Contents

1 Responsible manufacturing

OSB stands for „Oriented Strand Board“ and is a wood-based product made from thin veneer strands that are bonded together with a synthetic resin. OSB SUPERFINISH® ECO consists of three cross-oriented layers with the surface of the board formed from strands oriented along the length of the board and the core strands arranged in cross orientation. This crosswise orientation of the individual layers of OSB SUPERFINISH® ECO achieves a high level of dimensional stability and an excellent mechanical performance. Because of its bending strength OSB SUPERFINISH® ECO is the ultimate engineered wood product for timber framed construction. With its light and uniform wood surface it provides an attractive natural appearance and is used for a variety of decorative applications.

OSB SUPERFINISH® ECO

OSB SUPERFINISH® ECO is one of the most advanced OSB boards currently available. OSB SUPERFINISH® ECO is manufactured using a formaldehyde-free polyurethane resin-based binder and contributes to a more environmentally friendly living environment. With the formaldehyde content of OSB SUPERFINISH® ECO being limited to the natural formaldehyde content of wood (< 0.03 ppm HCHO as determined by the chamber method) stringent ecological requirements of the timber framed construction industry are met. A permanent quality control and a regular supervision by independent certification agencies (VVÚD – Timber Research and Development Institute, Prague) ensure full compliance to stringent quality standards and emission regulations. With its wide range of OSB SUPERFINISH® ECO products KRONOSPAN Jihlava promotes the environmentally friendly timber framed construction.

FORMALDEHYDE FREE

Technology and environmental impact

OSB SUPERFINISH® ECO is manufactured from quality softwood - primarily spruce – of woodlot thinnings sourced from well-managed forests. The veneer strands are precisely sliced from the side of clean, debarked wood logs so that the plane of the strand is parallel to the grain of the wood. These freshly cut strands are then dried, sorted and blended with a synthetic resin binder and a defined portion of paraffin emulsion before they are formed into large continuous mats. These mats are oriented in cross directional layers and pressed into panels by means of high temperature and pressure in the course of an uninterrupted continuous pressing process.

KRONOSPAN JIHLAVA currently operates Europe's most up-to-date facility for the production of OSB.

Environmentally-friendly timber framed construction

Contemporary timber framed construction is a lifestyle choice. Architects, developers and builders are looking increasingly at the environmental impact of their projects. Home buyers and consumers are both design conscious and environmentally aware. Due to its environmental and overall sustainability credentials timber as a construction material, has a significant role to play in helping to protect the environment. Timber framed construction delivers high build quality, a more efficient construction process and the opportunity to design beautiful and durable homes. Being a wood-based product with 95% of its volume made of wood of woodlot thinnings sourced from well-managed forests OSB SUPERFINISH® ECO supports and contributes to sustainable construction.

- Commitment to renewable resources
  There is no more sustainable building material than timber. With the potential to regenerate, wood is renewable and the use of timer for construction purposes helps reducing the production of not renewable raw materials such as limestone, brick tone,.. As a naturally raw material with a wide range of possible applications and an excellent performance the use of timber products sourced from well managed sustainable sources supports greater sustainability in the construction industry.
- Commitment to decrease carbon dioxide (CO_2) emissions
  Trees are net producers of oxygen and help reducing the threat of global warming and the greenhouse effect. The use of timber for construction purposes reduces the CO_2 impact of the building and construction industry. Trees soak up carbon dioxide within their core and store it for the life of the tree and the building. Young trees growing in a managed forest are more effective in absorbing carbon dioxide and producing oxygen than mature trees. The harvesting of older trees for construction purposes, and their replacement with saplings ensures a constant cycle of CO_2 absorption and oxygen production by photosynthesising.
- Low embodied energy
  Converting timber into a useable building material takes far less energy and resources and creates minimal pollution compared to other mainstream building materials such as aluminium, steel, concrete and brick. To manufacture beams of equivalent strength, timber uses five times less energy than concrete and nearly six times less than steel.
- Inherent insulation capabilities
  Once installed, wood is an excellent insulating material with very high energy efficiency. Lower running costs minimise the effects of burning fossil fuels and offer financial benefits and good prerequisites for eco-friendly homes.
- Reduced material handling and distribution
  Timber frame construction requires less energy input to transport a given building volume due to its natural lightweight.
- All of the raw material used for the production of OSB SUPERFINISH® ECO is sourced from PEFC certified forests securing responsible forest management. By using woodlot thinnings from well-managed forests we help to improve the growth and sustainability of surrounding plants, trees and wildlife.
- For the production of OSB SUPERFINISH® ECO the wood mass can be utilized to a yield of almost 100%. Fine strands unsuitable for the OSB production are used in our chipboard production without losing the energy invested in the chip drying. Wood dust and bark can be thermally recovered as fuel for the mill's energy needs.
- On site rail connection enables the shipping of a large amount of wood by cargo trains.
- Recyclable, biodegradable and waste efficient
  During manufacture and construction wood creates least production pollution and disposable problems when compared to other building materials. At the end of its service life wood can be recycled into new products (e.g. agglomerated wood products are made of recovered wood) or burned for energy as a substitute fossil fuel.

PEFC

Certified CFCS 1004-1:2002 by BVQI

S 3100

2 Application areas

OSB SUPERFINISH® ECO offers a wide range of possible applications both for interior and exterior use. Its exceptional properties make OSB SUPERFINISH® ECO ideal for timber framed construction. At the same time the growing popularity of this product result in new areas of use.

Structural use:

- construction of timber framed buildings
- ideal for low-energy and passive environmentally friendly buildings
- roof sheathing
- wall sheathing (both for interior and exterior walls)
- flooring / subfloor
- cladding
- sandwich panels
- webs of wooden i-joists
- renovation projects
- hoardings around building sites.
- concrete boarding: sacrificial shuttering, foundation shuttering, pre-cast concrete shuttering
- production of containers and site barracks
- warehouse construction and agricultural buildings

Other areas of use:

- furniture industry (e. g. frames for upholstery, doors and windows)
- exhibition stand construction, displays, platforms
- pallet and crate packaging industry
- vehicle linings
- shelving and racking manufacturing
- billboard manufacture
- shop fitting, decorative paneling

3 Convincing Features

Advantages of OSB SUPERFINISH® ECO:

- Environmentally friendly wood-based panel both for interior and exterior use
- Exceptional dimensional stability and stiffness
- Excellent load bearing properties with high bending, compression and tension strength values
- Excellent fastener retention, also near the edge
- Low thickness swelling
- Can be used for both diffusion-open and diffusion-closed structure systems
- The surface of OSB SUPERFINISH® ECO has a certain degree of resistance to short-term wetting
- Advantageous thermal insulating and sound absorbing properties when compared to similar construction materials
- Can be custom manufactured to meet specific requirements in thickness and panel size
- Suitable for humid conditions (OSB/3 and OSB/4)
- Is easy to cut and fix using conventional woodworking tools
- Natural wood surface finish
- Quick assembly
- Excellent price-performance ratio
- Good environmental credentials
- Formaldehyde content limited to the natural formaldehyde content of wood

OSB SUPERFINISH® ECO is manufactured to a series of inter-related European standards, of which the main product standard EN 300 – Oriented Strand Boards (OSB): Definitions, classification and specifications refers to other standards, such as EN 13986 – The harmonised European Standard for wood-based panels for use in construction. OSB SUPERFINISH® ECO complies with the strict requirements both of EN 300 and EN 13986.

Permanent quality control and regular supervision by national certification agencies ensure full compliance to these standards. This includes test sampling on raw materials and on the finished product during and after the production process and provides third party guarantee of OSB SUPERFINISH® ECO's excellent performance.

OSB classification as per EN 300:

- **OSB/2** – load-bearing boards for use in dry conditions
- **OSB/3** – load-bearing boards for use in humid conditions
- **OSB/4** – heavy duty load-bearing boards for the use in humid conditions

Properties of OSB-boards in accordance with EN 300

Basic technical requirements for OSB/2, OSB/3 and OSB/4:

property		test method	requirement
tolerance	in length	EN 324 -1	± 3 mm
	in width	EN 324 -1	± 3 mm
	in thickness	EN 324 -1	± 0,8 mm
edge straightness tolerance[1)]		EN 324 -2	1.5 mm/m
squareness tolerance[1)]		EN 324 -2	2 mm/m
moisture content		EN 322	2 – 12 %
tolerance on the mean density within a board		EN 323	± 15 %
formaldehyde content (perforator method)		EN 120	Class E1 max. 8 mg/100 g

Technical requirements for OSB/2 and OSB/3:

property		test method	thickness [mm]			
			6 to 10	>10 to <18	18 to 25	>25 to 32
bending strength	major axis	EN 310	22 MPa	20 MPa	18 MPa	16 MPa
	minor axis	EN 310	11 MPa	10 MPa	9 MPa	8 MPa
modulus of elasticity in bending	major axis	EN 310	3,500 MPa			
	minor axis	EN 310	1,400 MPa			
internal bond		EN 319	0.34 MPa	0.32 MPa	0.30 MPa	0.29 MPa
	boil test	EN 1087-1	0.15 MPa	0.13 MPa	0.12 MPa	0.06 MPa
	cyclic test	EN 321	0.18 MPa	0.15 MPa	0.13 MPa	0.10 MPa
bending strength after cyclic test – major axis (OSB/3)		EN 321	9 MPa	8 MPa	7 MPa	6 MPa
swelling in thickness	OSB/2	EN 317	20 %			
	OSB/3	EN 317	15 %			

Technical requirements for OSB/4:

property		test method	thickness [mm]			
			6 to 10	>10 to <18	18 to 25	>25 to 32
bending strength	major axis	EN 310	30 MPa	28 MPa	26 MPa	24 MPa
	minor axis	EN 310	16 MPa	15 MPa	14 MPa	13 MPa
modulus of elasticity in bending	major axis	EN 310	4,800 MPa			
	minor axis	EN 310	1,900 MPa			
internal bond		EN 319	0.50 MPa	0.45 MPa	0.40 MPa	0.35 MPa
	boil test	EN 1087-1	0.15 MPa	0.13 MPa	0.12 MPa	0.06 MPa
	cyclic test	EN 321	0.21 MPa	0.17 MPa	0.15 MPa	0.10 MPa
bending strength after cyclic test – major axis (OSB/3)		EN 321	15 MPa	14 MPa	13 MPa	6 MPa
swelling in thickness		EN 317	12 %			

Vlastnosti desek OSB SUPERFINISH® ECO

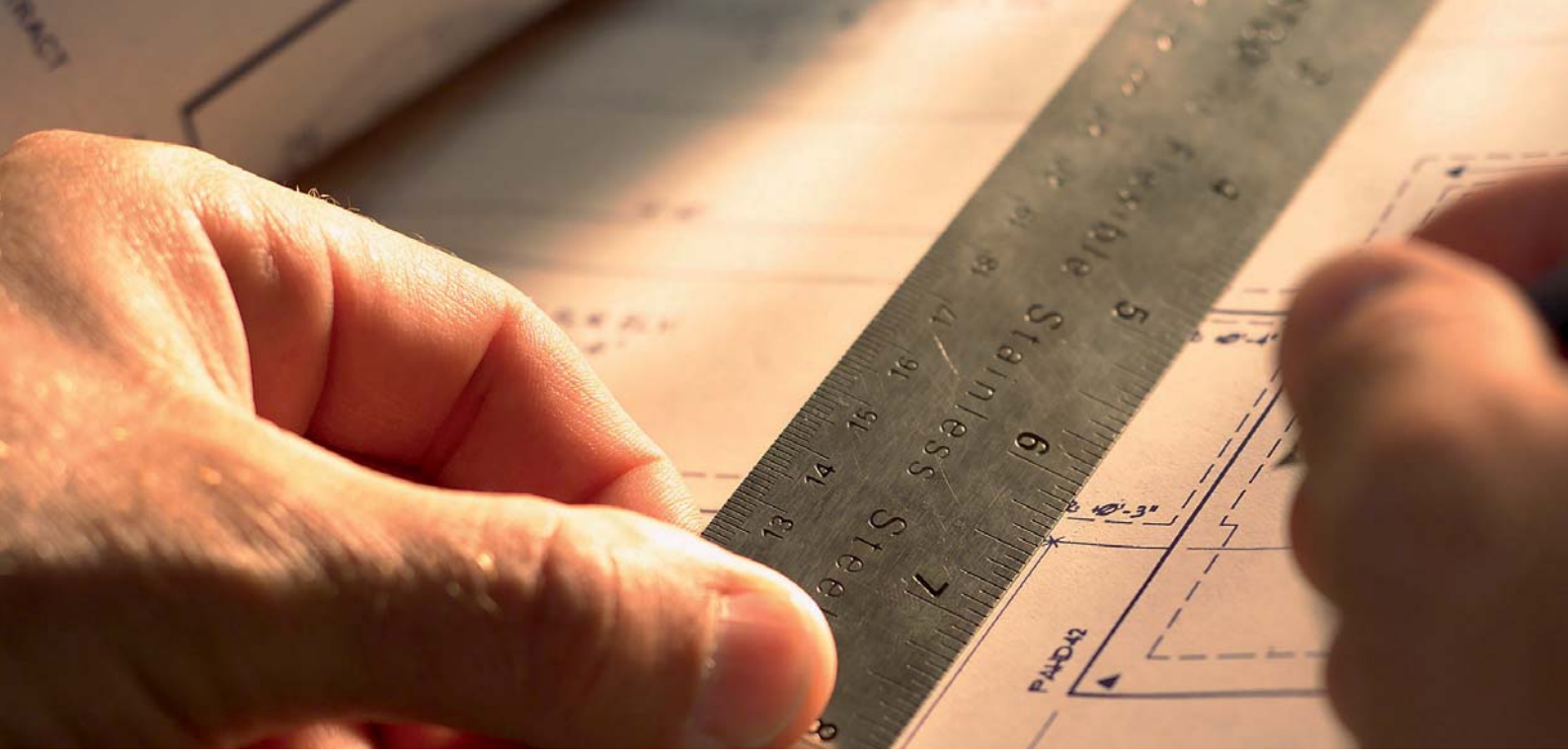
OSB SUPERFINISH® ECO complies with EN 300 for OSB/3 but has a lower formaldehyde content:

property	test method	requirement
formaldehyde content (chamber method)	EN 717-1	< 0.03 ppm

OSB SUPERFINISH® BAU ECO complies with EN 300 for OSB/4 but has a lower formaldehyde content and meets the building regulations registration No. Z-9.1-627:

property		test method	thickness [mm]	
			>10 to ≤18	18 to 30
bending strength	major axis	EN 310	33 MPa	36 MPa
	minor axis	EN 310		16 MPa
modulus of elasticity in bending	major axis	EN 310	6,300 MPa	7,400 MPa
	minor axis	EN 310	2,000 MPa	2,300 MPa
density		EN 323	550 kg/m^3	590 kg/m^3
internal bond after boil test		EN 1087-1		0.14 MPa

Remark: The values listed in EN 300 relate to product properties. Please see chapter 6 or on www.kronospan.cz for values to be used in structural calculations (e.g. as per EN 1995-1-1).



The production of OSB SUPERFINISH® ECO is supervised on a regular basis by national certification agencies:

Timber Research and Development Institute (VVUD), Prague

- **Certificate CE č. 1393 – CPD – 0016**
  for OSB SUPERFINISH® type OSB/2 as per EN 300
- **Certifikát CE č. 1393 – CPD – 0017**
  for OSB SUPERFINISH® type OSB/3 as per EN 300
- **Certifikát CE č. 1393 – CPD – 0273**
  for OSB SUPERFINISH® ECO type OSB/3 as per EN 300
- **Certifikát CE č. 1393 – CPD – 0271**
  for OSB SUPERFINISH® ECO BAU (Z-9.1-167)
- **Test protocol AP – 1317/012/06-1**
  Determination of the mechanical properties of OSB boards
- **FCHL test protocols**
  Determination of the formaldehyde emissions
  (chamber method) for OSB SUPERFINISH® ECO


CERTIFIKÁT SYSTÉMU ŘÍZENÍ VÝROBY


Protokol o zkoušce FCHL – 347/08

STANOVENÍ ÚNIKU FORMALDEHYDU


CERTIFIKÁT SYSTÉMU ŘÍZENÍ VÝROBY


CERTIFIKÁT SYSTÉMU ŘÍZENÍ VÝROBY

Building Engineering Centre (CSI), Prague

- **Classification protocol PK-05-091**
  OSB SUPERFINISH® pursuant to response to fire
- **Protocol 12814-1/3**
  OSB SUPERFINISH® on fire technology characteristics testing
- **Test protocol 1619**
  Measurement of sound insulation as per EN ISO 140-3 and EN ISO 717-1
- **Test protocol 1383**
  Determination of the thermal conductivity factor for OSB SUPERFINISH®
- **Test protocol AP-492-13/06**
  Determination of the vapour diffusion resistance factor for OSB SUPERFINISH®


Centrum stavebního inženýrství a.s.

PROTOKOL O KLASIFIKACI č. PK-05-091

výrobku

OSB deska KRONOSPAN SUPERFINISH

podle reakce na oheň


PROTOKOL


PROTOKOL O ZKOUŠCE


PROTOKOL O ZKOUŠCE

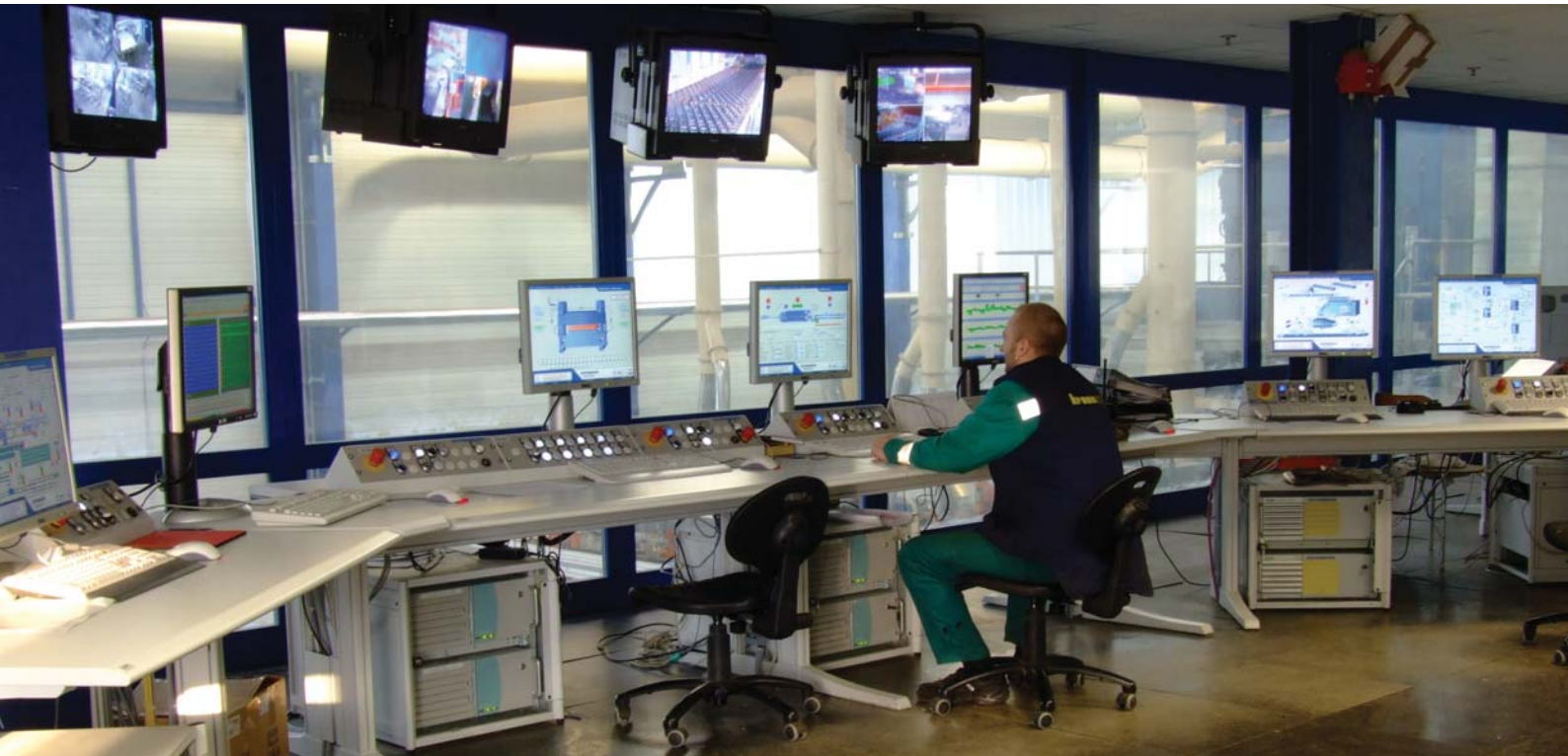
Deutsches Institut für Bautechnik (DIBt), Berlin

OSB SUPERFINISH® BAU and OSB SUPERFINISH® BAU ECO have been tested successfully and granted the "Allgemeine Bauaufsichtliche Zulassung" under protocol no Z-9.1-627. by the German Institute for Civil Engineering (DIBt). This „National technical approval" contains among others test results of all standardised mechanical and technical properties required and applicable in the EU.

CE marking – confirming compliance with EN 13986

The harmonised European Standard EN 13986 – Wood-based panels for use in construction – Characteristics, evaluation of conformity and marking forms the basis for the CE marking. Boards produced in conformity with EN 300 and marketed in any of the territories of the European Economic Area for use in construction applications as defined in the Construction Products Directive shall be marked according to the requirements of EN 13986. EN 13986 defines requirements for the wood-based panels in relation to its use in different environmental conditions – dry, humid and exterior - and for different levels of loading – non-load bearing, load-bearing and heavy-duty load-bearing. The specifications are further refined for load-bearing subflooring, roofing and wall sheathing. CE-marking has been compulsory for wood-based panels used in construction since 1st of April 2004 and must be attached in compliance with Regulation No. 93/68/EEC.

Above mentioned certificates and protocols are under permanent control and are brought up to date if required. They are also available on **www.kronospan.cz**.



4 Transport and Storage

Proper stacking and storage, correct transportation and handling of OSB SUPERFINISH® ECO is essential to ensure that the final performance and appearance is as intended.[1)] In common with solid wood and other wood-based products, the moisture content of OSB panels varies with the temperature and relative humidity of the surrounding environment. OSB panels may expand or shrink slightly (in length, width and thickness) when exposed to changes of temperature and/or air humidity. It is therefore important that the moisture content of the panels at the time of storage and installation is as close as possible to their final in-service moisture content. Incorrect storage or bad handling can result in damage to the panels.

Packaging – Storage

For delivery, OSB SUPERFINISH® ECO is banded together in bundles protected with a cardboard cover on top and stacked on bearers of the same thickness to avoid deformation. The bundles are stacked horizontally on a level base. Palletised stacks are placed on top of each other with the bearers lining up to prevent distortion.

Transportation

During transport, it is important to keep the edges of OSB SUPERFINISH® ECO well covered. Particular care should be taken to protect the edges and corners from rain and accidental soaking. The panels are slippery and should be fastened adequately during transportation. Protection should also be provided to avoid damage by ropes, straps or other banding. This particularly applies to tongue-and-groove panels.

Handling

Particular care should be taken to protect the edges and corners when handling OSB SUPERFINISH® ECO. The use of a fork lift is preferred to handling the panels with a crane. When lifting, moving and piling up the panels edge protection should be provided to avoid damage by lifting ropes and/or forklift tines.

Panel storage and stacking

OSB SUPERFINISH® ECO should be stored in an enclosed, dry building that is sufficiently ventilated to prevent excessive pick-up of moisture which can cause warping and other dimensional changes. To prevent sagging or other distortion the panels should be stored flat on a level base and clear off the floor. When re-stacking the panels where no pallet is available sufficient bearers of the same thickness should be used to support the panels. The bearers should lay parallel to the shorter side of the panels across the panel's full width and with a maximum spacing of 600 mm. The panels should be stacked with their edges matching up on

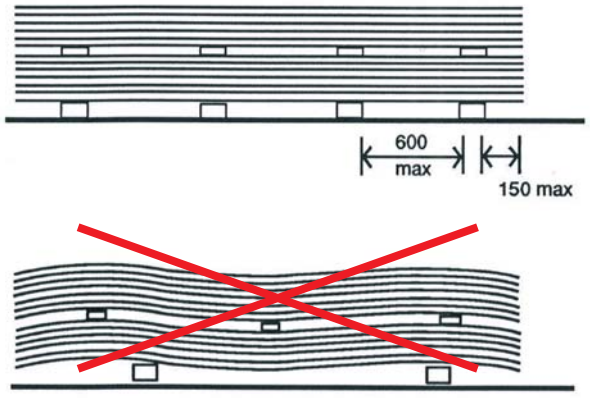
[1)] The following recommendations are in accordance with the standard ENV 12872:2000 – "Wood-based panels. Guidance on the use of load-bearing boards in floors, walls and roofs.", as well as with the publications of the European Panel Federation (EPF).

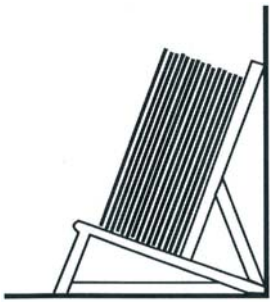
all four sides and with the edges and ends of the bundle never overhanging by more than 150 mm. Intermediate bearers should be used every 20 to 25 panels to allow through perfect ventilation. Each layer of bearers should lay directly above those in the layers below. The top board should be covered adequately.
Incorrect stacking can result in panel damage, deformation and significant wastage.

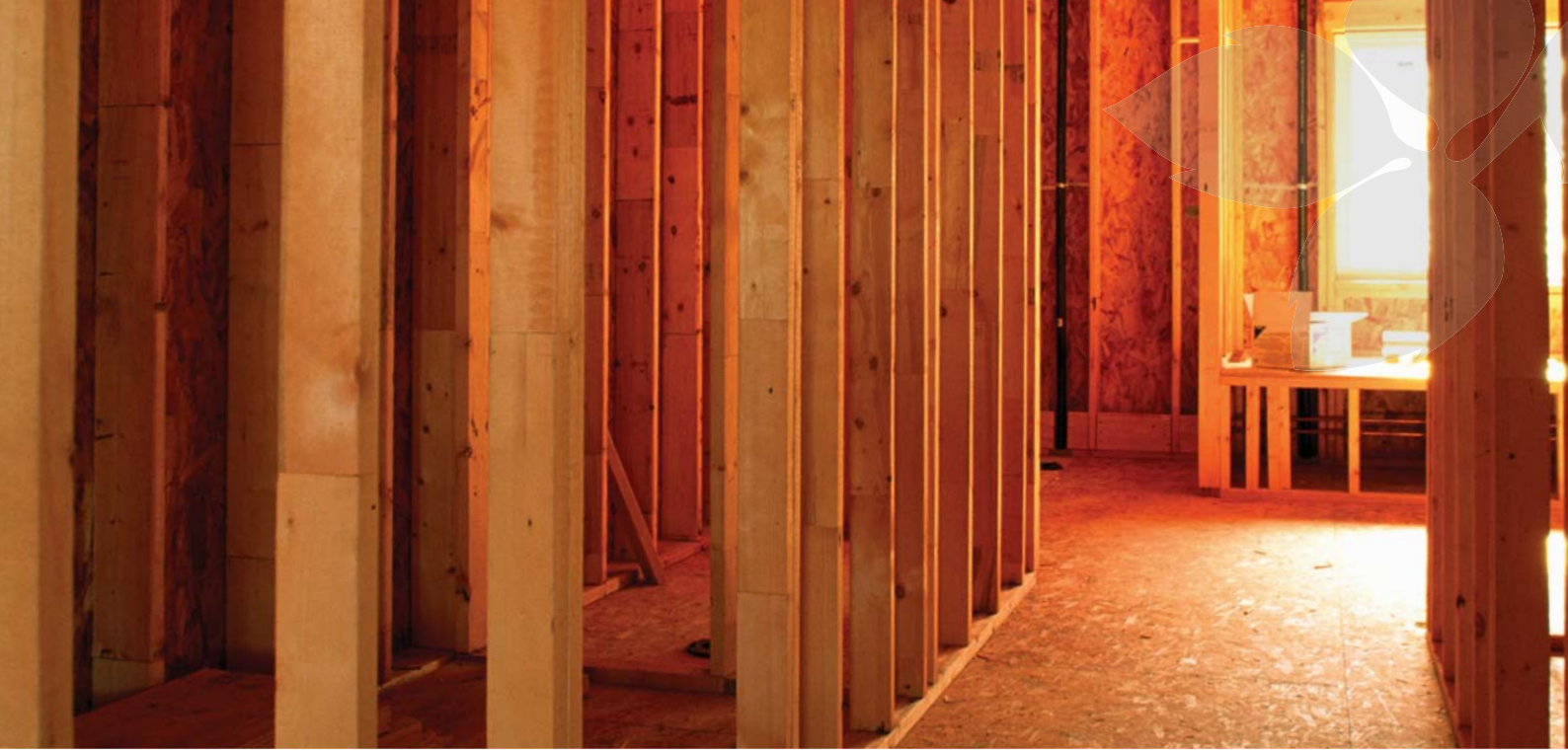
Temporary storage on building site

In case of temporary outdoor storage, high pallets or high supporting bearers should be used to keep the underside clear of the ground and any vegetation. The necessary should be done to avoid the risk of splashing to the underside of the bundle. The bundles should be protected with an additional waterproof and diffusion-open covering allowing space at the bottom and sides for good air circulation. If external storage is unavoidable it should be for the shortest possible period of time. It is not recommended to stack the panels on edge. Straight edged panels can only be stored standing on edge for a very short period of time (t. ex. when conditioning the panels before installation). In order not to damage the edges and to prevent the edge stacked panels from soaking up humidity any direct contact to the ground should be avoided and the panels should not be leant against walls. Ideally, the edge stacked panels should be supported by a braced stack made of base and back boards of a minimum thickness of 18 mm.

Remark: It should be noted that sunshine exposure may cause colour changes. This particularly is relevant to boards installed for decorative purposes. Colour changes as a result of sunshine exposure do not affect the technical properties of OSB.







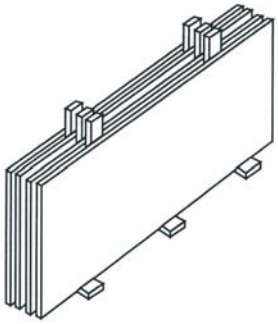
5 Processing instructions

Orientation

For an exceptional dimensional stability and high bending, compression and tension strength values OSB SUPERFINISH® ECO is manufactured with 3 distinct layers. In the surface layers the strands are oriented in the long direction of the panel, and in the core layer the strands are oriented across the panel. These two directions of orientation are termed the major and minor axes.

The major axis is identical with the direction of the surface layers and the direction of the panel stamp. Since the higher mechanical properties are in the direction of the major axis – strength and modulus of elasticity is 4 times higher than for the minor axis – it is essential to pay attention to the board's orientation, in particular for single-layer constructions.

