INTERNATIONAL STANDARD

ISO 16893-1

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Wood-based panels — Particleboard —

Part 1: Classifications

Panneaux à base de bois — Panneaux de particules —

Partie 1: Classifications

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Foreword

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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 16893-1 was prepared by Technical Committee ISO/TC 89, *Wood-based panels*, Subcommittee SC 2, *Particle boards*.

ISO 16893 consists of the following parts, under the general title *Wood-based panels — Particleboard*:

— *Part 1: Classifications*

— *Part 2: Requirements*

Introduction

This part of ISO 16893 is a performance-based product specification covering the various types of particleboard produced worldwide. It specifies an overall classification matrix, including all major existing classes, and allows for the addition of future grades.

Wood-based panels — Particleboard —

Part 1: Classifications

1 Scope

This part of ISO 16893 specifies a classification matrix and the related mandatory tests and thickness ranges to be applied to particleboard for general purposes, furniture, load-bearing applications, and heavy-duty load-bearing applications.

NOTE Requirements for mandatory test properties are specified in ISO 16893-2.

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 3340, *Fibre building boards — Determination of sand content*

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

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

ISO 12460-1, *Wood-based panels — Determination of formaldehyde release — Part 1: Formaldehyde emission by the 1-cubic-metre chamber method*

ISO 16572, *Timber structures — Wood-based panels — Test methods for structural properties*

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*

ISO 16981, *Wood-based panels — Determination of surface soundness*

ISO 16983, *Wood-based panels — Determination of swelling in thickness after immersion in water*

ISO 16984, *Wood-based panels — Determination of tensile strength perpendicular to the plane of the panel*

ISO 16985, *Wood-based panels — Determination of dimensional changes associated with changes in relative humidity*

ISO 16987, *Wood-based panels — Determination of moisture resistance under cyclic test conditions*

ISO 16998, *Wood-based panels — Determination of moisture resistance — Boil test*

ISO 17064, *Wood-based panels — Fibreboard, particleboard and oriented strand board (OSB) — Vocabulary*

ISO 20585, *Wood-based panels — Determination of wet bending strength after immersion in water at 70 °C or 100 °C (boiling temperature)*

ISO 27528, *Wood-based panels — Determination of resistance to axial withdrawal of screws*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 17064 apply.

4 Symbols and abbreviated terms

D	dry conditions
EXT	exterior
F	fungi retardant
FN	furniture
FR	fire retardant
GP	general purpose
H	humid conditions
HLB	heavy-duty load bearing
HMR	highly moisture resistant
I	insect retardant
LB	load bearing
M	high humid conditions
MR	moisture resistant
P	particleboard
REG	regular
δ	thickness

5 Classifications

5.1 Classification matrices

An overall classification matrix, which includes all major classes available at the time of publication, is shown in Table 1. Table 1 allows for future classes to be included as they become available on international markets.

Not all products in the matrix are currently available or under development. For example there are no existing exterior condition products. Realistic property tables can only be developed for existing products. The remainder are potential future products and property tables will be developed when necessary.

Table 1 — Classification matrix for particleboard

Type	Service conditions			
	Dry conditions (regular)	**Humid conditions**	**High humid conditions**	**Exterior conditions**
P-GP	REG general purpose	MR general purpose	HMR general purpose	No existing product
Application examples	General uses, veneer grade	General uses	General uses	
P-FN	REG furniture grade	MR furniture grade	HMR furniture grade	No existing product
Application examples	Carcass, furniture, cabinets, substrate for any decorative finish	Carcass, furniture, cabinets for kitchen and bathroom, toilet partitions, substrate for any decorative finish	Cabinets for kitchen and bathroom; moulded chair and table	
P-LB	REG load bearing	MR load bearing	HMR load bearing	No existing product
Application examples	Domestic flooring, shelving, general construction	Domestic flooring, shelving, roof decking, wall sheathing, general construction	Domestic flooring, shelving, roof decking, wall sheathing, general construction	
P-HLB	REG heavy-duty load bearing	MR heavy-duty load bearing	HMR heavy-duty load bearing	No existing product
Application examples	Industrial flooring, shelving	Industrial flooring, shelving, beams	Industrial flooring, shelving	

5.2 Uses

The following terms and abbreviations have been used in the preparation of the particleboard classification matrix.

regular	REG	dry conditions only
moisture resistant	MR	humid conditions
highly moisture resistant	HMR	high humid conditions
exterior	EXT	above ground
load bearing	LB	structural or load bearing
heavy-duty load bearing	HLB	heavy structural or load bearing
general purpose	GP	applications not requiring the specific properties of furniture or load-bearing grades
furniture	FN	in furniture manufacture, cabinet making, fitments, joinery, bases for surface decorative treatment

NOTE Definitions of the terms “dry”, “humid”, “high humid”, “load bearing”, and “structural” are given in ISO 17064.

5.3 Additional classifications

If additional attribute classifications are used, such as fire retardant (FR), insect retardant (I) and fungi retardant (F), claimed performance shall be confirmed by appropriate testing.

NOTE Relevant tests and performance requirements can be specified by national standards and codes.

5.4 Structural grades

When a product is used in a load-bearing or structural application, additional information shall be available in the form of characteristic values derived from structural testing (ISO 16572), experimental test results or history of use to validate its performance under the proposed conditions.

It should be noted that engineering design methods do not provide for design for high humid service conditions. The inclusion of P-LB and P-HLB grades in the high humid section of the classification matrix (Table 1) is on the basis that performance is validated by experimental test results or history of use.

6 Tests related to each class of particleboard

6.1 Mandatory tests

The mandatory tests shown in Table 2 shall be applied to the various particleboard grades identified in Table 1. All property requirements shall be met at dispatch from factory.

Table 2 — Tests related to particleboard grades

Property	Method	P-GP	P-FN	P-LB	P-HLB
Density variation	ISO 9427	D H M	D H M	D H M	D H M
Dimensions	ISO 9426	D H M	D H M	D H M	D H M
Formaldehyde emission	ISO 12460-1	D H M	D H M	D H M	D H M
Moisture content	ISO 16979	D H M	D H M	D H M	D H M
Internal bond strength	ISO 16984	D H M	D H M	D H M	D H M
Modulus of rupture	ISO 16978	D H M	D H M	D H M	D H M
Modulus of elasticity	ISO 16978	—	D H M	D H M	D H M
Thickness swell	ISO 16983	H M	D H M	D H M	D H M
Surface soundness	ISO 16981	—	D H M	—	—
Moisture resistance	ISO 20585, ISO 16998, ISO 16987	H M	H M	H M	H M
NOTE D — dry conditions; H — humid conditions; M — high humid conditions.					

6.2 Optional tests

If information on additional properties is agreed between user and manufacturer, it shall be determined using test method(s) nominated from: ISO 3340; ISO 16985; and/or ISO 27528.

7 Thickness ranges

Specification values shall be related to the ranges of thickness, δ, shown. The specification of a particular thickness of product shall be determined by consulting the correct thickness range.

$\delta \leqslant 6$ mm

6 mm $< \delta \leqslant 13$ mm

13 mm $< \delta \leqslant 20$ mm

20 mm $< \delta \leqslant 25$ mm

25 mm $< \delta \leqslant 34$ mm

$\delta > 34$ mm

Bibliography

[1] ISO 16893-2, *Wood-based panels — Particleboard — Part 2: Requirements*