
**Lesene konstrukcije - Montažne stene, stropni in strešni elementi - 1. del:
Zahteve za izdelek**

Timber structures - Prefabricated wall, floor and roof elements - Part 1: Product requirements

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English Version

Timber structures - Prefabricated wall, floor and roof elements - Part 1: Product requirements

Structures en bois - Éléments de mur, de plancher et de
toiture préfabriqués - Partie 1 : Exigences relatives au
produit

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COMITÉ EUROPÉEN DE NORMALISATION
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Contents

Page

Foreword.....	4
1 Scope	4
2 Normative references	4
3 Terms and definitions	7
4 Symbols	9
5 Product performance requirements.....	9
5.1 General.....	9
5.2 Strength and stiffness.....	9
5.3 Bond line integrity and shear strength.....	10
5.4 Thermal insulation properties	10
5.5 Vapour barrier properties	11
5.6 Fire properties.....	11
5.6.1 Reaction to fire properties	11
5.6.2 Resistance to fire properties	11
5.7 Emission of dangerous substances	11
5.7.1 General.....	11
5.7.2 Formaldehyde emission.....	11
5.8 Impact	12
5.9 Acoustical properties	12
5.9.1 Airborne sound insulation	12
5.9.2 Impact sound insulation	12
5.10 Durability	12
5.11 Tolerances	13
6 Material requirements	14
6.1 Framing members.....	14
6.1.1 Timber	14
6.1.2 Finger jointed timber	14
6.1.3 Glued laminated timber.....	14
6.1.4 Laminated veneer lumber (LVL).....	14
6.1.5 Structural, prefabricated beams.....	14
6.2 Panel materials.....	15
6.2.1 Wood-based panels.....	15
6.2.2 Gypsum bonded boards.....	15
6.4 Mechanical fasteners and connectors.....	15
6.5 Thermal insulation materials and systems.....	15
6.6 Vapour barriers	15
7 Manufacturing requirements	16
7.1 General.....	16
7.1.1 Staff.....	16
7.1.2 Build-up of the element.....	16
7.2 Premises	16
7.2.1 General.....	16
7.2.2 Storage.....	16
7.2.3 Additional requirements for production of adhesively bonded elements	16
7.3 Equipment	16
7.4 Materials	17
7.4.1 Moisture content of timber and glulam	17
7.4.2 Insulation products.....	17
7.5 Production	17

7.5.1	Tolerances of elements.....	17
7.5.2	Assembly of framework and panels.....	17
7.5.3	Tolerances of spacings and edge distances of mechanical fasteners.....	17
7.5.4	Assembling by bonding.....	17
7.6	Product documents.....	18
8	Evaluation of conformity.....	18
8.1	General.....	18
8.2	Initial type testing and assessment.....	18
8.3	Factory production control.....	19
8.3.1	General.....	19
8.3.2	Reception control.....	19
8.3.3	Daily control.....	20
8.3.4	Bonding record.....	20
8.3.5	Weekly control.....	20
8.3.6	Regular control.....	21
8.3.7	Non conformity.....	21
9	Marking and labelling.....	21
Annex A	(normative) Bond line shear strength test for adhesively fixed joist-panel bonds.....	22
A.1	General.....	22
A.2	Glue line shear test.....	22
A.2.1	Principle.....	22
A.2.2	Testing machine.....	22
A.3	Manufacture of specimen.....	22
A.4	Procedure.....	22
A.5	Results.....	23
A.6	Test report.....	23
Annex B	(informative) Guidelines on bonding.....	26
B.1	Bonding guidelines.....	26
B.2	Cramping pressure.....	26
Annex C	(normative) Bond strength evaluation.....	27
C.1	Calculation.....	27
C.2	Control chart.....	27
C.3	Conformity.....	27
Annex ZA	(informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Directive.....	28
ZA.1	Scope and relevant characteristics.....	28
ZA.2	Procedure for attestation of conformity of prefabricated wall, floor and roof elements.....	29
ZA.2.1	Systems of attestation of conformity.....	29
ZA.2.2	Elements under attestation of conformity system 1 (adhesively bonded elements and mechanically fixed elements in reaction to fire Classes (A1 – C) ^a).....	30
ZA.2.3	Elements under attestation of conformity system 2+ (mechanically fixed elements).....	32
ZA.2.4	EC Certificate and Declaration of conformity.....	33
ZA.3	CE marking and labelling.....	35