Conditioning of the boards



In common with other wood and wood-based products, OSB SUPERFINISH® ECO may expand or contract slightly when exposed to changes of air humidity. The boards should therefore be allowed to reach equilibrium with their environment. This is usually achieved by storing them in the room where they will be used, for a minimum of 48 hours prior to installation. The boards can be conditioned by stacking them with batten spacers.

Benchmark humidity values:

installation conditions	approximate moisture content of panel
continuously heated building	6 – 9 %
periodically heated building	9 – 10 %
unheated building	16 – 18 %

Protection against high humidity or wetting

OSB SUPERFINISH® ECO should generally be kept away from direct contact with water as excessive moisture pick up can cause warping and other dimensional changes. Boards incorporated in external walls and roofs must immediately after installation be insulated with a suitable weather protection on the outside surface. OSB SUPERFINISH® ECO with an enhanced moisture resistance (OSB/3, OSB/4) has a degree of resistance to short-term wetting and high humidity, though is not intended for exposure to prolonged wetting. When exposed to a higher humidity for a longer period of time the panel's edges might slighty swell in thickness. If this is the case, it is recommended to slighty sand them in order to obtain a flat surface prior to the installation of finishing elements such as roof asphalt shingles. OSB SUPERFINISH® ECO like all wood products reacts to changes in moisture and humidity conditions. To prevent any damage of this kind it is important to install the panels in a dry condition after all wet site operations have been completed and are dried out thoroughly. Sufficient protection by means of damp-proof membranes and vapour control layers should be provided as necessary. In accordance with normal good practice for wood-based materials any exposure to water must be for the shortest possible period.

Cutting, drilling

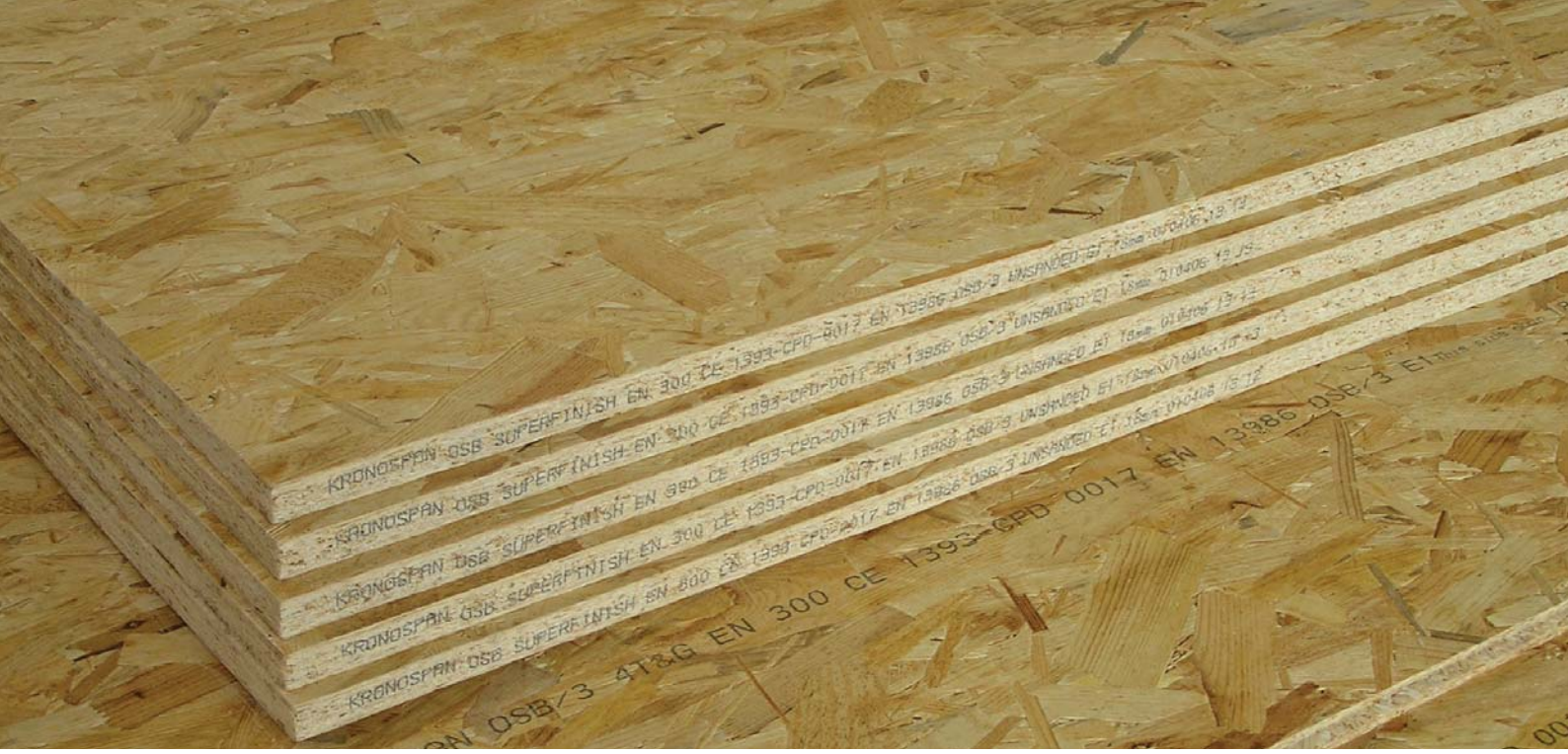
OSB SUPERFINISH® ECO offers excellent workability. The boards are easy to saw, mill and drill using conventional woodworking tools and machinery (hand or powered saw, portable or stationary). Hard metal cutting edges are recommended because of their long endurance. The feeding rate generally is expected to be lower than with solid timber. Normal precautions should be exercised when cutting and drilling the panel. The panel should be appropriately supported and panel vibrations and machine oscillations should be avoided.

Fixing

OSB SUPERFINISH® ECO demonstrates an excellent fastener performance. It is easily fixed using conventional woodworking fixings (nails, screws, staples) and techniques and it provides good holding strength for fixings into the upper surface of a panel – generally, edge fixing is not recommended. For structural applications non-corroding fixing means of galvanised, stainless steel are to be used. A higher rigidity may be reached when using flat head nails with a twisted, serrated or roughened shank, rather than common smooth nails.

The following general instructions should be noted when fixing OSB SUPERFINISH® ECO:

- The fixings should have an overall length of about 2.5 times the panel thickness but at least 50 mm
- Nails and screws should have a minimum diameter of 3 mm, staples a minimum wire diameter of 1.5 mm
- Pilot holes should be drilled for all screw fixings. Typically, the holes should be 85 to 90 % of the screw core diameter
- The distance between the fixing devices and the panel edges should be at least seven times the diameter of the fastener (i.e. 20 mm for a 3 mm diameter nail)
- A maximum distance of 150 mm between the fixing devices at the panel edge should be respected, at the panel centre it should be a maximum distance of 300 mm
- All short edges must be supported on joists or ceiling trusses
- Panels should be installed with the long edges at 90° to the supports and the short edge joints must be staggered
- When installing thinner OSB panels, please start fixing at the top mid section and then proceed evenly downwards and outwards to prevent buckling
- All tongue and groove joints should be glued with a PVA adhesive



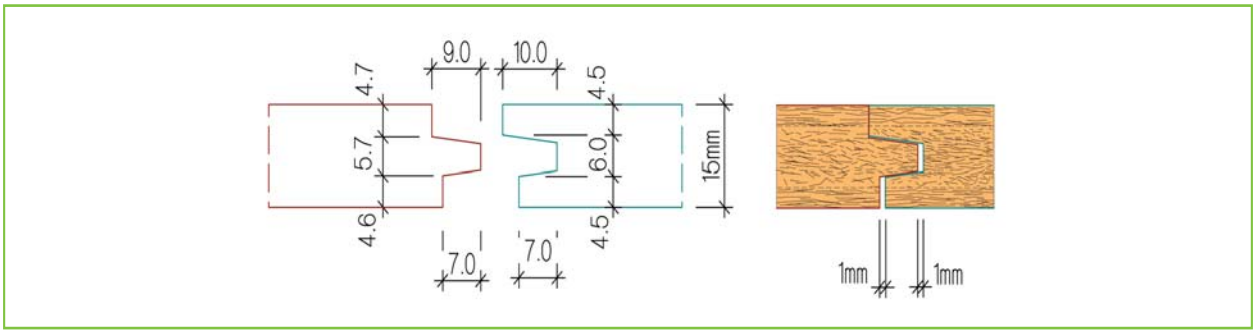
Expansion gaps

When exposed to moisture all wood and wood-based products expand. It therefore is necessary to gap OSB SUPERFINISH® ECO to allow for possible expansion and thus to avoid buckling.

- with all square edged panels an expansion gap of at least 3 mm should be allowed between the individual panels
- panels with a tongue and groove profile (T+G panels) have an expansion gap included in the tongue and groove joint

Please do note the following general instructions when installing OSB SUPERFINISH® ECO:

- An expansion gap of at least 3 mm must be observed between the panels and any fixed object, e. g. door frames, heating pipes
- When installing the boards as subflooring an expansion gap of at least 15 mm must be left at the outer limits
- When installing the boards as wall sheathing an expansion gap of at least 10 mm must be left where the OSB board touches other building materials and the floor
- In long runs of more than 12 metres an additional expansion gap of approximately 25 mm should be allowed every 12 meter in either direction of the area.



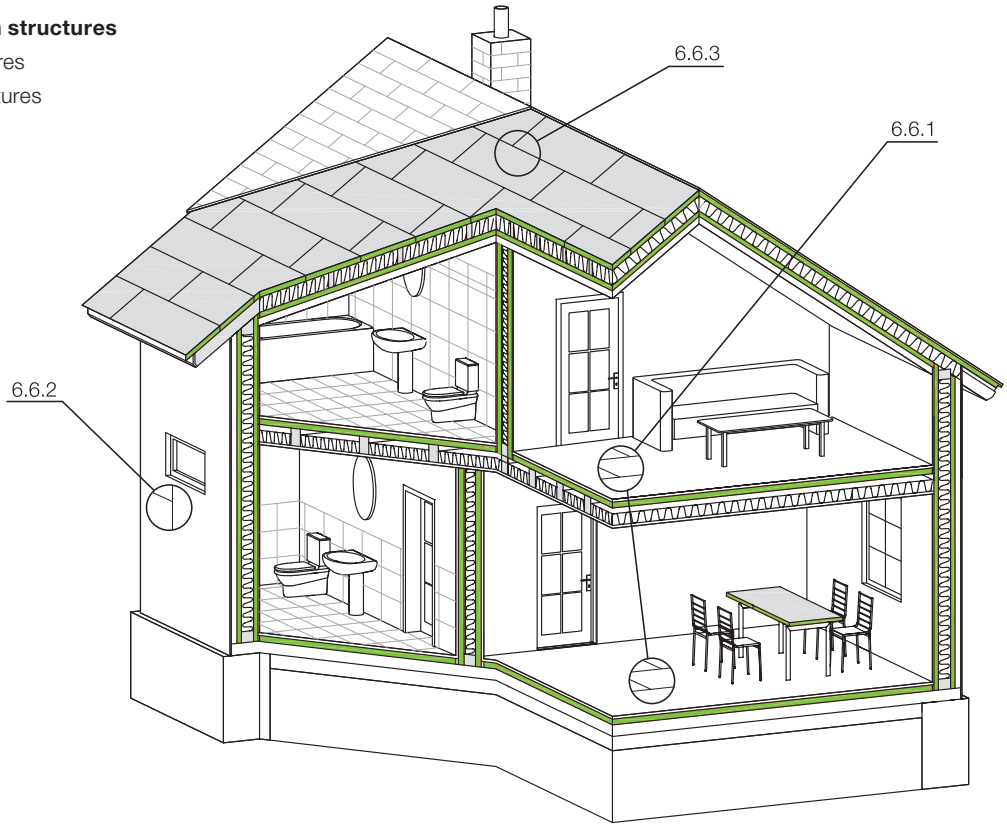
Coating

A wide range of coating products may be used to cover OSB SUPERFINISH® ECO but please do always refer to the paint manufacturer's directions and application instructions. For visible indoor surfaces where a fine finish is required, factory pre-sanded panels should be used. Before painting unsanded panels, the surface should be wire brushed or sanded to remove any loose strands and resin deposits. Conventional wood coating systems are appropriate to use. Spirit based priming and top coating, as directed by the manufacturers, will give the highest quality finish. When painting the panels or immediately thereafter, some surface strands might set free from the board. Water-based coating products might cause some light swelling of the surface strands. No product claims can be made in this respect.

It is recommended to test the selected coating product on a small sample area of the panel as some coating products may be incompatible with wood ingredients.


FIN. FLR ELV.
+ 0'-6"
14'-10"
FIN. FLR ELV:
+ 0'-4½"
PAHD42
Flexible Stainless Steel Ruler

6 A guideline to timber framed construction



6.1 Introduction to building physics

For a durable and reliable outcome few general principles should be taken in account when designing and constructing timber framed constructions.

The greatest challenge is placed on the external envelope of a building, which is the area where the conditioned internal air is separated from the unconditioned outside air. The external envelope of a building consists of the vertical exterior walls and the roof.

The main demands include:

- static load-bearing capacity
- protection against influences of the weather
- thermal insulation
- air permeability
- protection against humidity
- acoustic properties
- fire protection
- harmless to health and environment

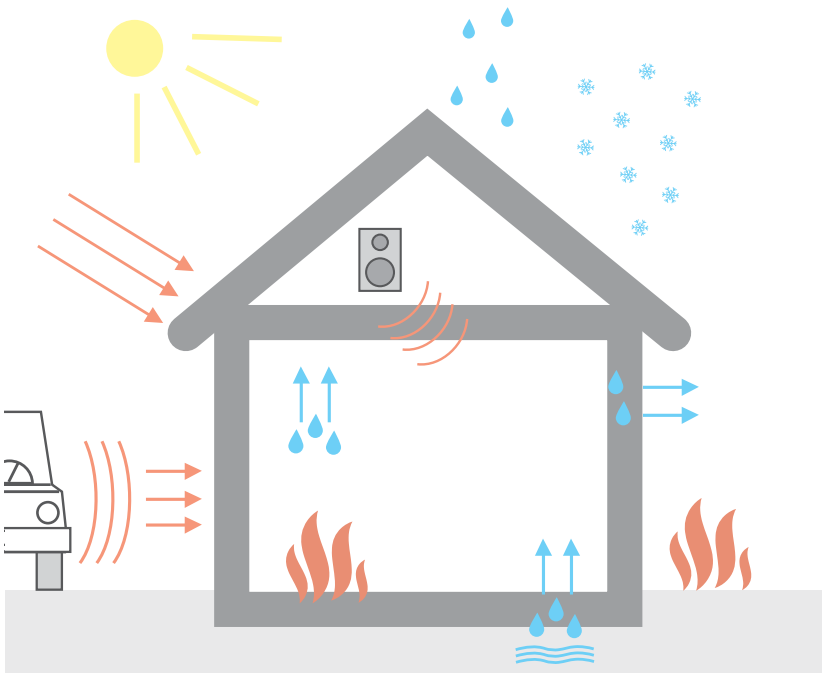


Fig.: Main influences on the building's exterior and interior

The **static load-bearing capacity** affects the overall stability and the lifetime of the construction. As concerns the assembly of the single components modern timber framed construction offers advantageous solutions. Light skeleton structures are used with the timber studs posted relatively close together and fixed to the upper and bottom threshold to form a wooden frame. Stabilisation of the frame is provided with reinforcing board material with the required load-bearing capacity. For this method of enclosure OSB SUPERFINISH® ECO boards is very suitable as it greatly increases the stiffness of the timber frame (see chapter 6.3).

Protection against influences of the weather is provided with the roofing and façade cladding. With regards to construction physics the best cladding is ventilated or aerated for improved dry out of the construction. Air distribution minimises possible humidity inside the construction. Other common solutions are plastered façades, either aerated or compact (ETICS), and timber façades, ventilated or non-ventilated.

Effective **thermal insulation** is provided with flexible porous materials adaptable to the timber elements and preventing potential gaps between the insulation and the timber studs. The most popular insulators are glass wool or mineral rock wool mats and cellulose based boards (fibreboards), rather than hardwood boards (polystyrene based).
Effective insulators have the following features:

- increased thermal resistance of the insulation layer (λ)
- low share of load-bearing constructions in the insulation layers (thermal bridges)
- high air tightness with suitable vapour resistance of the entire construction
- better ability of thermal accumulation
- low thermal conductivity of the interior surface layer

Air permeability plays a significant role in the energy efficiency of buildings and is an essential part of a healthy living space. Air leakage or a draught may lead to potential mould growth and structural degradation within building components caused by the penetration of humid air from the room side into the construction. These leaks may negatively affect thermal comfort and result in increased energy consumption.

Protection against humidity is one of the main demands on timber constructions. The purpose is to reduce the humidity in order to prevent defects. Possible causes of humidity are:

- precipitation (please see: protection against influences of the weather)
- construction humidity (wet construction process, moisture contained in building components)
- vapour diffusion, leaking humid air
- Surface condensation (e.g. thermal transfer of a steel construction)
- capillarity (constructions in contact with ground, spraying water, contact with construction elements such as concrete slab, wet masonry)

The **acoustic demands** should consider both exterior noises, as well as the noise from adjacent rooms. Locating the noise cause is crucial: in case of a direct contact between the noise

source and the building construction, we consider this as the impact sound transmission (L_{nw}) (for ceilings and floors only). If there is no direct contact we speak of the air soundproof factor (R_w). A high value of the air sound transmission is better whereas the impact sound transmission is better when its value is low.

Fire protection is crucial when designing the building structure and the individual building components and joints. Two basic parameters are distinct: the behaviour of the individual building components in relation to fire as specified by the EU regulation and the behaviour to fire of the entire construction (e. g. the fire resistance of the wall, the ceiling). The fire resistance of the building is defined by one or more of the following decisive factors: R – load-bearing function, E – fire partition function, I – thermal insulation function.

The evaluation of the acoustic properties and the fire resistance of the building structure are always related to the entire construction. The above parameters may be optimized with the appropriate assembly and the suitable selection of materials, as well as with proper joints and connections. Also other factors, which cannot be described throughout this publication, are decisive. For construction examples including the structural-physical parameters please see chapter 6. 7.

6.2. Structural-physical and other properties of OSB boards

Table 6.1 – Structural-physical properties of OSB boards

property		test method	thickness			
			6 to 10 mm	>10 to <18 mm	18 to 25 mm	>25 to 32 mm
KRONOSPAN OSB SUPERFINISH® ECO, type OSB/3						
thermal conductivity factor λ [1]		EN 12664	0.1 W/mK		0.091 W/mK	
vapour diffusion resistance factor μ [1]		EN 12524	143		118	
air soundproof factor R_w (C; C_{tr}) [1]		EN ISO 717-1	25 (-1, -2)		27 (0, -1)	
linear expansion (rel. humidity) [2, 3]	$\delta l_{65, 85}$	EN 318	∥ 0.34 mm/m, ⊥ 0.64 mm/m			
	$\delta l_{65,35}$		∥ -0.69 mm/m, ⊥ -1.01 mm/m			
bending strength major/minor axis [2]	grand mean value	EN 310	29.2 / 16.0 MPa			
	lower 5% quintile value		24.5 / 14.1 MPa			
modulus of elasticity major/minor axis [2]	grand mean value	EN 310	5,017 / 1,964 MPa			
	lower 5% quintile value		4,294 / 1,778 MPa			
spread of flame index		EN 13501-1	83.8 mm/min			
reaction to fire		EN 13501-1	class D-s1, d0			
KRONOSPAN OSB SUPERFINISH® BAU ECO (Z-9.1-627)						
vapour diffusion resistance factor		DIN 4108-3	500 % / %			
shrink and swell factor α		–	0.003 % / %			

[1] Measurement carried out for OSB in 10 and 18 mm thick.
[2] Determined for OSB/3, thickness 22 mm.
[3] Length variations are determined in relation to the relative air humidity variations.

Remark: Above values are determined by independent laboratory tests (please see chapter 3 for certificates and protocols).

6.3 Static calculation methods with OSB SUPERFINISH® ECO

6.3.1 Calculation methods for timber framed constructions

Static calculations for timber framed constructions are made in accordance with the valid standards. For the EU-countries the following are applicable:

- valid European norms (Eurocode 5) with adjustments as per national application documents (NAD) for the respective country
- national norms (see table)

country	note to Eurocode 5	national standard
Czech Republic	ČSN EN 1995-1-1: 2006 + NAD (ČSN 731701)	ČSN 73 1702 (mod DIN 1052:2004)
Slovakia	STN ENV 1995-1-1: 2004 + NAD	STN 73 1701
Germany	DIN EN 1995-1-1:2004 + NAD	DIN 1052:2004
Austria	ÖNORM EN 1995-1-1: 2004 + NAD	ÖNORM B 4100-2
Switzerland	SN EN 1995-1-1:2004	SIA 265:2003
Great Britain	BS EN 1995-1-1: 2004 + NAD	BS 5268
Italy	UNI ENV 1995-1-1: 2004 + NAD	–

For static calculation and evaluation purposes only approved values are applicable. The values listed in the European Standard EN 300 relate to product properties (see chapter 3) but they are not characteristic values to be used in design calculations.

- For OSB SUPERFINISH® ECO the characteristic values as per EN 12 369-1 „Wood-based panels – Characteristic values for structural design“, and as per NAD in EN 1995-1-1:2004 are applicable. For calculations as per DIN 1052:2004 the values of this standard may be used.
- The characteristic values for OSB SUPERFINISH® BAU ECO have been tested for the National Technical Approval (abZ – Allgemeine bauaufsichtliche Zulassung Nr. Z-9.1-627) and published by the German Institute for Civil Engineering, Berlin (DIBt – Deutsches Institut für Bautechnik). Permanent quality control and regular supervision by independent national certification agencies ensure full compliance to the above approval.

6.3.2 Characteristic values of OSB SUPERFINISH® ECO

Table 6.4 and 6.5: Characteristic values of strength and rigidity in MPa

OSB SUPERFINISH® ECO, type OSB/3 (as per EN 13986)									
load impact direction		panel thickness [mm]							
		direction of major axis [1]				direction of minor axis			
		směr zatížení	8 – 10	> 10 – 18	> 18 – 25	směr zatížení	8 – 10	> 10 – 18	> 18 – 25
bending right-angled to panel surface	$f_{m,k}$ $E_{m,mean}$		18 4,930	16.4 4,930	14.8 4,930		9 1,980	8.2 1,980	7.4 1,980
bending in panel surface	$f_{m,k}$ $E_{m,mean}$		– –	– –	– –		– –	– –	– –
tension in panel surface	$f_{t,k}$ $E_{t,mean}$		9.9 3,800	9.4 3,800	9 3,800		7.2 3,000	7 3,000	6.8 3,000
compression in panel surface	$f_{c,k}$ $E_{c,mean}$		15.9 3, 800	15.4 3,800	14.8 3,800		12.9 3,000	12.7 3,000	12.4 3,000
shearing in panel surface	$f_{v,k}$ [1] G_{mean}		1 50	1 50	1 50		1 50	1 50	1 50
shearing right-angled to panel surface	$f_{v,k}$ [2] G_{mean}		6.8 1,080	6.8 1,080	6.8 1,080		6.8 1,080	6.8 1,080	6.8 1,080

OSB SUPERFINISH® BAU ECO (Z-9.1-627), type OSB/4									
load impact direction		panel thickness [mm]							
		direction of major axis [1]				direction of minor axis			
		směr zatížení	8 – 10	> 10 – 18	> 18 – 30	směr zatížení	8 – 10	> 10 – 18	> 18 – 30
bending right-angled to panel surface	$f_{m,k}$ $E_{m,mean}$		21 8,300	26 8,400	29 9,500		10 2,400	12 2,600	13 2,800
bending in panel surface	$f_{m,k}$ $E_{m,mean}$		17 3,900	19 4,000	21 4,700		9 2,000	12 2,300	14 2,900
tension in panel surface	$f_{t,k}$ $E_{t,mean}$		0: 10 5,300	0: 11 5,100	0: 13 6,100		90: 5 2,600	90: 7 2,900	90: 8 3,400
	$f_{t,k}$ $E_{t,mean}$		30: 6.4 3,800	30: 8.9 3,900	30: 10.1 4,500		60: 4.4 2,700	60: 6.5 2,800	60: 8.4 3,600
	$f_{t,k}$ $E_{t,mean}$		45: 6.2 3,300	45: 7.6 3,200	45: 8.9 3,700				
compression in panel surface	$f_{c,k}$ $E_{c,mean}$		13 5,300	15 5,100	17 6,100		9 2,600	10 2,900	11 3,400
smyk v rovině desky	$f_{v,k}$ [1] G_{mean}		1.3 250	1.6 250	1.9 250		1.5 250	1.9 250	2.4 250
shearing in panel surface	$f_{v,k}$ [2] G_{mean}		7 1,200	8 1,300	8 1,400		7 1,200	8 1,400	10 1,500
shearing right-angled to panel surface	R_h		18	19	27		18	19	27

[1] The major axis is identical with the direction of the surface layers and the direction of the panel stamp.
[2] In ENV 1995-1-1 this value is used for the specification of $f_{v,90,d}$
[3] In ENV 1995-1-1 this value is used for the specification of $f_{v,0,d}$

E_{mean} is the mean value of the modulus of elasticity. For the specification of the lower 5% value E_{05} the following is valid:
$E_{05} = 0.9\ E_{mean}$, similar $G_{05} = 0.9\ G_{mean}$

6.3.3 General Information

The orientation of the major axis of the panels (longitudinal direction) should be perpendicular to the construction frame with the support spacing (span) being related to the panel's size.

For a panel's size of 2,500 × 1,250 mm a span of 625 mm is appropriate. For roof constructions the following spacing is permissible: 417 mm and 833 mm.

For structural wall sheathing the installation of panels in the full length of the storey height is recommended. In such way easy fixing and avoiding cutting of panels unnecessarily reduces building costs.

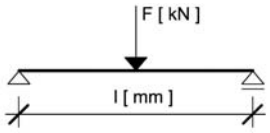
In order to optimize costs minimizing the amount of joints is more important than avoiding cutting from the point of view of structural strength. It is more important to minimize the amount of joints than to optimize the board's utilization by means of extra cutting.

To avoid deflection of the construction, the minimum panel thickness of the sheathing generally should be calculated as follows: panel thickness = support span [mm]/50.

6.3.4 Tables with temporary load-carrying capacity of OSB SUPERFINISH® ECO and OSB SUPERFINISH® BAU ECO as per DIN 1052:2004 for a maximum deflection of 1/300th of span

The tabled values refer to temporary load duration, in case of a permanent load duration the values should be reduced by 50 %. The rated load is specified by multiplying the standard load with the relevant load coefficient.

Point load on simple beam



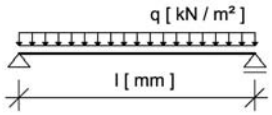
- span in direction of the major axis

thickness [mm]	span (axial distance between supports) [mm]											
	312	400	417	500	600	625	700	800	833	900	1,000	1,250
	max. load-carrying capacity [kN] for 1 m panel width											
12	1.17	0.71	0.65	0.45	0.32	0.29	0.23	0.18	0.16	0.14	0.11	0.07
15	2.28	1.39	1.28	0.89	0.62	0.57	0.45	0.35	0.32	0.27	0.22	0.14
18	3.94	2.40	2.20	1.53	1.06	0.98	0.78	0.60	0.55	0.47	0.38	0.25
22		4.37	4.03	2.80	1.94	1.79	1.43	1.09	1.01	0.86	0.70	0.45
25				4.11	2.85	2.63	2.01	1.60	1.48	1.27	1.03	0.66
30					4.93	4.54	3.62	2.77	2.56	2.19	1.77	1.14

- span in direction of the minor axis

thickness [mm]	span (axial distance between supports) [mm]											
	312	400	417	500	600	625	700	800	833	900	1,000	1,250
	max. load-carrying capacity [kN] for 1 m panel width											
12	0.47	0.29	0.26	0.18	0.13	0.12	0.09	0.07	0.07	0.06	0.05	0.03
15	0.92	0.56	0.51	0.36	0.25	0.23	0.18	0.14	0.13	0.11	0.09	0.06
18	1.58	0.96	0.89	0.62	0.43	0.39	0.31	0.24	0.22	0.19	0.15	0.01
22		1.76	1.62	1.12	0.78	0.72	0.57	0.44	0.41	0.35	0.28	0.18
25				1.65	1.15	1.06	0.84	0.64	0.59	0.51	0.41	0.26
30					1.98	1.82	1.45	1.11	1.03	0.88	0.71	0.46

Uniformly distributed load on simple beam



- span in direction of the major axis

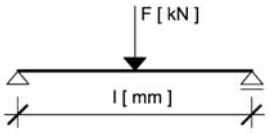
thickness [mm]	span (axial distance between supports) [mm]											
	312	400	417	500	600	625	700	800	833	900	1,000	1,250
	max. load-carrying capacity [kN/m²] for 1 m panel width											
12	5.98	2.84	2.51	1.45	0.84	0.74	0.53	0.35	0.31	0.25	0.18	0.09
15		5.55	4.90	2.84	1.64	1.45	1.03	0.69	0.61	0.49	0.35	0.18
18		9.58	8.46	4.91	2.84	2.51	1.79	1.20	1.06	0.84	0.61	0.31
22				8.96	5.18	4.59	3.26	2.19	1.94	1.54	1.12	0.57
25					7.61	6.73	4.79	3.21	2.84	2.25	1.64	0.84
30						11.63	8.28	5.55	4.91	3.90	2.84	1.45

- span in direction of the minor axis

thickness [mm]	span (axial distance between supports) [mm]											
	312	400	417	500	600	625	700	800	833	900	1,000	1,250
	max. load-carrying capacity [kN/m²] for 1 m panel width											
12	2.40	1.14	1.01	0.58	0.34	0.30	0.21	0.14	0.13	0.10	0.07	0.04
15	4.69	2.23	1.97	1.14	0.66	0.58	0.42	0.28	0.25	0.20	0.14	0.07
18	8.11	3.85	3.40	1.97	1.14	1.01	0.72	0.48	0.43	0.34	0.25	0.13
22		7.03	6.20	3.60	2.08	1.84	1.31	0.88	0.78	0.62	0.45	0.23
25			9.10	5.28	3.06	2.70	1.92	1.29	1.14	0.91	0.66	0.34
30				9.12	5.28	4.67	3.33	2.23	1.97	1.56	1.14	0.58

Tables with temporary load-carrying capacity of OSB SUPERFINISH® BAU ECO

Point load on simple beam



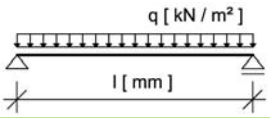
- span in direction of the major axis

thickness [mm]	span (axial distance between supports) [mm]											
	312	400	417	500	600	625	700	800	833	900	1,000	1,250
	max. load-carrying capacity [kN] for 1 m panel width											
12	1.72	1.21	1.11	0.77	0.54	0.50	0.40	0.30	0.28	0.24	0.19	0.12
15	2.69	2.10	2.01	1.51	1.05	0.97	0.77	0.59	0.55	0.47	0.38	0.24
18			2.90	2.42	1.81	1.67	1.33	1.02	0.94	0.81	0.65	0.42
22				4.07	3.39	3.25	2.75	2.11	1.94	1.67	1.35	0.86
25					4.38	4.20	3.75	3.09	2.85	2.44	1.98	1.27
30						7.68	6.86	5.34	4.93	4.22	3.42	2.19

- span in direction of the minor axis

thickness [mm]	span (axial distance between supports) [mm]											
	312	400	417	500	600	625	700	800	833	900	1,000	1,250
	max. load-carrying capacity [kN] for 1 m panel width											
12	0.62	0.37	0.34	0.24	0.17	0.15	0.12	0.09	0.09	0.07	0.06	0.04
15	1.20	0.73	0.67	0.47	0.32	0.30	0.24	0.18	0.17	0.14	0.12	0.07
18	1.94	1.26	1.16	0.81	0.56	0.52	0.41	0.32	0.29	0.25	0.20	0.13
22		2.42	2.29	1.59	1.10	1.02	0.81	0.62	0.57	0.49	0.40	0.25
25		3.13	3.00	2.33	1.62	1.49	1.19	0.91	0.84	0.72	0.58	0.37
30				4.03	2.80	2.58	2.06	1.58	1.45	1.24	1.01	0.65

Uniformly distributed load on simple beam



- span in direction of the major axis

thickness [mm]	span (axial distance between supports) [mm]											
	312	400	417	500	600	625	700	800	833	900	1,000	1,250
	max. load-carrying capacity [kN/m²] for 1 m panel width											
12	9.80	4.72	4.18	2.44	1.42	1.25	0.89	0.60	0.53	0.42	0.31	0.15
15	17.25	9.10	8.06	4.72	2.75	2.44	1.74	1.17	1.03	0.82	0.60	0.30
18	24.85	15.12	13.72	8.08	4.72	4.18	2.99	2.01	1.78	1.41	1.03	0.53
22		25.41	23.38	16.26	9.59	8.51	6.10	4.12	3.65	2.90	2.12	1.09
25			30.19	21.00	13.92	12.37	8.88	6.00	5.33	4.24	3.10	1.60
30					24.05	21.38	15.34	10.37	9.21	7.33	5.36	2.76

- span in direction of the minor axis

thickness [mm]	span (axial distance between supports) [mm]											
	312	400	417	500	600	625	700	800	833	900	1,000	1,250
	max. load-carrying capacity [kN/m²] for 1 m panel width											
12	3.11	1.49	1.31	0.76	0.44	0.39	0.28	0.18	0.16	0.13	0.09	0.05
15	6.16	2.92	2.58	1.49	0.86	0.76	0.54	0.36	0.32	0.25	0.18	0.09
18	10.65	5.05	4.46	2.58	1.49	1.32	0.94	0.63	0.56	0.44	0.32	0.16
22		9.93	8.77	5.08	2.94	2.60	1.85	1.24	1.10	0.87	0.63	0.32
25			12.87	7.46	4.32	3.83	2.72	1.82	1.61	1.28	0.93	0.47
30				12.90	7.47	6.61	4.70	3.15	2.79	2.21	1.61	0.83

The clear difference between the tabled values for the panel's major and minor axis is distinct. When installing the panels it is necessary to pay attention to the board's orientation.

