Kronobuild®

OSB Firestop

Kronospan

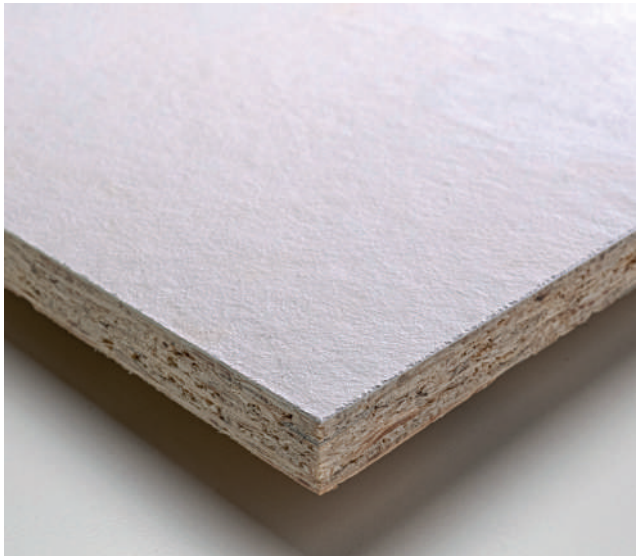
OSB **Firestop**

EVERY SECOND COUNTS

Fire can destroy buildings, equipment and even lives. The importance of quick evacuation of personnel associated with the proper design of escape routes and the use of suitable materials for the final surface of walls and ceilings plays an important role in the initial stage of a fire.
That is why today‘s visionary constructors rely on sophisticated materials such as OSB Firestop which provides structural strength and burn resistance at the same time. In addition to providing excellent fire features, OSB Firestop board also features surface finish characteristics similar to plasters and drywall. In contrast to drywall, OSB Firestop boards are highly resistant to cracking and damage during handling, installation and operational load at the time of use.

OSB Firestop

The base plate is OSB 3 board, to EN 300 standard, labeled as OSB 3 and equipped with patented fire-resistant Pyrotite® finish on one or both sides.
As opposed to conventional wood-based boards, the OSB Firestop has a better classification in the evaluation of reaction to fire. According to European classification (EN 13501-1), it meets class B-s1, d0. The Pyrotite® finish coating consists of fireproof materials on the basis of magnesium oxide, reinforced with fiberglass mesh. This finish provides a very strong connection with OSB boards and in addition to a high resistance to burning, it increases OSB board bending and shear strength in all thickness categories.



AREA OF USE

Load bearing and non-load bearing structure

- Internal wall and ceiling linings
- Construction of roofs or shelters
- Interior - exhibition stands, television and theatre scenery

Packaging

- Pallets for the chemical industry
- Military equipment such as crates and containers

Especially for building structure materials where a B-s1, d0 or higher reaction to fire is required. It applies to multi-story apartment buildings, terraced family homes and public buildings.
The national fire code of each EU country require the use of materials with a B-s1, d0 reaction to fire, especially for the final lining of escape routes or assembly areas.
At exhibition buildings there is a requirement for materials used for the construction of exhibition stands.

ADVANTAGES

- Mechanical strength and load capacity in class OSB/3
- Reaction to fire class B-s1, d0
- 2 litres of crystal-bound water in one board (2,5 x 1,25 m) is released during the fire, thus increasing resistance to fire
- The composition of the Pyrotite® surface layer with fiberglass increases the strength properties of OSB boards
- Enables faster and more cost-effective solutions than construction combined with drywall
- Lighter and easier handling and processing compared to silicate - based wallboards (gypsum, gypsum fibreboard and cement-bonded chipboard)
- High air tightness for use in building envelopes
- More than fifteen years of practical experience
- High dimensional accuracy and stability
- Resistant to shock or damage during handling
- High-speed dry construction
- Application in seismic areas
- Environmentally friendly, even under fire no hazardous chemicals are emitted
- Made of wood originating from sustainably-managed forests
- OSB Firestop boards are glued with formaldehyde-free binders

HOW THE PYROTITE® COATING AFFECTS THE BUILDING FIRE

The course of a fire can be divided into three time phases - initial - fully developed fire - decay, see chart No.1. When the fire starts, it grows from its point of origin, ignites with combustible materials and spreads to other combustible materials. Surface materials used in construction and building interiors such as furniture, etc. have great importance in the initiation of fire and its subsequent development during the crucial initial stage.
For the fire to spread, the initial stage is the most important. This may last a considerably varied time - from several minutes to several hours. Extending the fire development time provides time for the evacuation of endangered personnel and gives the opportunity to extinguish the fire before irrecoverable losses occur (see chart No.1). Building equipment is not regulated by building codes. In contrast, the using surface linings of building structures is determined in most EU countries by building code requirements for minimal reaction to fire class, as well as other fire safety regulations.