oSIST prEN 14732-1:2006

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Foreword

This document (prEN 14732-1:2006) has been prepared by Technical Committee CEN/TC 124 "Timber structures", the secretariat of which is held by SFS.

This document is currently submitted to the second CEN Enquiry.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative annex ZA, which is an integral part of this document.

1 Scope

This standard specifies performance requirements for prefabricated structural (load-bearing) wall, floor and roof elements consisting of framing members of wood and/or wood based materials and one or both sided panels or boards connected to the joists by suitable adhesive bonding or mechanical fixing. The cavities of the elements may be filled entirely or partially with insulating materials. The exterior faces of the panels or boards may also be covered with insulation material.

This standard applies to elements which require but do not include an external finishing layer when installed, such as brickwork or a roof covering. It does not apply to elements incorporating doors or windows.

This standard specifies requirements for the components and materials and gives minimum requirements for the production of such elements that experience has shown will lead to elements fulfilling the requirements.

The standard also covers methods to carry out the evaluation of conformity and marking.

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.

EN 300, *Oriented strand boards (OSB) — Definitions, classification and specifications.*

EN 301, *Adhesives, phenolic and aminoplastic, for load bearing structures — Classification and performance requirements.*

EN 312, *Particleboards - Specifications*

EN 335-1, *Durability of wood and wood-based products — Natural durability of solid wood — Part 2: Guide to natural durability and treatability of selected wood species of importance in Europe.*

EN 335-2, *Durability of wood and wood-based products — Definition of hazard classes of biological attack — Part 2: Application to solid wood.*

EN 335-3, *Durability of wood and wood-based products — Definition of hazard classes of biological attack — Part 3: Application to wood-based panels.*

- EN 336, *Structural timber — Coniferous and poplar — Permissible deviations.*
- EN 350-1, *Durability of wood and wood-based products — Natural durability of solid wood — Part 1: Guide to the principles of testing and classification of the natural durability of wood.*
- EN 350-2, *Durability of wood and wood-based products — Natural durability of solid wood — Part 2: Guide to natural durability and treatability of selected wood species of importance in Europe.*
- EN 385, *Finger jointed structural timber — Performance requirements and minimum production requirements.*
- EN 386, *Glued laminated timber — Performance requirements and minimum production requirements.*
- EN 390, *Glued laminated timber — Sizes — Permissible deviations.*
- EN 520, *Gypsum plasterboards — Specifications — Test methods.*
- EN 594, *Timber structures — Test methods — Racking strength and stiffness of timber frame panels.*
- EN 596, *Timber structures — Test methods — Soft body impact test of timber framed walls.*
- EN 622-2, *Fibreboards — Specifications — Part 2: Requirements for hardboards.*
- EN 622-3, *Fibreboards — Specifications — Part 3: Requirements for medium boards.*
- EN 622-4, *Fibreboards — Specifications - Part 4: Requirements for softboards*
- EN 622-5, *Fibreboards — Specifications — Part 5: Requirements for dry process boards (MDF).*
- EN 636, *Plywood — Specifications.*
- EN 717-1, *Wood-based panels — Determination of formaldehyde release — Part 1: Formaldehyde emission by the chamber method.*
- EN 1195, *Timber structures — Test methods — Performance of structural floor decking.* EN 1365-1, *Fire resistance tests for loadbearing elements — Part 1: Walls.*
- EN 1365-2, *Fire resistance tests for loadbearing elements — Part 2: Floors and roofs.*
- EN 1931, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of water vapour transmission properties.*
- EN 1990, *Eurocode: Basis of design.*
- EN 1991, *Eurocode 1: Actions on structures.*
- EN 1995-1-1:2004, *Eurocode 5: Design of timber structures — Part 1-1: General rules and rules for buildings.*
- EN 1995-1-2, *Eurocode 5: Design of timber structures — Part 1-2: General rules — Structural fire design.*
- EN 12086, *Thermal insulating products for building applications — Determination of water vapour transmission properties.*
- EN 12183-2, *Moisture content of a piece of sawn timber — Part 2: Estimation by electrical resistance method.*
- EN 12369-1, *Wood-based panels — Characteristic values for structural design — Part 1: OSB, particleboards and fibreboards.*
- EN 12524, *Building materials and products — Hygrothermal properties — Tabulated design values.*