Uniformly distributed load on combined beam with two identical fields

- span in direction of the major axis

thickness [mm]	span (axial distance between supports) [mm]											
	312	400	417	500	600	625	700	800	833	900	1,000	1,250
	max. load-carrying capacity [kN/m²] for 1 m panel width											
12	11.04	6.58	5.81	3.37	1.95	1.72	1.23	0.82	0.73	0.57	0.42	0.21
15		10.50	9.66	6.58	3.81	3.37	2.34	1.61	1.42	1.12	0.82	0.42
18					6.58	5.82	4.14	2.77	2.46	1.95	1.42	0.73
22					11.29	10.40	8.29	5.73	5.08	4.02	2.93	1.50
25						13.44	10.71	8.20	7.45	5.91	4.30	2.20

6.4 OSB SUPERFINISH® ECO as load-bearing construction element

In accordance with EN 300 [1] and EN13986 [2] OSB SUPERFINISH® ECO is classified as OSB/2, OSB/3 and OSB/4:

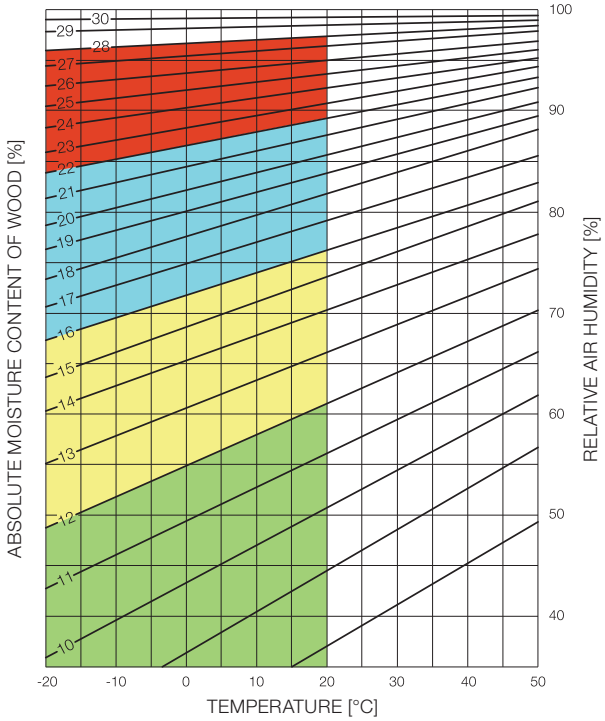
OSB/2 load-bearing boards for use in dry conditions [3]	service class 1 [5]
OSB/3 load-bearing boards for use in humid conditions [4]	service class 2 [5]
OSB/4 heavy duty load-bearing boards for use in humid conditions [4]	service class 2 [5]

Eurocode 5 covers the design of timber structures and defines the service classes as application classes:

- **Application class 1** (dry condition) is characterised by a moisture content in the material corresponding to a temperature of 20 °C and a relative humidity of the surrounding air only exceeding 65 % for a few weeks per year. The average moisture content in most coniferous tree woods will not exceed 12 %.
- **Application class 2** (humid condition) is characterised by a moisture content in the material corresponding to a temperature of 20 °C and a relative humidity of the surrounding air only exceeding 85 % for a few weeks per year. The average moisture content in most coniferous tree woods will not exceed 20 %.
- **Application class 3** (external condition) is characterised by climatic conditions leading to a higher humidity content than in application class 2.

OSB/3 and OSB/4 meet the requirements of the application classes 1 and 2.

In common with solid wood, the moisture content within wood-based panel products varies with the temperature and relative humidity of the surrounding environment. Depending upon the moisture content of the ambient air, wood-based panel products absorb or release water vapour, so establishing an equilibrium moisture content.



Above equilibrium moisture content chart indicates the dependency of the moisture content of coniferous wood with the relative humidity of the surrounding air and the temperature.

- In the green field the equilibrium moisture content of the wood material corresponds to application class 1.
- In the yellow and the blue field the equilibrium moisture content of the wood material corresponds to application class 2. In the yellow field the wood should moreover not be attacked by moulds.
- In the red field the equilibrium moisture content of the wood material corresponds to application class 3 (e. g. unprotected exterior conditions).

1) EN 300 – Oriented strand boards (OSB) – Definition, classification and specifications
2) EN 13986 – Wood-based panels for use in construction – Characteristics, evaluation of conformity and marking
3) This type of boards is designed for use in biological hazard class 1 as per EN 335-3.
4) This type of boards is designed for use in biological hazard classes 1 and 2 as per EN 335-3.
5) As defined in DIN EN 1995-1-1:2005 - EUROCODE 5: Design of timber structures – Part 1-1: General – Common rules and rules for buildings.

6.5 OSB SUPERFINISH® ECO and diffusion resistance

The protection of the building against humidity is directly connected with the vapour diffusion, the protection against humidity and the air tightness of the construction.

Moisture movement by diffusion in building constructions refers to the rate at which humid air moves from an area of high humidity to an area of lower humidity through porous construction components. Vapour tends to move from the conditioned "heated" internal side into the building construction to balance temperature and pressure between the interior and exterior of the building. If the temperature drops below a certain value the vapour may condensate and may threaten the functionality of the building construction and shorten its lifetime. This can be prevented by an appropriate structure of the construction and by complying accurately with the construction procedures obliged for the individual building components.

The migration of vapour and the penetration of moisture from the inside of the building into the external envelope can be regulated by including an effective diffusion resistant layer.

The **diffusion resistant layer (vapour barrier or vapour retarder)** is to install on the warm side of the insulation. Its function is to retard the migration of moisture by diffusion and to help prevent the interior moisture from penetrating into the construction and condense. It protects constructions against the potential risks associated with condensation within the construction.

The diffusion resistance rate depends primarily on the structure of the construction, but also the ventilation and the interior and exterior climatic conditions are decisive. To guarantee a problem-free migration of the water vapour the individual layers of the building's envelope should be composed in this way that their diffusion resistance rate decreases gradually from the inside to the outside.

The required diffusion resistance differs with the construction type. Therefore various material types are utilizable, e. g. foils, paper webs. Wood-based panels, such as OSB SUPERFINISH® ECO, are outstanding vapour retarders.

The closed **air barrier** is generally combined with a vapour barrier (foil or wood-based panel in combination with various additional materials such as adhesive tapes, adhesive paints and fastening battens) to guarantee absolute air tightness of all joints, conveyance penetrations and connections. Air permeability testing is done throughout the construction phase and once the construction is completed e. g. through an on-site Blower Door Test. Mineral wool mats, fibreboards or wood siding do not provide sufficient air tightness. OSB SUPERFINISH® ECO is the most advantageous building material that meets all requirements of air impermeability. The penetration of moisture in the construction can furthermore be hindered by means of an exterior protective layer, which is particularly during the construction phase important as it does protect the already installed thermal insulation. OSB SUPERFINISH® ECO is also suitable for this purpose.

Diffusion open and closed systems

For easy understanding we differentiate between diffusion open (breathing) (DO) and diffusion closed (DU) constructions when specifying the distinctive timber framed construction types. The difference though between both types is rather vague. For our purposes we use the term diffusion open systems for constructions with OSB SUPERFINISH® ECO as vapour retarder and air barrier. Diffusion closed systems on the other hand do require an additional vapour barrier such as a thin plastic foil.

External walls and roofs are increasingly constructed as diffusion open systems: the material of the exterior layers is vapour permeable, thus no vapour barrier is needed for the interior side. The interior of diffusion open constructions are sheathed with diffusion resistant wood-based panels. OSB SUPERFINISH® ECO is extremely appropriate due to its sufficient high and at the same time variable diffusion resistance, which regulates the migration of the vapour from the inside to the outside most favourably.

Whether you are constructing a diffusion open or a conventional timber frame, OSB SUPERFINISH® ECO provides you with the following benefits: they cover a static function, protect the building against climatic effects, regulate the water vapour diffusion and if applied correctly they solve the problem of the air impermeability effectively.

Diffusion open systems are highly breathable constructions with increased popularity securing a healthy living environment. When used in diffusion open systems OSB SUPERFINISH® ECO functions as a load-bearing element but at the same time it operates as vapour barrier. This multifunctional use of a single construction component reduces labour and material costs, reduces the risk of damaging the vapour barrier and offers an excellent price/performance ratio.

6.6 General construction principles

6.6.1 Structural floor decking and flooring

Structural floor decking (subfloor)

Installation:

- With all square edged boards a 3 mm expansion gap should be allowed between boards and edges.
- All joints in tongue-and-groove panels should be glued with a suitable T+G-adhesive (e. g. polyurethane).
- The panels should be installed with the major axis (i. e. direction of surface layers and panel stamp) across the beams and the short edge joints must be staggered.
- Tongue-and-groove boards should have both short edges supported with beams. Square edged boards should be continuously supported along all edges.
- For both square edged and tongue-and-groove boards a 15 mm (min.) expansion gap should be provided at wall perimeters to allow for possible expansion.

Fixing:

- Deformed shank or ring thread nails should be used in preference to common smooth nails. Minimum nail length should be 50 mm or 2.5 times the board thickness, whichever is greater.
- Minimum length of wood screws should be 45 mm or 2.5 times the board thickness, whichever is greater. Minimum diameter is 4.2 mm.
- Recommended maximum spacing of the fixings is 150 mm at the perimeter and 300 mm for intermediate fixing.
- Fixing should not be inserted closer to the edges than min. 10 mm.

Recommended max. support spacing (o. c.):

recommended panel thickness (min.)	support spacing from centre lines
15 mm	300 – 400 mm
18 mm	400 – 600 mm
22 mm	600 – 800 mm

Note: Above figures are not binding and intended as a guideline only. They are dependent on panel length and exact static load.

Protection against humidity:

When installed directly above the subsoil wooden ceiling constructions on the ground floor level should be insulated against humidity. An insulating foil should be positioned to protect from moisture. The barrier should be continuous, without any gaps. During installation the necessary should be done to protect against exposure to the weather. Any temporary exposure should be for the shortest possible period and if wetted, an effective drainage should be provided in order to allow the boards to dry out thoroughly.

Structural flooring

Generally spoken, the principles for structural floor decking are applicable. To reduce the impact sound transmission an additional sound insulation layer should be installed on the beams.

Floating flooring constructions

The flooring construction consists of OSB SUPERFINISH® ECO panels with tongue and groove profiling and with a thickness of 22–25 mm. Even more appropriate is the use of 2 panels of each 15–18 mm thick (min. 12 mm thick). Where no heavy traffic at the tongue-and-groove joints is expected or for floors with low requirements a single-layer construction is suitable. In any other case a two- or multi-layer construction is recommended. The panels are to be installed on the sound insulation layer (hardboards of mineral wool or polystyrene destined for flooring constructions) with the individual layers laid at 90° to each other. They should be glued and/or screwed together. To reduce the risk of creaking in use it is recommended to screw the individual layers in both directions and to incorporate a separation layer, for instance Mirelon of 2–3 mm thick.

Due to its minor tolerances **OSB SUPERFINISH® (BAU) ECO** is a suitable underlayment for both resilient and hard floor coverings which are either bonded with adhesives or loose-laid.

6.6.2 Structural wall sheathing

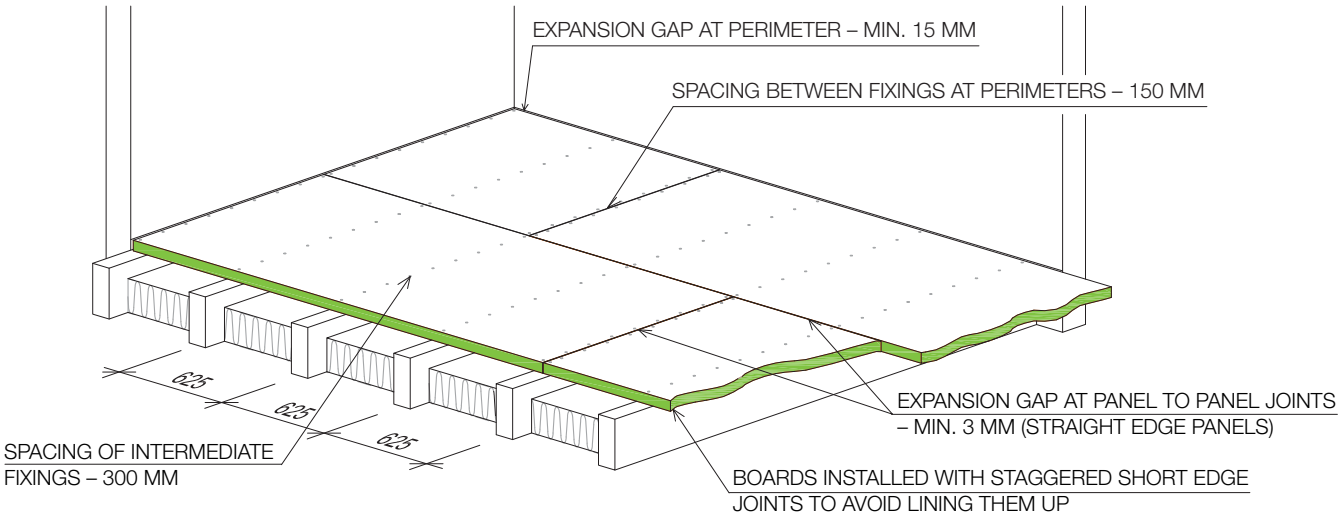
Installation:

- When applied in structural wall sheathing OSB panels may be placed either vertically or horizontally. For ease of fixing and to avoid cutting panels unnecessarily, the panel length should relate and run entirely along the full storey height. This is particularly preferred for bearing walls.
- When installing horizontally all edges should be supported by and fixed to a framing member.
- In timber-framed structures sheathing boards may be installed on one or on both sides of the framing. When applied to exterior walls, sheathing boards may be installed to the outside of the framing or internally to the frame.

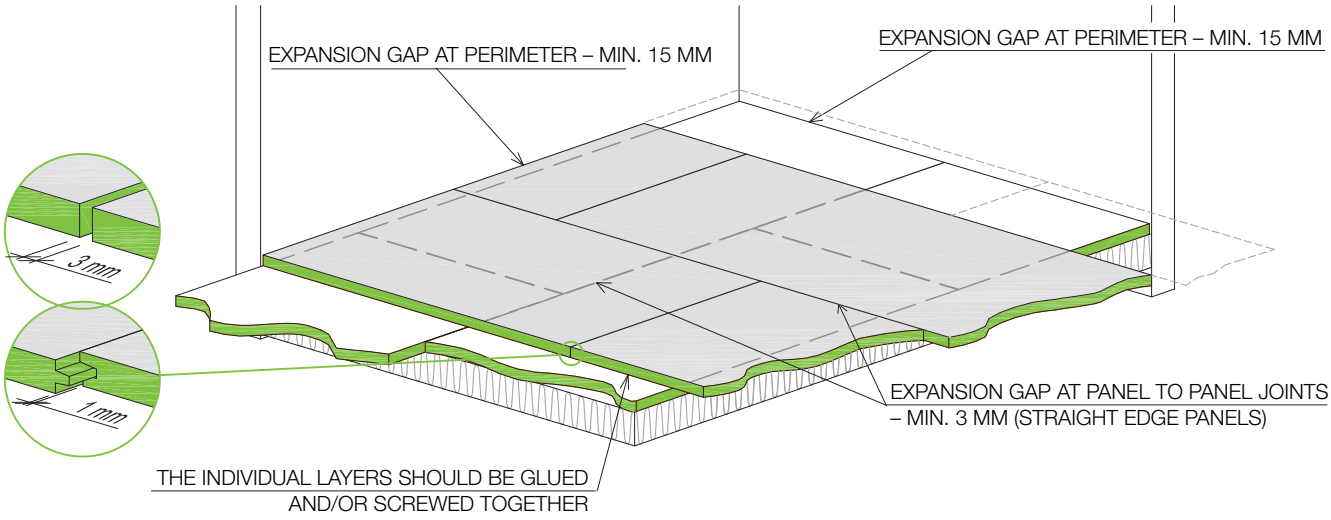
Expansion gaps:

- To avoid any possible water absorption a 25 mm (min.) expansion gap should be observed between the bottom frame and the concrete slab. The gap may be incorporated by installing the complete structure on wedge bases and filling the space with cement mortar. Where the frame is directly to install on the concrete slab the timber-framed structure is to protect chemically and the panels are to raise with min. 25 mm (see detail on next page).
- A 3 mm (min.) expansion gap should be left between the panels and fixed objects such as door frames and window openings.

STRUCTURAL FLOOR DECKING / FLOORING CONSTRUCTIONS ON LOAD-BEARING FRAMEWORK



FLOATING FLOORING CONSTRUCTIONS (TWO-LAYER CONSTRUCTION)



Fixing:

- Deformed shank or ring thread nails should be used in preference to common smooth nails. Minimum nail length should be 50 mm or 2.5 times the board thickness, whichever is greater.
- Minimum length of wood screws should be 45 mm or 2.5 times the board thickness, whichever is greater. Minimum diameter is 4.2 mm.
- Fixing should not be inserted closer to the edges than min. 10 mm – for bearing walls not closer than 7 times the diameter of the fixing device (min. 20 mm).

Recommended spacing of fixings (o. c.)

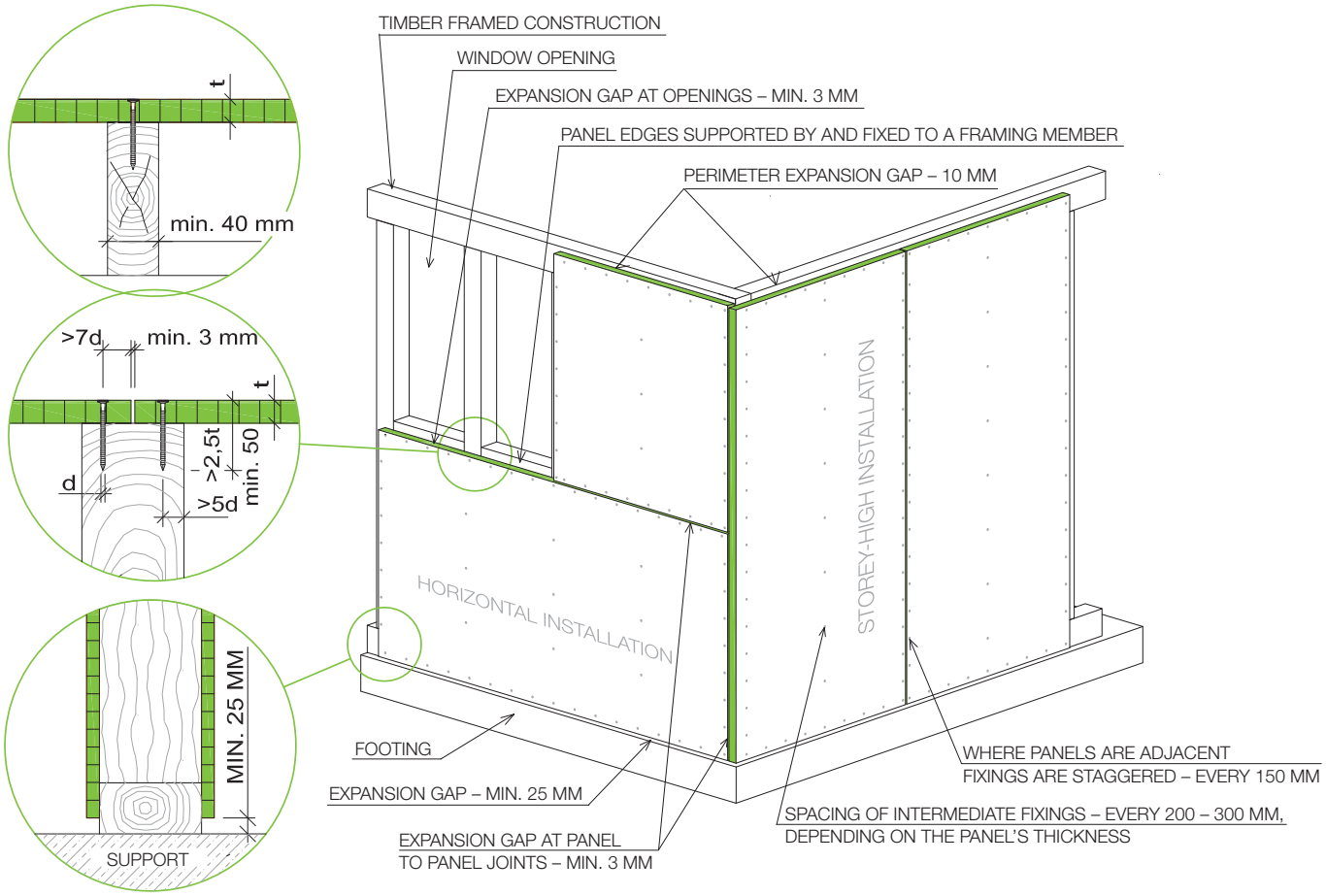
panel thickness	at perimeter	intermediate
9 – 12 mm	100 mm	200 mm
12 – 15 mm	125 mm	250 mm
15 – 22 mm	150 mm	300 mm

Note: For load-bearing walls the spacing should be determined by a statistical calculation.

For stud spacings at 400 – 625 mm centres the recommended panel thickness for wall sheathing is min. 12 mm.

Thermal insulation and protection against humidity:

For an additional thermal and sound insulation the use of mineral wool and mineral plaster for the façade is recommended. Consideration should be given to the installation of the latter. For panels installed to the external face of exterior walls the diffusion resistance of the panel should be considered to control interstitial condensation risk within the wall panel. A panel installed to the inside of the frame may have sufficiently vapour resistance to act as an adequate diffusion resistant layer on condition that the panel to panel joints, as well as any connection to other construction elements are taped to stop water ingress and to improve air tightness. Tongue-and-groove panels should be glued with an appropriate adhesive (PUR, PVAC). Where the wood frame construction touches the concrete slab hydro insulation paint (e.g. bitumen-emulsion-based) should be provided to protect against rising damp.



6.6.3 Structural roof sheathing

Installation:

- Before installing the panels make sure the supporting rafters are in alignment, even and straight. Curved or uneven rafters affect the finished roof appearance.
- The panels should be installed with their long edges across the rafters with short edges supported on rafters. The distance between the rafters preferably should be 833 or 625 mm.
- When different or higher than 833 mm an additional structure of roof battens with a width of 80 to 100 mm should be used to avoid sagging. When installing these longitudinally every 417 or 625 mm, a reduction of the board thickness might be possible depending on the level of loading that is anticipated.
- The panels may be square edged or profiled but the following recommendations should be noted.
- Square edged boards:
  - Leave a 3 mm expansion gap at the panel edges or ends to allow for movement.
  - To avoid sagging or excessive gapping the long panel edges should be joined with small metal clips in the form of an "H".
- Tongue-and-groove boards:
  - To avoid sagging and for improved air tightness all tongue-and-groove joints should be glued with a PUR, PVAC adhesive.

Fixing:

- The boards should be fixed using corrosion resistant materials, e. g. of galvanised or stainless steel.
- Flat headed nails with a deformed shank or ring thread nails have superior holding power and should be used in preference to common smooth nails. Minimum nail length is 50 – 75 mm or 2.5 times the board thickness, whichever is greater. Minimum wire diameter is ≥ 3 mm.
- The minimum length of wood screws should be 45 mm or 2.5 times the board thickness, whichever is greater. Minimum diameter is 4.2 mm.
- To avoid tear out at board edges, fixing should not be inserted closer to the edges than 7 times the diameter of the fixing device (min. 20 mm).

Recommended frequency and pattern of nailing to rafters (o. c.):

Intermediate spacing of rafters	Recommended minimum board thickness
600 cm	12 mm
800 cm	15 mm
1,000 cm	18 mm

Recommended distance between fixing means on panel edges
150 mm

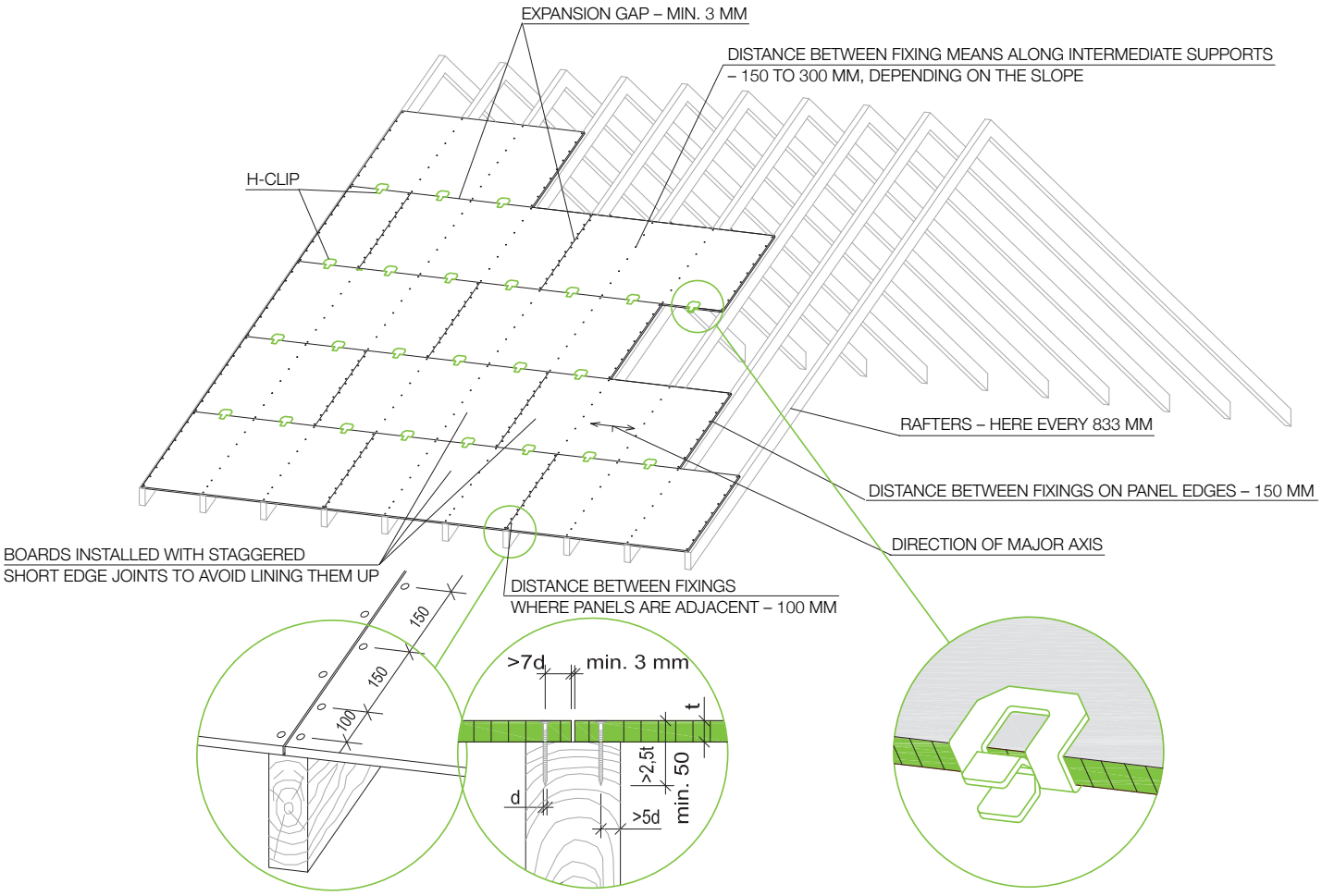
Recommended distance between fixing means along intermediate supports	
slope 40° and more	150 mm
slope 30–40°	200 mm
slope < 30°	300 mm
nails	3,1 × 50 mm

Note: The dimensions must be determined in accordance with the precise static load of the panels.