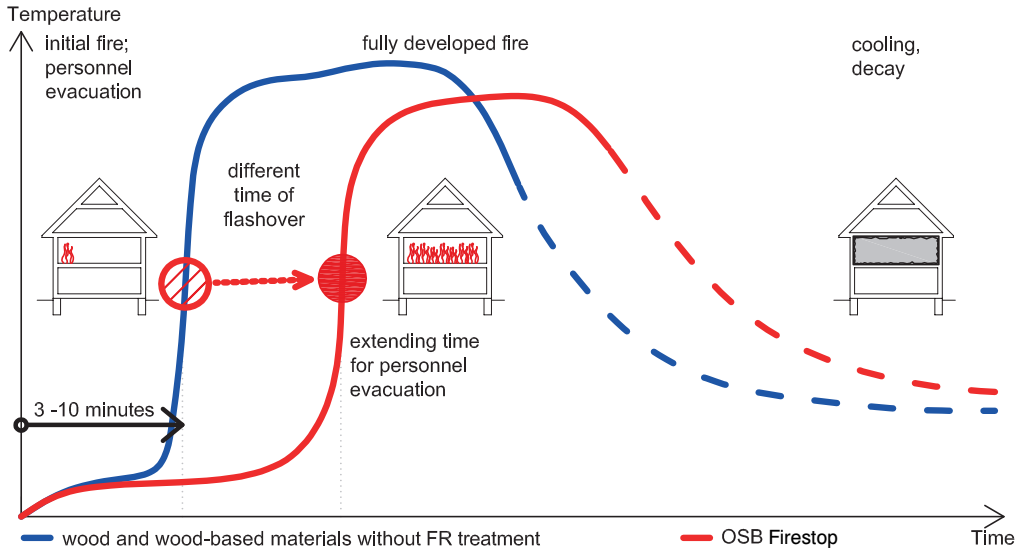


Chart No.1: Building fire scenario. In the initial stage, fire development is affected mainly by the reaction of materials to fire. The right selection of materials is crucial. The picture No.1 below shows that the difference in fire development when using conventional wood material and OSB Firestop is truly dramatic.

Picture 1: Fire development timeline

THE IMPORTANCE OF USING OSB **Firestop**

PYROTITE® - YOUR PROTECTION

Pyrotite® the unique cement mixture is a non-flammable, non-toxic, inorganic material which is designed to inhibit the ignition and spreading of flames. The patented cement mixture consists of crushed non-combustible magnesium oxide and additives which are firmly connected to the bearing OSB board. The mixture is reinforced with glass fibre, which increases the consistency and strength of the whole layer in normal use and under fire conditions.

Pyrotite® unique surface technology of OSB 3 contains crystal-bound water molecules. In the case of the board surface being exposed to intense heat created by fire (temperature rises above cca 100°C) the crystal-bound water is released. Up to 2 litres of water is released from one board of 2,5 x 1,25 m during a fire. The resulting water vapour cools the surface structure which helps to resist burning through and slows the spread of fire.

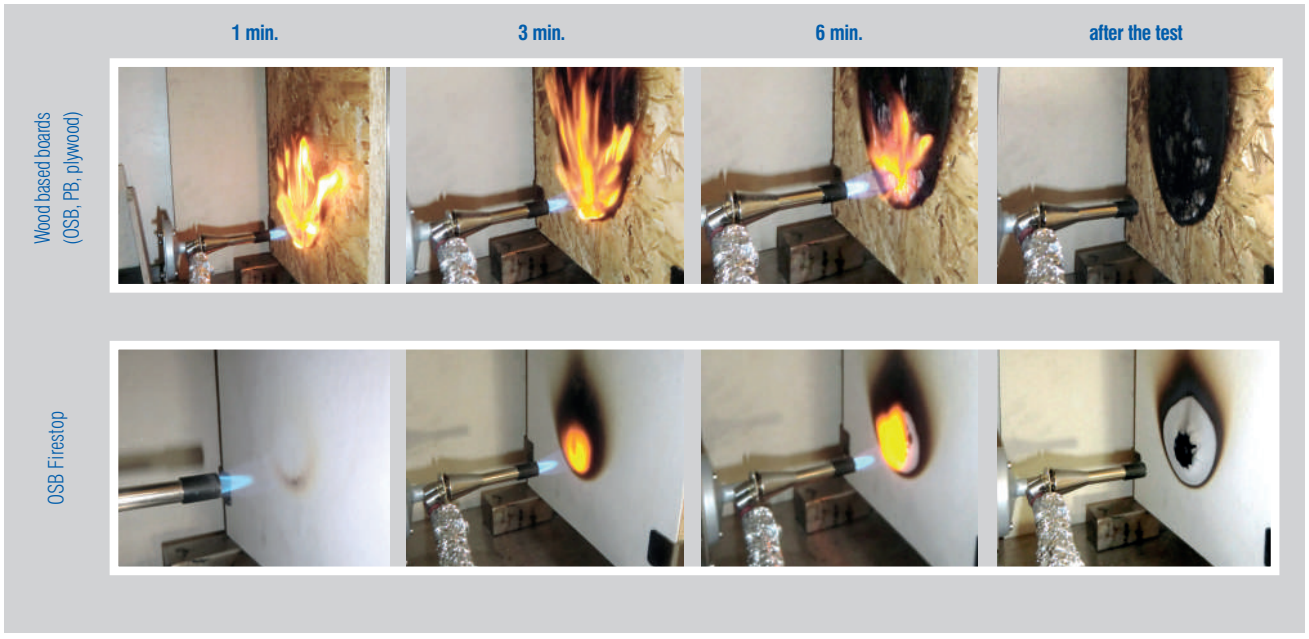
Pyrotite® is environmentally friendly. It contains no hazardous chemical substances. There is no need for the special treatment or storage of waste residues. It is installed as standard cladding without the need for special tools and protective equipment.

