INTERNATIONAL STANDARD

ISO 12465

First edition
2007-04-01

Plywood — Specifications

Contreplaqué — Spécifications

Reference number
ISO 12465:2007(E)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 12465 was prepared by Technical Committee ISO/TC 89, *Wood-based panels*, Subcommittee SC 3, *Plywood*.

Plywood — Specifications

1 Scope

This International Standard establishes requirements for the specification of plywood for general and structural use, in dry, tropical dry/humid and high-humidity/exterior conditions. It includes requirements for the quality of veneer, glue bond, lay-up (construction), dimensions and tolerances, conformance verification and marking.

The values listed in this International Standard relate to product properties, but they are not characteristic values to be used in design calculations.

NOTE Such characteristic values are given by the manufacturer, based on testing according to ISO 16572.

Additional information on supplementary properties for certain applications is also given.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO Guide 65, *General requirements for bodies operating product certification systems*

ISO 1954, *Plywood — Tolerances on dimensions*

ISO 2074, *Plywood — Vocabulary*

ISO 2426-2, *Plywood — Classification by surface appearance — Part 2: Hardwood*

ISO 2426-3, *Plywood — Classification by surface appearance — Part 3: Softwood*

ISO 9426, *Wood-based panels — Determination of dimensions of panels*

ISO 9427, *Wood-based panels — Determination of density*

ISO 12466-1, *Plywood — Bonding quality — Part 1: Test methods*

ISO 12466-2, *Plywood — Bonding quality — Part 2: Requirements*

ISO 16572, *Timber structures — Wood-based panels — Structural properties*[1)]

ISO 16978, *Wood-based panels — Determination of modulus of elasticity in bending and of bending strength*

ISO 16979, *Wood-based panels — Determination of moisture content*

1) To be published.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 2074 and the following apply.

3.1
dry conditions
conditions in which the plywood will attain an equilibrium moisture content not exceeding 12 % except for only a few weeks per year (e.g. ambient temperature of 20 °C and relative humidity of 65 %)

NOTE 1 Plywood suitable for use in these conditions is considered as suitable for use in biological-use class 1 of ISO 21887.

NOTE 2 This plywood, under these conditions, is appropriate for dry internal applications excluding any extended direct exposure to water.

3.2
tropical dry/humid conditions
conditions in which the plywood will attain an equilibrium moisture content not exceeding 18 % except for only a few weeks per year (e.g. ambient temperature of 30 °C and relative humidity of 85 %)

NOTE 1 Plywood suitable for use in these conditions is considered as suitable for use in biological-use class 1 and class 2 of ISO 21887.

NOTE 2 This plywood, under these conditions, is appropriate for protected external applications (e.g. behind cladding or under roof coverings), but is also capable of resisting weather exposure for short periods (e.g. when exposed during the construction). It is also suitable for interior situations where the service moisture condition is raised above the humidity of dry conditions.

3.3
high-humidity/exterior conditions
conditions leading to a higher equilibrium moisture content than in tropical dry/humid conditions or prolonged exposure to weather

NOTE Plywood suitable for use in these conditions, is considered as suitable for use in biological-use class 1, class 2 and 3 of ISO 21887.

3.4
structural use
load-bearing application for which predictable reliable load and/or engineering design values (characteristic values) are required

4 Materials

4.1 Veneer

The following requirements apply at the time of pressing.

4.1.1 Species

Any wood species is permitted.

Veneer shall be identified according to its species, or species group, or mechanical property.

When multiple veneers are used in parallel to create a layer, the veneers should be of similar mechanical and physical properties.

4.1.2 Thickness

Maximum thickness: 6,0 mm.

4.1.3 Quality

The quality (grade) of veneer shall be controlled in accordance with limits for the characteristics defined in Annex A.

4.1.4 Jointing

Edge joints (parallel to grain) are permitted, glued or unglued.

End joints shall be structurally made (i.e. scarfed or equivalent) and glued.

4.2 Adhesives

The adhesive, in combination with the veneer used, shall be capable of providing a bond of the performance necessary to meet the requirements for the bond type as specified in Clause 8.

5 Manufacturing of panels

The lay-up (construction) shall be controlled, including the thickness, orientation, wood species and quality of the plies as given in Annex B. Characteristics defining the quality of plies shall be defined according to Table C.1.

The manufacturing characteristics of the end products shall be controlled; these characteristics shall be defined according to Table C.2.

The grain direction of each ply shall be at 90° to at least one adjacent ply.

6 Dimensions and tolerances

Unless stated otherwise by the manufacturer, dimensions of plywood are determined in the conditions given in ISO 9426, and tolerances applied in the conditions given in ISO 1954.

Width, length and thickness shall be specified in mm.

7 General requirements

7.1 Classification by surface appearance

If required, classification by surface appearance shall be carried out in accordance with ISO 2426-2 and ISO 2426-3.

7.2 Mechanical characteristics

7.2.1 General

If required, bending strength and/or stiffness shall be determined on small test pieces in accordance with ISO 16978.

Bending strength and/or stiffness values determined according to ISO 16978 are not suitable for the determination of characteristic values or design properties for structural use, unless a correlation between these values and values determined according to 7.2.2 has been established.

7.2.2 Structural application

Characteristic values used for the determination of design properties and capacities shall be determined in accordance with ISO 16572.

7.3 Physical properties

If required, physical properties shall be determined according to ISO 16979 and ISO 9427.

8 Bonding quality

The bonding quality shall be established by testing in accordance with the requirements of ISO 12466-1 and classified in accordance with ISO 12466-2.

In addition to the testing and classification according to 7.1, the maximum size of permitted characteristics (Annex A) should take into account any adverse effects those characteristics may have on bonding quality and bond durability.

— For plywood for use in dry conditions, the bonding quality shall comply with the requirements of bonding class 1 of ISO 12466-2.

— For plywood for use in tropical dry/humid conditions, the bonding quality shall comply with the requirements of bonding class 2 of ISO 12466-2.

— For plywood for use in high-humidity/exterior conditions, the bonding quality shall comply with the requirements of bonding class 3 of ISO 12466-2.

9 Supplementary properties

For certain applications, information on some supplementary properties can be required. Some of these supplementary properties and corresponding test methods are listed in Table D.1.

If there is no International Standard available, the method used shall be fully described in the test report.

10 Conformance

Plywood conforming to this International Standard shall be manufactured under a quality system which

a) includes in-plant production and quality-control procedures;

b) includes external and internal auditing of the in-plant procedures;

c) is consistent with the requirements of ISO Guide 65.

11 Marking, identification and documentation

The marking and the accompanying information shall be placed on the product itself, on a label attached to it, on its packaging, or in the accompanying commercial documents.

Insofar as these data have not been given by other marking rules, panels, or possibly packages, which comply with this International Standard shall be marked to provide the following information:

— the reference of this International Standard;

— the name (or logo) or code of the manufacturer;

— the bonding class;

— species, species group or mechanical/structural property identification;

— reference to the quality system

and optionally

— the nominal dimensions, in millimetres;

— the quality label and the certification body, if any;

— the batch number, or the production week and year;

— supplementary properties (e.g. the formaldehyde release).

NOTE 1 Further documents, if requested, will be provided by the manufacturer.

NOTE 2 In case of cut-size panels, where the first purchaser is the user of the product and where he agrees that marking (other than on the package) is unnecessary, the marking of such individual panels in the package need not be undertaken.