Thermal insulation and protection against humidity:
In diffusion open roof constructions OSB SUPERFINISH® ECO is considered to have sufficiently vapour resistance. For rooms with a common air humidity of 50 %, such as living rooms, offices, etc., this type of structure does not require an additional vapour barrier provided that the panel joints are sealed with a tape, or glued in case of a tongue-and-groove connection (please see page 28).

Protection against wetting:
Any exposure to water must be for the shortest possible period and the panels should be installed in a dry condition. As water can migrate from wet rafters and cause localised swelling of the boards, the rafters should be dry prior to sheathing. For further protection against water and humidity, stabilisation and storage, please see chapter 4 and 5.

Safety:
OSB is made from thin veneer strands that are bonded together with a synthetic resin. This offers OSB a remarkably smooth surface but might also be slippery, especially when wet or covered with sawdust. Installers therefore should follow accurately all applicable safety regulations.

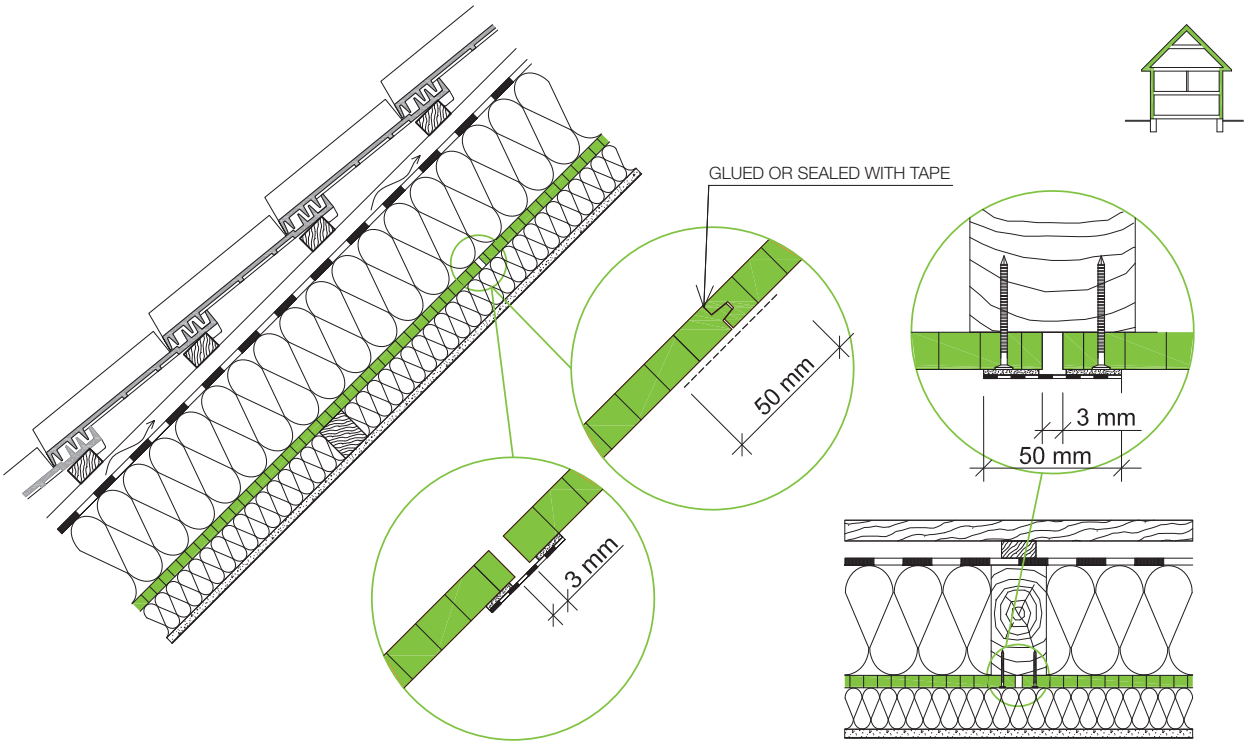


6.7 Timber framed construction structures

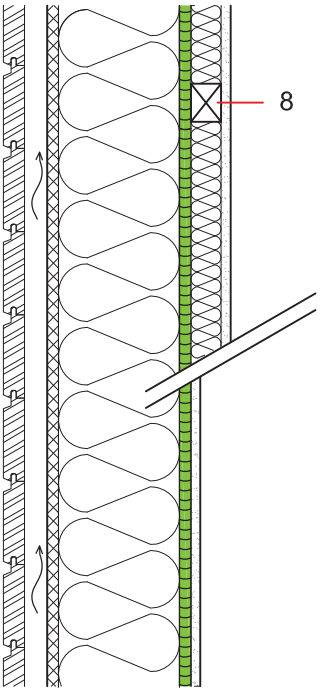
part	description	marking	details	page
A.1.	**Diffusion-open external structures (DO)**	**DO**		
A.1.1	Ventilated exterior constructions	DO-W-V	3	29
A.1.2	Exterior constructions with thermal insulation	DO-W-K	6	32
A.1.3	Flat roof constructions	DO-R-F	2	38
A.1.4	Pitched roof constructions	DO-R-P	1	40
A.2.	**Diffusion-closed external structures (DU)**	**DU**		
A.2.1	Ventilated exterior constructions	DU-W-V	1	41
A.2.2	Exterior constructions with thermal insulation	DU-W-K	4	42
A.2.3	Flat roof constructions	DU-R-F	2	46
A.2.4	Pitched roof constructions	DU-R-P	2	48
A.3.	**Interior constructions**	**I**		
A.3.1	Interior wall systems within living unit	I-W-F	1	50
A.3.2	Compartment walls between living units	I-W-D	1	51
A.3.3	Floor constructions within living unit	I-F-F	5	52
A.3.4	Floor constructions between living units	I-F-D	2	58
A.3.5	Floor constructions below unheated attic	I-F-T	3	60

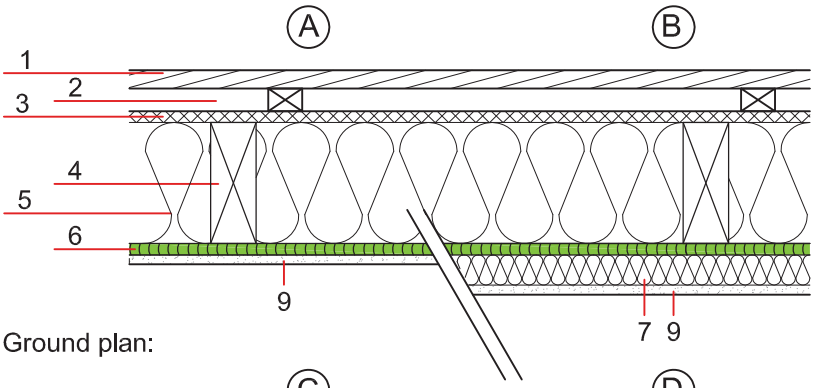
Note:
The structural-physical construction characteristics as designated below have been gathered from: Dataholz.com, Informationsdienst Holz, “Holzbau mit System“ (Josef Kolb, 2007)

As concerns diffusion-open constructions with OSB-panels (roof, external walls) the following principles for air impermeability should be observed:

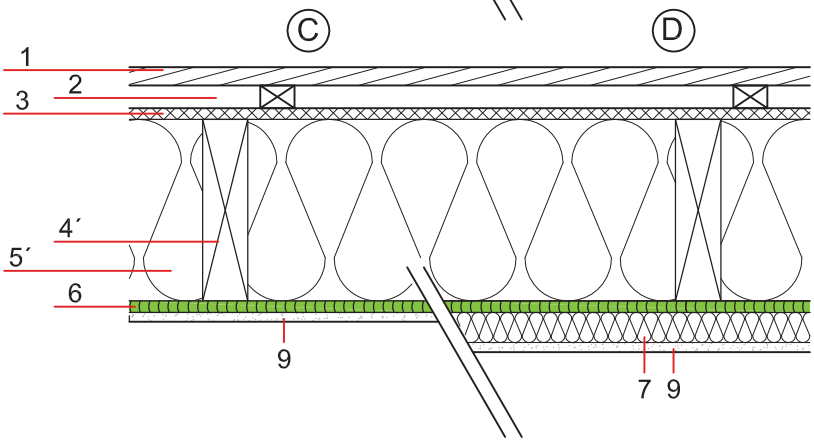


Construction type: external envelope of building - external wall
for standard, low energy and energy passive houses
System: timber framed, diffusion open
Variant: A - without installation gap standard house
B - with installation gap standard house
C - without installation gap low energy, energy passive house
D - with installation gap low energy, energy passive house
Coating: ventilated façade, finished wood siding



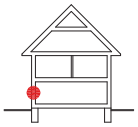


Ground plan:

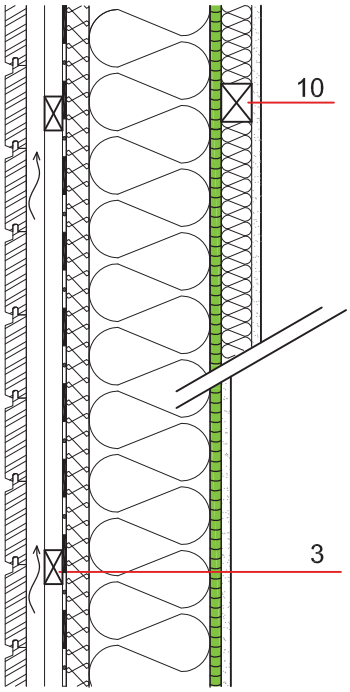


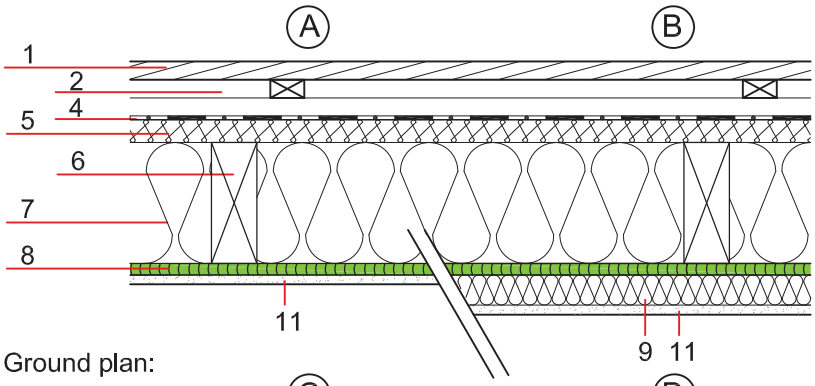
	Structure (exterior → interior)	Thickness [mm]	A	B	C	D
1	Finished wood siding	24	●	●	●	●
2	Battens 30/50 (or 30/80) + ventilation	30	●	●	●	●
3	MDF-board	15	●	●	●	●
4	Timber framed construction (60/160, e = 625 mm)	160	●	●	-	-
5	Thermal insulation - mineral or glass wool	160	●	●	-	-
4´	Timber framed construction (60/240, e = 625 mm)	240	-	-	●	●
5´	Thermal insulation - mineral or glass wool	240	-	-	●	●
6	**OSB SUPERFINISH® ECO** (air tight connected)	15	●	●	●	●
7	Additional insulation - mineral wool	40	-	●	-	●
8	Battens (a = 400 mm)	40	-	●	-	●
9	Gypsum plasterboard	12,5	●	●	●	●

Thermal insulation	U-value	U [W/m²K]	0,25	0,20	0,15	0,17
Fire protection	Fire resistance	REI [min]	REI 30			
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	47(-2;-8)	50(-3;-10)	49(-2;-8)	52(-3;-10)
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-		

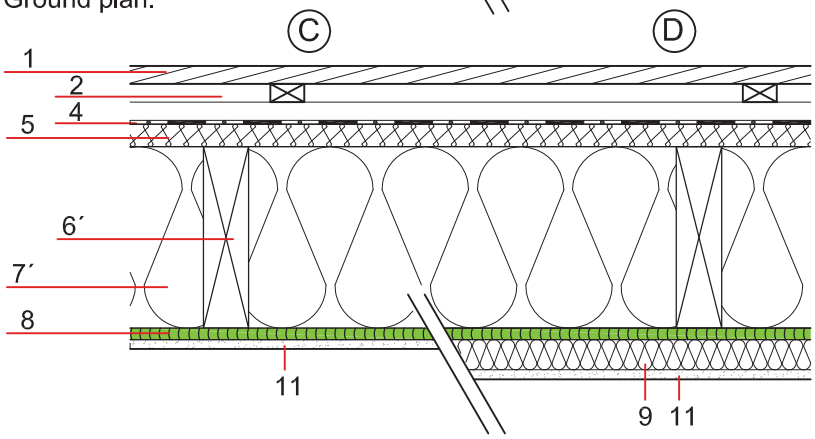


Construction type: external envelope of building - external wall
for standard, low energy and energy passive houses
System: timber framed, diffusion open
Variant: A - without installation gap standard house
B - with installation gap standard house
C - without installation gap low energy, energy passive house
D - with installation gap low energy, energy passive house
Coating: ventilated façade, finished wood siding





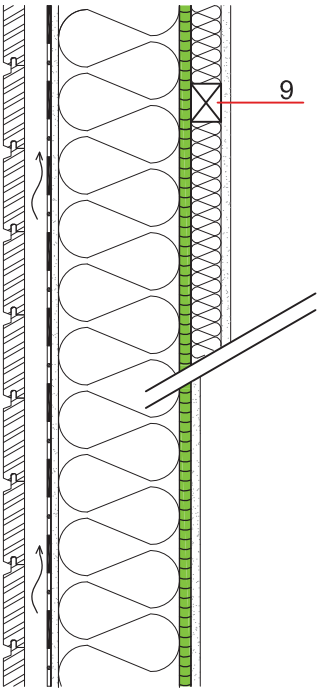
Ground plan:

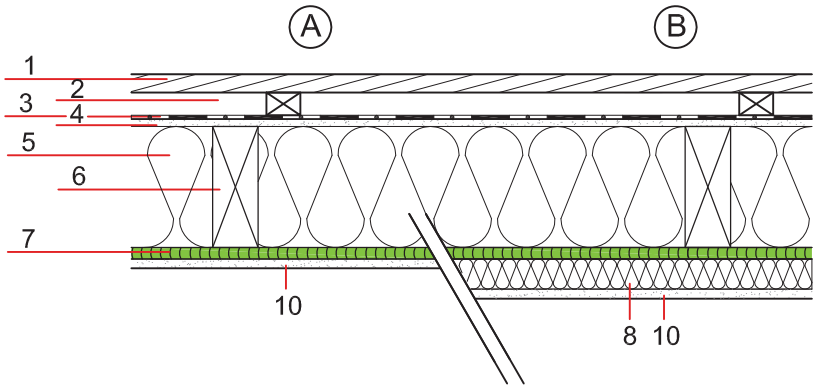


	Structure (exterior → interior)	Thickness [mm]	A	B	C	D
1	Finished wood siding	24	●	●	●	●
2	Battens + ventilation	24	●	●	●	●
3	Battens	24	●	●	●	●
4	Wind protective diffusion foil sd < 0,3 m	~1	●	●	●	●
5	Wood fibre board (150 kg/m³)	30	●	●	●	●
6	Timber framed construction (60/160, e = 625 mm)	160	●	●	-	-
7	Thermal insulation - mineral or glass wool	160	●	●	-	-
6´	Timber framed construction (60/240, e = 625 mm)	240	-	-	●	●
7´	Thermal insulation - mineral or glass wool	240	-	-	●	●
8	**OSB SUPERFINISH®ECO** (air tight connected)	15	●	●	●	●
9	Battens (a = 400 mm)	40	-	●	-	●
10	Additional insulation - mineral wool	40	-	●	-	●
11	Gypsum plasterboard	12,5	●	●	●	●

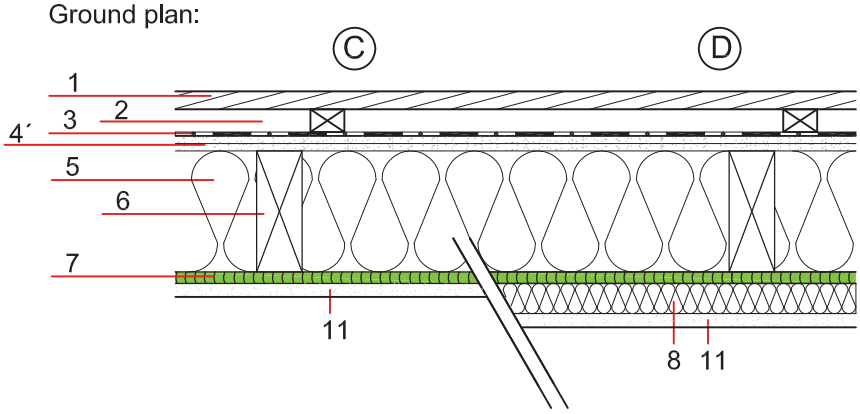
Thermal insulation	U-value	U [W/m²K]	0,22	0,18	0,16	0,14
Fire protection	Fire resistance	REI [min]	REI 30			
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	46(-2;-8)	50(-3;-10)	48(-2;-8)	52(-3;-10)
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	-	-

Construction type: external envelope of building - external wall with increased fire resistance
System: timber framed, diffusion open
Variant:
A - without installation gap REI 30
B - with installation gap REI 30
C - without installation gap REI 60
D - with installation gap REI 60
Coating: ventilated façade, finished wood siding





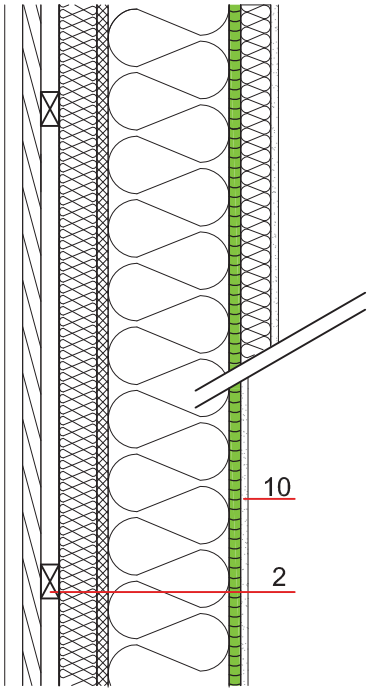
Ground plan:

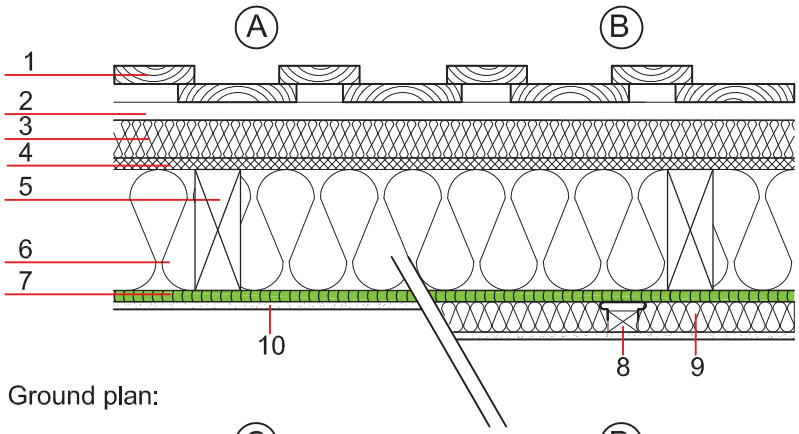


	Structure (exterior → interior)	Thickness [mm]	A	B	C	D
1	Finished wood siding	24	●	●	●	●
2	Battens	24	●	●	●	●
3	Wind protective diffusion foil sd < 0,3 m	~1	●	●	●	●
4	Gypsum fibre board	10	●	●	-	-
4´	Double gypsum fibre board	2x10	-	-	●	●
5	Thermal insulation - mineral or glass wool	160	●	●	●	●
6	Timber framed construction (e = 625 mm)	160	●	●	●	●
7	**OSB SUPERFINISH®ECO** (air tight connected)	15	●	●	●	●
8	Battens mounted on resilient clips	40	-	●	-	●
9	Additional insulation - mineral wool	40	-	●	-	●
10	Gypsum plasterboard	12,5	●	●	-	-
11	Gypsum plasterboard	18	-	-	●	●

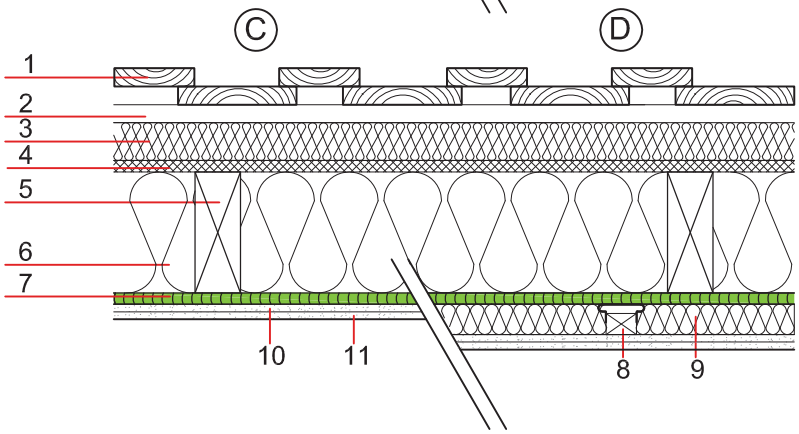
Thermal insulation	U-value	U [W/m²K]	0,26	0,21	0,25	20
Fire protection	Fire resistance	REI [min]	REI 30		REI 60	
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	47(-2;-8)	50(-3;-10)	49(-2;-7)	52(-2;-8)
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	-	-

Construction type: external envelope of building - external wall with increased fire resistance
System: timber framed, diffusion open
Variant:
A - without installation gap REI 30
B - with installation gap REI 30
C - without installation gap REI 60
D - with installation gap REI 60
Coating: non-ventilated façade, finished wood siding





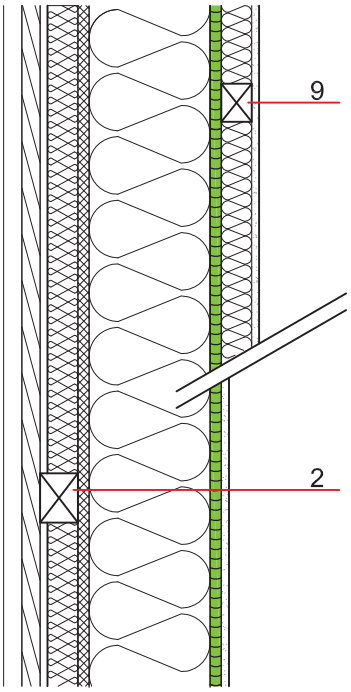
Ground plan:

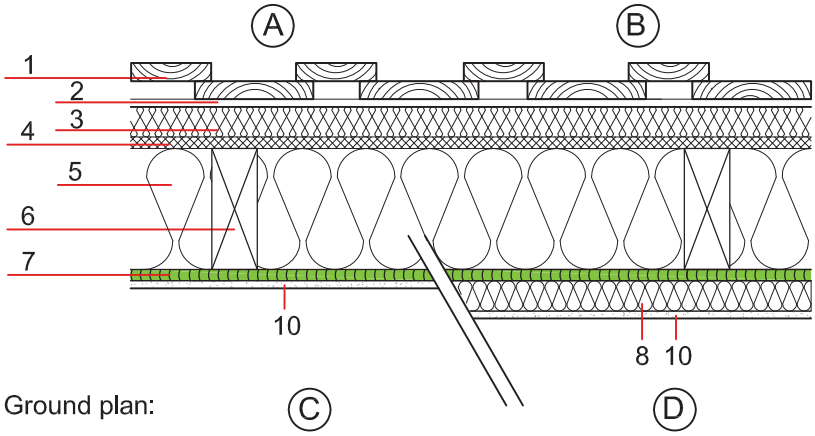


	Structure (exterior → interior)	Thickness [mm]	A	B	C	D
1	Finished wood siding	24	●	●	●	●
2	Battens	24	●	●	●	●
3	Wood fibre board (350-400 kg/m³)	50	●	●	●	●
4	MDF-board	15	●	●	●	●
5	Timber framed construction (60/160, e = 625 mm)	160	●	●	●	●
6	Thermal insulation - mineral or glass wool	160	●	●	●	●
7	**OSB SUPERFINISH®ECO** (air tight connected)	15	●	●	●	●
8	Battens mounted on resilient clips	40	-	●	-	●
9	Additional insulation - mineral wool	40	-	●	-	●
10	Gypsum plasterboard	12,5	●	●	●	●
11	Gypsum plasterboard	12,5	-	-	●	●

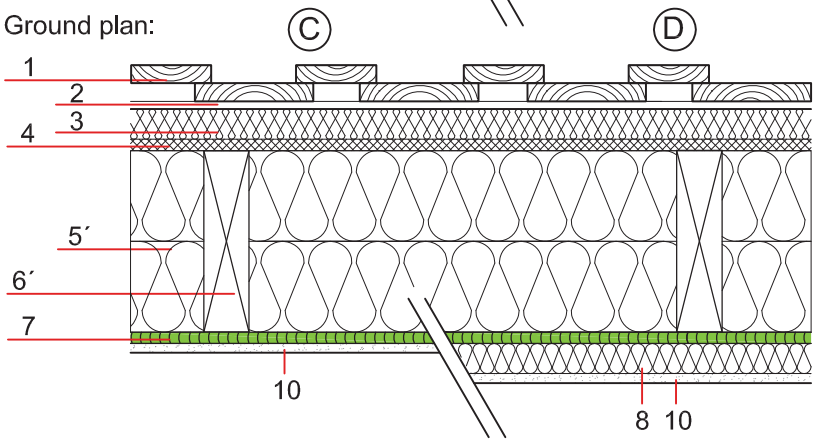
Thermal insulation	U-value	U [W/m²K]	0,20	0,17	0,20	0,17
Fire protection	Fire resistance	REI [min]	REI 30		REI 60	
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	50(-2;-7)	54(-3;-9)	51(-1;-6)	54(-2;-8)
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	-	-

Construction type: external envelope of building - external wall
for standard, low energy and energy passive houses
System: timber framed, diffusion open
Variant: A - without installation gap standard house
B - with installation gap standard house
C - without installation gap low energy, energy passive house
D - with installation gap low energy, energy passive house
Coating: non-ventilated façade, finished wood siding





Ground plan:

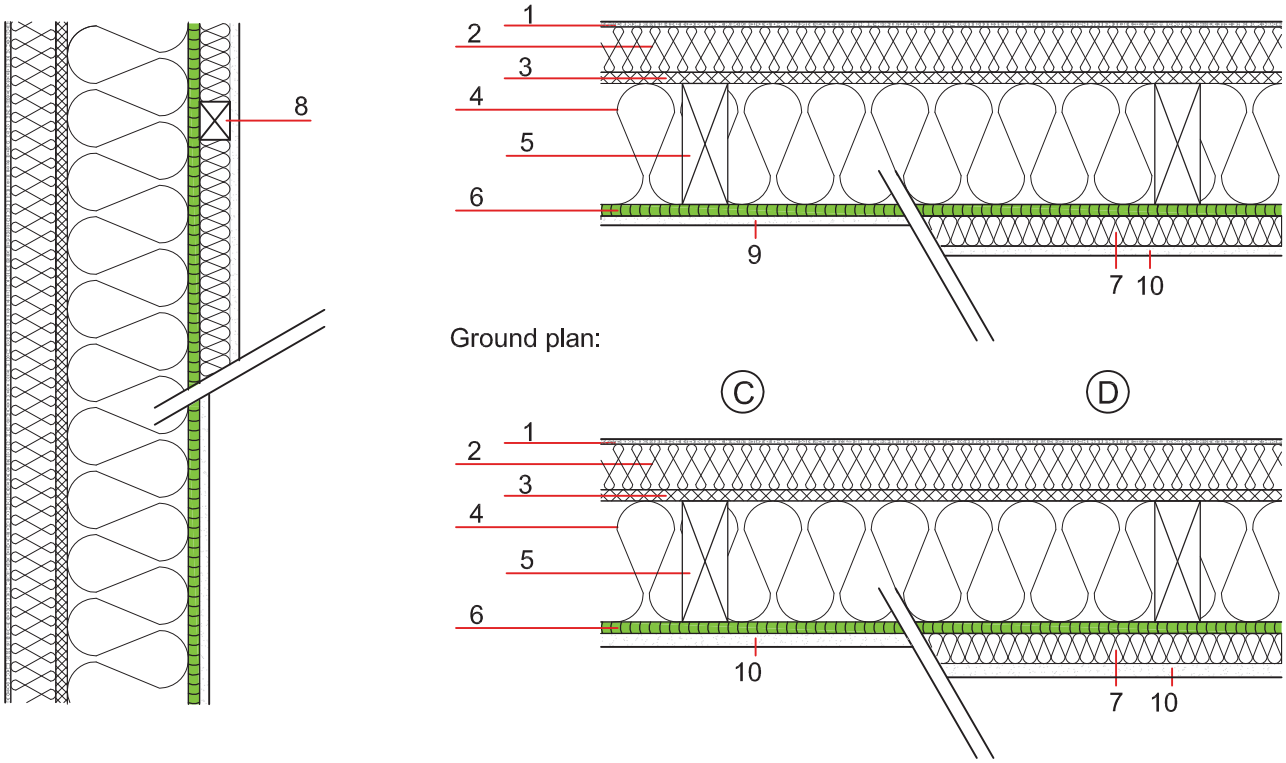


	Structure (exterior → interior)	Thickness [mm]	A	B	C	D
1	Finished wood siding	24	●	●	●	●
2	Battens	50	●	●	●	●
3	Wood fibre board (250 kg/m³)	40	●	●	●	●
4	MDF-board	15	●	●	●	●
5	Timber framed construction (60/160, e = 625 mm)	160	●	●	-	-
6	Thermal insulation - mineral or glass wool	160	●	●	-	-
5´	Timber framed construction (60/240, e = 625 mm)	240	-	-	●	●
6´	Thermal insulation - mineral or glass wool	240	-	-	●	●
7	**OSB SUPERFINISH®ECO** (air tight connected)	15	●	●	●	●
8	Battens	40	-	●	-	●
9	Additional insulation - mineral wool	40	-	●	-	●
10	Gypsum plasterboard	12,5	●	●	●	●

Thermal insulation	U-value	U [W/m²K]	0,20	0,17	0,15	0,12
Fire protection	Fire resistance	REI [min]	REI 30			
Acoustic properties	Airborne sound insulation	R_w ($C;C_{tr}$) [dB]	50(-2;-7)	50(-3;-9)	52(-2;-7)	52(-3;-9)
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	-	-