OSB **Firestop** - THE MOST ADVANTAGEOUS SOLUTION

The application of Pyrotite® cement mixture to the surface of OSB boards together with the glass fibre reinforcement increases the strength of the OSB board. OSB Firestop boards provide the strength and safety of building structures. During a fire they ensure anti-fire integrity for a much longer time than, for example, drywall.

OSB Firestop boards are lighter and stronger than drywall. With the same thickness they achieve similar fire qualities to cladding systems based on a combination of OSB boards and drywall. Using OSB Firestop boards saves assembly time and is more cost-effective.

Pyrotite® technology for OSB boards has more than fifteen years of verified functionality. In contrast to conventional fire protective coatings designed for wood-based products, Pyrotite® does not lose its protective qualities over time.



Picture 2: Timeline. Surface exposition of gas burner (EN 16733, laboratory Hoch Fladungen)

FIRE DEVELOPMENT DETERMINATION

The basic indicator for determining the fire development is the time of reaching the total (spatial) ignition, so-called flashover, and heat release rate.
Flashover is a collapse limit generally understood as a very rapid dynamic change from a local fire to a fully developed one. Flashover is formed inside a partially enclosed room when flammable gases reach a temperature of approximately 600 °C. When this limit is reached, the heat released increases dramatically, smoke production increases intensely, and flames whip through the openings of the room. Under the real conditions, flammable gases can reach a temperature of 600 to 1300 °C.
Flashover is preceded by the gradual accumulation of hot combustion products under the room ceiling, thus heating the surrounding flammable surfaces and objects to the ignition temperature.
Use of materials with very low or preferably no surface flammability can be decisive as to whether a flashover is formed at all.
As a demonstrative example of the possible total ignition non-occurrence, the timeline of the fire course in two simple structures is provided (Fig. 1). The first test structure was made of common unprotected wood-based materials and the second was made of wood-based material protected with only 1.5 mm thin non-flammable Pyrotite surface treatment.

A video of the entire test can be found here:

ROOM CORNER TEST (RCT)

Use the test method per EN ISO 9705 represents a more accurate way of the fire development determination. Significance of the contribution to fire or behaviour of structure surface treatments in fire is performed in a test room of a real size, with its dimensions of 2.4 x 3.6 m and height of 2.4 m, and with one window and one door. The reference test consists of igniting a burner in one corner of the room. The test is terminated after the total ignition (flashover) occurrence, or after 20 minutes of flame exposure.

REACTION TO FIRE CLASSIFICATION ACC. EN 13501-1

The European Reaction to Fire Classification System is directly linked to the perceived risks during the course of fire. The system is derived from large-scale room corner fire tests, such as the RCT reference test, and is based on the definition of the building material properties and their tendency to contribute to overall ignition (flashover). An overview is given in Tab. 1.
A more detailed description and basic information on the comparison of European fire reaction classes with national fire reaction classification systems, as well as information on the classification of all the Kronobuild boards into the individual fire reaction classes can be found in the Kronobuild catalogue in Chapter 6, Fire Protection.

FIRE SPREAD PROTECTION

The classification of products in terms of the fire reaction per the Common European Classification System might not always be fully adequate. For the reaction to fire with the Class A2 – D classification, the so-called SBI test (exposure to the flame effects in a corner of 1.5 x 1.5 m for 20 minutes) is the basis. However, the subsequent material behaviour after the test end is not determined. In practice, this refers to what happens after the fire flames are extinguished.
Therefore, additional properties defined per the national regulations are also required. In German countries, in the case of structures that require the use of non-combustible or not easily combustible materials, it must also be ensured that the fire cannot spread through unobserved progressive smouldering or glow. Based on the requirement of MVV TB2017/1, this must be proved by a test, e.g. per EN16733.