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prEN 14732-1:2006 (E)

EN 12871, *Wood-based panels — Performance specifications and requirements for load bearing boards for use in floors, walls and roofs.*

EN 12872, *Wood-based panels — Guidance on the use of load-bearing boards in floors, walls and roofs.*

EN 12939, *Thermal performance of building materials and products — Determination of thermal resistance by means of guarded hot plate and heat flow meter methods — Thick products of high and medium thermal resistance.*

EN 13162, *Thermal insulation products for buildings — Factory made mineral wool (MW) products — Specification.*

EN 13163, *Thermal insulation products for buildings — Factory made products of expanded polystyrene foam — Specification.*

EN 13164, *Thermal insulation products for buildings — Factory made products of extruded polystyrene foam — Specification.*

EN 13165, *Thermal insulation products for buildings — Factory made products of rigid polyurethane foam — Specification.*

EN 13166, *Thermal insulation products for buildings — Factory made products from phenolic foam — Specification.*

EN 13167, *Thermal insulation products for buildings — Factory made cellular glass products — Specification.*

EN 13168, *Thermal insulation products for buildings — Factory made wood wool products — Specification.*

EN 13169, *Thermal insulation products for buildings — Factory made products of expanded perlite — Specification.*

EN 13170, *Thermal insulation products for buildings — Factory made products of cork — Specification.*

EN 13171, *Thermal insulation products for buildings — Factory made wood fibre products — Specification.*

EN 13353, *Solid wood panels (SWP) — Requirements.*

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests.*

EN 13501-2, *Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation services*

EN 13823, *Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item.* (standards.itech.ai)

EN 13986, *Wood-based panels for use in construction — Characteristics, evaluation of conformity and marking.*

EN 14080:2005, *Timber structures — Glued laminated timber — Requirements.*

EN 14081-1, *Timber structures — Strength graded structural timber with rectangular cross section — Part 1: General requirements.*

EN 14279, *Laminated Veneer Lumber (LVL) — Definitions, classification and requirements*

EN 14374, *Timber structures — Structural laminated Veneer Lumber — Requirements.*

EN 14545, *Timber structures — Connectors — Requirements.*

EN 14592, *Timber structures — Fasteners — Requirements.*

EN 15288, *Structural timber – Structural timber preservative treated against biological attack.*

EN ISO 717-1, *Acoustics — Rating of sound insulation in buildings and of building elements — Part 1: Airborne sound insulation.*

EN ISO 717-2, *Acoustics — Rating of sound insulation in buildings and of building elements — Part 2: Impact sound insulation.*

EN ISO 12572, *Hygrothermal performance of building materials and products — Determination of water vapour transmission properties.*

EN ISO 9001, *Quality management systems — Requirements.*

ISO 140-3, *Acoustics — Measurement of sound insulation in buildings and of building elements — Part 3: Laboratory measurements of airborne sound insulation of building elements.*

ISO 140-6, *Acoustics — Measurement of sound insulation in buildings and of building elements — Part 6: Laboratory measurements of impact sound insulation of floors.*

