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BSI Standards Publication

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

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National foreword

This Published Document is the UK implementation of CEN/TR 12872:2014. It supersedes DD CEN/TS 12872:2007 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/541, Wood based panels.

A list of organizations represented on this committee can be obtained on request to its secretary.

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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 Report was approved by CEN on 11 November 2014. It has been drawn up by the Technical Committee CEN/TC 112.

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Foreword

This document (CEN/TR 12872:2014) has been prepared by Technical Committee CEN/TC 112 “Wood-based panels”, the secretariat of which is held by DIN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes CEN/TS 12872:2007.

Compared to CEN/TS 12872:2007 the following changes have been made:

a) deliverability changed from CEN/TS to CEN/TR;

b) references to requirements according to EN 12871 deleted after transformation of EN 12871 into a test method standard;

c) in 10.2, Table 2, values of dimensional changes depending on moisture content for multilayer solid wood panels added;

d) presentation of wall and roof constructions in Clauses 14 and 15 indicated as basic examples;

e) recommended expansion gaps for walls and roofs in Clauses 14 and 15 reduced.

1 Scope

This Technical Report 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.

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.

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 - Determination of performance characteristics for load bearing panels for use in floors, roofs and walls*

EN 13353, *Solid wood panels (SWP) - Requirements*

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, 2.3.1.3]

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, 2.3.1.3]

3.1.3
service class 3
climatic conditions leading to higher moisture contents than in service class 2

[EN 1995-1-1:2004, 2.3.1.3]

3.2
structural floor decking
assembly of wood-based panels supported on joists over which the decking spans

Note 1 to entry: The characteristic of the floor 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 1 to entry: 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 1 to entry: 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 1 to entry: 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

4 Information on product performance

Information on product performance based on EN 13986 will be made available by the manufacturer or supplier.

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;

— suitability for biological durability use 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.

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.

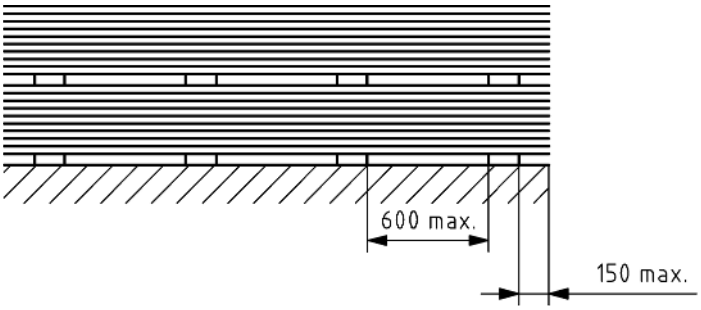
Intermediate battens are recommended every 15 to 20 panels to allow through ventilation, they shall be placed directly above those below. The battens should be placed parallel to the short edges across the full width. Overhang of the panels at the ends of the stack should not exceed 150 mm. Where stacks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



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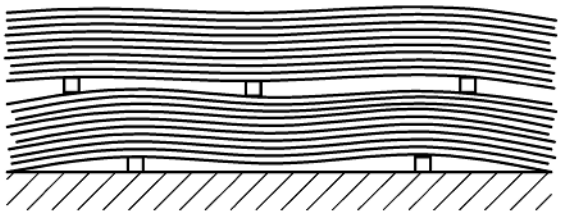


INCORRECT

Figure 1 — Panel storage

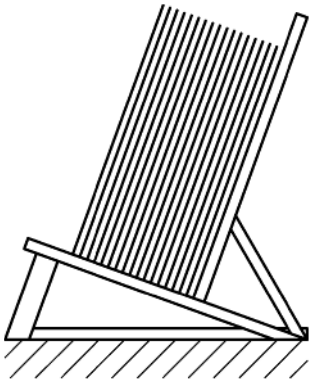


Figure 2 — Correct method of edge stacking

9 Storage

Wood based panels can be susceptible to damage from high levels of moisture and measures should be taken to prevent such elevated levels of moisture during transport and subsequent storage, in particular protect from rain or standing water.

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 % ≤ emc ≤ 11 %	Dry installations, no risk of wetting in service
2	65 % to 85 %	11 % ≤ emc ≤ 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.

NOTE The allowable moisture content range is stated in the respective product standard.

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
Solid wood panels (multi-layer)	EN 13353	0,02	0,035	0,2

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.