EN 16733 – propensity to undergo continuous smouldering
The determination of a building product's propensity to undergo continuous smouldering acc. EN 16733 defines 3 possible assessment states:

- **Smouldering** – combustion of a material without flame and with or without visible light. This includes glowing combustion
- **Progressive smouldering** – self-propagating exothermic oxidation that is not accompanied by flaming combustion
- **Glowing** – combustion of a material in the solid phase without flame but with emission of light from the combustion zone

During the test, the test specimen surface is exposed to the constant heat of the gas burner flame for 15 minutes. Smouldering is detected by measuring temperatures with thermocouples and observing the continuous flame combustion after re-ignition.

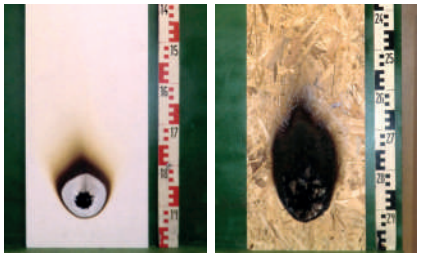


Fig.: Difference between surface-protected and unprotected OSB after a test per to EN 16733 (Hoch Fladungen testing laboratory).

ČSN 730865 – Dripping of burning materials
Per the Czech national regulations, it is required to verify the properties of dripping and falling-off in case of fire when used as a suspended layer of ceilings and roofs. Tests have shown that the Firestop OSB boards can withstand exposure to fire test conditions per ČSN 730865 for the required time of 15 minutes, where the flame temperature reaches up to 800°C.

Tab.1: Illustration of the effect on the total ignition occurrence based on the material's distinct reaction to fire.

Class	Material reraction to fire	Flashover during the reference test
A1	Without contribution to fire	Ne
A2	No significant contribution to growth of fire	Ne
B	Very limited contribution to growth of fire	Ne
C	Limited contribution to overall ignition	After 10 minutes
D	Contribution to overall ignition	Up to 10 minutes
E	Significant contribution to overall ignition	Up to 2 minutes
F	Unable to reach class E, not rated	Not specified

OSB **Firestop** PER THE FIRE STANDARDS

Property	Test procedure	Result
Reaction to fire	EN 13501-1	**Class B-s1, d0** (side protected by Pyrotite cement layer) * **Class D-s1, d0** (side without Pyrotite cement layer coating)
Propensity to undergo continuous smouldering	EN 16733	The OSB Firestop shows no tendency towards continuous smouldering, and there is no re-ignition or significant temperature rise after the fire is extinguished.
Fire resistance	EN 13501-2	In the scope of: REI/REW 30, 45, or 60 minutes There are 34 structures with classified fire resistance for interior and exterior walls, ceilings, and roofs, including defined load-bearing capacity

* Regarding to the classification protocol (Hoch Fladungen), a classification is valid if the product is installed on mineral bases of fire reaction Class A1 or A2-s1, d0 (density ≥ 37.5 kg/m^3 and thickness ≥ 25 mm), and it must be mechanically fixed with metal fasteners.

BUILDING STRUCTURES WITH OSB **Firestop** BOARDS

To prove fire resistance, it is necessary in particular to determine the parameters on building elements structures with OSB Firestop boards as a whole.

The following sheets provide examples of the use of OSB Firestop boards in the composition of external and internal load-bearing walls and load-bearing floors and flat and pitched roofs. In all these structures, the OSB Firestop board is used as a material ensuring the static load-bearing capacity and stability of the structure. The stated load-bearing capacity values are based on the load values of the structure verified during fire resistance tests.

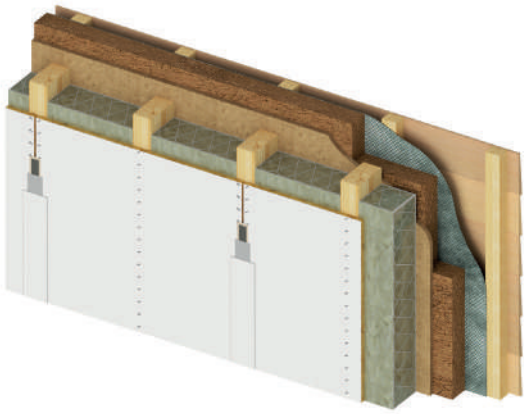
Fire classification reports for walls, ceilings, and roofs are available at www.kronospan.com in the download section. This concerns mainly report No.:

- PKO-23-082 – Fire resistant ceilings and roofs made of OSB Firestop boards
- PKO-23-081 – Fire resistant walls made of OSB Firestop boards

Construction-Technical Parameters of the Specified Compositions:

PAVUS (CZ, EU): All the compositions marked PAVUS: xxxx were tested or classified by the PAVUS fire testing laboratory for the fire resistance specified for the individual composition variants.
Dataholz (AT,DE, EU): The composition is listed in the Dataholz database at www.dataholz.com with the parameters of fire resistance, thermal resistance, and acoustic properties verified by Holzfoschung Austria.
Deksoft (CZ, SK): The composition is listed in the database of Deksoft compositions by Dektrade at www.deksoft.cz with parameters of fire resistance, acoustics, statics, and thermal-humidity parameters depending on the indoor environment type. The compositions were verified by the DEK studio.