ETAG 011, *Light Composite Wood-based Beams and Columns.*

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply:

3.1

batch

all elements produced according to the same specifications in one shift

3.2

bond shear strength

minimum bond shear strength value of a rigid joist-panel joint determined from the results of tests carried out according to Annex A

3.3

element

prefabricated load bearing member built-up of different structural and non-structural components, whereby the components are jointed semi-rigidly (mechanical fixing) or rigidly (adhesive bonding)

NOTE An element may be used for exterior and interior walls, roofs and floors and can have openings (for windows, doors, etc.). Examples of typical build-ups are given in Figure 1.

3.4

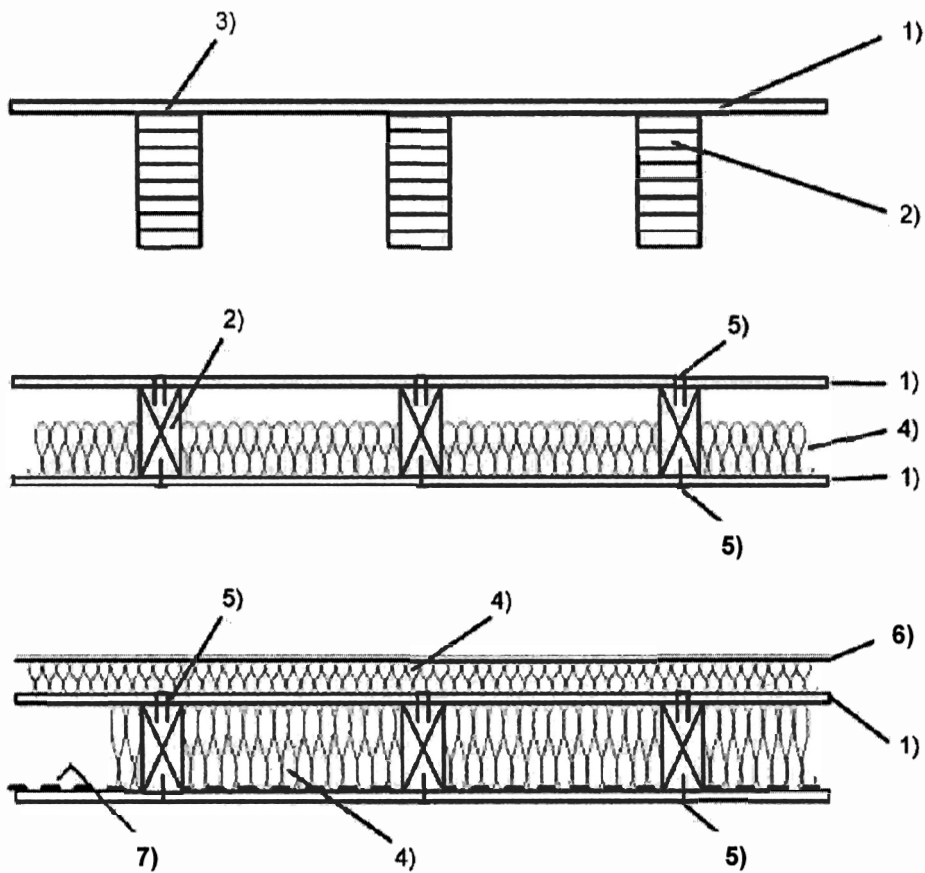
non-structural component

any material permanently installed/ fixed to the element not contributing to the structural compound action but contributing e.g. to durability, thermal and sound insulation and fire resistance

3.5

structural component

wood-based joists, wood-based panels and panels from gypsum plaster board contributing to the structural composite action of an element (see below)



- 1 panel product, e.g. plywood, OSB etc.
- 2 framing member, e.g. wood, plywood or wood based product
- 3 adhesive bonded joint
- 4 insulation
- 5 fastener (e.g. nail, staple or screw)
- 6 exterior non-structural cladding
- 7 vapour barrier

