



SLOVENSKI STANDARD
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Wood-based panels - Guidance on the use of load-bearing boards in floors, walls and roofs

Holzwerkstoffe - Leitfaden für die Verwendung von tragenden Platten in Böden, Wänden und Dächern

Panneaux a base de bois - Guide pour l'utilisation des panneaux structurels en planchers, murs et toitures

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English Version

Wood-based panels - Guidance on the use of load-bearing boards in floors, walls and roofs

Panneaux à base de bois - Guide pour l'utilisation des panneaux structurels en planchers, murs et toitures

Holzwerkstoffe - Leitfaden für die Verwendung von tragenden Platten in Böden, Wänden und Dächern

This Technical Specification (CEN/TS) was approved by CEN on 14 July 2007 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (CEN/TS 12872:2007) has been prepared by Technical Committee CEN/TC 112 "Wood-based panels", the secretariat of which is held by DIN.

This document supersedes ENV 12872:2000. Compared to ENV 12872:2000 the following changes have been made:

- The deliverability has been changed from ENV to CEN/TS. No technical changes have been made.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This document gives guidance on the use of wood-based panels in structural applications as structural floor and roof decking on joists or structural wall sheathing on studs in accordance with EN 12871. It provides information on:

- inspection at site;
- transport and delivery;
- handling;
- stacking;
- storage;
- moisture content, conditioning and the effects of moisture;
- cutting and machining;
- selection;
- installation.

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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.

- <https://standards.iteh.ai/catalog/standards/sist/745c09c4-ad09-40cf-8c3d-53c66df956a3/sist-ts-cen-ts-12872-2008>
- EN 300, *Oriented Strand Boards (OSB) — Definitions, classification and specifications*
- EN 312, *Particleboards — Specifications*
- EN 622-2, *Fibreboards — Specifications — Part 2: Requirements for hardboards*
- EN 622-3, *Fibreboards — Specifications — Part 3: Requirements for medium boards*
- EN 622-5, *Fibreboards — Specifications — Part 5: Requirements for dry process boards (MDF)*
- EN 634-2, *Cement-bonded particleboards — Specifications — Part 2: Requirements for OPC bonded particleboards for use in dry, humid and external conditions*
- EN 636, *Plywood — Specifications*
- EN 12871, *Wood-based panels — Performance specifications and requirements for load bearing boards for use in floors, walls and roofs*
- EN 1995-1-1:2004, *Eurocode 5 — Design of timber structures — Part 1-1: General — Common rules and rules for buildings*

3 Terms and definitions

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

3.1 Service classes

3.1.1

service class 1

is characterised by a moisture content in the materials corresponding to a temperature of 20 °C and the relative humidity of the surrounding air only exceeding 65 % for a few weeks per year

[EN 1995-1-1:2004]

3.1.2

service class 2

is characterised by a moisture content in the materials corresponding to a temperature of 20 °C and the relative humidity of the surrounding air only exceeding 85 % for a few weeks per year

[EN 1995-1-1:2004]

3.1.3

service class 3

climatic conditions leading to higher moisture contents than in service class 2

[EN 1995-1-1:2004]

3.2

structural floor decking

assembly of wood-based panels supported on joists over which the decking spans

NOTE The characteristic of the decking is that it is supported by joists and, when subjected to load, is free to deflect between the joists.

3.3

structural wall sheathing

wood-based panel capable of providing mechanical resistance to a wall structure

3.4

structural roof decking

assembly of wood-based panels supported on joists over which the roof decking spans

NOTE The characteristic of the decking is that it is supported by joists and, when subjected to load, is free to deflect between the joists.

3.5

warm roof

roof design in which the panels supported on joists are placed below the insulation

NOTE The panels are considered to be under conditions corresponding to service class 1.

3.6

cold roof

roof design in which the panels and some of the supporting joists are placed above the insulation

NOTE The panels are considered to be under conditions corresponding to service class 2.

3.7

sub floor

structural panel meant to be covered by overlays

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4 Performance requirements

The requirements to ensure sufficient margin of safety against failure, damage or excessive deflection are given in EN 12871.