Zdroj: www.datahelz.at

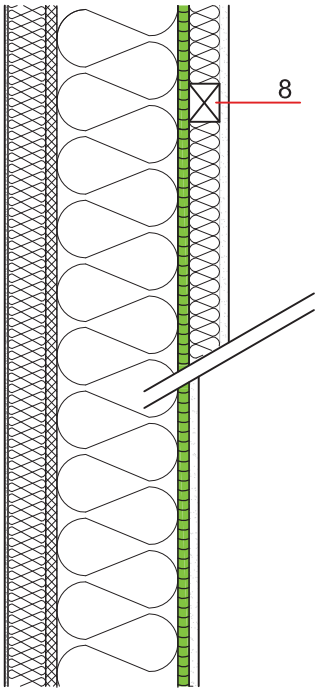
Construction type: external envelope of building - external wall with increased fire resistance
System: timber framed, diffusion open
Variant:
A - without installation gap REI 30
B - with installation gap REI 30
C - without installation gap REI 60
D - with installation gap REI 60
Coating: External thermal insulation composite systems (ETICS) (Wood fibre board 200 kg/m³)

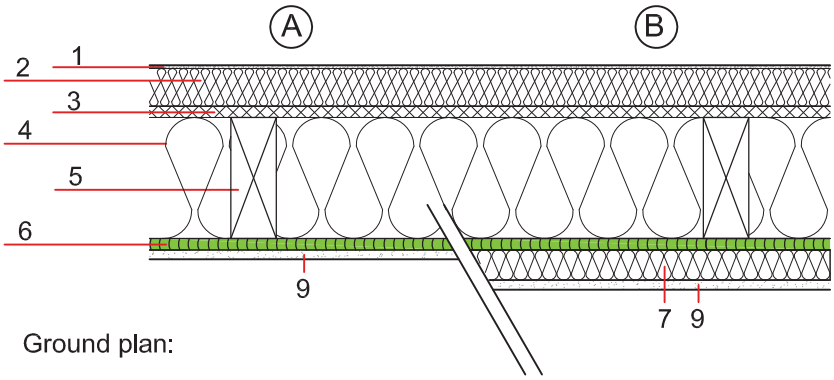


	Structure (exterior → interior)	Thickness [mm]	A	B	C	D
1	Thin layer of mineral plaster	7	●	●	●	●
2	Thermal insulation - Wood fibre board (200 kg/m³)	60	●	●	●	●
3	MDF-board	15	●	●	●	●
4	Timber framed construction (60/160, e = 625 mm)	160	●	●	●	●
5	Thermal insulation - mineral or glass wool	160	●	●	●	●
6	**OSB SUPERFINISH®ECO** (air tight connected)	15	●	●	●	●
7	Additional insulation - mineral wool	40	-	●	-	●
8	Battens (a = 400 mm)	40	-	●	-	●
9	Gypsum plasterboard	12,5	●	●	-	-
10	Gypsum plasterboard	18	-	-	●	●

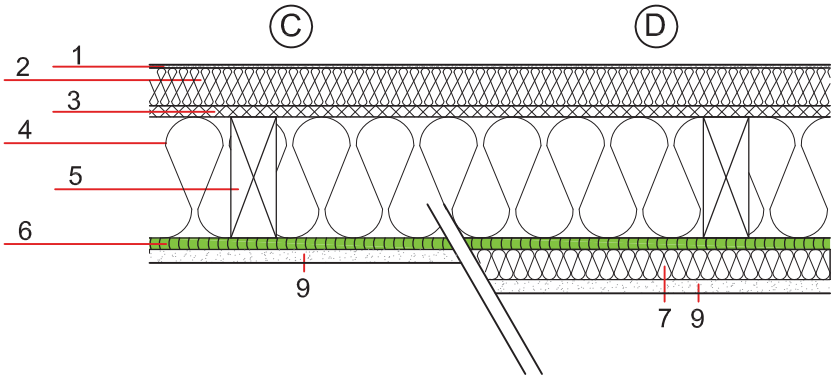
Thermal insulation	U-value	U [W/m²K]	0,20	0,17	0,20	0,17
Fire protection	Fire resistance	REI [min]	REI 30		REI 60	
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	51(-3;-9)	52(-3;-10)	51(-2;-9)	52(-2;-9)
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	-	-

Construction type: external envelope of building - external wall with increased fire resistance
System: timber framed, diffusion open
Variant:
A - without installation gap REI 30
B - with installation gap REI 30
C - without installation gap REI 60
D - with installation gap REI 60
Coating: External thermal insulation composite systems (ETICS) (Wood fibre board 370 kg/m³)





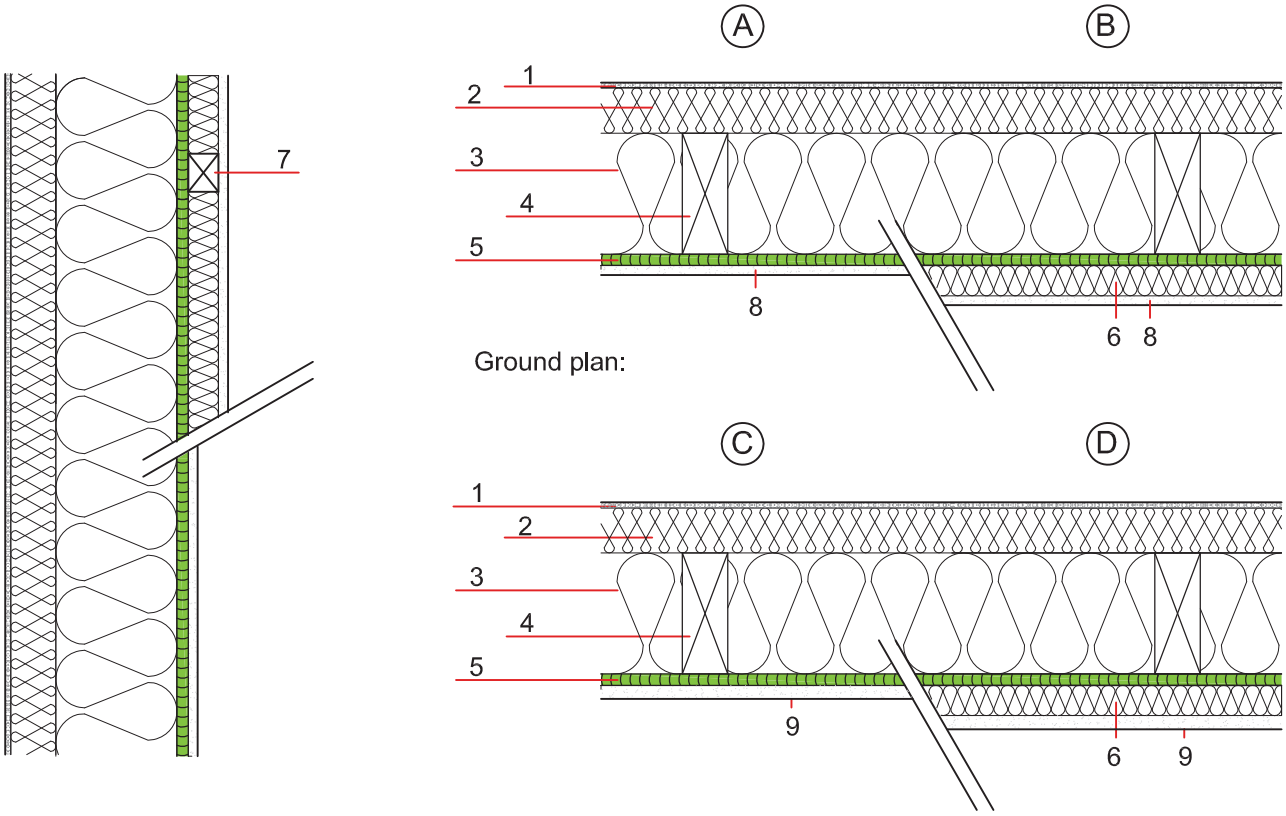
Ground plan:



	Structure (exterior → interior)	Thickness [mm]	A	B	C	D
1	Thin layer of mineral plaster	4	●	●	-	-
2	Thermal insulation - Fibre board (350-400 kg/m³)	50	●	●	-	-
3	MDF-board	15	●	●	●	●
4	Timber framed construction (60/160, e = 625 mm)	160	●	●	●	●
5	Thermal insulation - mineral or glass wool	160	●	●	●	●
6	**OSB SUPERFINISH® ECO** (air tight connected)	15	●	●	●	●
7	Additional thermal insulation - mineral wool	40	-	●	-	●
8	Battens (a = 400 mm)	40	-	●	-	●
9	Gypsum plasterboard	12,5	●	●	-	-
9	Gypsum plasterboard	18	-	-	●	●

Thermal insulation	U-value	U [W/m²K]	0,22	0,18	0,22	0,18
Fire protection	Fire resistance	REI [min]	REI 30		REI 60	
Acoustic properties	Airborne sound insulation	R_w ($C;C_{tr}$) [dB]	51(-3;-8)	52(-3;-8)	51(-3;-8)	52(-3;-8)
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	-	-

Construction type: external envelope of building - external wall with increased fire resistance
System: timber framed, diffusion open
Variant:
A - without installation gap REI 30
B - with installation gap REI 30
C - without installation gap REI 60
D - with installation gap REI 60
Coating: External thermal insulation composite systems (ETICS) (Wood fibre board 200 kg/m³)



	Structure (exterior → interior)	Thickness [mm]	A	B	C	D
1	Thin layer of mineral plaster	7	●	●	●	●
2	Thermal insulation - Wood fibre board (200 kg/m³)	60	●	●	●	●
3	Timber framed construction (60/160, e = 625 mm)	160	●	●	●	●
4	Thermal insulation - mineral or glass wool	160	●	●	●	●
5	**OSB SUPERFINISH® ECO** (air tight connected)	15	●	●	●	●
6	Additional thermal insulation - mineral wool	40	-	●	-	●
7	Battens (a = 400 mm)	40	-	●	-	●
8	Gypsum plasterboard	12,5	●	●	-	-
9	Gypsum plasterboard	18	-	-	●	●

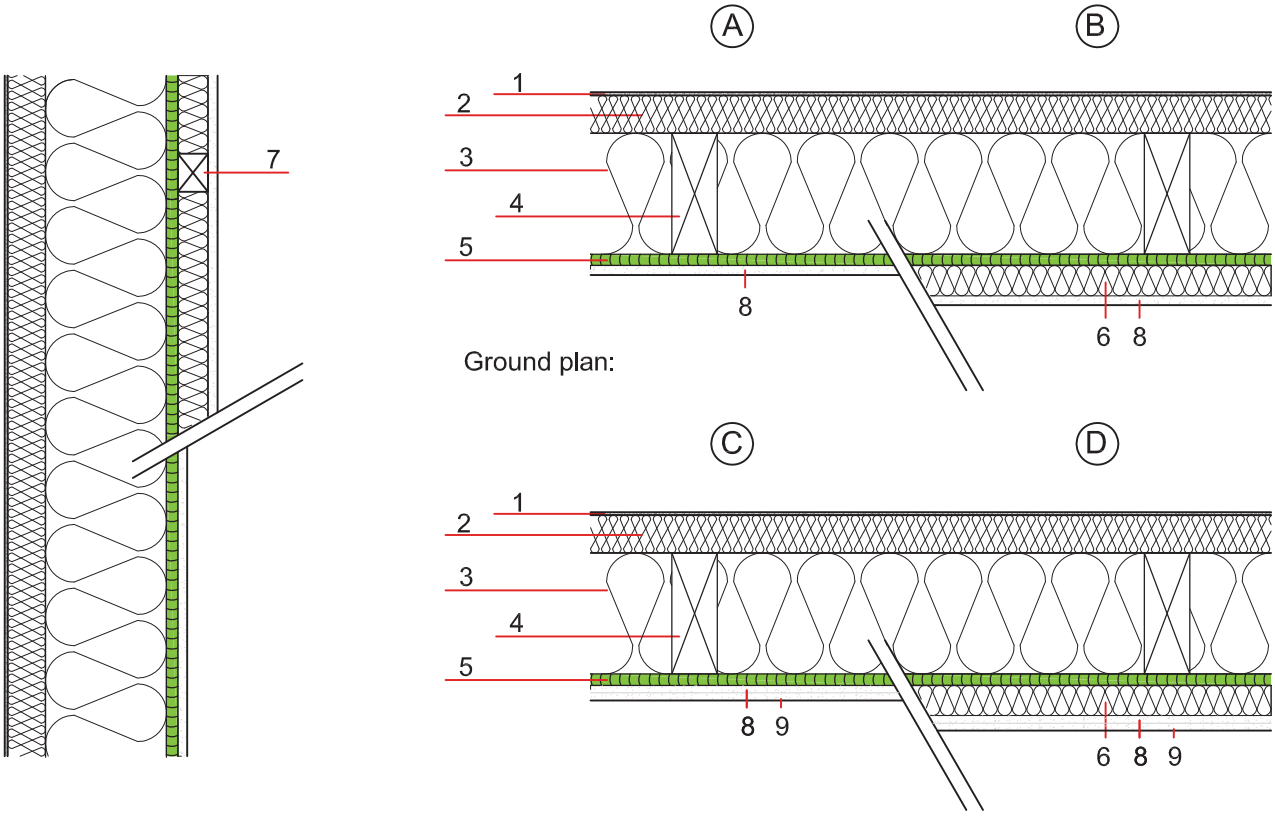
Thermal insulation	U-value	U [W/m²K]	0,20	0,17	0,20	0,17
Fire protection	Fire resistance	REI [min]	REI 30		REI 60	
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	50(-3;-11)	52(-3;-11)	49(-2;-7)	52(-2;-9)
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	-	-

Construction type: external envelope of building - external wall with increased fire resistance

System: timber framed, diffusion open

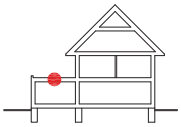
Variant:
- A - without installation gap — REI 30
- B - with installation gap — REI 30
- C - without installation gap — REI 60
- D - with installation gap — REI 60

Coating: External thermal insulation composite systems (ETICS) (Wood fibre board 370 kg/m³)



	Structure (exterior → interior)	Thickness [mm]	A	B	C	D
1	Thin layer of mineral plaster	4	●	●	●	●
2	Thermal insulation - Fibre board (350-400 kg/m³)	50	●	●	●	●
3	Timber framed construction (60/160, e = 625 mm)	160	●	●	●	●
4	Thermal insulation - mineral or glass wool	160	●	●	●	●
5	**OSB SUPERFINISH® ECO** (air tight connected)	15	●	●	●	●
6	Additional thermal insulation - mineral wool	40	-	●	-	●
7	Battens (a = 400 mm)	40	-	●	-	●
8	Gypsum plasterboard	12,5	●	●	●	●
9	Gypsum plasterboard	12,5	-	-	●	●

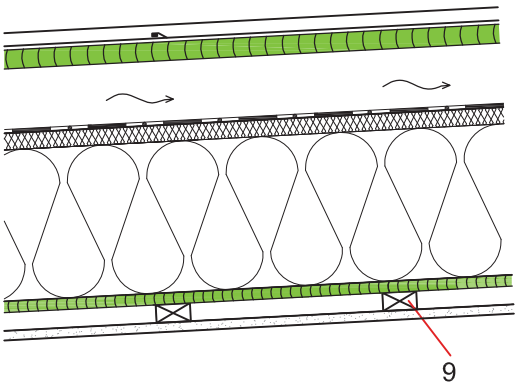
Thermal insulation	U-value	U [W/m²K]	0,23	0,19	0,23	0,18
Fire protection	Fire resistance	REI [min]	REI 30		REI 60	
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	49(-3;-9)	52(-3;-10)	49(-3;-9)	52(-3;-10)
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	-	-

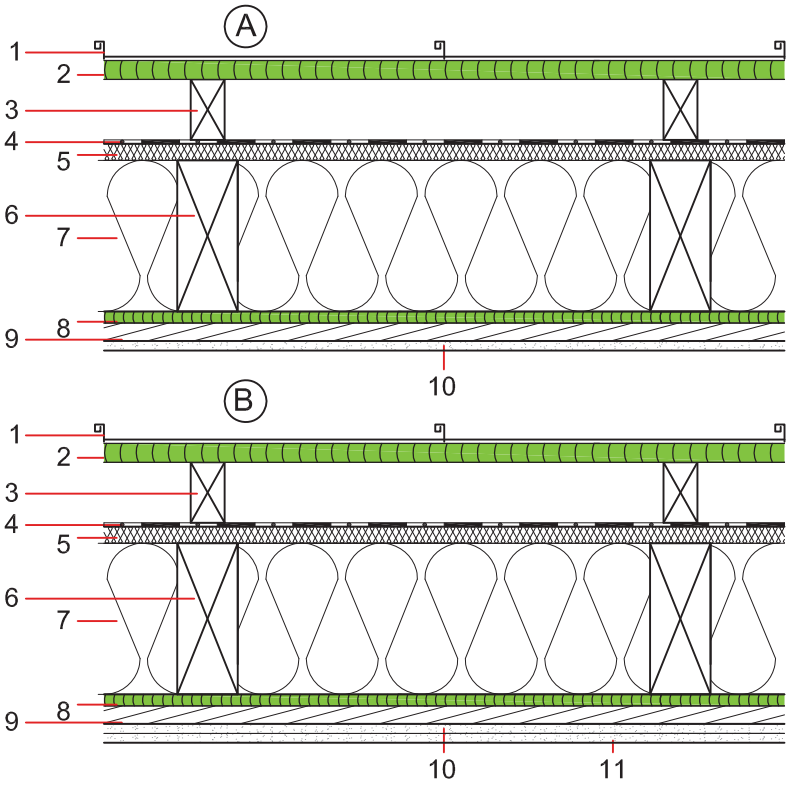


Construction type: double-levelled flat roof

System: timber framed, diffusion open
Variant: A - without installation gap REI 30
B - with installation gap REI 60

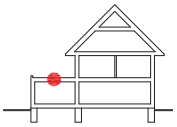
Coating: metal coating with ventilation gap



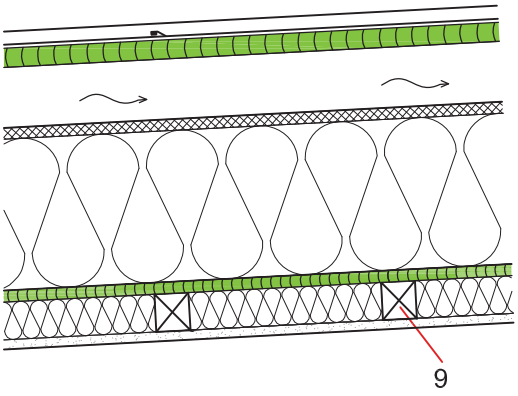


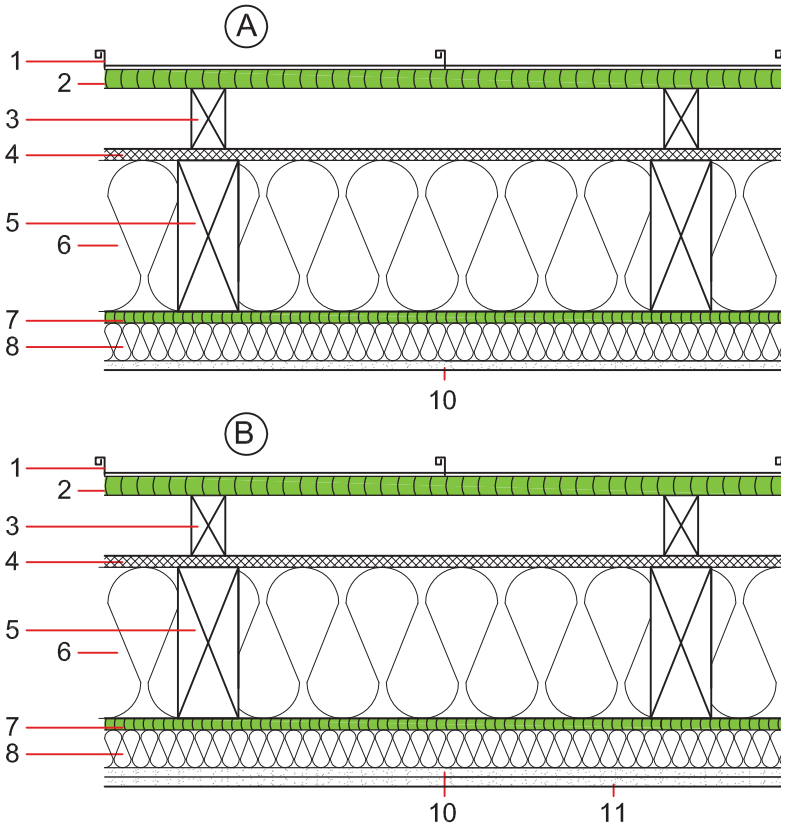
	Structure (exterior → interior)	Thickness [mm]	A	B
1	Metal coating		●	●
2	OSB SUPERFINISH® ECO (tongue & groove)	24	●	●
3	Battens + ventilation gap	80	●	●
4	Diffusion foil sd< 0,3m		●	●
5	Wood fibre board (250 kg / m³)	22	●	●
6	Timber framed construction (80/200, e = 625 mm)	200	●	●
7	Thermal insulation - mineral or glass wool	200	●	●
8	OSB SUPERFINISH® ECO (air tight connected)	15	●	●
9	Wood cladding (24/100mm, spacing a = 400mm)	24	●	●
10	Gypsum plasterboard	12,5	●	●
11	Gypsum plasterboard	12,5	-	●

Thermal insulation	U-value	U [W/m²K]	0,19	0,18	
Fire protection	Fire resistance	REI [min]	REI 30	REI 60	
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	46(-2;-6)	47(-2;-6)	
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	



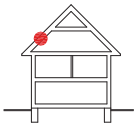
Construction type:	double-levelled flat roof with increased fire resistance	
System:	timber framed, diffusion open	
Variant:	A - with installation gap + additional thermal insulation	REI 30
	B - with installation gap but without additional thermal insulation	REI 30
	C - with installation gap + additional thermal insulation	REI 60
	D - with installation gap but without additional thermal insulation	REI 60
Coating:	metal coating with ventilation	



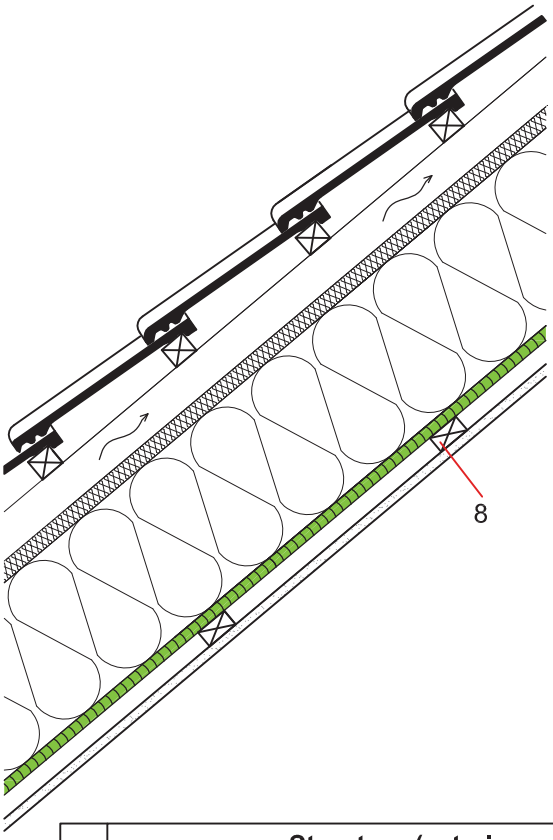


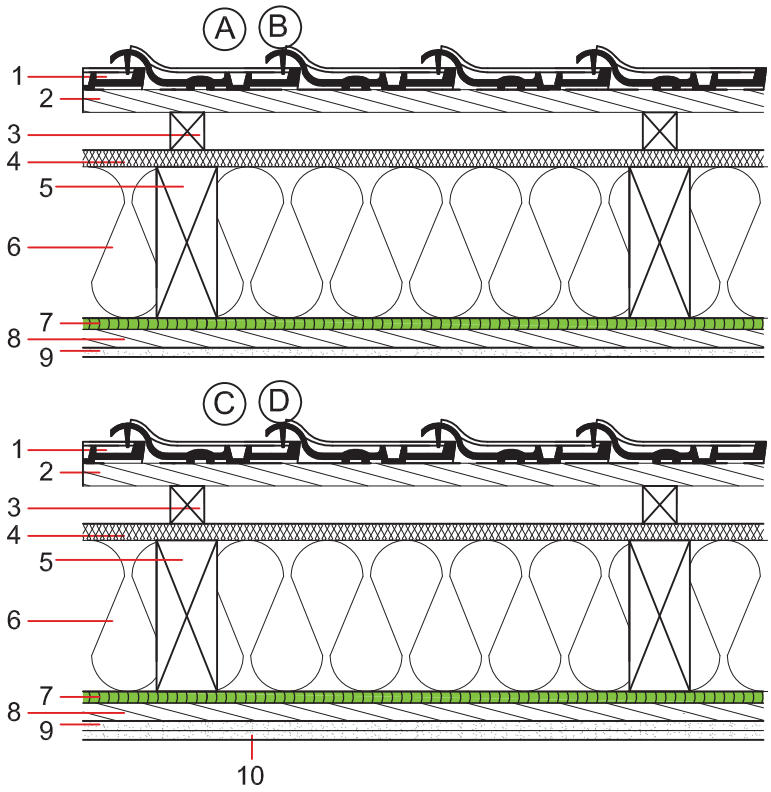
	Structure (exterior → interior)	Thickness [mm]	A	B	C	D
1	Metal coating		●	●	●	●
2	OSB SUPERFINISH® ECO (tongue & groove)	25	●	●	●	●
3	Battens + ventilation gap	80	●	●	●	●
4	MDF-board	15	●	●	●	●
5	Timber framed construction (80/200, e = 625 mm)	200	●	●	●	●
6	Thermal insulation - mineral or glass wool	200	●	●	●	●
7	OSB SUPERFINISH® ECO (air tight connected)	15	●	●	●	●
8	Wood cladding (50/80mm, spacing a = 400mm)	50	●	●	●	●
9	Additional thermal insulation - mineral or glass wool	50	●	●	-	-
10	Gypsum plasterboard	12,5	●	●	●	●
11	Gypsum plasterboard	12,5	-	●	-	●

Thermal insulation	U-value	U [W/m²K]	0,17	0,20	0,17	0,20
Fire protection	Fire resistance	REI [min]	REI 30		REI 60	
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	47(-3;-7)	45(-3;-7)	48(-3;-7)	46(-3;-7)
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	-	-



Construction type:	pitched roof with increased fire resistance	
System:	timber framed, diffusion open	
Variant:	A - with wood fibre board	REI 30
	B - with MDF-board	REI 30
	C - with wood fibre board	REI 60
	D - with MDF-board	REI 60
Coating:	roof tiling with ventilation gap	

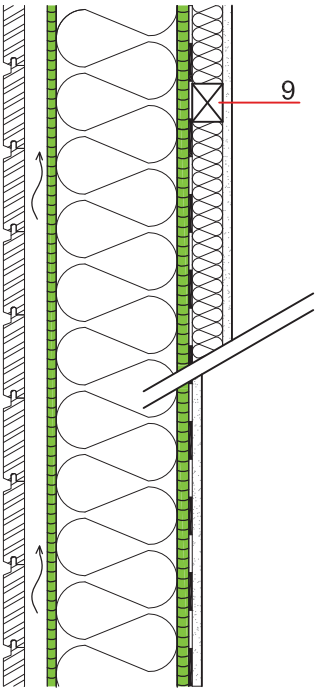




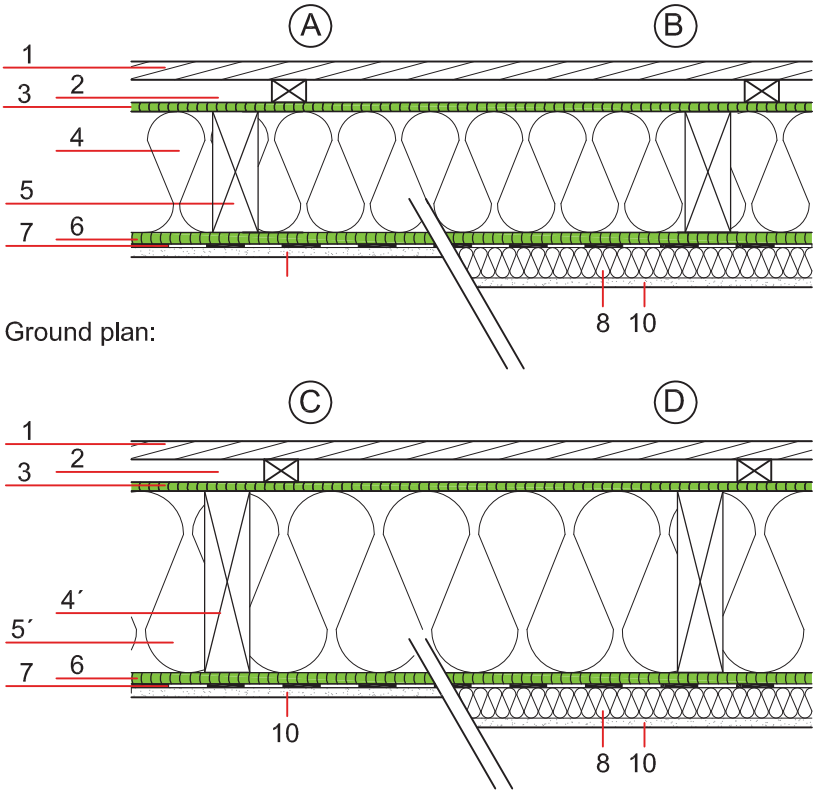
	Structure (exterior → interior)	Thickness [mm]	A	B	C	D
1	Roof tiling		●	●	●	●
2	Roof battens (30/50mm)	30	●	●	●	●
3	Battens + ventilation gap min. 50mm	50	●	●	●	●
4	Wood fibre board (250 kg/m³)	22	●	-	●	-
4´	MDF-board	15	-	●	-	●
5	Timber framed construction (80/200, e = 625 mm)	200	●	●	●	●
6	Thermal insulation - mineral or glass wool	200	●	●	●	●
7	OSB SUPERFINISH® ECO (air tight connected)	15	●	●	●	●
8	Wood cladding (24/100mm, spacing a = 400mm)	24	●	●	●	●
9	Gypsum plasterboard	12,5	●	●	●	●
10	Gypsum plasterboard	12,5	-	-	●	●

Thermal insulation	U-value	U [W/m²K]	0,19	0,20	0,18	0,20
Fire protection	Fire resistance	REI [min]	REI 30		REI 60	
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	53(-2;-8)	52(-2;-8)	54(-2;-8)	53(-2;-8)
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	-	-