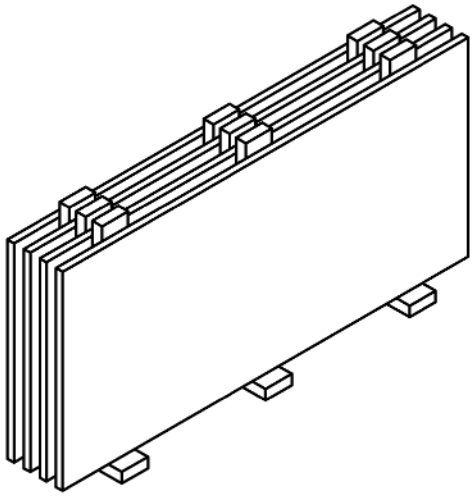


Figure 3 — Panels stacked with battens

11 Cutting and machining

11.1 General

Wood-based panels can be sawn, routed, spindle-moulded or drilled. When cutting wood based panels it is important to pay attention to normal good practice e.g. sharp cutters, adequate support close to saws and cutters, elimination of machine vibration, correct allowance for saw kerf.

The rate of feed should generally be slower than that used for solid wood and cutting tools should be kept sharp.

The quality of the machined surface decreases with increasing moisture content. When a very close tolerance fir is needed, panels should be cut to size after conditioning to the moisture content appropriate to the end use.

11.2 Cutting with hand tools

All panel types can be cut to size with conventional hand tools, however, quicker and more consistent results can be achieved using either portable or fixed power tools.

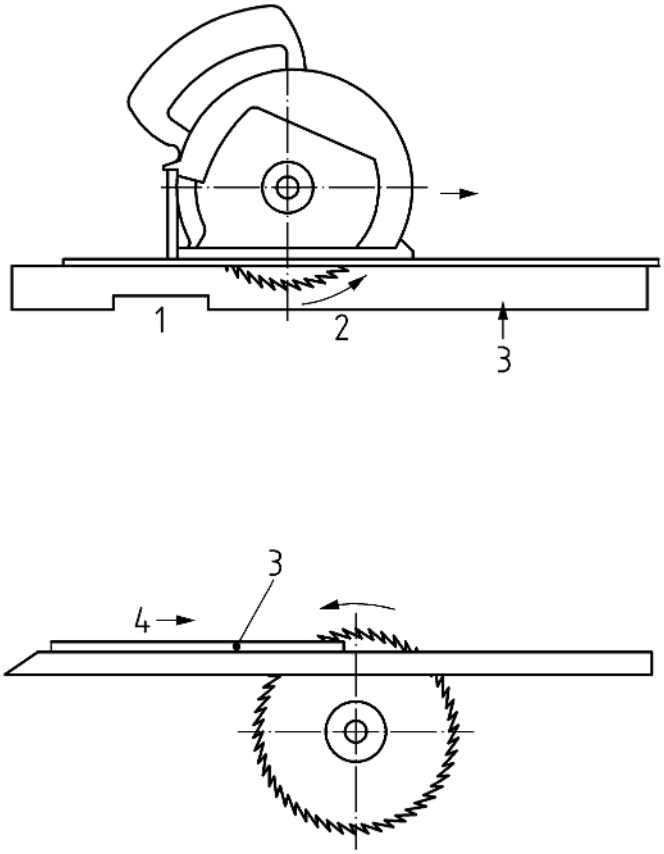
11.3 Machining with power tools

For fibreboards and particleboards saw blades with cross cutting teeth should be used.

Circular saw blades should be set as low as possible to prevent chipping and scoring as the panel passes the rear of the saw blade.

If the feed speed is too slow, cutters will have insufficient chip load and the tip of the cutter will wear rapidly. Too great a feed speed will result in rough fibrous cut edges. Control of the panel during machining is important, panels should be properly supported and pressed down firmly against the cutting table and guides to avoid vibration.

The panel should be placed against the saw blades such that the upper or decorative face is cut first (see Figure 4).



Key

1 support
2 blade rotation
3 upper or decorated face
4 feed

Figure 4 — Sawing wood based panels

11.4 Drilling

Drill bits designed for drilling wood should be used.

12 Fixing

Flat headed annular grooved or ringshank or other improved nails and screws having superior holding power should be used.

Panels should be fixed using corrosion resistant fasteners in service class 2. Corrosion resistant materials include galvanised or sheradised steel, austenitic stainless steel, phosphor bronze and silicon bronze.

Minimum nail or screw length should be 50 mm or 2 times the panel thickness, whichever is greater. The minimum nail or screw diameter should be 0,16 times the panel thickness.

When fixing panels to metal supporting framework, self- tapping screws or other appropriate fasteners should be used in accordance with manufacturer's instructions.