EXTERNAL WALL STRUCTURE WITH OSB Firestop BOARDS

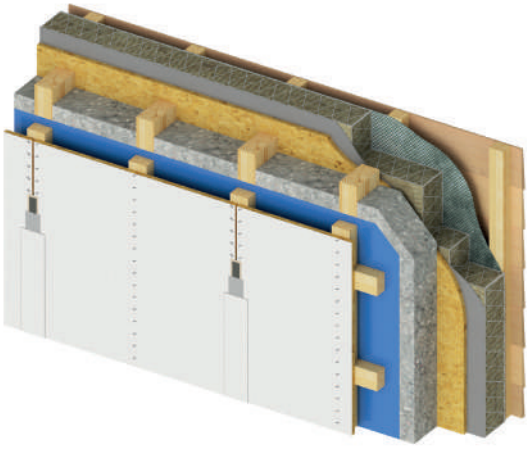


Benefits:
When using Firestop OSB boards for walls as a final cladding, installation is performed in a single step. The OSB Firestop boards are attached directly to the wooden posts using fasteners, joints are sealed, and boards are provided with an interior coating at the end. It accelerates and replaces the assembly of two layers of boards in a combination of OSB and plasterboard. It is recommended to use tongue and groove boards and glue the joints with PU glue. The use of water vapour diffusion-permeable materials throughout the structure behind the OSB Firestop board is necessary.

Composition (from exterior side)	**00**	**01**	**02**
	thickness in mm		
Wooden facade, ventilated	of your choice		
Waterproofing – diffusion open membrane	per the facade type		
Additional thermal insulation	0 – 60		
MDF board	15	15	15
Wooden studs 60 /... spaced 625 mm	200	240	200
Insulation between studs	MW	MW	Cellulose
OSB Firestop	16	16	16

Airborne sound insulation R_w [dB]	≥ 45	≥ 46	≥ 45
Thermal transmittance U-value U [W/(m².K)]	0,20	0,17	0,21
Fire resistance [min.]	**REI 45**	**REI 60**	**REI 30**
Max. vertical load	32 kN/m´		

PAVUS, PKO-20-044:	**9**	**12**	**3**
Dataholz:	**Awrhho12**		
Deksoft: EWO.V-MF.MW;EWO-V-MF.BI			

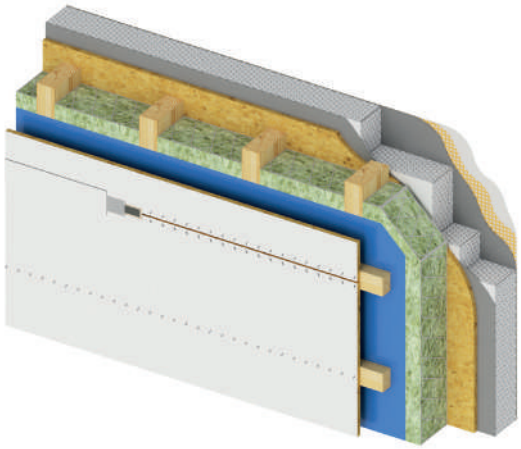


Benefits:
When using OSB Firestop for walls, it is a single-step installation. The installation gap is inserted behind the OSB board. Any vapour control layer (e.g. foil) is then placed on its wooden frame. The OSB Firestop boards get connected to wooden posts by means of mechanical fixing via wooden battens; the joints between the boards are sealed, and the board receives its final interior coating. Compared to plasterboard, the use of the Firestop OSB boards increases impact resistance and allows heavier loads to be hung arbitrarily without any need for a supporting structure.