Construction type: external envelope of building - external wall
for standard, low energy and energy passive houses
System: timber framed, diffusion closed
Variant:
A - without installation gap — standard house
B - with installation gap — standard house
C - without installation gap — low energy, energy passive house
D - with installation gap — low energy, energy passive house
Coating: ventilated façade, finished wood siding



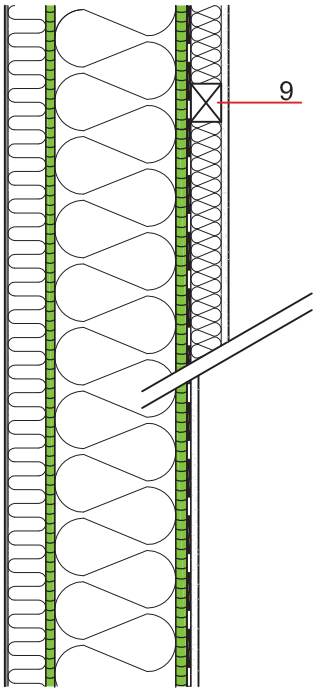
Ground plan:

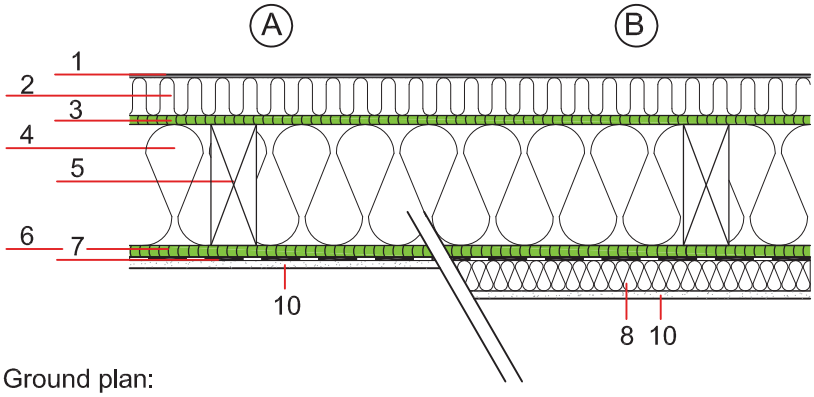


	Structure (exterior → interior)	Thickness [mm]	A	B	C	D
1	Finished wood siding	24	●	●	●	●
2	Battens 30/50 (or 30/80) + ventilation	30	●	●	●	●
3	OSB SUPERFINISH® ECO	12	●	●	●	●
4	Timber framed construction (60/160, e = 625 mm)	160	●	●	-	-
5	Thermal insulation - mineral or glass wool	160	●	●	-	-
4´	Timber framed construction (60/240, e = 625 mm)	240	-	-	●	●
5´	Thermal insulation - mineral or glass wool	240	-	-	●	●
6	OSB SUPERFINISH® ECO	15	●	●	●	●
7	Vapour barrier sd>10m		●	●	●	●
8	Additional insulation - mineral wool	40	-	●	-	●
9	Battens (a = 400 mm)	40	-	●	-	●
10	Gypsum plasterboard	12,5	●	●	●	●

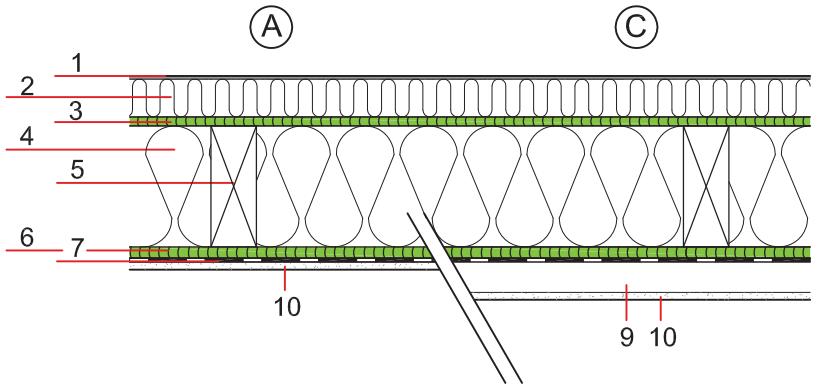
Thermal insulation	U-value	U [W/m²K]	0,25	0,20	0,18	0,15
Fire protection	Fire resistance	REI [min]	REI 30			
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	47(-2;-8)	50(-3;-10)	49(-2;-8)	52(-3;-10)
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	-	-

Construction type: external envelope of building - external wall with installation gap
System: timber framed, diffusion closed
Variant: A - without installation gap
B - with installation gap and additional thermal insulation
C - with installation gap but without additional thermal insulation
Coating: External thermal insulation composite systems (ETICS) (Polystyrene EPS)





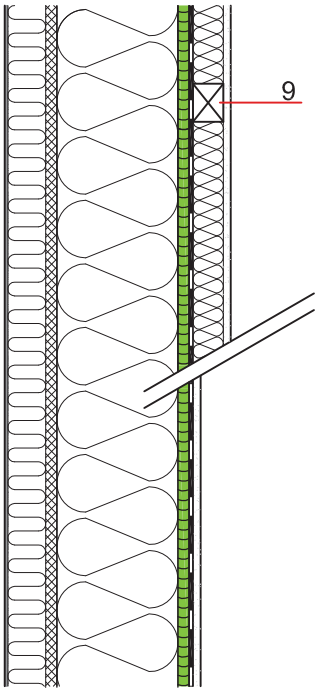
Ground plan:

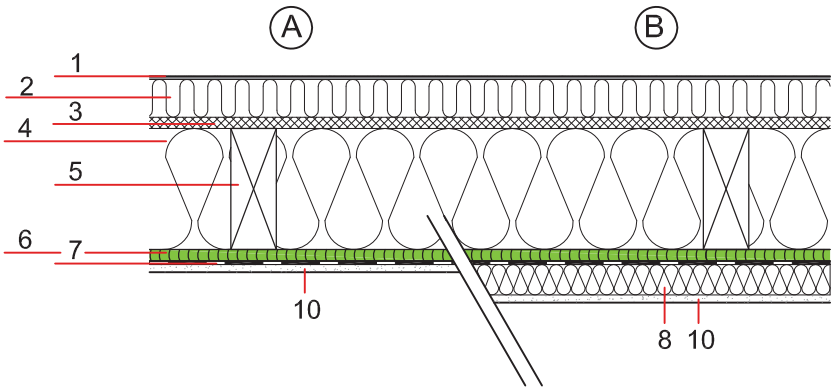


	Structure (exterior → interior)	Thickness [mm]	A	B	C
1	Thin layer of mineral plaster	4	●	●	●
2	Thermal insulation - polystyrene EPS	50	●	●	●
3	OSB SUPERFINISH	12	●	●	●
4	Timber framed construction (60/160, e = 625 mm)	160	●	●	●
5	Thermal insulation - mineral or glass wool	160	●	●	●
6	OSB SUPERFINISH® ECO	15	●	●	●
7	Vapour barrier sd > 23m		●	●	●
8	Additional insulation - mineral wool	40	-	●	-
9	Battens (a = 400 mm)	40	-	●	●
10	Gypsum plasterboard	12,5	●	●	●

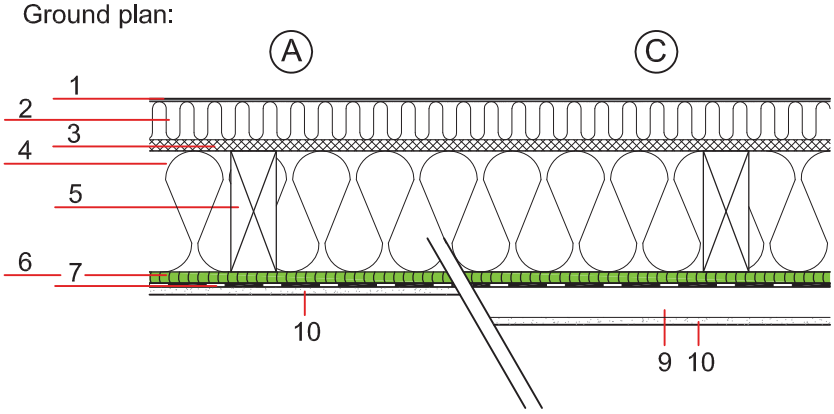
Thermal insulation	U-value	U [W/m²K]	0,19	0,16	0,19	
Fire protection	Fire resistance	REI [min]	REI 30			
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	44(-2;-6)	45(-3;-6)	45(-3;-6)	
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	-	

Construction type: external envelope of building - external wall with installation gap
System: timber framed, diffusion closed
Variant: A - without installation gap
B - with installation gap and additional thermal insulation
C - with installation gap but without additional thermal insulation
Coating: External thermal insulation composite systems (ETICS) (Polystyrene EPS)





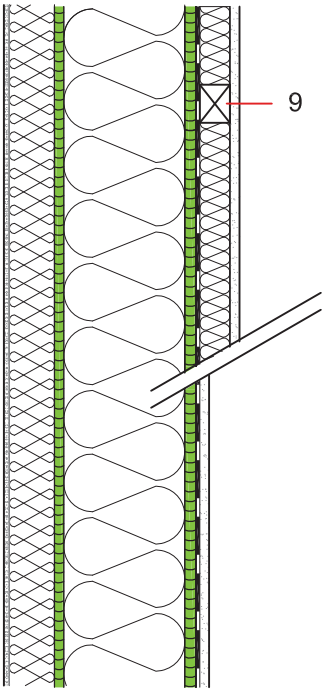
Ground plan:



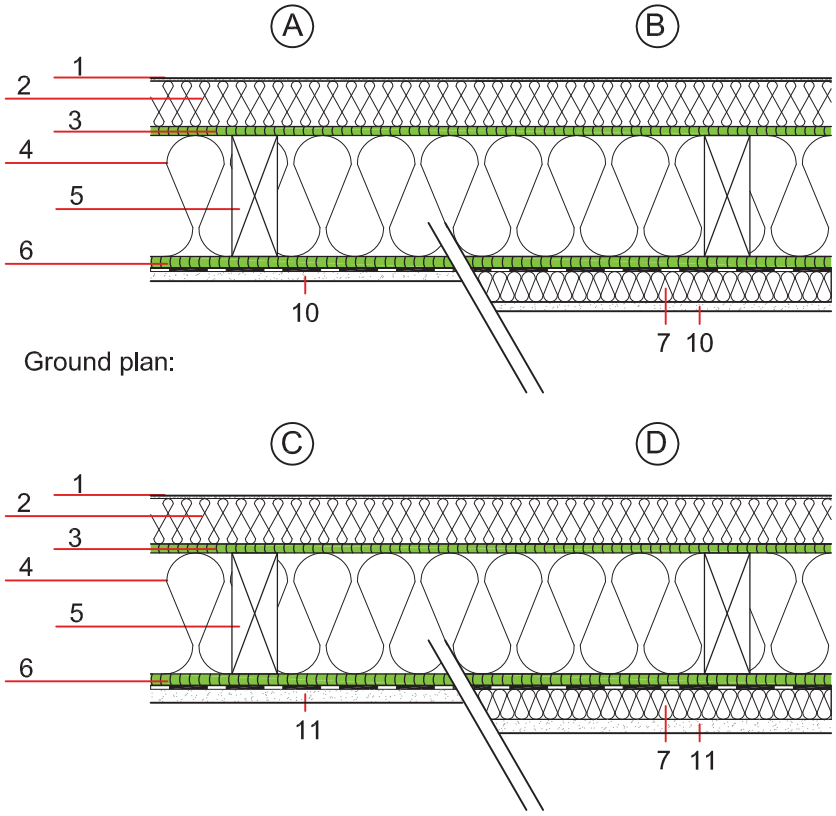
	Structure (exterior → interior)	Thickness [mm]	A	B	C
1	Thin layer of mineral plaster	4	●	●	●
2	Thermal insulation - polystyrene EPS	50	●	●	●
3	MDF-board	15	●	●	●
4	Timber framed construction (60/160, e = 625 mm)	160	●	●	●
5	Thermal insulation - mineral or glass wool	160	●	●	●
6	OSB SUPERFINISH® ECO	15	●	●	●
7	Vapour barrier sd > 9m		●	●	●
8	Additional insulation - mineral wool	40	-	●	-
9	Battens (a = 400 mm)	40	-	●	●
10	Gypsum plasterboard	12,5	●	●	●

Thermal insulation	U-value	U [W/m²K]	0,19	0,16	0,19	
Fire protection	Fire resistance	REI [min]	REI 30			
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	44(-2;-6)	45(-3;-6)	45(-3;-6)	
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	-	

Construction type: external envelope of building - external wall with increased fire resistance
System: timber framed, diffusion closed
Variant:
A - without installation gap REI 30
B - with installation gap REI 30
C - without installation gap REI 60
D - with installation gap REI 60
Coating: External thermal insulation composite systems (ETICS) (Wood fibre board 200 kg/m³)



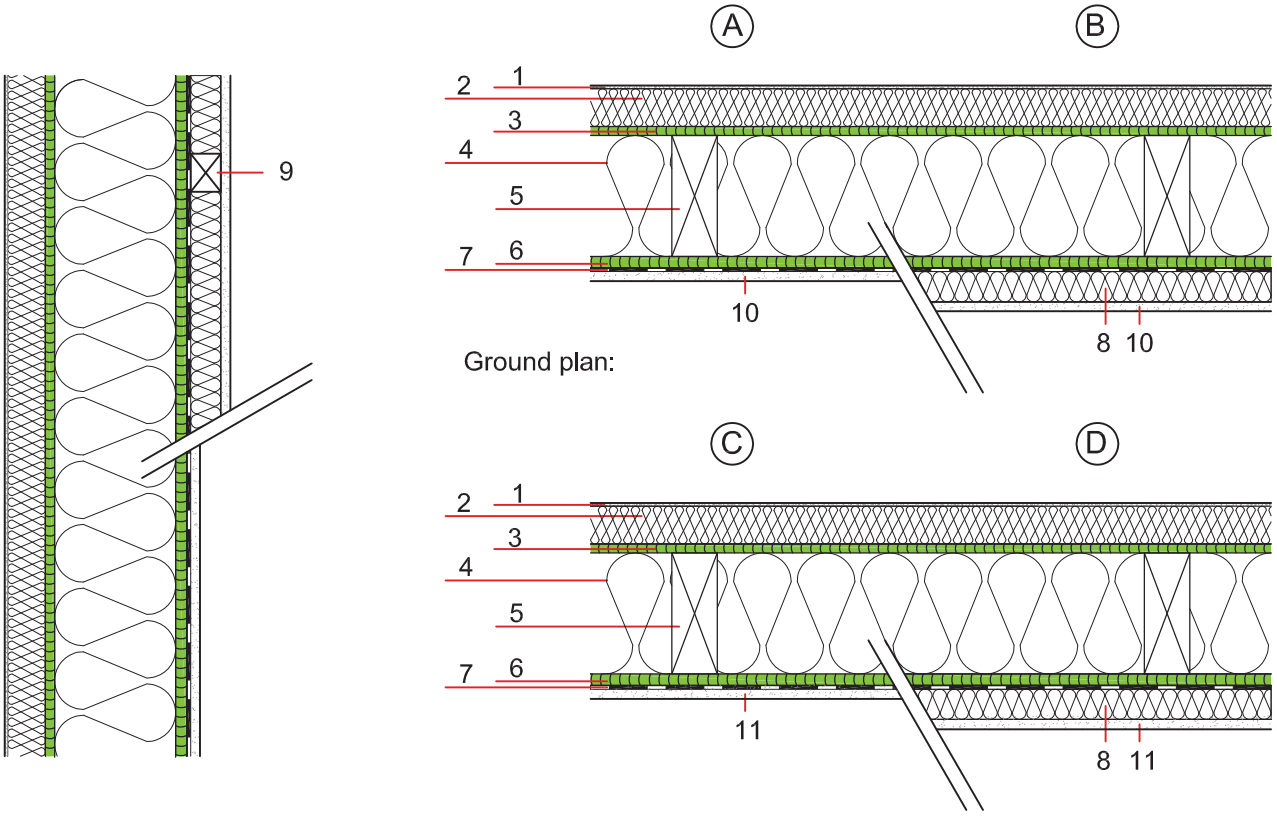
Ground plan:



	Structure (exterior → interior)	Thickness [mm]	A	B	C	D
1	Thin layer of mineral plaster	7	●	●	●	●
2	Thermal insulation - wood fibre board (200 kg/m³)	60	●	●	●	●
3	OSB SUPERFINISH® ECO	15	●	●	●	●
4	Timber framed construction (e = 625 mm)	160	●	●	●	●
5	Thermal insulation - mineral or glass wool	160	●	●	●	●
6	OSB SUPERFINISH® ECO	15	●	●	●	●
7	Vapour barrier sd > 13m		●	●	●	●
8	Additional insulation - mineral wool	40	-	●	-	●
9	Battens (a = 400 mm)	40	-	●	-	●
10	Gypsum plasterboard	12,5	●	●	-	-
11	Gypsum plasterboard	18	-	-	●	●

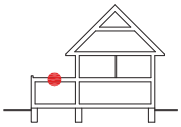
Thermal insulation	U-value	U [W/m²K]	0,20	0,17	0,20	0,17
Fire protection	Fire resistance	REI [min]	REI 30		REI 60	
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	51(-3;-9)	52(-3;-10)	52(-3;-9)	52(-2;-9)
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	-	-

Construction type: external envelope of building - external wall with increased fire resistance
System: timber framed, diffusion closed
Variant:
A - without installation gap REI 30
B - with installation gap REI 30
C - without installation gap REI 60
D - with installation gap REI 60
Coating: External thermal insulation composite systems (ETICS) (Wood fibre board 370 kg/m³)



	Structure (exterior → interior)	Thickness [mm]	A	B	C	D
1	Thin layer of mineral plaster	4	●	●	●	●
2	Thermal insulation - wood fibre board (350-400 kg/m³)	50	●	●	●	●
3	OSB SUPERFINISH® ECO	15	●	●	●	●
4	Timber framed construction (e = 625 mm)	160	●	●	●	●
5	Thermal insulation - mineral or glass wool	160	●	●	●	●
6	OSB SUPERFINISH® ECO	15	●	●	●	●
7	Vapour barrier sd > 13m		●	●	●	●
8	Additional insulation - mineral wool	40	-	●	-	●
9	Battens (a = 400 mm)	40	-	●	-	●
10	Gypsum plasterboard	12,5	●	●	-	-
11	Gypsum plasterboard	18	-	-	●	●

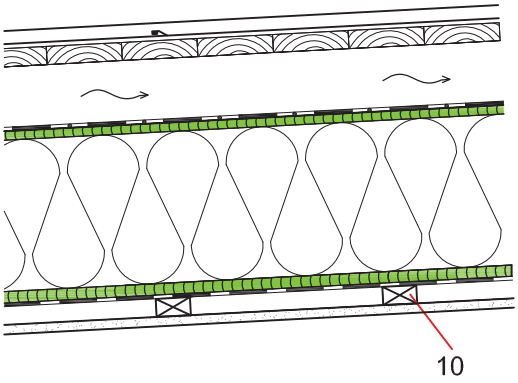
Thermal insulation	U-value	U [W/m²K]	0,22	0,19	0,22	0,19
Fire protection	Fire resistance	REI [min]	REI 30		REI 60	
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	51(-3;-8)	52(-3;-8)	51(-3;-8)	52(-3;-8)
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	-	-

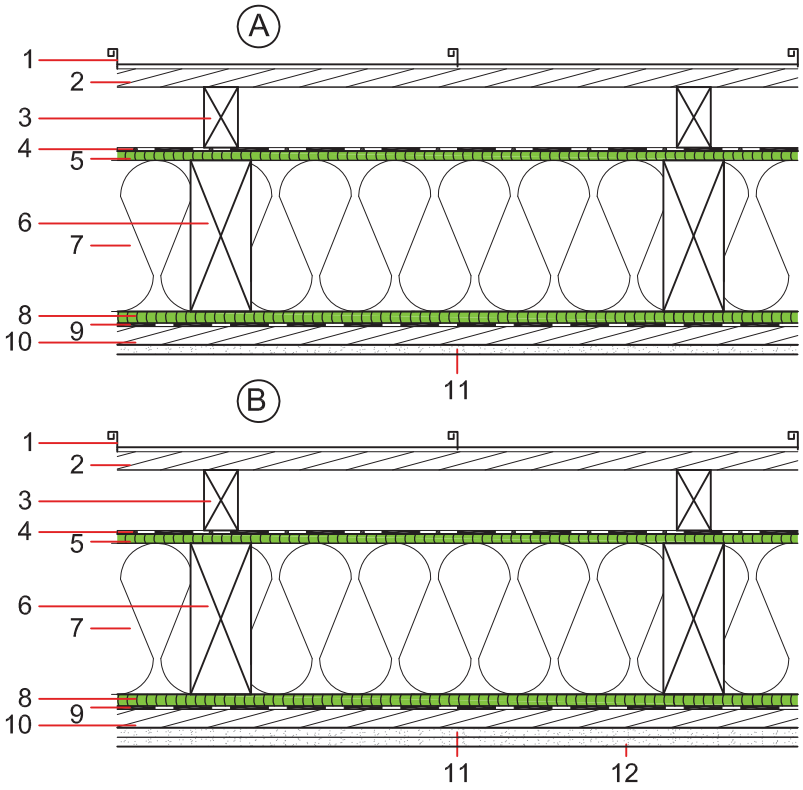


Construction type: double-levelled flat roof

System: timber framed, diffusion closed
Variant: A - with installation gap REI 30
B - with installation gap REI 60

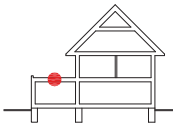
Coating: metal coating with ventilation gap



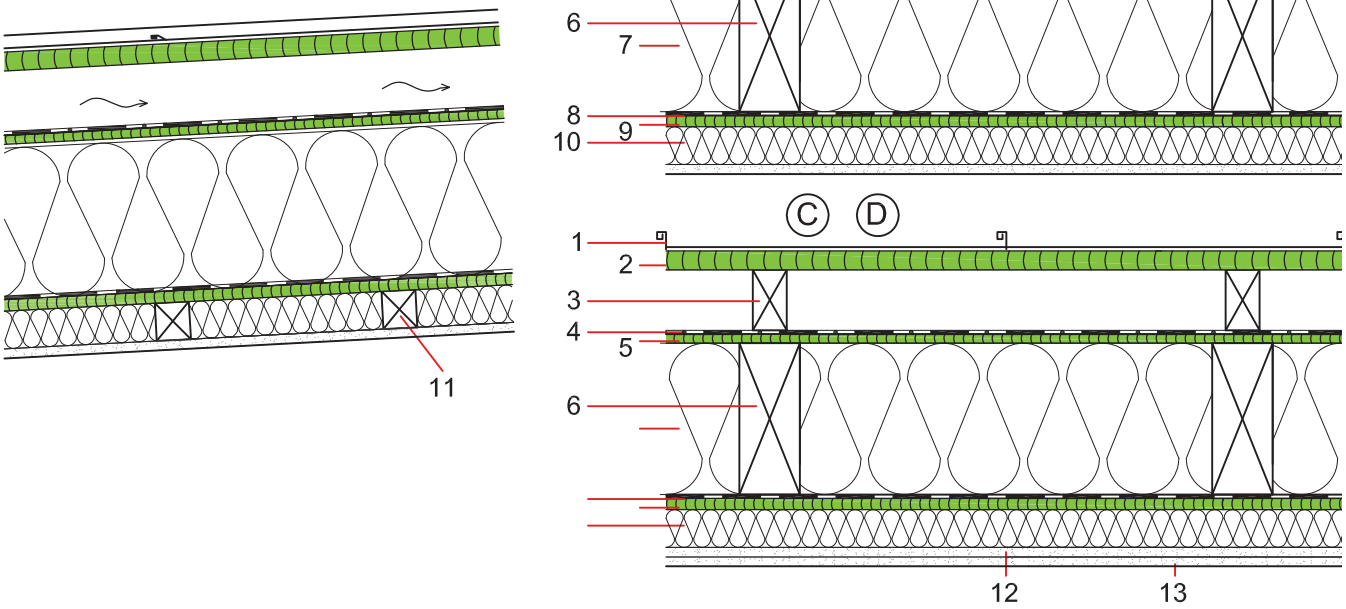


	Structure (exterior → interior)	Thickness [mm]	A	B		
1	Metal coating		●	●		
2	Timber boarding	24	●	●		
3	Battens + ventilation gap	80	●	●		
4	Diffusion foil sd < 0,3m	~1	●	●		
5	OSB SUPERFINISH® ECO	12	●	●		
6	Timber framed construction (80/200, e = 625 mm)	200	●	●		
7	Thermal insulation - mineral or glass wool	200	●	●		
8	OSB SUPERFINISH® ECO	15	●	●		
9	Vapour barrier sd > 11m	<1	●	●		
10	Wood cladding (24/100mm, spacing a = 400mm)	24	●	●		
11	Gypsum plasterboard	12,5	●	●		
12	Gypsum plasterboard	12,5	-	●		

Thermal insulation	U-value	U [W/m²K]	0,20	0,20		
Fire protection	Fire resistance	REI [min]	REI 30	REI 60		
Acoustic properties	Airborne sound insulation	R_w ($C;C_{tr}$) [dB]	46(-2;-6)	47(-2;-6)		
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-		



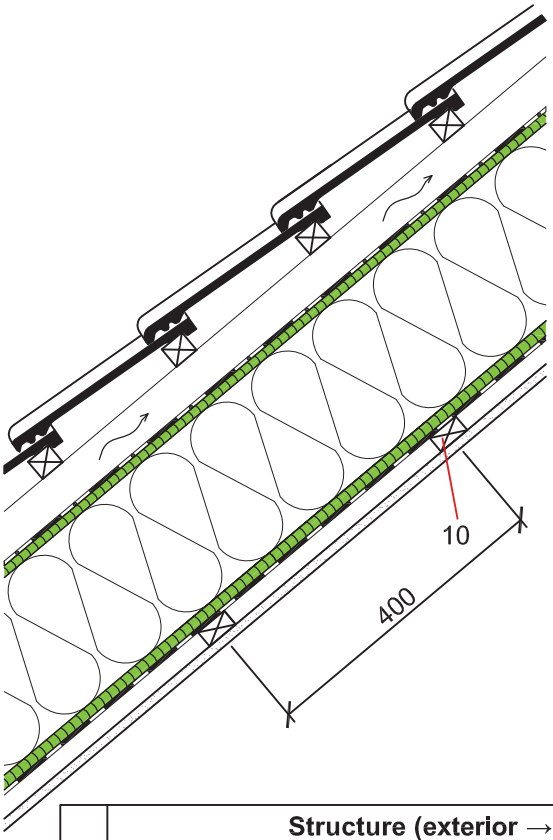
Construction type:	double-levelled flat roof with increased fire resistance	
System:	timber framed, diffusion closed	
Variant:	A - with installation gap + additional thermal insulation	REI 30
	B - with installation gap but without additional thermal insulation	REI 30
	C - with installation gap + additional thermal insulation	REI 60
	D - with installation gap but without additional thermal insulation	REI 60
Coating:	metal coating with ventilation gap	

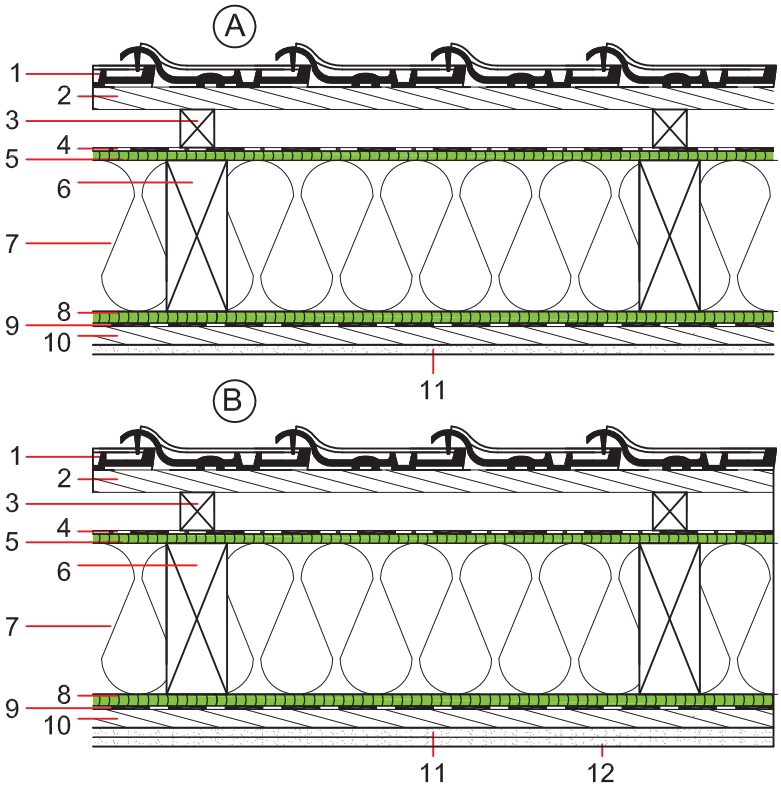


	Structure (exterior → interior)	Thickness [mm]	A	B	C	D
1	Metal coating		●	●	●	●
2	OSB SUPERFINISH® ECO (tongue & groove)	25	●	●	●	●
3	Battens + ventilation gap	80	●	●	●	●
4	Diffusion foil sd < 0,3m	~1	●	●	●	●
5	OSB SUPERFINISH® ECO	12	●	●	●	●
6	Timber framed construction (80/200, e = 625 mm)	200	●	●	●	●
7	Thermal insulation - mineral or glass wool	200	●	●	●	●
8	Vapour barrier sd > 8m	15	●	●	●	●
9	OSB SUPERFINISH® ECO	<1	●	●	●	●
10	Wood cladding (50/80mm, spacing a = 400mm)	50	●	●	●	●
11	Additional thermal insulation - mineral or glass wool	50	●	-	●	-
12	Gypsum plasterboard	12,5	●	●	●	●
13	Gypsum plasterboard	12,5	-	-	●	●

Thermal insulation	U-value	U [W/m²K]	0,17	0,20	0,17	0,20
Fire protection	Fire resistance	REI [min]	REI 30		REI 60	
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	47(-3;-7)	45(-3;-7)	48(-3;-7)	46(-3;-7)
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	-	-

Construction type: pitched roof
with increased fire resistance
System: timber framed, diffusion closed
Variant: A - with installation gap REI 30
B - with installation gap REI 60
Coating: roof tiling with ventilation gap

