INTERNATIONAL STANDARD

ISO 16895-1

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Wood-based panels — Dry-process fibreboard —

Part 1: Classifications

Panneaux à base de bois — Panneaux de fibres obtenus par procédé à sec —

Partie 1: Classifications

Reference number
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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 16895-1 was prepared by Technical Committee ISO/TC 89, *Wood-based panels*, Subcommittee SC 1, *Fibre boards*.

ISO 16895 consists of the following parts, under the general title *Wood-based panels — Dry-process fibreboard*:

— *Part 1: Classifications*

— *Part 2: Requirements*

Wood-based panels — Dry-process fibreboard —

Part 1:
Classifications

1 Scope

This part of ISO 16895 specifies a classification matrix, related mandatory tests and thickness ranges for ultra-low-, low-, medium-, and high-density dry process fibreboard.

NOTE 1 Requirements for mandatory test properties are specified in ISO 16895-2 [1].

NOTE 2 Fibreboards are broadly divided into two groups based on the manufacturing process, namely the dry process group and the wet process group (see Clause 3). Wet process fibreboards lie outside the scope of this part of ISO 16895.

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 and the following apply.

3.1
dry process fibreboard
fibreboard with a forming line moisture content, as a mass fraction, of less than or equal to 20 % and whose primary bonding results from applied adhesives or resins

3.2
wet process fibreboard
fibreboard with a forming line moisture content, as a mass fraction, of greater than 20 % and whose primary bonding results from felting of fibres and their inherent adhesive properties

4 Symbols and abbreviated terms

D	dry conditions
DIY	do-it-yourself
E	exterior conditions
EXT	exterior
F	fungi retardant
FN	furniture
FR	fire retardant
GP	general purpose
H	humid conditions
HDF	high-density fibreboard
HMR	highly moisture resistant
I	insect retardant
LB	load bearing
LDF	low-density fibreboard
M	high humid conditions
MDF	medium-density fibreboard
MR	moisture resistant
REG	regular
UDF	ultra-low-density fibreboard
δ	thickness

5 Classification, designation and coding

5.1 General

5.1.1 Classification matrices

Overall classification matrices, which include all major classes available at the time of publication, are shown in Tables 1 to 4. Tables 1 to 4 allow for future classes to be included as they become available on international markets.

Not all products in the matrices shown in Tables 1 to 4 are currently available or under development. Realistic property tables can only be developed for existing products. The remainder are potential future products and property tables will be developed when necessary.

Density ranges given in product descriptions in 5.2 to 5.5 are a guide. Manufacturers may classify a product as a particular type if the product is within 10 % of the nominated density range and if it meets all the property requirements of the nominated type. For example, a thin fibreboard of density 830 kg/m^3 could be called MDF if it meets all property requirements of the particular MDF grade nominated.

5.1.2 Uses

The following abbreviations and terms have been used in the preparation of the dry process fibreboard classification matrices.

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
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
do-it-yourself	DIY	home projects done by residents rather than professional tradespersons

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

5.1.3 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. Relevant tests and performance requirements may be specified by national standards and regulations.

5.1.4 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 or exterior service conditions. The inclusion of the MDF-LB grade in the “high humid” section of the classification matrix (Table 3) is on the basis that performance is validated by experimental test results or history of use.

5.2 Ultra-low-density fibreboard (UDF)

UDF has a nominal density less than 550 kg/m^3 and is classified according to Table 1.

Table 1 — UDF classification matrix

UDF type	Service conditions			
	Dry	Humid	High humid	Exterior
UDF-FN	REG furniture grade	No existing product	No existing product	No existing product
Application examples	Light-duty partitions			

5.3 Low-density fibreboard (LDF)

LDF has a nominal density in the range 550 kg/m^3 to 650 kg/m^3 and is classified according to Table 2.

Table 2 — LDF classification matrix

LDF type	Service conditions			
	Dry	Humid	High humid	Exterior
LDF-GP	No existing product	MR general purpose	HMR general purpose	No existing product
Application examples		Roof underlay/sheathing, wall sheathing	Roof underlay/sheathing, wall sheathing	
LDF-FN	REG furniture grade	MR furniture grade	HMR furniture grade	No existing product
Application examples	Furniture, DIY uses, general uses, light-duty partitions	Furniture, DIY uses, general uses	Furniture, DIY uses, general uses	

5.4 Medium density fibreboard (MDF)

MDF has a nominal density in the range 650 kg/m^3 to 800 kg/m^3 and is classified according to Table 3.

Table 3 — MDF classification matrix

MDF type	Service conditions			
	Dry	Humid	High humid	Exterior
MDF-GP	REG general purpose	MR general purpose	HMR general purpose	No existing product
Application examples	DIY uses, general uses, veneer grade	DIY uses, general uses, overlay floors	DIY uses, general uses, overlay floors	
MDF-FN	REG furniture grade	MR furniture grade	HMR furniture grade	EXT fitments grade
Application examples	Carcase, furniture, cabinets, substrate for any decorative finish	Carcase, furniture, cabinets for kitchen and bathroom, substrate for any decorative finish	Carcase, furniture, cabinets for kitchen and bathroom, substrate for any decorative finish	Cladding, fascias, window joinery, decking, protected exterior construction
MDF-LB	REG load bearing	MR load bearing	HMR load bearing	No existing product
Application examples	Domestic flooring, shelving, general construction	Domestic or industrial flooring, shelving, general construction	Domestic or industrial flooring, wall and roof sheathing, beams, toilet partitions	

5.5 High-density fibreboard (HDF)

HDF has a nominal density greater than 800 kg/m^3 and is classified according to Table 4.

Table 4 — HDF classification matrix

HDF type	Service conditions			
	Dry	Humid	High humid	Exterior
HDF-GP	REG general purpose	MR general purpose	HMR general purpose	No existing product
Application examples	Composite flooring, machined articles, patterns, packaging	Composite flooring, wall panelling in public amenities, packaging	Composite flooring, wall panelling in public amenities	

6 Tests related to each grade

6.1 Mandatory tests

The mandatory tests shown in Tables 5 to 8 shall be applied to the various fibreboard grades identified in Tables 1 to 4 respectively. All property requirements shall be met at dispatch from the factory.

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.

Table 5 — Tests relating to each UDF grade

Property	Method	UDF-FN
Dimensions	ISO 9426	D
Density variation	ISO 9427	D
Formaldehyde emission	ISO 12460-1	D
Moisture content	ISO 16979	D
Internal bond strength	ISO 16984	D
Bending strength (modulus of rupture)	ISO 16978	D
NOTE D — dry conditions.		