INTERNATIONAL STANDARD

ISO 16895

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Wood-based panels — **Dry-process fibreboard**

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

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 89, Wood-based panels, Subcommittee SC 1, Fibre boards.

ISO 16895:2016

This first edition cancels and replaces ISO/16895-1:2008 and ISO-16895-2:2010, of which the product classification and specification have been technically revised.

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Wood-based panels — Dry-process fibreboard

1 Scope

This International Standard specifies a classification matrix, related mandatory tests and thickness ranges for ultra-low-, low-, medium- and high-density dry process wood-based fibreboard. It then provides the manufacturing property requirements for these types of uncoated fibreboard.

The values listed in this International Standard relate to product properties used to classify fibreboards into one of four types (UDF, LDF, MDF and HDF, see <u>Clause 3</u>), one of four grades (GP, FN, BL and LB), for use in one of four service conditions (REG, MR1, MR2, and HMR). The values are not characteristic values to be used for design purposes.

NOTE Fibreboards are broadly divided into two groups based on the manufacturing process, namely the dry process group and the wet process group (see <u>Clause 3</u>). Wet process fibreboards lie outside the scope of this International Standard.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 https://standards.itch.ai/catalog/standards/sist/8b6e7be0-81f7-48a7-b7c

ISO 9427, Wood-based panels — Determination of density 2016

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

ISO 12460-2, Wood-based panels — Determination of formaldehyde release — Part 2: Small-scale chamber method

ISO 12460-3, Wood-based panels — Determination of formaldehyde release — Part 3: Gas analysis method

ISO 12460-4, Wood-based panels — Determination of formaldehyde release — Part 4: Desiccator method

ISO 12460-5, Wood-based panels — Determination of formaldehyde release — Part 5: Perforator 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

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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 20585:2005, Wood-based panels — Determination of wet bending strength after immersion in water at 70 degrees C or 100 degrees 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

wood 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

EXT

wet process fibreboard

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

4 Symbols and abbreviated terms

For the purposes of this document, the following symbols and abbreviated terms apply.

(standards.iteh.ai)

BL building

DIY do-it-yourself ISO 16895:2016

https://standards.iteh.ai/catalog/standards/sist/8b6e7be0-81f7-48a7-b7cc-

a4badf266694/iso-16895-2016

F fungi resistant

exterior

FN furniture

FR fire retardant

GP general purpose

HDF high-density fibreboard

HMR highly moisture resistant

I insect resistant

LB load bearing

LDF low-density fibreboard

MDF medium-density fibreboard

MR1 moisture resistant — temperate

MR2 moisture resistant — tropical

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 $\underline{\text{Tables 1}}$ to $\underline{\text{4}}$. $\underline{\text{Tables 1}}$ to $\underline{\text{4}}$ allow for future classes to be included as they become available on international markets.

Not all products in the matrices shown in <u>Tables 1</u> to <u>4</u> 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 $\underline{5.2}$ to $\underline{5.5}$ are a guide. Manufacturers may classify a product as a particular type or grade if it meets all the property requirements of the nominated type or grade. For example, a thin fibreboard of density 830 kg/m³ could be called MDF if it meets all property requirements of the particular MDF grade nominated.

5.1.2 Uses

Products specified in this International Standard have the following applications.

regular (Stregdary conditions only)

moisture resistant — temperate MR1 stemperate humid conditions

moisture resistant — tropical standards iteh a catalog standards sist 8 bec 7 be 0.81 f7-48 a 7-b 7 cc-

highly moisture resistant HMR high humid conditions

exterior EXT exposed to weather conditions, above ground

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

building BL building applications requiring high dimensional stability

load bearing LB structural or load bearing

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

tradespersons

5.1.3 Additional classifications

If additional attribute classifications are used, such as fire retardant (FR), insect resistant (I) and fungi resistant (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 (see 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 (see <u>Table 3</u>) 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/m³ and is classified according to <u>Table 1</u>.

Table 1 — UDF classification matrix

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

5.3 Low-density fibreboard (LDF) TANDARD PREVIEW

LDF has a nominal density in the range 550 kg/m³ and is classified according to Table 2.

a4badf2 Service conditions LDF type Dry **Humid temperate Humid** tropical High humid **Exterior** MR1 general purpose MR2 general purpose LDF-GP No No existing Roof Roof No existing product existing Application product underlay/sheathing, underlay/sheathing, product examples wall sheathing wall sheathing REG furniture LDF-FN MR1 furniture grade MR2 furniture grade grade No No existing existing Furniture, DIY uses, product Application Furniture, DIY uses, Furniture, DIY uses, product general uses, examples general uses general uses light-duty partitions LDF-BL REG building grade MR1 building grade No No existing No existing product existing Window frames, Window frames, Application product product examples door backs door backs

Table 2 — LDF classification matrix

5.4 Medium density fibreboard (MDF)

MDF has a nominal density in the range 650 kg/m³ to 800 kg/m³ and is classified according to Table 3.