When the fixing forms are essential part of the design, the characteristic load-carrying capacities and deformation characteristics for design of joints can be found by calculation according to EN 1995-1-1.

Screws should be countersunk, self-drilling and self-tapping types.

Nails should be punched and screws should be countersunk by 2 mm to 3 mm below the surface. Where floor coverings are used it is preferable not to fill the punch holes.

The frequency and pattern of nailing to joists and noggings or studs should be as given in Table 3, unless structural calculations require otherwise. To avoid tear-out at panel edges, fixings should not be inserted closer to the edges than the minimum distances given in Table 3, and as shown in Figure 8 (floors), Figure 11 (walls) and Figure 20 (roofs).

Table 3 — Maximum spacings and minimum edge distance of fixings

Maximum fastener spacings mm		Minimum edge distance mm
Centres at the perimeter of the panels	Centres of the intermediate supporting joists and noggings or studs of panels	
150	300	8

Some wood-based panels may need to be pre-drilled or fixed with self-drilling screws to avoid splitting.

Where manufacturer's instructions are supplied with the panels, their recommendations shall be followed.

After fixing, panel surfaces should be protected from moisture change damage, grit and debris during building works, using building paper/polythene.

13 Floors — Selection and installation

13.1 Selection (specification)

The selection of panels for structural floor decking on joists depends on the required load-bearing characteristics, the centre to centre span, mechanical characteristics and the service class of the designer’s specification. Typical floor types are:

— floors that act as structural diaphragms;

— floors where the decking does not provide a diaphragm action.

The selection can be made based on the manufacturer’s documentation and instructions.

Wood-based panels should only be used for floors assigned to service classes 1 or 2.

13.2 Type of floor covering related to wood-based floor panels

Sanded and some un-sanded structural floor panels with a smooth and solid surface are suitable for use with many types of floor coverings, especially for thin coverings e.g. PVC, vinyl, carpet.

Some un-sanded structural floor panels which have a rough or texture surface which shows the grain of the wood fibre (plywood) or the shape of wood strands (OSB) are not suitable for thin floor coverings, but only for “thick” floor coverings (overlays) as e.g. parquet, thin panel sheets, tiles.

All floor coverings should be laid according to the manufacturer's recommendations.

13.3 Installation

13.3.1 Preparation of structure

Support joists, noggings and edge supports should be laid to line and level.

Timber and wood-based components and structural elements should not be unnecessarily exposed to climatic conditions more severe than those to be encountered in the finished structure.

Before installation of the panels, the timber joists should be dried as near as practicable to the moisture content appropriate to its climatic condition in the completed structure.

In some types of floor structures moisture can migrate from timber and other materials (e.g. concrete). This should be avoided.

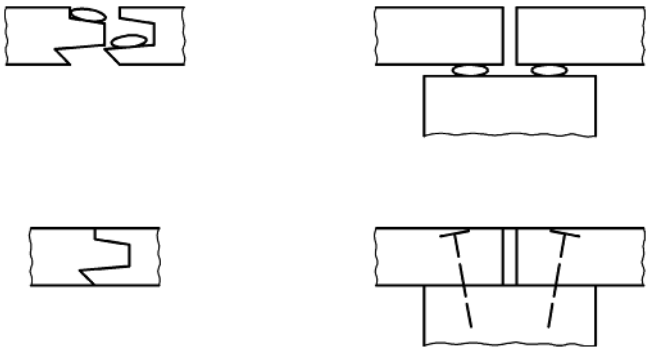
Access traps or ducting and the necessary noggings and edge supports should be pre-planned.

Joists and nogging should provide a minimum bearing for panel edges of 18 mm.

13.3.2 Edge profile

Panels can be square edged, or profiled. Square edged panels need gaps to be provided between panels, and support to be provided by joists or noggings at all sides. Profiled sides usually have a matching tongue and groove which removes the need to provide additional supports to the long edges.

Examples of edge profiles are given in Figure 5, for glue joints see 13.3.4.



a) Tongued and grooved, glued **b) Square edged and glued**

Figure 5 — Joints

13.3.3 Expansion gaps

To take into account any increase of panel moisture content it is necessary to incorporate an expansion gap.

For tongued and grooved panels a gap should be provided around the perimeter of a floor to upstands or abutting construction to allow for possible expansion of the decking. This should be a minimum of 10 mm at the perimeter or 1,5 mm per metre run of panel, whichever is the greater. The gaps should either be left open and covered by a skirting panel, or filed with a compressible strip such as cork or softboard. Larger floors, above 10 m in length, may also need intermediate expansion gaps. All tongued and grooved panels shall be firmly fixed down to avoid buckling.