Composition (from exterior side)	**00**	**01**	**02**
	thickness in mm		
Wooden ventilated facade	dle výběru		
Waterproofing – diffusion foil	1		
Additional thermal insulation	0 – 60		
MDF board	15	15	15
Wooden studs 60 /... spaced 625 mm	200	240	200
Insulation between studs	MW	MW	Cellulose
Vapour barrier (s_d ≥ 4m)			
Installation gap – battens 40/60	40	40	40
OSB Firestop	16	16	16

Airborne sound insulation R_w [dB]	≥ 45	≥ 46	≥ 45
Thermal transmittance U-value U [W/(m².K)]	0,20	0,17	0,21
Fire resistance [min.]	**REI 45**	**REI 60**	**REI 30**
Max. vertical load	32 kN/m´		

PAVUS, PKO-20-044:	**13**	**13**	**5**
Dataholz:	**Awrhhi13a**		
Deksoft: EWU.V-A.MW.IG; EWU.V-WF.BI.IG			

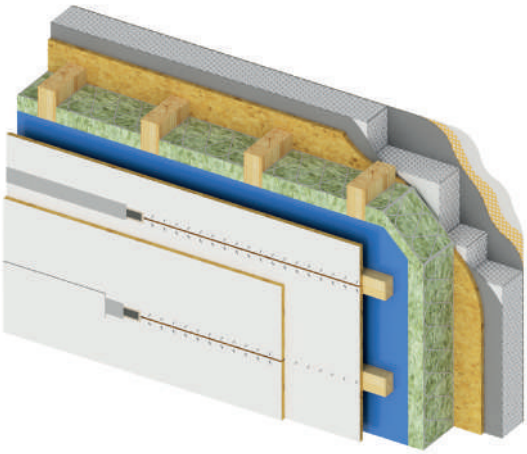


Benefits:
Composition with external thermal insulation contact system (ETICS) based on facade polystyrene EPS-F is most cost-effective solution. The OSB Firestop board functions as a static and final interior layer. The water vapour control layer (e.g. PE foil), which shall be designed per the boundary conditions of a hydrothermal calculation, must then meet greater demands for the structure's vapour tightness.

Composition (from exterior side)	**00**	**01**	**02**	**03**	**04**
	thickness in mm				
ETICS thermal insulation system with EPS-F	120	120	120	120	120
OSB 3	15	15	15	15	15
Wooden studs 60 /... spaced 625 mm	160	120	200	240	120
Thermal insulation between studs	MW	MW	MW	MW	Cell.
Vapour barrier	1	1	1	1	1
Instal. gap – 40/60 laths spaced 400 mm	40	40	40	40	40
OSB Firestop	16	16	16	16	16

Airborne sound insulation R_w [dB]	≥ 45	≥ 44	≥ 45	≥ 46	≥ 44
Thermal transmittance U-value [W/(m^2.K)]	0,14	0,16	0,12	0,11	0,16
Fire resistance [min.]	**REI60**	**REI30**	**REI60**	**REI60**	**REI30**
Max. vertical load	32 kN/m´				

PAVUS, PKO-20-044:	**11**	**6**	**11**	**11**	**4**
Dataholz:	**Awropi27a**				
Deksoft: EWU.CEPS.MW.IG; EWU.CEPS.BI.IG					



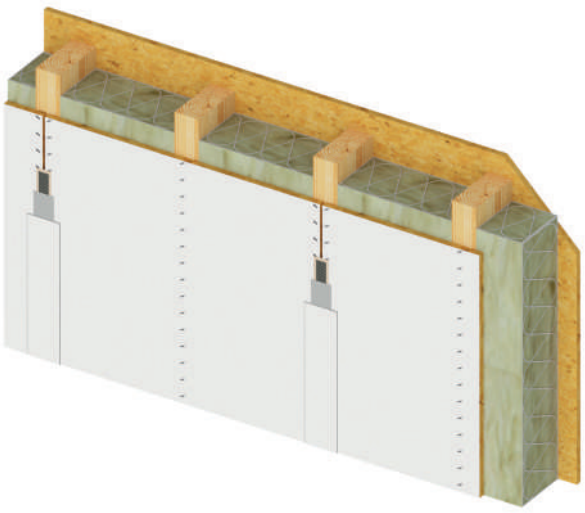
Benefits:
Composition with external thermal insulation contact system (ETICS) based on mineral wool insulation achieves greater acoustic parameters than the composition mentioned above with EPS-F. The OSB Firestop board functions as a static and final interior layer. It is recommended to use the OSB Firestop boards with tongue and groove and glue the joints with PU glue.

Composition (from exterior side)	**00**	**01**	**02**	**03**	**04**
	thickness in mm				
ETICS thermal insulation system with MW	120	120	120	120	120
OSB 3	15	15	15	15	15
Wooden studs 60 /... spaced e= 625 mm	160	120	200	240	120
Thermal insulation between studs	MW	MW	MW	MW	Cell.
Vapour barrier	1	1	1	1	1
Instal. gap – battens 40/60 spaced e=400 mm	40	40	40	40	40
OSB Firestop	16	16	16	16	16

Airborne sound insulation R_w [dB]	≥ 48	≥ 48	≥ 48	≥ 50	≥ 48
Thermal transmittance U-value [W/(m^2.K)]	0,28	0,27	0,19	0,16	0,28
Fire resistance [min.]	**REI 60**	**REI 30**	**REI 60**	**REI 60**	**REI 30**
Max. vertical load	32 kN/m´				