5 Inspection at site

The following should be checked based on the marking of the panel and/or the manufacturer's documentation and/or the designers specification:

- grade or class according to EN specification standard;
- thickness;
- service class;
- biological durability hazard class;
- surface (sanded or un-sanded);
- edges (tongue and groove or other type of profile);
- joist or stud spacing;
- load category;
- main load-bearing direction for OSB, plywood and solid wood panels only.

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6 Transport and delivery

Panels should be adequately protected by a waterproof covering during transportation. Edges should be well protected from rain or traffic spray. Edge protection should also be provided to avoid damage by ropes, straps or other banding. This applies particularly to profiled panels such as tongued and grooved panels.

Panels should be stacked properly to avoid sagging or other distortion, see Clause 8.

If packing includes banding or strapping this should be removed as soon as possible after delivery to prevent any permanent deformation of the panels. When packs are delivered with edge or face protection panels, these should be left in place until the pack is required for use.

7 Handling

When lifting, moving and stacking panels, edge protection should also be provided to avoid damage by lifting ropes and/or forklifts.

When handling pre-finished panels, it is essential to avoid damage or dirt on the finished surfaces.

Pre-finished panels should always be lifted from a stack and never slid.

8 Stacking

Panels should be stacked flat on a level surface with all four edges flush. The ideal base is a close boarded or slatted pallet.

If this is not possible the panels should be carefully stacked on battens of equal thickness at centres not exceeding 600 mm as shown in Figure 1.

Intermediate battens are recommended every 15 to 20 panels to allow through ventilation, they shall be placed directly above those below. The battens should be placed parallel to the short edges across the full width. Overhang of the panels at the ends of the stack should not exceed 150 mm. Where stacks are placed on top of one another, the bearers should line up vertically to prevent distortion.

The top of the stack should be covered.

Stacking on edge should be avoided whenever possible. Where space will only permit edge stacking then the edges should not be permitted to come into direct contact with the floor to avoid possible moisture pick-up or damage to the edges. Panels should not be leant against walls but supported by a braced, purpose made rack using thick (> 18 mm) base and back panels (see Figure 2).

In case of tongued and grooved panels, edge stacking on the tongue should be avoided.

Dimensions in millimetres

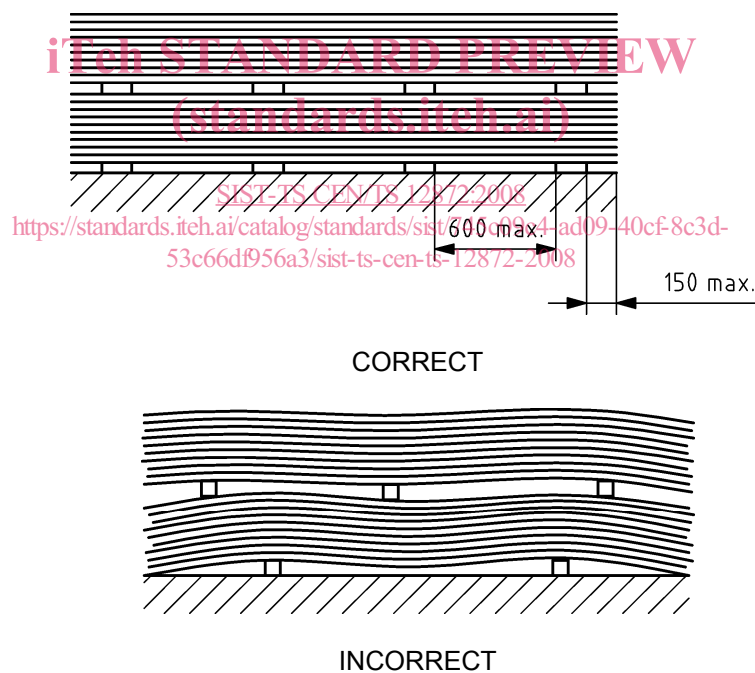


Figure 1 — Panel storage

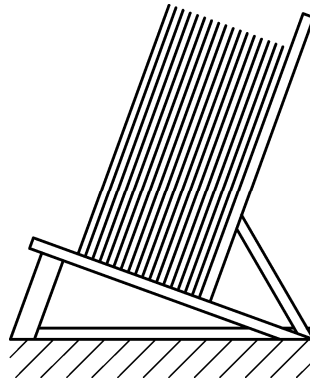


Figure 2 — Correct method of edge stacking

9 Storage

Panels should preferably be stored in an enclosed dry building. Where temporary storage outside cannot be avoided, then stacks should be covered with waterproof but vapour permeable sheeting, keeping all panels on raised bearers to prevent contact with the ground, water or vegetation. Any protective wrapping should be kept in place as long as possible prior to conditioning for use.