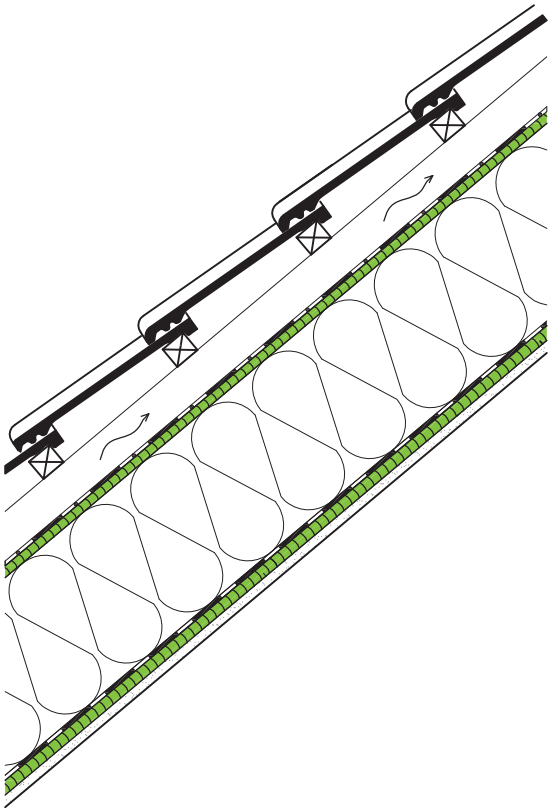


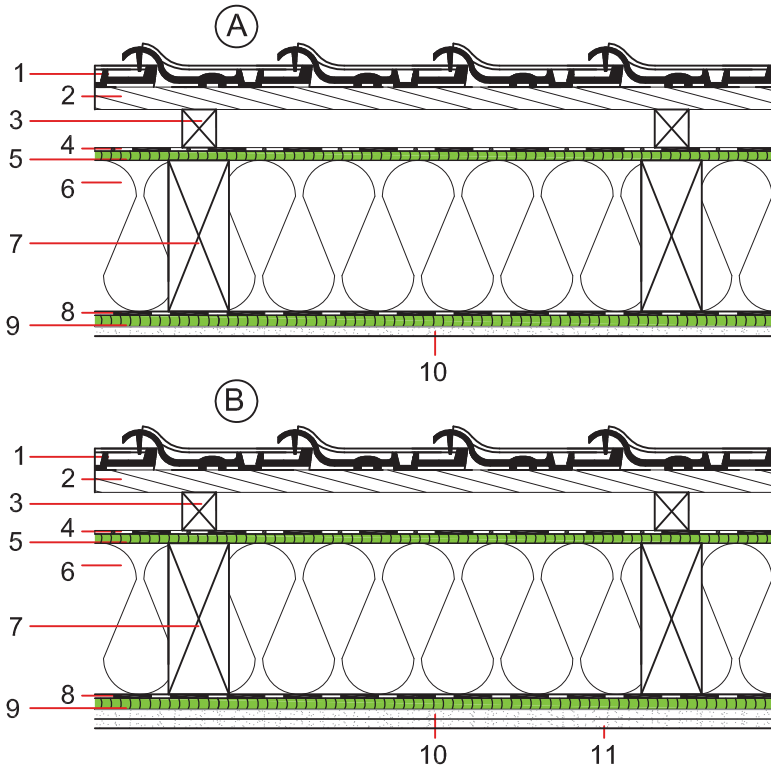


	Structure (exterior → interior)	Thickness [mm]	A	B	
1	Roof tiling		●	●	
2	Roof battens (30/50mm)	30	●	●	
3	Battens + ventilation gap min. 50mm	50	●	●	
4	Diffusion foil sd < 0,3m	~1	●	●	
5	OSB SUPERFINISH® ECO	12	●	●	
6	Timber framed construction (80/200, e = 625 mm)	200	●	●	
7	Thermal insulation - mineral or glass wool	200	●	●	
8	OSB SUPERFINISH® ECO	15	●	●	
9	Vapour barrier sd > 11m	<1	●	●	
10	Wood cladding (24/100mm, spacing a = 400mm)	24	●	●	
11	Gypsum plasterboard	12,5	●	●	
12	Gypsum plasterboard	12,5	-	●	

Thermal insulation	U-value	U [W/m²K]	0,20	0,20	
Fire protection	Fire resistance	REI [min]	REI 30	REI 60	
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	52(-2;-8)	53(-2;-8)	
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	

Construction type: pitched roof
with increased fire resistance
System: timber framed, diffusion closed
Variant: A - without installation gap REI 30
B - without installation gap REI 60
Coating: roof tiling with ventilation gap

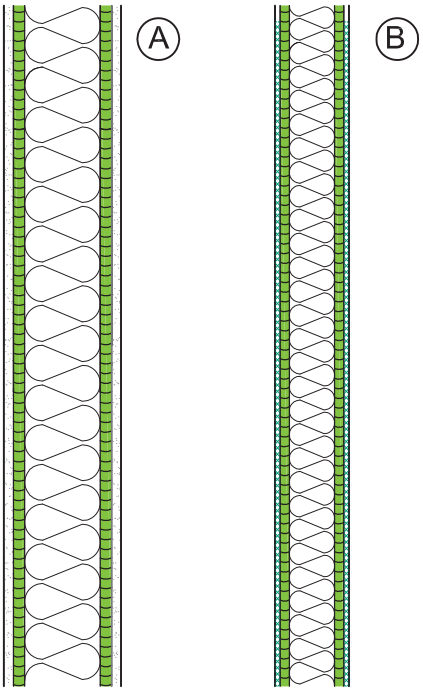




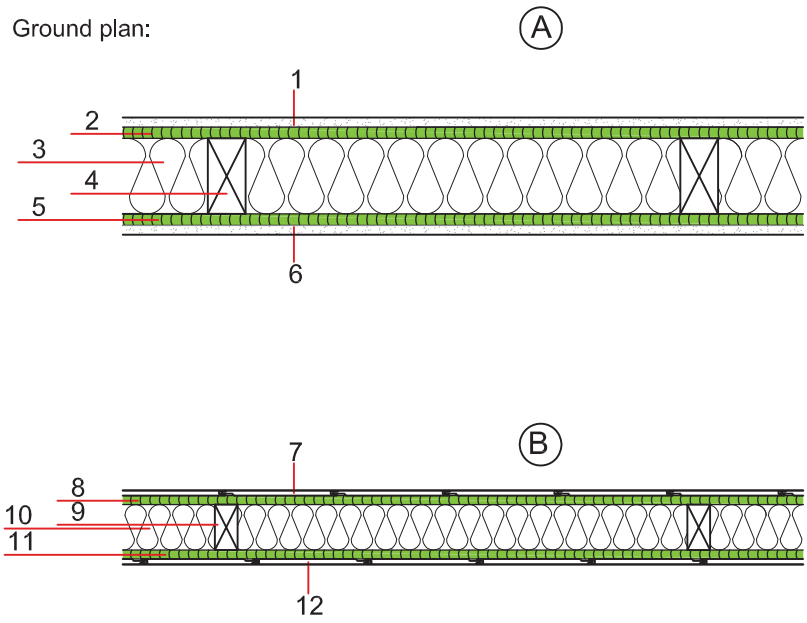
	Structure (exterior → interior)	Thickness [mm]	A	B	
1	Roof tiling		●	●	
2	Roof battens (30/50mm)	30	●	●	
3	Battens + ventilation gap min. 50mm	50	●	●	
4	Diffusion foil sd < 0,3m	~1	●	●	
5	OSB SUPERFINISH® ECO	12	●	●	
6	Timber framed construction (80/200, e = 625 mm)	200	●	●	
7	Thermal insulation - mineral or glass wool	200	●	●	
8	Vapour barrier sd > 11m	<1	●	●	
9	OSB SUPERFINISH® ECO	15	●	●	
10	Gypsum plasterboard	12,5	●	●	
11	Gypsum plasterboard	12,5	-	●	

Thermal insulation	U-value	U [W/m²K]	0,21	0,21	
Fire protection	Fire resistance	REI [min]	REI 30	REI 60	
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	50(-2;-8)	51(-2;-8)	
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-	

Construction type: interior non-load-bearing wall
System: timber framed
Variant: A - partition wall, 155mm thick, REI 30
B - partition wall, 100mm thick, without fire resistance
Coating: A - OSB board + gypsum plasterboard
B - OSB-board + MDF-based panel

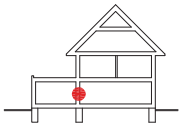


Ground plan:

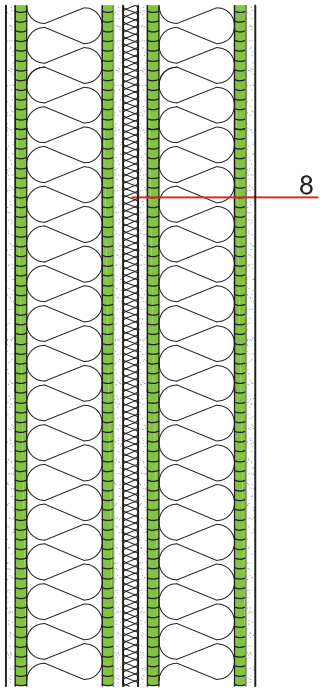


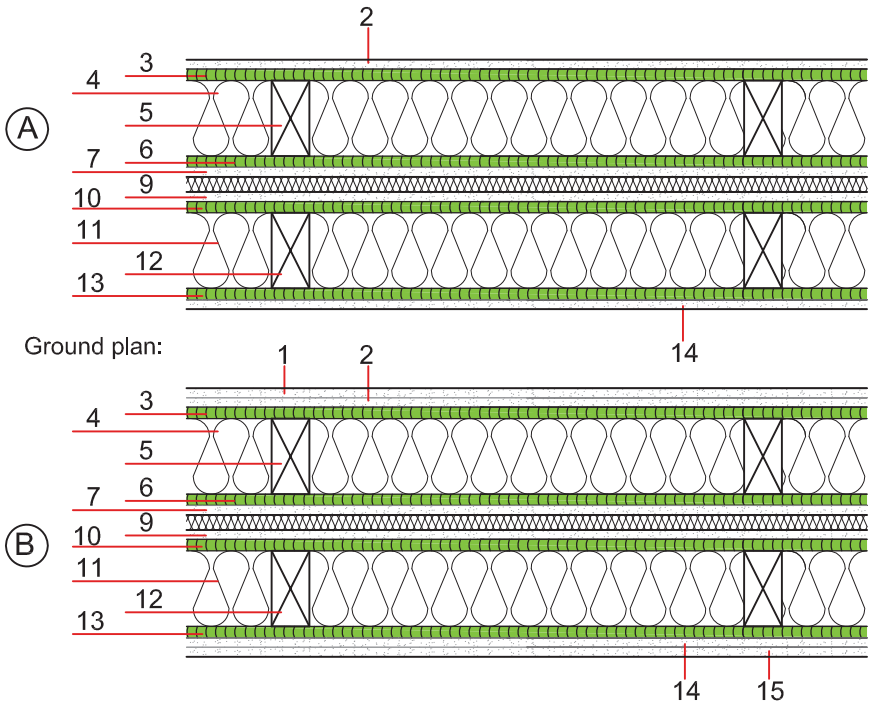
	Structure	Thickness [mm]	A	B		
1	Gypsum plasterboard	12,5	●	-		
2	OSB SUPERFINISH® ECO	15	●	-		
3	Timber framed construction (60/100, e = 625 mm)	100	●	-		
4	Mineral or glass wool	100	●	-		
5	OSB SUPERFINISH® ECO	15	●	-		
6	Gypsum plasterboard	12,5	●	-		
7	**MDF-based panel Kronospan Standard**	8	-	●		
8	OSB SUPERFINISH® ECO	12	-	●		
9	Mineral or glass wool	100	-	●		
10	Timber framed construction (40/60, e = 625 mm)	100	-	●		
11	OSB SUPERFINISH® ECO	12	-	●		
12	**MDF-based panel Kronospan Standard**	8	-	●		

Thermal insulation	U-value	U [W/m²K]	-	-		
Fire protection	Fire resistance	REI [min]	REI 30	-		
Acoustic properties	Airborne sound insulation	R_w ($C;C_{tr}$) [dB]	-	-		
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-		



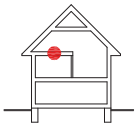
Construction type: compartment double wall
System: double timber framed
Variant: A - with fire resistance REI 90
B - with fire resistance REI 90
Coating: OSB board + gypsum plasterboard



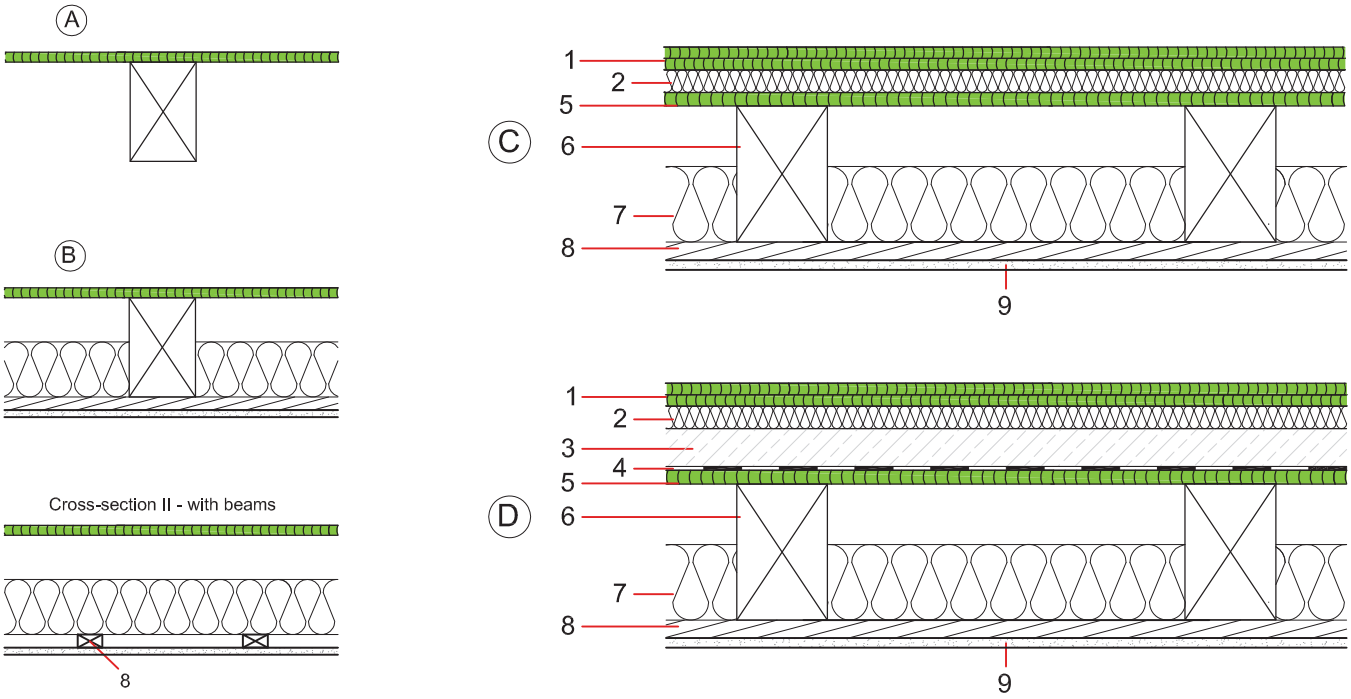


	Structure	Thickness [mm]	A	B		
1	Gypsum plasterboard	12,5	-	●		
2	Gypsum plasterboard	12,5	●	●		
3	OSB SUPERFINISH® ECO	15	●	●		
4	Timber framed construction (60/100, e = 625 mm)	100	●	●		
5	Mineral or glass wool	100	●	●		
6	OSB SUPERFINISH® ECO	15	●	●		
7	Gypsum plasterboard	12,5	●	●		
8	Mineral or glass wool	20	●	●		
9	Gypsum plasterboard	12,5	●	●		
10	OSB SUPERFINISH® ECO	15	●	●		
11	Mineral or glass wool	100	●	●		
12	Timber framed construction (60/100, e = 625 mm)	100	●	●		
13	OSB SUPERFINISH® ECO	15	●	●		
14	Gypsum plasterboard	12,5	●	●		
15	Gypsum plasterboard	12,5	-	●		

Thermal insulation	U-value	U [W/m²K]	0,17	0,17		
Fire protection	Fire resistance	REI [min]	REI 90			
Acoustic properties	Airborne sound insulation	R_w (C;C_{tr}) [dB]	59(-3;-10)	60(-3;-10)		
	Impact sound insulation	$L_{n,w}$ (C_I) [dB]	-	-		



Construction type: timber floor construction with certified floating flooring system
System: timber framed
Variant: A - standard
B - trial timber floor in accordance with EN ISO 140-11
C - trial timber floor with floating flooring system
D - trial timber floor with load concrete layer and floating flooring system
Flooring: sound reducing floor system
Ceiling: gypsum plasterboard, fixed to wooden framing



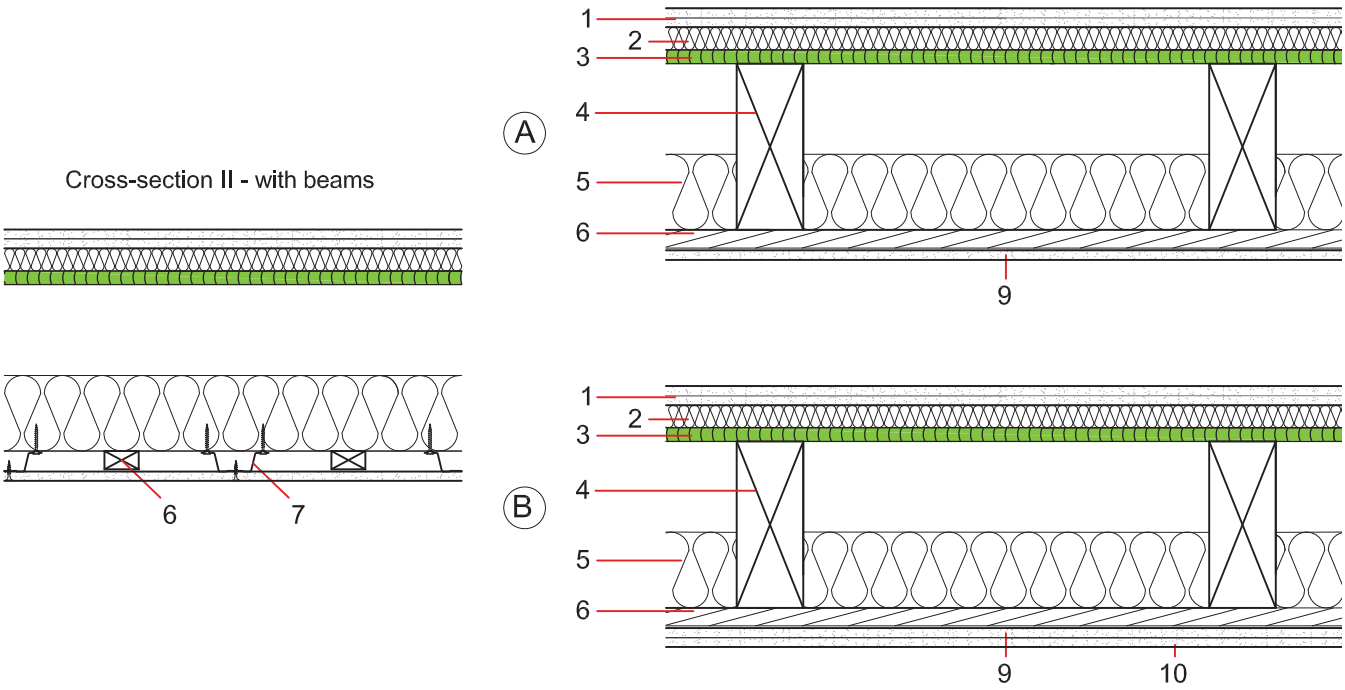
	Structure	Thickness [mm]	A	B	C	D
	Sound reducing floor system:					
1	**OSB SUPERFINISH® ECO** (panels glued together)	2 x 15			●	●
2	Sound insulation layer - mineral wool	30			●	●
3	Concrete, or pre-manufactured concrete blocks	50			-	●
4	Separation layer (e.g. PE-foil)	< 1			-	●
5	OSB SUPERFINISH® ECO	22	●	●	●	●
6	Load-bearing beams (120/180, e = 625mm)	180	●	●	●	●
7	Mineral wool	100		●	●	●
8	Wood cladding (24/48; spacing a = 625mm)	24		●	●	●
9	Gypsum plasterboard	12,5		●	●	●

Thermal insulation	U-value	U [W/m²K]	-	-	0,25	
Fire protection	Fire resistance	REI [min]	-	-	REI 30	
Acoustic properties	Airborne sound	R_w (C;C_{tr}) [dB]	26(-1;-4)	42(-2;-6)	52(-3;-10)	58(-3;-10)
	Impact sound	$L_{n,w}$ (C_I) [dB]	90	74	65	57

Zdroj: www.kronospan.cz

Construction type: timber floor construction within living unit
with flexible suspended ceiling for improved acoustic properties
System: timber framed
Variant: A - with fire resistance REI 30
B - with fire resistance REI 60
Flooring: floating with wood panels
Ceiling: gypsum plasterboard, flexible suspended

Cross-section II - with beams

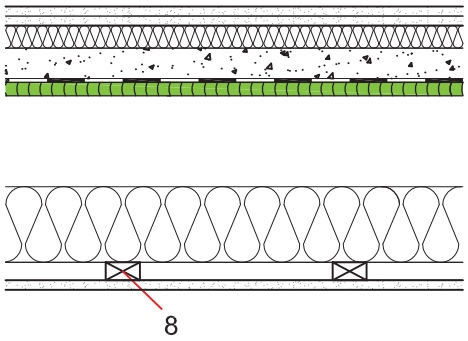


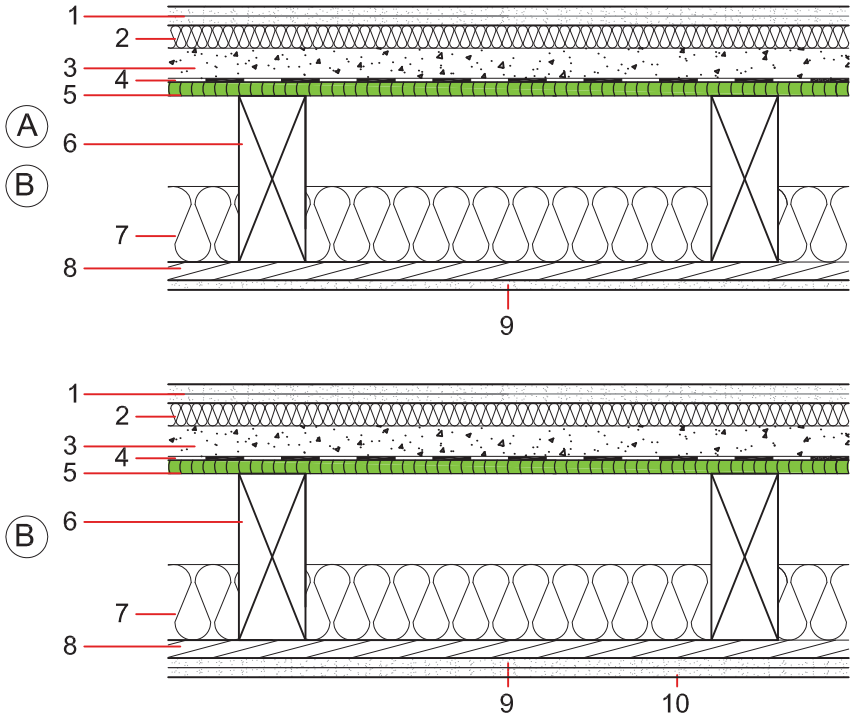
	Structure	Thickness [mm]	A	B	
1	Flooring	25	●	●	
2	Sound insulation layer - mineral wool	30	●	●	
3	OSB SUPERFINISH® ECO	≥18	●	●	
4	Load-bearing beams (80/220, e = 625mm)	220	●	●	
5	Mineral or glass wool	100	●	●	
6	Wood cladding (24/100; a = 400mm)	24	●	●	
7	Resilient channel (between battens)	27	●	●	
8	Gypsum plasterboard	12,5	●	●	
9	Gypsum plasterboard	12,5	-	●	

Thermal insulation	U-value	U [W/m²K]	0,26	0,25	
Fire protection	Fire resistance	REI [min]	REI 30	REI 60	
Acoustic properties	Airborne sound	R_w (C;C_{tr}) [dB]	66(-2;-7)	67(-2;-7)	
	Impact sound	$L_{n,w}$ (C_I) [dB]	48 (4)	48 (2)	

Construction type: timber floor construction within living unit
ballast layer for acoustic properties improvement
System: timber framed
Variant: A - with fire resistance REI 30
B - with fire resistance REI 60
Flooring: floating dry screed
Ceiling: gypsum plasterboard, fixed to wooden framing

Cross-section II - with beams



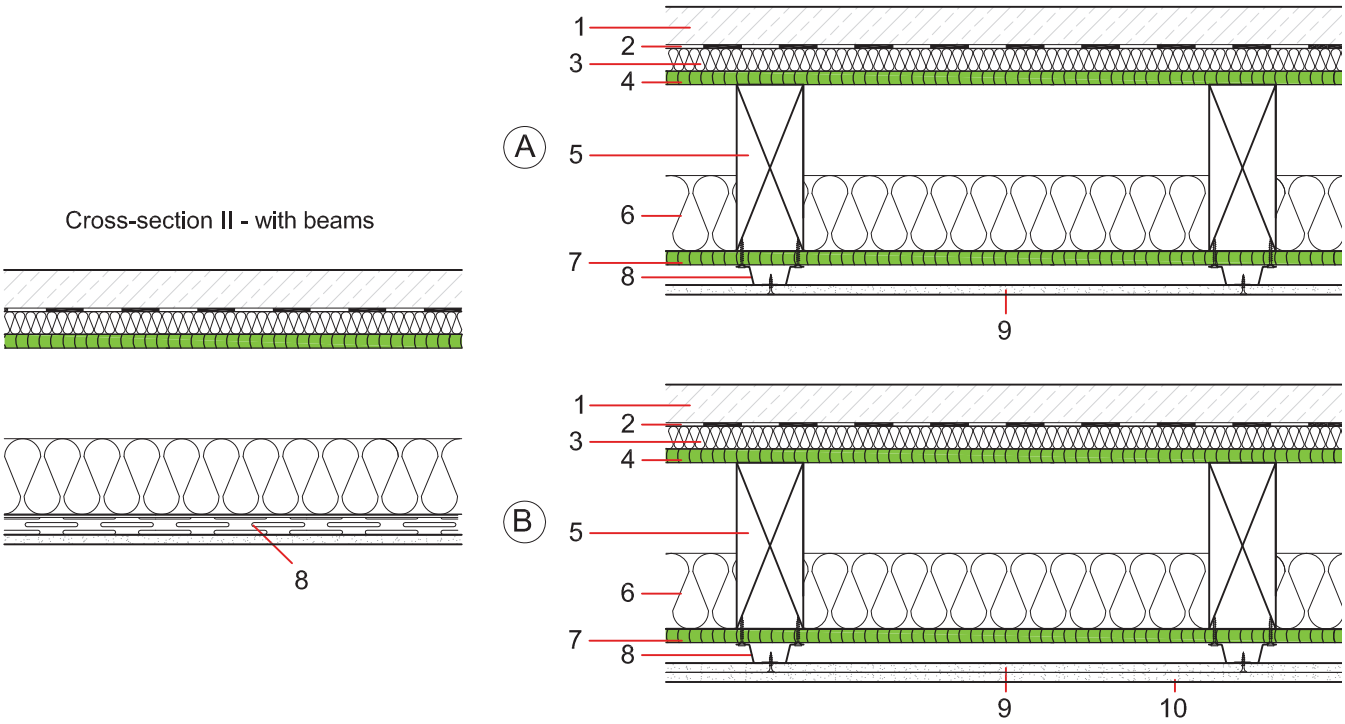


	Structure	Thickness [mm]	A	B	
1	Flooring	25	●	●	
2	Sound insulation layer - mineral wool	30	●	●	
3	Sand layer (min. 1800 kg/m³)	40	●	●	
4	Separation layer (e.g. PE-foil)	< 1	●	●	
5	OSB SUPERFINISH® ECO	≥18	●	●	
6	Load-bearing beams (80/220, e = 625mm)	220	●	●	
7	Mineral or glass wool	100	●	●	
8	Wood cladding (24/100; a = 400mm)	24	●	●	
9	Gypsum plasterboard	12,5	●	●	
10	Gypsum plasterboard	12,5	-	●	

Thermal insulation	U-value	U [W/m²K]	0,25	0,25	
Fire protection	Fire resistance	REI [min]	REI 30	REI 60	
Acoustic properties	Airborne sound	R_w (C;C_{tr}) [dB]	63(-5;-12)	63(-4;-11)	
	Impact sound	$L_{n,w}$ (C_I) [dB]	58 (2)	58 (0)	

Construction type: timber floor construction within living unit
System: timber framed
Variant: A - with fire resistance REI 30
B - with fire resistance REI 60
Influence on acoustic properties of floor :
C - axial spacing of beams: 400mm
D - floating sound insulating underlay (polystyrene EPS)
Flooring: floating concrete slab
Ceiling: gypsum plasterboard, flexible suspended

Cross-section II - with beams

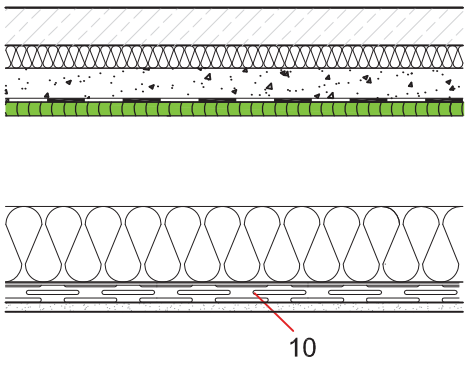


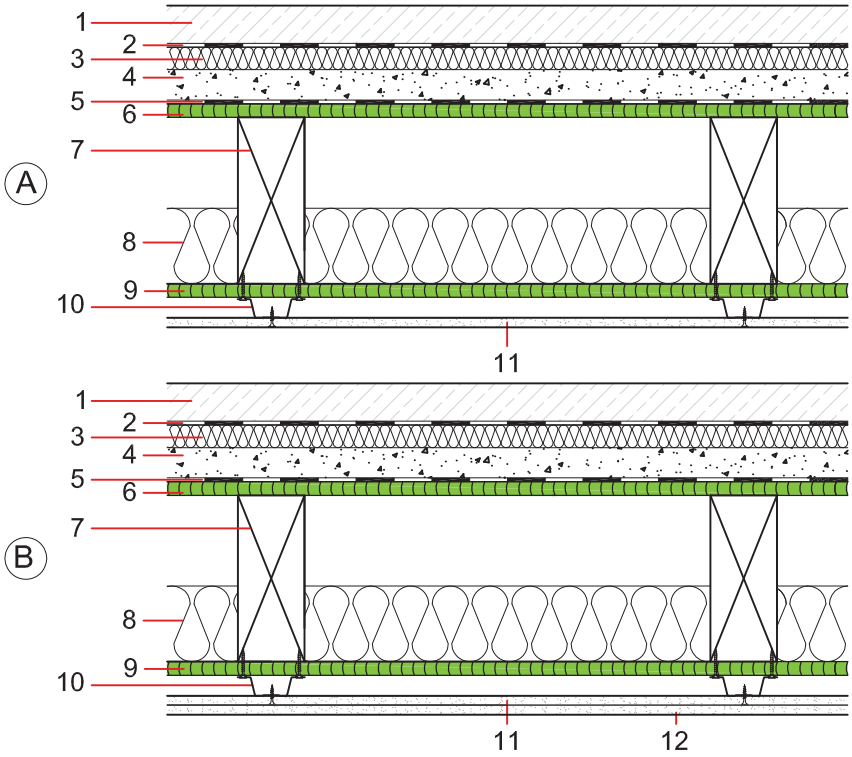
	Structure	Thickness [mm]	A	B	C	D
1	Anhydrite or concrete slab	50	●	●	●	●
2	Separation layer (e.g. PE-foil)	< 1	●	●	●	●
3	Sound insulation layer - mineral wool	30	●	●	●	-
3´	Impact sound insulation layer - EPS (15 kg/m³)	30	-	-	-	●
4	OSB SUPERFINISH® ECO	≥18	●	●	●	●
5	Load-bearing beams (80/220, e = 625mm)	220	●	●	-	●
5´	Load-bearing beams (80/220, e = 400mm)	220	-	-	●	-
6	Mineral or glass wool	100	●	●	●	●
7	OSB SUPERFINISH® ECO	18	●	●	●	●
8	Resilient channel	27	●	●	●	●
9	Gypsum plasterboard	12,5	●	●	●	●
10	Gypsum plasterboard	12,5	-	●	●	●