PAVUS, PKO-20-044:	**11**	**6**	**11**	**11**	**4**
Dataholz:	**Awropi28a**				
Deksoft: EWU.CEPS.MW.IG; EWU.CEPS.BI.IG					

INTERIOR WALL STRUCTURE WITH OSB Firestop BOARDS

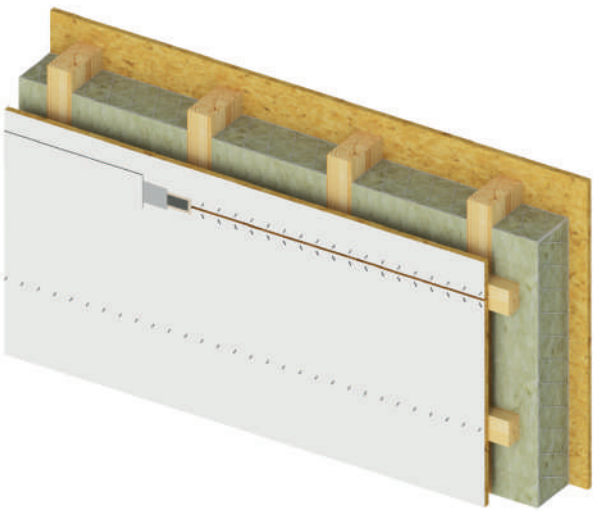


Benefits:
A simple wooden frame structure with inserted insulation and single-layer cladding on both sides based on the OSB Firestop board. The structure is sufficient for load-bearing interior walls of two-storey wooden buildings.

Composition	**00**	**01**	**02**
	thickness in mm		
OSB Firestop	16	16	16
Wooden studs 60 /...	120	140	120
Thermal insulation between studs	MW	MW	Celullose
OSB Firestop	16	16	16

Airborne sound insulation R_w [dB]	≥ 35	≥ 35	
Fire resistance [min.]	**REI 45**	**REI 60**	**REI 30**
Max. vertical load	32 kN/m´		

PAVUS, PKO-20-044:	**22**	**25**	**21**
Deksoft: IW.MW (REI 45); IW.MW; IW.BI			



Benefits:
A simple wooden frame structure with inserted insulation and single-layer cladding on both sides based on the OSB Firestop board with an inserted installation gap made of 40/60 wooden battens grid on one side for installation wiring. The 02 composition 02 features its double cladding both sides.

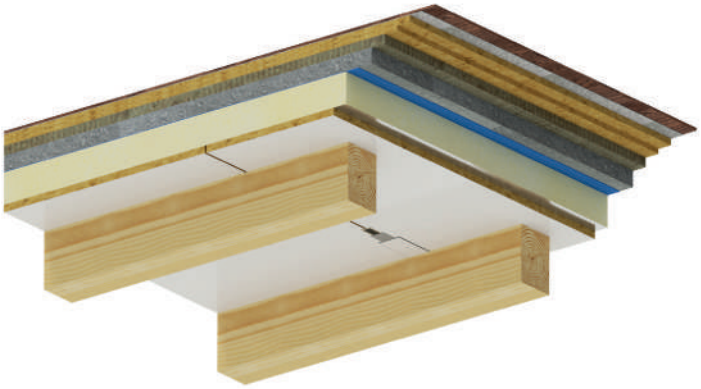
Composition	**00**	**01**	**02**
	thickness in mm		
OSB Firestop	16	16	16
OSB 3	–	–	15
Wooden studs 60 /...	120	140	120
Thermal insulation between studs	MW	MW	MW
Instal. gap – 40/60 battens	40	40	40

Airborne sound insulation R_w [dB]	≥ 35	≥ 35	≥ 47
Fire resistance [min.]	**REI 45**	**REI 60 REI 45***	**REI 30**
Max. vertical load	32 kN/m´		

PAVUS, PKO-20-044:	**23**	**26**	**24**
Deksoft: IW.MW.IG; IW.MW.IG.AKU			

* the structure is asymmetrical. The fire load from the grid side is REI 60, the fire load from the side without any grid is REI45.