A 1 mm gap should also be left between the edges of square edged panels.

13.3.4 Gluing

All joints in tongued and grooved panelled floors should be glued with a suitable adhesive (see Figure 5). Panels, whether tongue and groove profiled or square edged, can also be glued to the supporting timber joists to further improve the properties of the floor.

13.3.5 Laying of wood-based panels for flooring

Tongued and grooved panels should be laid across the joists with both short edges supported on a joist, or other edge support (see Figure 6).

Square edged panels should be continuously supported along all edges; short edges should be butted at joists and long edges supported by noggings (see Figure 7).

Where the panel properties vary in the panel direction (e.g. OSB) it is important that the panels are installed in the direction assumed by the design.

It is advisable that all floor perimeter and panel cut edges are supported on joists or noggings.

Panels should have a minimum bearing of 18 mm on joists and noggings (see Figure 8).

The short edge joints of panels of both edge types should be staggered (see Figures 6 and 7).

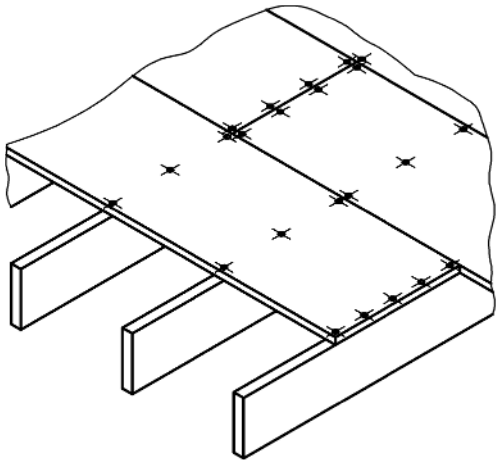


Figure 6 — Tongued and grooved structural decking laid across the joists with short edges supported on joists

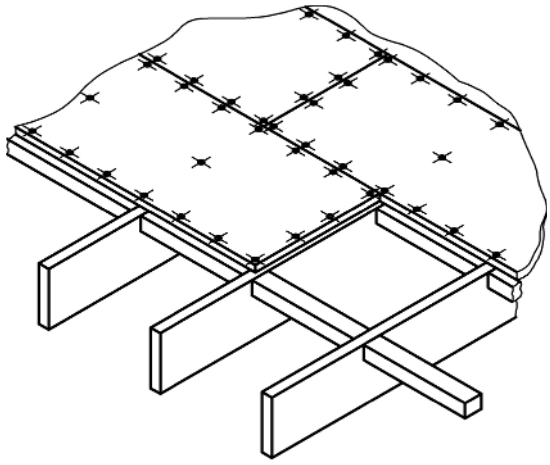
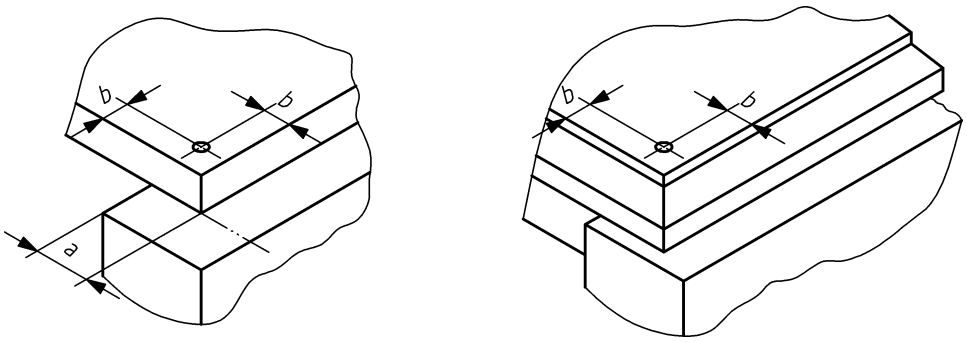


Figure 7 — Square edged structural decking laid across the joists and supported by noggings



Key

a bearing

b edge nailing distance

Figure 8 — Minimum edge nailing distance

14 Walls — Selection and installation

14.1 Selection (specification)

The selection of panels for structural wall sheathing on studs depends on the required load-bearing characteristics, the centre to centre span, mechanical characteristics and on the service class of the designer's specification. Typical uses might be:

— structural wall sheathing inside and/or outside on studs;

— internal lining.

