not restricted provided the joints are well made.

The veneers forming the outer plies of grade I shall be reasonably matched for colour and of similar grain.

6.3 In grades E, I and II, the veneers forming any outer ply shall be laid with the joints approximately parallel to the edges of the panel.

7 INCLUSIONS

The inclusion of metal particles is prohibited with the exception of non-ferrous clips which are permitted according to the corresponding standards for each species or species group.

8 REPAIRS

8.1 If the diameter of unsound knots, non-adhering knots, loose knots and holes, or the length or width of splits and checks, exceeds the value permitted by the ISO documents for this classification by appearance of veneer plywood with outer veneers of the various species (or categories of species), they shall be properly repaired.

8.2 Repairs must fit and be properly fixed. The matching for colour and grain of patches and shims of grades I, II, III and IV shall be in accordance with the requirements of the appropriate grade for the classification of this species or group of species.

9 CLASSIFICATION BY APPEARANCE OF PANELS

9.1 The grade of veneer plywood by appearance is determined by the grades of the two surfaces of the panel.

The better quality surface is called "face"; the opposite side is called "back". If the face and the back are of the same quality, they are not distinguished.

The grade of the plywood describes first the grade of the face followed by the grade of the back.

All possible combinations are indicated in table 3.

TABLE 3

E/E	E/I	E/II	E/III	E/IV
	I/I	I/II	I/III	I/IV
		II/II	II/III	II/IV
			III/III	III/IV
				IV/IV

9.2 Veneer plywood having more extensive visible defects than permitted in ISO documents governing the classification by appearance of veneer plywood cannot be delivered either under the designation "ISO Plywood" or under any other designation liable to cause confusion with one of the grades of appearance indicated in table 3.

9.3 The maximum number of categories of defects permitted on one surface of a panel is restricted in accordance with table 4.

TABLE 4

Grade by appearance of the surface of the panel	Maximum number of categories of permissible defects ¹⁾
E	practically without defects
I	3
II	6
III	9
IV	unlimited

1) For each species group it is possible to add a maximum of three categories of defects considered as minor in the ISO specification for this group.

If the number of the categories of defects visible on one surface of the panel exceeds the maximum indicated in table 4 (for grades E to III), such surface shall be classified as the next lower grade.

Defects due to sawing or sanding at the edges of the panel shall be disregarded if they are less than 2 mm from the edge.

For coniferous species, it is permitted to add a maximum of three categories of defects defined as minor in the International Standards for those species groups.

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AMENDMENT

Foreword (Inside front cover)

The ISO Member Body for the U.S.A. has now withdrawn its disapproval of this International Standard. The U.S.A. should therefore be included in the list of countries whose Member Bodies have approved the document.

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