10 Moisture content, conditioning and the effects of moisture

10.1 Moisture content

Moisture content of wood-based panel products varies in accordance with the moisture condition of the surrounding environment, and is affected primarily by the relative humidity (rh) of the surrounding air. It moves towards and maintains an equilibrium moisture content (emc) i.e. one that is in equilibrium with the surrounding air. This means that moisture contents in wood-based panel products will vary depending on the situation of use and with time as temperature and humidity conditions change.

Although it is not possible to give precise levels, the figures in Table 1 give a general indication of the range of moisture contents in wood-based panels in various conditions.

Table 1 — Equilibrium moisture content and conditions of use

Service class	Normal range of relative humidity (rh) at 20 °C	Approximate equilibrium moisture content (emc)	Conditions of use
1	30 % to 65 %	$4 \% \leq emc \leq 11 \%$	Dry installations, no risk of wetting in service
2	65 % to 85 %	$11 \% \leq emc \leq 17 \%$	Risk of wetting during installation and risk of occasional wetting in service
3	> 85 %	$emc > 17 \%$	Risk of regular wetting in service

The moisture content of panels when they leave the factory can be as low as 2 % depending on the type of panel.

This indicates that unconditioned newly manufactured panels can increase in moisture content when installed in a building under construction and subsequently change in moisture content as the building is occupied, heated and dries out, with the consequence of dimensional changes, see ranges given in 10.2.

10.2 Dimensional movement

Timber and wood-based panels expand on taking up moisture from the surrounding air, and shrink on losing moisture. Excessive changes in moisture content may therefore lead to unacceptable dimensional changes which may result in bowing, buckling or open joints between panels.

Panels should be protected from rain, dampness and accidental wetting and prior to fixing be conditioned to the moisture content corresponding to the moisture conditions of end use.

Problems which may occur if insufficient care is taken with protection or conditioning include edge swelling due to moisture ingress at unprotected edges, localised swelling due to moisture pick-up from adjacent materials which have a higher moisture content, e.g. timber joists, and general expansion causing bowing between supports or restraints. Any increase in moisture content will cause slight expansion in the panel.

For guidance purposes it may be assumed that a 1 % change in panel moisture content will cause a dimensional change in panel width, length and thickness as given in Table 2.

The dimensional movement of specific products can differ from those given in Table 2 and reference should be made to the manufacturers, where this is critical.

Table 2 – Dimensional change for a 1 % change in panel moisture content

Type of panel	Specification	Dimensional change at 1 % change in panel moisture content		
		Length %	Width %	Thickness %
Particleboards	EN 312, P4, P6	0,05	0,05	0,7
	EN 312, P5, P7	0,03	0,04	0,5
OSB	EN 300, OSB/2	0,03	0,04	0,7
	EN 300, OSB/3, OSB/4	0,02	0,03	0,5
Fibreboards	EN 622-2 (Hard)	0,03	0,03	0,5
	EN 622-3 (Medium)	0,04	0,04	0,7
	EN 622-5 (MDF)	0,05	0,05	0,7
Plywood	EN 636 (Spruce or pine)	0,015	0,015	0,2
	EN 636 (Beech)	0,025	0,025	0,3
Cement-bonded particle-boards	EN 634-2	0,05	0,05	0,04

10.3 Conditioning

To reduce dimensional changes the panels should be conditioned in the service class for the intended end use by loose laying (for example on floors) or stacking with spacers as appropriate (see Figure 3).

The length of time allowed for conditioning will vary depending on the panel and the likely condition of use. A minimum period of one week is recommended but a longer period can be necessary.