The selection can be made based on the manufacturer's documentation and instructions for use.

Wood-based panels should only be used for wall sheathing assigned to services classes 1 or 2.

14.2 Wall constructions using wood-based panels on studs

Figure 9 shows various protective measures taken for sheathing in an example of an external wall construction. The external side of wall panels is protected by a breather membrane and cladding such as brick, exterior – wood-boarding, tiles, slates or profiled metal sheets.

In this example the construction incorporates a ventilated cavity between the cladding and the external side of the wall panels. The internal lining is fixed to the studs with a vapour control layer between the lining and stud framing.

If wood-based panel products are used internally, they should be covered by a protective coating against humidity, wetting and abrasion in service. Tempered hardboard and cement bonded particleboard may require a pre-finish with appropriate primers.

All wall coverings should be applied according to the panel manufacturer's recommendations.

14.3 Installation

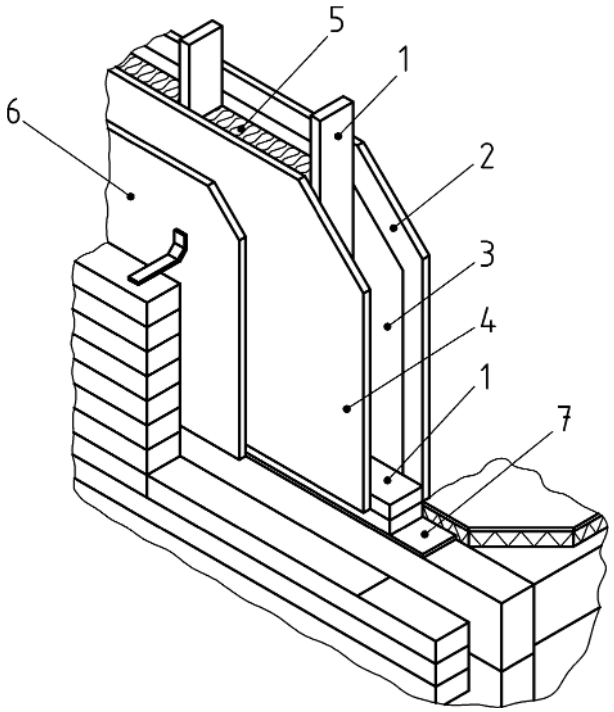
14.3.1 Preparation of structure

Supporting frames and studs should be erected perpendicular with the required span and dimension. The surface of the studs and framing shall be flush to ensure that the wall sheathing can be adequately fixed.

Timber and wood-based components and structural elements should not be unnecessarily exposed to climatic conditions more severe than those to be encountered in the finished structure.

Before installation of the panels, timber studs should be dried as near as practicable to the moisture content appropriate to its climatic condition in the completed structure.

The studs should provide a minimum bearing for panel edges of 18 mm, see Figure 11.



Key

1 stud framing
2 internal lining
3 vapour control layer
4 sheathing on outside face of wall frame
5 insulation
6 breather membrane (when required)
7 soleplate

Figure 9 —Basic example of a timber frame external wall construction

14.3.2 Edge profile

Panels can be square edged or profiled. Square edged panels need gaps to be provided between panels, and support to be provided by studs, framing, or noggings at all sides.

14.3.3 Expansion gaps

Sheathing panels — except softboard fixed to the outside of framing or used externally — should have a minimum gap of 1 mm/per metre of wall length between adjacent panels.

For tightly butted or tongue and groove sheathing boards, fixed to the inside of studs, an expansion gap should be provided between the perimeter of the wall and abutting construction to allow for possible expansion of the sheathing and to avoid buckling.

14.3.4 Assembly of wood-based panels for walls on studs

In general, square edged panels are used for internal or external structural sheathing.

Square edged panels should be continuously supported along all edges — vertical edges should be fixed at studs and all horizontal edges supported by wall framings or noggings (see Figure 10).

All perimeter and cut edges need to be supported on studs and wall framing.

Panels should have a minimum bearing of 18 mm on studs and framing (see Figure 11).