Table 3 — MDF classification matrix

MDE trops	Service conditions						
MDF type	Dry	Humid temperate	Humid tropical	High humid	Exterior		
MDF-GP	REG general purpose	MR1 general purpose	MR2 general purpose	No ovieting	No		
Application examples	DIY uses, general uses, veneer grade	DIY uses, general uses, overlay floors	DIY uses, general uses, overlay floors	No existing product	existing product		
MDF-FN	REG furniture grade	MR1 furniture/fitments grade	MR2 furniture/fitments grade	HMR furniture/fitments grade	N		
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	Fascias, window joinery, protected exterior construction	No existing product		
MDF-LB	REG load bearing	MR1 load bearing	MR2 load bearing				
Application examples Domestic floori shelving, gener construction		Domestic or industrial flooring, shelving, general construction	Domestic or industrial flooring, wall and roof sheathing, beams,	No existing product	No existing product		
MDF-BL	REG building grade	MR1 building grade	MR2 building grade	HMR building grade			
Application examples	Window frames, door linings, bea ring walls ards	Window frames, door liftings, 95:20 sitch bearing wansrds/si a4badf266694/iso-16	Window frames, Idoor linings, bearing walls, floor and roof sheathing, underlay	Window frames, door linings, bearing cc_walls, floor and roof sheathing, underlay	No existing product		

5.5 High-density fibreboard (HDF)

HDF has a nominal density greater than 800 kg/m³ and is classified according to Table 4.

Table 4 — HDF classification matrix

IIDE trumo	Service conditions						
HDF type	Dry	Humid temperate	Humid tropical	High humid	Exterior		
HDF-GP	REG general purpose	MR1 general purpose	MR2 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	No existing product			
HDF-BL	REG building grade	MR1 building grade	MR2 building grade	No ovieting	No existing product		
Application examples	Composite flooring	Composite flooring	Bearing walls	No existing product			

6 Tests related to each grade

6.1 Mandatory tests

The mandatory tests shown in <u>Tables 5</u> to <u>8</u> shall be applied to the various fibreboard grades identified in <u>Tables 1</u> to <u>4</u>, 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 the 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	REG
Density variation	ISO 9427	REG
Formaldehyde emission	ISO 12460-1	REG
Moisture content	ISO 16979	REG
Internal bond strength	ISO 16984	REG
Bending strength — Modulus of rupture (MOR)	ISO 16978	REG

Table 6 — Tests relating to each LDF grade

Property	Method	LDF-GP	LDF-FN	LDF-BL
Dimensions	ISO 9426	MR1 MR2	REG MR1 MR2	REG MR1
Density variation	ISO 9427	MR1 MR2	REG MR1 MR2	REG MR1
Formaldehyde emission	ISO 12460-1	MR1 MR2	REG MR1 MR2	REG MR1
Moisture content	ISO 16979	MR1 MR2	REG MR1 MR2	REG MR1
Internal bond strength	ISO 169 <mark>84ta</mark>	ndmrdrzitel	areg MR1 MR2	REG MR1
Bending strength — Modulus of rupture (MOR)	ISO 16978	MR1 MR2 ISO 16895:2016	REG MR1 MR2	REG MR1
Bending stiffness — htt Modulus of elasticity (MOE)	ps://standards.iteh.ai/c ISO 16978 _{a4b}	VID4 MD9	e7be0-81f7-48a7-b7cc- 016 REG MR1 MR2	REG MR1
Thickness swelling	ISO 16983	MR1 MR2	REG MR1 MR2	REG MR1
Surface soundness	ISO 16981	_	MR1 MR2	_
Moisture resistance	ISO 16987 ISO 16998 ISO 20585	MR1 MR2	MR1 MR2	_
Moisture resistance — Wet bending strength	ISO 20585	_	_	MR1

Table 7 — Tests relating to each MDF grade

Property	Method	MDF-GP	MDF-FN	MDF-BL	MDF-LB
Dimensions	ISO 9426	REG MR1 MR2	REG MR1 MR2 HMR	REG MR1 MR2 HMR	REG MR1 MR2
Density variation	ISO 9427	REG MR1 MR2	REG MR1 MR2 HMR	REG MR1 MR2 HMR	REG MR1 MR2
Formaldehyde emission	ISO 12460-1	REG MR1 MR2	REG MR1 MR2 HMR	REG MR1 MR2 HMR	REG MR1 MR2
Moisture content	ISO 16979	REG MR1 MR2	REG MR1 MR2 HMR	REG MR1 MR2 HMR	REG MR1 MR2
Internal bond strength	ISO 16984	REG MR1 MR2	REG MR1 MR2 HMR	REG MR1 MR2 HMR	REG MR1 MR2
Bending strength — Modulus of rupture (MOR)	ISO 16978	REG MR1 MR2	REG MR1 MR2 HMR	REG MR1 MR2 HMR	REG MR1 MR2