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Figure 1 — Examples of typical element build-up
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4 Symbols

A	sheared area, in square millimetres
B	width of floor or roof element
D	diagonal length of wall, floor or roof elements
F_u	ultimate load, in newtons
H	height of wall element
L	length of wall, floor or roof element
O_1, O_2, O_3	opening dimensions of wall, floor or roof elements
T	(cross-sectional) thickness of element
b	width of framing member
f_v	shear strength
h	depth of framing member
l	length of sheared bond line, parallel to applied force
t_1, t_2	thicknesses of panels 1 and 2
t_{r1}, t_{r2}	thicknesses of glued-on reinforcement panels of compression shear specimen
w	width of panel of compression shear specimen

5 Product performance requirements

5.1 General

Elements shall be designed and produced in such a way that they will, during their intended life, with appropriate degrees of reliability:

- sustain all actions and influences likely to occur during execution and use, and
- remain fit for the use for which they are required.

These general requirements shall be considered satisfied if the requirements of this Clause 5, the requirements for the materials in Clause 6 and the minimum production requirements in Clause 7 are met.

5.2 Strength and stiffness

The structural characteristics of the elements shall be declared as either:

- 1) the geometrical and material properties of the components used according to Clause 6, sufficient to calculate the strength and stiffness of the structural elements according to methods valid in the country of use of the element (e.g. EN 1990, EN 1991 and EN 1995-1-1:2004 taking into account any National Application Documents); or

- 2) the load-carrying capacity found by testing of representative elements for the relevant loads according to the principles of EN 1990 and EN 408 or EN 594.
- 3) a reference to design documents produced (and held) by the manufacturer according to methods valid in the country of use of the element (e.g. EN 1990, EN 1991 and EN 1995-1-1:2004 taking into account any National Application Documents); or
- 4) a reference to the design documents produced by another party, together with information on the destination works and the party responsible for the design.

NOTE For the initial type testing or assessment according to the method of declaration, see Clause 8 and, for marking requirements, see Clauses 9 and ZA.3.

5.3 Bond line integrity and shear strength

For adhesive bonded elements the integrity of the bond line connecting joists and panel materials shall be determined by tests as specified in Annex A.

Procedures alternative to the standardised procedure (for example, unconditioned or block shear testing) may be used for the determination of the bond properties, provided that a statistically significant relationship can be established between the test results from the alternative method and the results obtained according to Annex A.

The lower 5-percentile of the bond shear strengths of the last 30 specimens of each production line determined according to Annex C shall be equal or greater than the characteristic value (specification limit) determined in the initial type testing. The specification limit shall at least comply with the minimum characteristic bond shear strength values specified in Table 1. No individual bond shear strength value shall be more than 10% below the minimum characteristic bond shear strength value given in Table 1.

In case of panel and/or joist types not specified in Table 1, the number of specimens for determination of the specification limit in the initial type testing shall be at least 60 (2 specimens taken from at least 30 elements). In no case the characteristic value stated as specification limit for panel and/or joist types not specified in Table 1 shall be lower than the characteristic planar shear strength of the respective panel product.

Table 1 — Minimum characteristic bond shear strengths for glued joist/panel joints depending on panel type (joists: glulam or solid timber)

Panel type	Characteristic bond shear strength f_v in N/mm ²
Oriented strand board acc. to EN 300	2.0
Particle board acc. to EN 312	2.5
Solid wood panels acc. to EN 13353	5
Plywood acc. to EN 636	
Structural laminated veneer lumber acc. to EN 14279	

5.4 Thermal insulation properties

Where subject to regulatory requirements or where the manufacturer wishes to declare the thermal insulation properties of elements, the properties shall be declared as either:

- 1) the geometrical and thermal properties of the components used according to Clause 6 sufficient to calculate the thermal resistance (thermal properties may be product data from appropriate tests, product data supplied by the product supplier or reference data from EN 12524), or