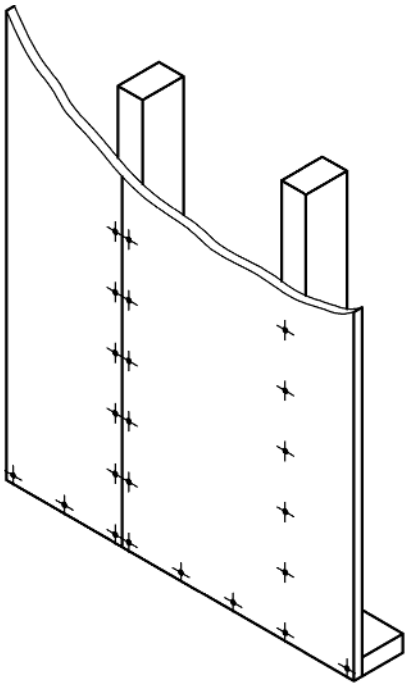


Figure 10 — Basic example of sheathing board fixing

Key

a bearing

b edge nailing distance

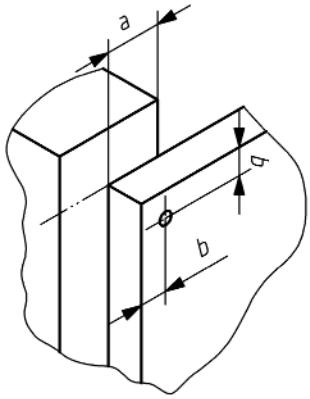


Figure 11 — Minimum edge nailing distance

15 Roofs — Selection and installation

15.1 Selection (specification)

The selection of panels for structural roof decking on joists depends on the required load bearing characteristics, the centre to centre span, mechanical characteristics and on the service class of the designer's specification.

The selection can be made based on the manufacturer's documentation and instructions.

Wood-based panels should only be used for roof decking assigned to service classes 1 or 2.

15.2 Type of roof covering related to wood-based roof panels

Sanded or un-sanded structural roof panels with a solid surface are suitable for use with many types of roof coverings, such as asphalt, felt, shingles, tiles, both for flat and pitched roofs.

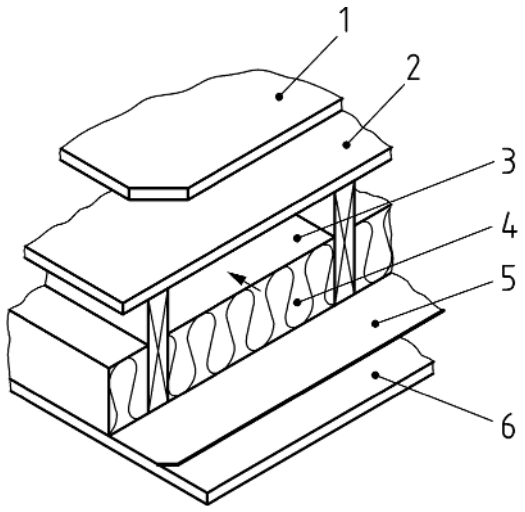
All roof coverings should be installed according to the manufacturer's recommendations.

15.3 Type of roofs

15.3.1 Flat roofs: cold roofs — warm roofs

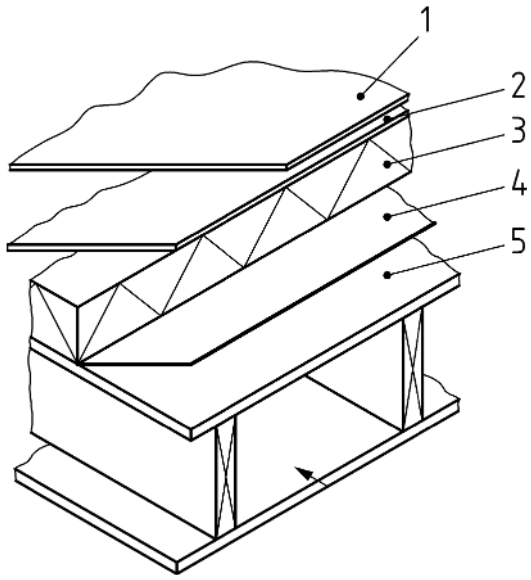
Flat roofs can typically be of two types: "cold roofs" and "warm roofs".

Figure 12 gives the principles of a "cold roof" build-up (i.e. decking and a portion of the supports on the cold side of the insulation) and Figure 13 gives the principles of a "warm roof" build-up (i.e. decking and supports on the warm side of the insulation).



Key
1 roof covering
2 roof deck
3 ventilated air space
4 thermal insulation
5 vapour control layer
6 ceiling lining

Figure 12 — Basic example of a cold flat roof



Key
1 roof covering
2 overlay board (optional)
3 rigid insulation
4 vapour control layer
5 structural roof deck

Figure 13 — Basic example of a warm flat roof

For insulated cold roofs it is important that adequate cross ventilation and the appropriate vapour control layers are provided to avoid the risk of harmful condensation occurring within the roof construction (see Figure 12).