Thermal insulation	U-value	U [W/m²K]	0,20	0,19	0,26	0,19
Fire protection	Fire resistance	REI [min]	REI 30	REI 60	REI 30	
Acoustic properties	Airborne sound	R_w ($C;C_{tr}$) [dB]	58(-7;-1)	58(-7;-1)	58(-7;-1)	55(-3;-9)
	Impact sound	$L_{n,w}$ (C_I) [dB]	61 (0)	60 (0)	61 (0)	68 (0)

Construction type: floor construction within living unit
System: timber framed
Variant: A - with fire resistance REI 30
B - with fire resistance REI 60
Influence on acoustic properties of floor:
C - axial spacing of beams: 400mm
D - floating sound insulating underlay (polystyrene EPS)
Flooring: floating concrete slab
Ceiling: gypsum plasterboard, flexible suspended

Cross-section II - with beams



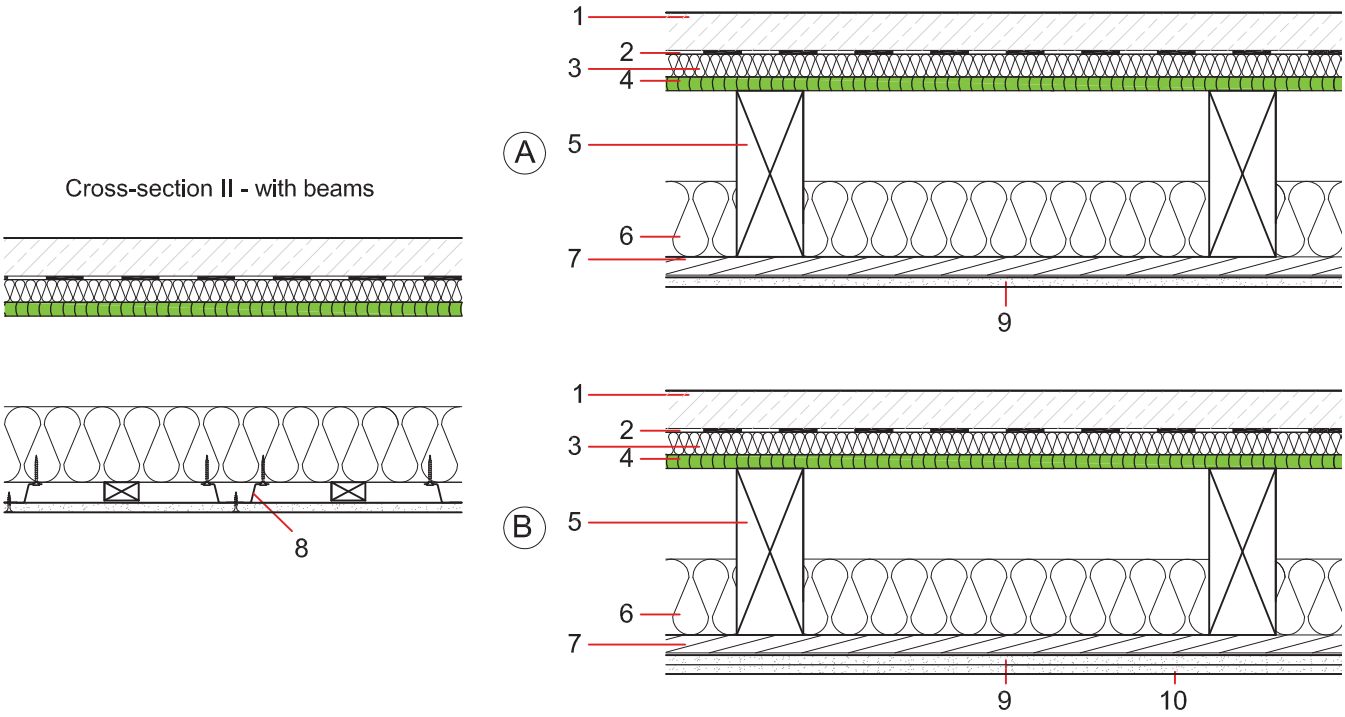


	Structure	Thickness [mm]	A	B	C	D
1	Anhydrite or concrete slab	50	●	●	●	●
2	Separation layer (e.g. PE-foil)	< 1	●	●	●	●
3	Sound insulation layer - mineral wool	30	●	●	●	-
3´	Impact sound insulation layer - polystyrene EPS	30	-	-	-	●
4	Sand layer (min. 1800 kg/m³)	40	●	●	●	●
5	Separation layer (e.g. PE-foil)	< 1	●	●	●	●
6	OSB SUPERFINISH® ECO	≥18	●	●	●	●
7	Load-bearing beams (80/220, e = 625mm)	220	●	●	-	●
7´	Load-bearing beams (80/220, e = 400mm)	220	-	-	●	-
8	Mineral or glass wool	100	●	●	●	●
9	OSB SUPERFINISH® ECO	18	●	●	●	●
10	Resilient channel	27	●	●	●	●
11	Gypsum plasterboard	12,5	●	●	●	●
12	Gypsum plasterboard	12,5	-	●	-	-

Thermal insulation	U-value	U [W/m²K]	0,25	0,25	0,25	0,25
Fire protection	Fire resistance	REI [min]	REI 30	REI 60	REI 30	
Acoustic properties	Airborne sound	R_w ($C;C_{tr}$) [dB]	67(-1;-17)	67(-1;-17)	64(-9;-18)	64(-10;-19)
	Impact sound	$L_{n,w}$ (C_I) [dB]	50 (6)	50 (6)	55 (6)	57 (6)

Construction type: floor construction within living unit
System: timber framed
Variant: A - with fire resistance REI 30
B - with fire resistance REI 60
Influence on acoustic properties of floor:
C - axial spacing of beams: 400mm
D - floating sound insulating underlay (polystyrene EPS)
Flooring: floating concrete slab
Ceiling: gypsum plasterboard, flexible suspended

Cross-section II - with beams

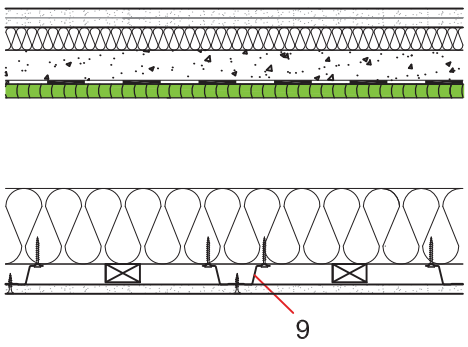


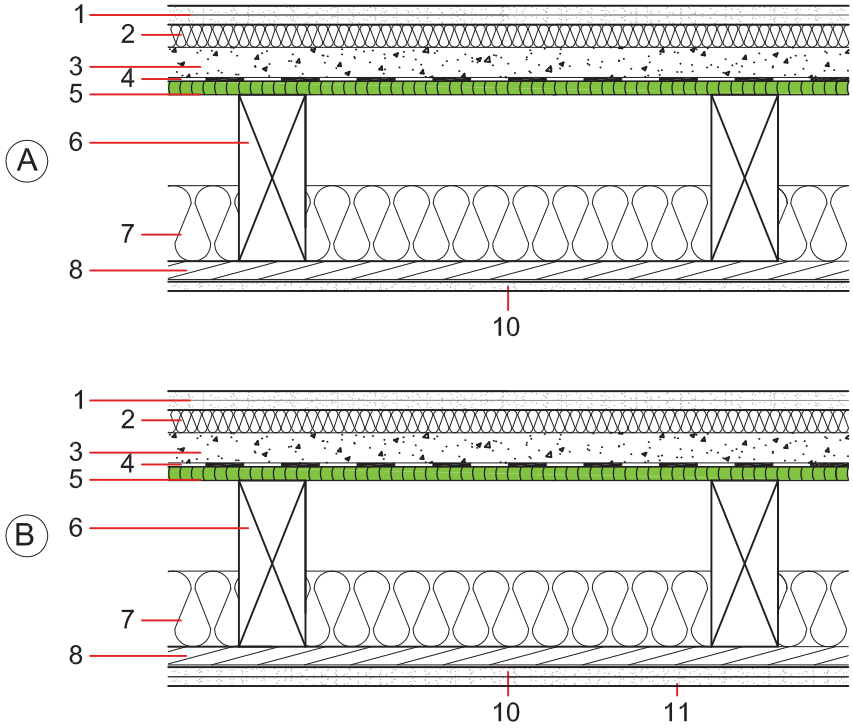
	Structure	Thickness [mm]	A	B	C	D
1	Anhydrite or concrete slab	50	●	●	●	●
2	Separation layer (e.g. PE-foil)	~1	●	●	●	●
3	Sound insulation layer - mineral wool	30	●	●	●	-
3´	Impact sound insulation layer - polystyrene EPS	30	-	-	-	●
4	OSB SUPERFINISH® ECO	≥18	●	●	●	●
5	Load-bearing beams (80/220, e = 625mm)	220	●	●	-	●
5´	Load-bearing beams (80/220, e = 400mm)	220	-	-	●	-
6	Mineral or glass wool	100	●	●	●	●
7	Wood cladding (24/100; a = 400mm)	24	●	●	●	●
8	Resilient channel (between)	27	●	●	●	●
9	Gypsum plasterboard	12,5	●	●	●	●
10	Gypsum plasterboard	12,5	-	●	-	-

Thermal insulation	U-value	U [W/m²K]	0,26	0,26	0,26	0,26
Fire protection	Fire resistance	REI [min]	REI 30	REI 60	REI 30	
Acoustic properties	Airborne sound	R_w (C;C_{tr}) [dB]	66(-1;-6)	67(-1;-17)	63(-2;-7)	63(-3;-8)
	Impact sound	$L_{n,w}$ (C_I) [dB]	52 (0)	51 (0)	55 (0)	59 (-1)

Construction type: floor construction between living units
System: timber framed
Variant: A - with fire resistance REI 30
B - with fire resistance REI 60
Ceiling with improved acoustic properties:
C - axial spacing of beams: 400mm
D - floating sound insulating underlay (polystyrene EPS)
Flooring: floating with dry screed
Ceiling: gypsum plasterboard, flexible suspended

Cross-section II - with beams



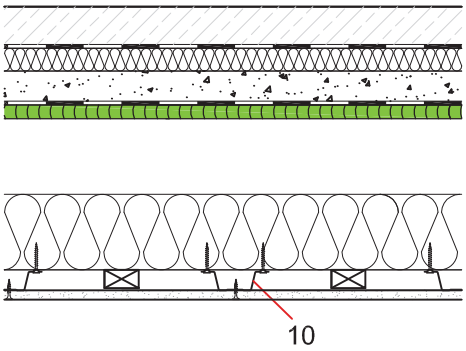


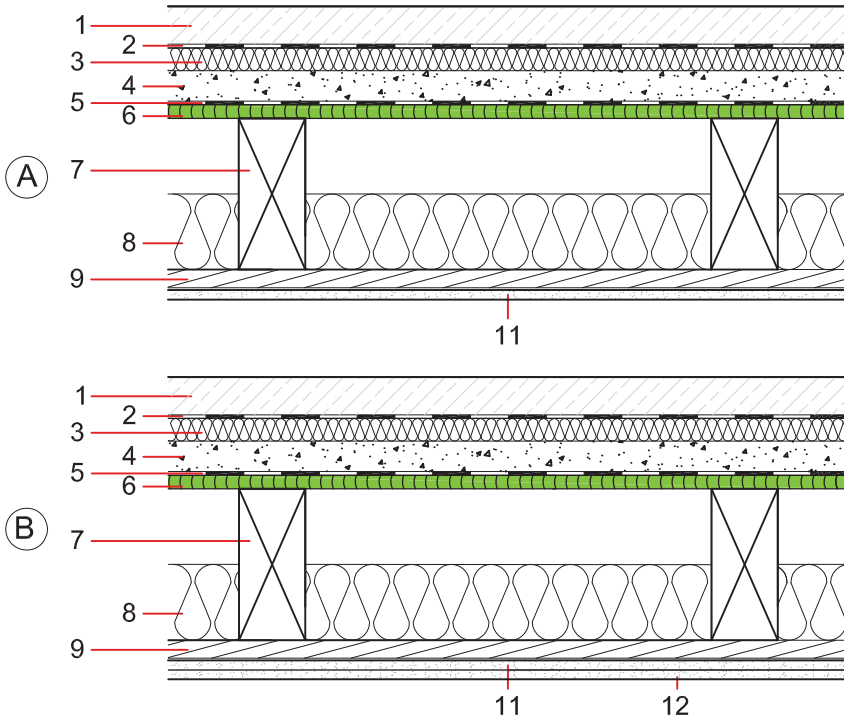
	Structure	Thickness [mm]	A	B	C	D
1	Flooring	25	●	●	●	●
2	Sound insulation layer - mineral wool	30	●	●	●	-
2´	Impact sound insulation layer - polystyrene EPS	30	-	-	-	●
3	Sand layer (min. 1800 kg/m³)	40	●	●	●	●
4	Separation layers (e.g. PE)	< 1	●	●	●	●
5	OSB SUPERFINISH® ECO	≥18	●	●	●	●
6	Load-bearing beams (80/220, e = 625mm)	220	●	●	-	●
6´	Load-bearing beams (80/220, e = 400mm)	220	-	-	●	-
7	Mineral or glass wool	100	●	●	●	●
8	Wood cladding (24/100; a = 400mm)	24	●	●	●	●
9	Resilient channel (between)	27	●	●	●	●
10	Gypsum plasterboard	12,5	●	●	●	●
11	Gypsum plasterboard	12,5	-	●	-	-

Thermal insulation	U-value	U [W/m²K]	0,25	0,25	0,26	0,26
Fire protection	Fire resistance	REI [min]	REI 30	REI 60	REI 30	
Acoustic properties	Airborne sound	R_w ($C;C_{tr}$) [dB]	70(-2;-6)	70(-1;-6)	67(-3;-8)	65(-4;-9)
	Impact sound	$L_{n,w}$ (C_I) [dB]	42 (3)	42 (1)	49 (4)	51 (4)

Construction type: floor construction between living units
System: timber framed
Variant: A - with fire resistance REI 30
B - with fire resistance REI 60
Ceiling with improved acoustic properties:
C - axial spacing of beams: 400mm
D - floating sound insulating underlay (polystyrene EPS)
Flooring: floating concrete slab
Ceiling: gypsum plasterboard, flexible suspended

Cross-section II - with beams



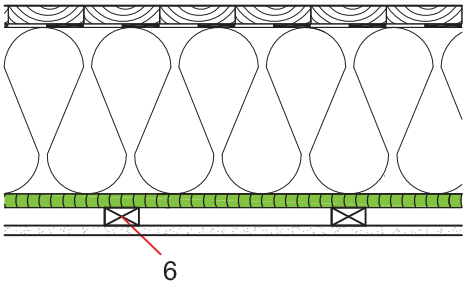


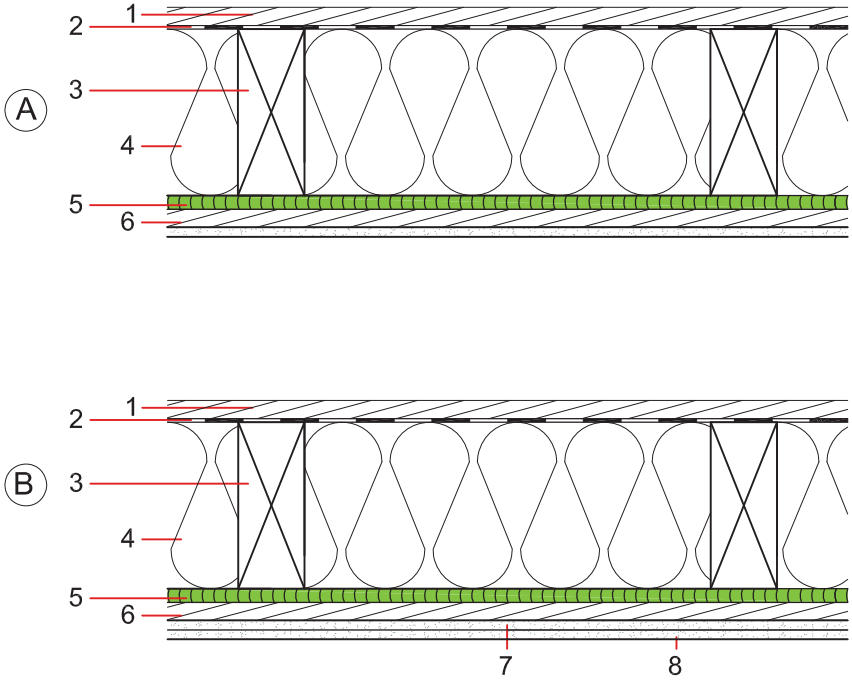
	Structure	Thickness [mm]	A	B	C	D
1	Anhydrite or concrete slab	50	●	●	●	●
2	Separation layer (e.g. PE-foil)	< 1	●	●	●	●
3	Impact sound insulation layer - mineral wool	30	●	●	●	-
3´	Impact sound insulation layer - polystyrene EPS	30	-	-	-	●
4	Sand layer (min. 1800 kg/m³)	40	●	●	●	●
5	Separation layer (e.g. PE-foil)	< 1	●	●	●	●
6	OSB SUPERFINISH® ECO	≥18	●	●	●	●
7	Load-bearing beams (80/220, e = 625mm)	200	●	●	-	●
7´	Load-bearing beams (80/220, e = 400mm)	200	-	-	●	-
8	Mineral or glass wool	100	●	●	●	●
9	Wood cladding (24/100; a = 400mm)	24	●	●	●	●
10	Resilient channel (between)	27	●	●	●	●
11	Gypsum plasterboard	12,5	●	●	●	●
12	Gypsum plasterboard	12,5	-	●	-	-

Thermal insulation	U-value	U [W/m²K]	0,26	0,26	0,26	0,26
Fire protection	Fire resistance	REI [min]	REI 30	REI 60	REI 30	
Acoustic properties	Airborne sound	R_w ($C;C_{tr}$) [dB]	70(-1;-6)	70(0;-4)	67(-2;-7)	65(-3;-8)
	Impact sound	$L_{n,w}$ (C_I) [dB]	41 (2)	41 (0)	48 (2)	50 (2)

Construction type: floor construction below unheated attic
System: timber framed, diffusion open
Variant: A - with fire resistance REI 30
B - with fire resistance REI 60
Flooring: floating concrete slab
Ceiling: gypsum plasterboard, fixed to wooden framing

Cross-section II - with beams



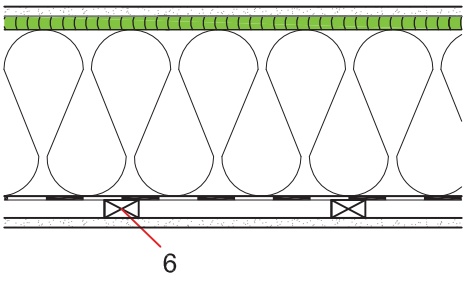


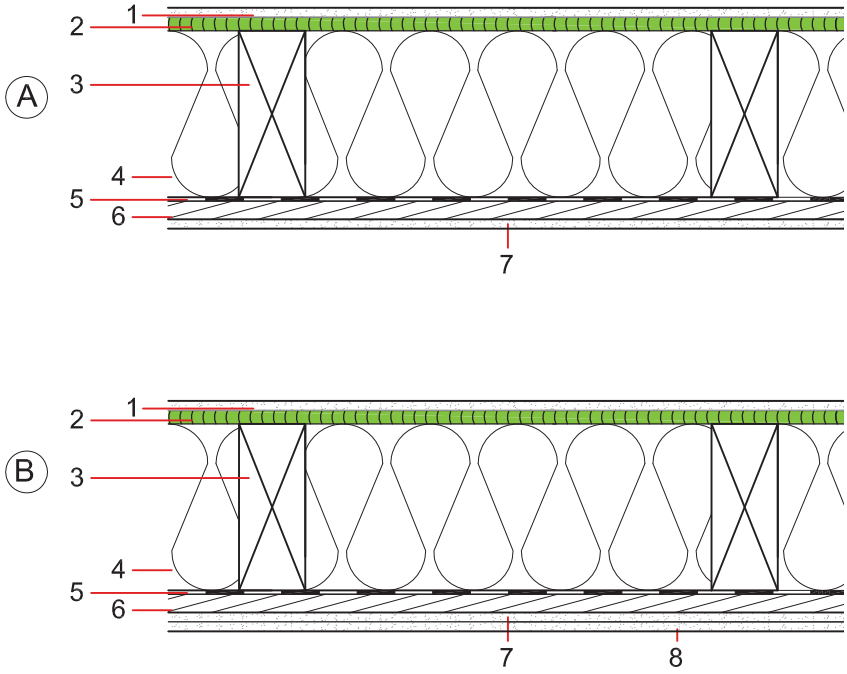
	Structure	Thickness [mm]	A	B	
1	Timber boarding	12,5	●	●	
2	Wind protective diffusion foil sd<0,3m	< 1	●	●	
3	Load-bearing timber beams (80/220, e = 625mm)	220	●	●	
4	Glass wool	220	●	●	
5	**OSB SUPERFINISH® ECO** (air tight connected)	18	●	●	
6	Wood cladding (24/100; a = 400mm)	24	●	●	
7	Gypsum plasterboard	12,5	●	●	
8	Gypsum plasterboard	12,5	-	●	

Thermal insulation	U-value	U [W/m²K]	0,19	0,19	
Fire protection	Fire resistance	REI [min]	REI 30	REI 60	
Acoustic properties	Airborne sound	R_w (C;C_{tr}) [dB]	42(-3;-7)	43(-3;-7)	
	Impact sound	$L_{n,w}$ (C_I) [dB]	-	-	

Construction type: floor construction below unheated attic
System: timber framed, diffusion closed
Variant: A - with fire resistance REI 30
B - with fire resistance REI 60
Flooring: floating concrete slab
Ceiling: plasterboard, fixed to wooden framing

Cross-section II - with beams



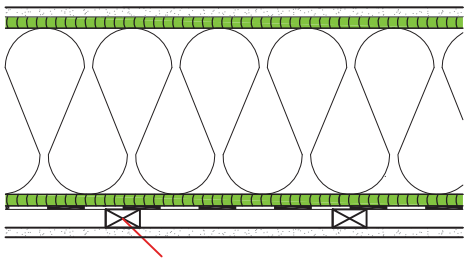


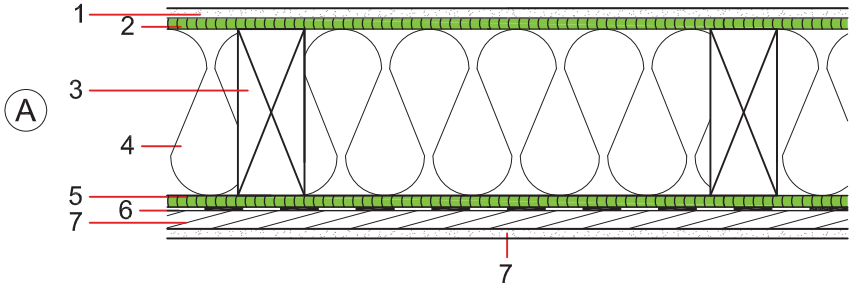
	Structure	Thickness [mm]	A	B	
1	Gypsum plasterboard	12,5	●	●	
2	OSB SUPERFINISH® ECO	18	●	●	
3	Load-bearing beams (80/220, e = 625mm)	220	●	●	
4	Mineral or glass wool	220	●	●	
5	Vapour barrier sd > 15m	< 1	●	●	
6	Wood cladding (24/100; a = 400mm)	24	●	●	
7	Gypsum plasterboard	12,5	●	●	
8	Gypsum plasterboard	12,5	-	●	

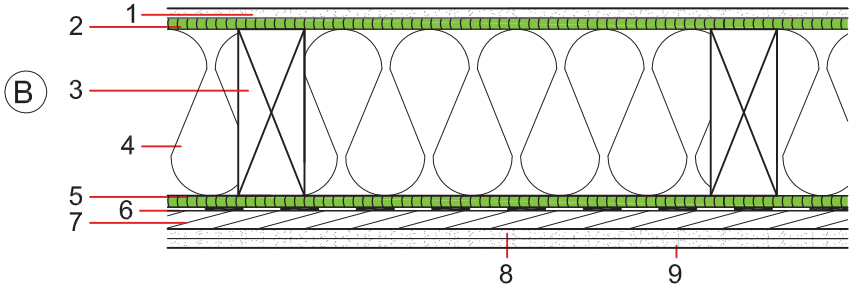
Thermal insulation	U-value	U [W/m²K]	0,20	0,19	
Fire protection	Fire resistance	REI [min]	REI 30	REI 60	
Acoustic properties	Airborne sound	R_w (C;C_{tr}) [dB]	47(-4;-9)	48(-4;-9)	
	Impact sound	$L_{n,w}$ (C_I) [dB]	-	-	

Construction type: floor construction below unheated attic
System: timber framed, diffusion closed
Variant: A - with fire resistance REI 30
B - with fire resistance REI 60
Flooring: floating concrete slab
Ceiling: plasterboard, fixed to wooden framing

Cross-section II - with beams







	Structure	Thickness [mm]	A	B	
1	Gypsum plasterboard	12,5	●	●	
2	OSB SUPERFINISH® ECO	15	●	●	
3	Cross-section II - with beams	220	●	●	
4	Glass wool	220	●	●	
5	OSB SUPERFINISH® ECO	15	●	●	
6	Vapour barrier sd > 7m	< 1	●	●	
7	Wood cladding (24/100; a = 400mm)	24	●	●	
8	Gypsum plasterboard	12,5	●	●	
9	Gypsum plasterboard	12,5	-	●	

Thermal insulation	U-value	U [W/m²K]	0,19	0,19	
Fire protection	Fire resistance	REI [min]	REI 30	REI 60	
Acoustic properties	Airborne sound	R_w (C;C_{tr}) [dB]	46(-2;-8)	47(-2;-8)	
	Impact sound	$L_{n,w}$ (C_I) [dB]	-	-	

Notes

Notes

8 Product availability

OSB SUPERFINISH® ECO is available in a large variety of thicknesses and dimensions, either straight edge or with tongue and groove.

OSB SUPERFINISH® ECO – OSB/3

	format [mm]	thickness [mm]						pallets per truck
		12	15	18	22	25	30	
straight edge	5,000 × 2,500	22	18	15	12	11		12
	5,000 × 1,250	38	31	26	21	19		14
	3,000 × 1,250	59	47	39	32			12 – 15
	2,800 × 1,250	59	47	39	32	28		15 – 18
	2,650 × 1,250	59	47	39	32	28		17 – 18
	2,500 × 1,250	59	47	39	32	28		18
	2,440 × 1,220	59	47	39	32	28		18
4 N+F	2,500 × 1,250	59	47	39	32	28		15
	2,500 × 625	59	47	39	32	28	23	36 – 40
2 N+F	2,500 × 1,250		47	39	32			15
	5,000 × 1,250		31	26	21	19		8
4 N+F, sanded	2,500 × 625		47	39	32	28		36 – 40

	format [mm]	thickness [mm]						pallets per truck
		8	9	10	11			
straight edge	2,500 × 1,250	84	75	69	64			18

OSB SUPERFINISH® BAU ECO – OSB/4

	format [mm]	thickness [mm]						pallets per truck
		12	15	18	22	25	30	
straight edge	5,000 × 2,500	22	18	15	12	11	9	11
	5,000 × 1,250	38	30	25	21	18		13
	3,000 × 1,250	58	47	39	31	28	23	12
	2,800 × 1,250	58	47	39	31	28	23	12
	2,650 × 1,250	58	47	39	31	28	23	16
	2,500 × 1,250	58	47	39	31	28	23	17
4 N+F	2,500 × 1,250	59	47	39	32	28	23	15
	2,500 × 625	59	47	39	32	28	23	33 – 35
2 N+F	5,000 × 625				23	20		15

xx	Express programm (number indicates amount of panels per pack)	In stock
xx	Production programm (number indicates amount of panels per pack)	Min. order quantity: 120 m^3 per thickness and size
	Availability of other sizes on request	

- **OSB/3** – load-bearing boards for use in humid conditions
- **OSB/4** – heavy duty load-bearing boards for use in humid conditions
- **2 N+F** – boards profiled with tongue-and-groove on 2 longitudinal edges
- **4 N+F** – boards profiled with tongue-and-groove on all 4 edges

Approximate panel weights:

	thickness [mm]	8	9	10	11	12	15	18	22	25	32
OSB/3 straight edge	[kg/m^3]	580	580	580	575	570	570	560	560	550	540
	[kg/m^2]	4.64	5.22	5.8	6.32	6.84	8.55	10.08	12.32	13.75	17.28
OSB/3 N+F	[kg/m^3]					580	580	570	570	560	545
	[kg/m^2]					6.96	8.70	10.26	12.54	14	17.44
OSB/4	[kg/m^3]					580	580	570	570	560	550
	[kg/m^2]					6.96	8.70	10.26	12.54	14	17.6

8 Customer service

KRONOSPAN strives to obtain the highest quality standards in the industry and is committed to achieving continual improvements of its environmental performance. In cooperation with independent testing and research institutes, as well as with major construction and manufacturing companies, KRONOSPAN investigates and explores new innovative solutions for structural applications with OSB SUPERFINISH® ECO.

For information on the most recent developments please see www.kronospan.cz