For insulated warm roofs it is essential that sufficient insulation is provided over the deck and an effective vapour control layer is incorporated within the roof construction to avoid the risk of harmful condensation occurring within the roof construction (see Figure 13).

15.3.2 Pitched roofs — principles

Where structural wood-based panels are used in pitched roofs the joints should be staggered as shown in Figure 14.

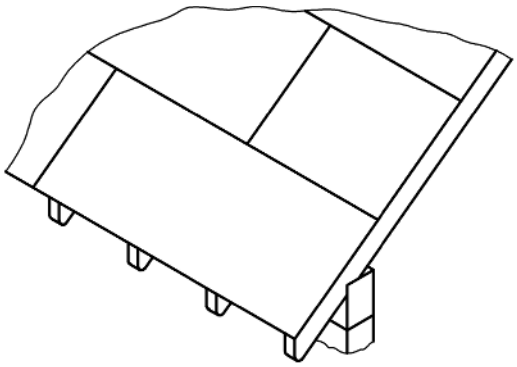
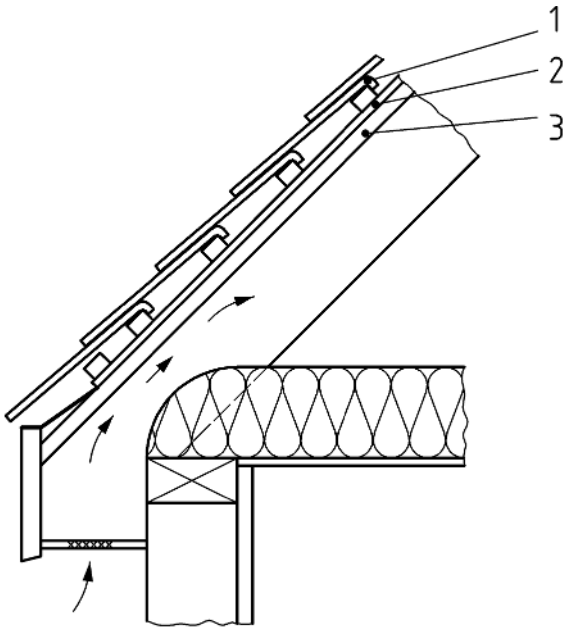


Figure 14 — Pitched roof using structural wood-based panel decking



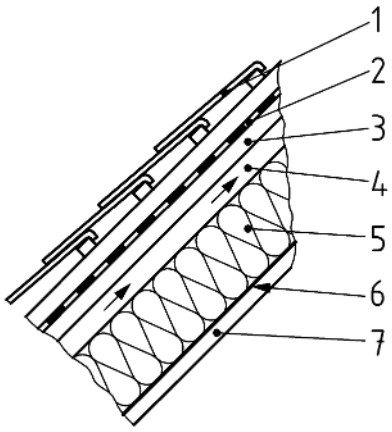
Key
1 tiles on battens and counter battens
2 tiling underlay
3 wood-based roof panel

Figure 15 — Ventilation of roof space with insulation at ceiling level

In order to avoid condensation on the underside of wood-based panels ventilation should normally be provided as follows:

— where roof panels are used over a roof-space with insulation on a horizontal ceiling, the roof space shall be adequately ventilated at the eaves (see Figure 15) with additional ridge vents if required;

— where roof panels are used over a "room-in-the-roof" with sloping ceilings and insulation between the rafters, ventilation space to the underside of the wood-based roof panel over the insulation, ventilated from eaves to ridge, and a vapour control layer positioned on the warm side of the insulation (see Figure 16).



Key

1	tiles on battens and counter battens	5	insulation
2	tiling underlay	6	vapour control layer
3	sarking board	7	ceiling lining
4	ventilation space		

Figure 16 — Ventilation of "room in the roof" with sloping ceiling and insulation between the rafters

Wood-based panels should be protected from rain and accidental wetting whilst in storage and conditioned prior to installation.

Any panels which have been exposed to limited rainfall or other wetting should be allowed to dry thoroughly before applying roof finishers or subjecting them to the full design load.

15.4 Installation

15.4.1 Preparation of structure

Support joists, noggings and edge supports should be laid to line and level.

Timber and wood-based components and structural elements should not be unnecessarily exposed to climatic conditions more severe than those to be encountered in the finished structure.

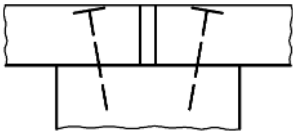
Before installation of panels, timber supports should be dried as near as practicable to the moisture content appropriate to its climatic condition in the completed structure.

15.4.2 Edge profile

Panels can be square edged or profiled. Square edged panels need spaces to be provided between panels, and support to be provided by joists or noggings at all sides. Profiled sides usually have a matching tongue and groove which removes the need to provide additional supports to the long edges.

Examples on edge profiles are given in Figure 17.

a) Tongued and grooved



b) Square edged

Figure 17 — Joints

15.4.3 Expansion gaps

To take into account any increase of panel moisture content it is necessary to incorporate an expansion gap.

For tongued and grooved panels or panels which by design are tightly butted, special attention shall be given to fixing down to avoid buckling.

In the absence of information provided by the manufacturer a minimum space of 2 mm should be left between the edges of square edged panels. A gap should be provided around the perimeter of roofs to up stand or abutting construction to allow for possible expansion of the decking. This should have a minimum gap 2 mm/per metre run of panel.

15.4.4 Laying of wood-based panels in roof structures

Tongued and grooved panels should be laid across the joists with both short edges supported on a joist, or other edge support (see Figure 18).

Square edged panels should be continuously supported along all edges; short edges should be butted at joists and long edges supported by nogging (see Figure 19).

All perimeter and cut edges need to be supported on joists or noggings.

Panels should have a minimum bearing of 18 mm on joists and noggings (see Figure 20).

The short edge joints of panels of both edge types should be staggered (see Figures 18 and 19).

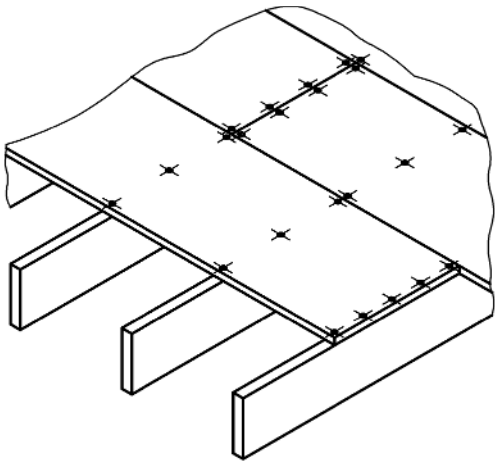


Figure 18 — Tongued and grooved structural decking laid across the joists with short edges supported on joists

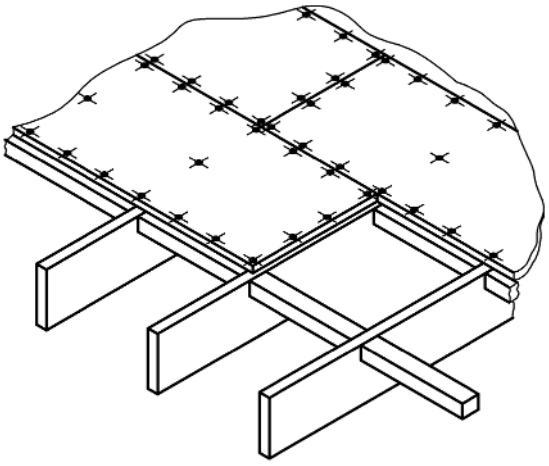
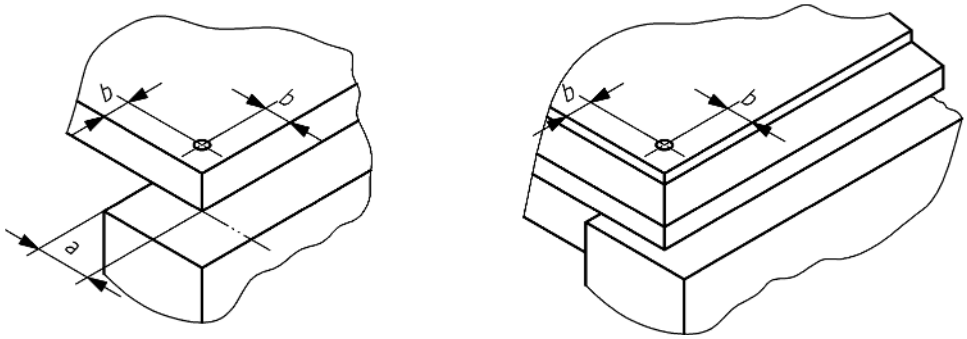


Figure 19 — Square edged and structural decking laid across the joists and supported by noggings



Key
a bearing
b edge nailing distance

Figure 20 — Minimum edge nailing distance

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