FLOOR STRUCTURE WITH EXPOSED BEAMS AND OSB **Firestop** DECKING

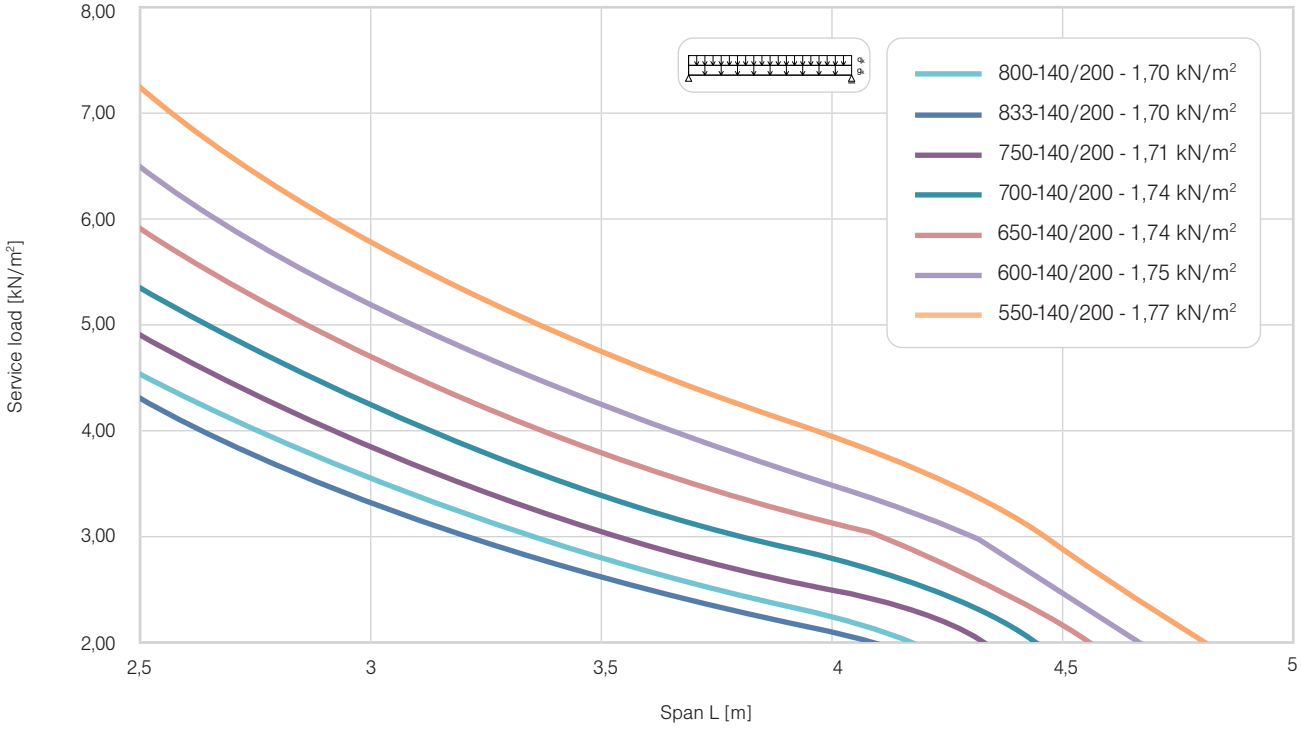


Composition (from the top)	00	01	02
	thickness in mm		
Floor covering	Laminate, vinyl, carpet,...		
OSB 3	2x 15	2x 15	2x 15
Pillows wooden prism 50/100	–	50	–
MW insolation between prisms	–	50	–
Impact sound insulation layer – mineral wool	30	30	30
Load layer – Concrete paving 400 x 400 mm	50	50	
– Gravel – aggregate 4-8 mm	–	–	70
Separation layer	–	–	2
OSB Firestop	31	31	31
Wooden beams spaced 833 mm	140/180	140/180	140/180

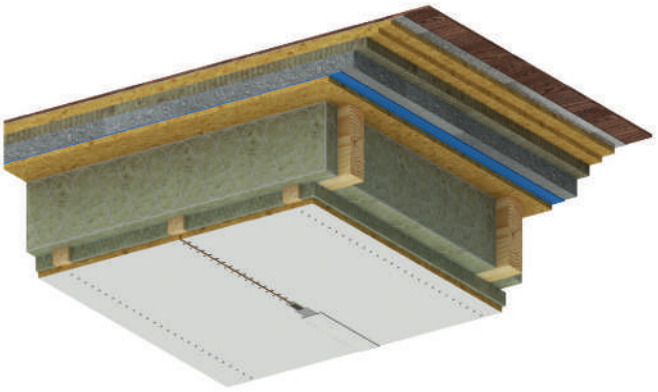
Airborne sound insulation R_w[dB]	≥ 57	≥ 61	≥ 59
Impact sound insulation $L_{n,w}$[dB]	≤ 58	≤ 53	≤ 54
Fire resistance [min.]	**REI 60**	**REI 60**	**REI 60**

PAVUS, PKO-20-042:	**22**	**25**	**21**
Deksoft: F.EB.PIR; FEB.PIR.2			

Benefits:
The use of OSB Firestop in floor structures as a visible decking with exposed beams belongs to the modern concept of interiors of residential and administrative buildings. The benefit rests in the structure's simplicity and quick installation.



FLOOR STRUCTURE WITH OSB Firestop CEILING

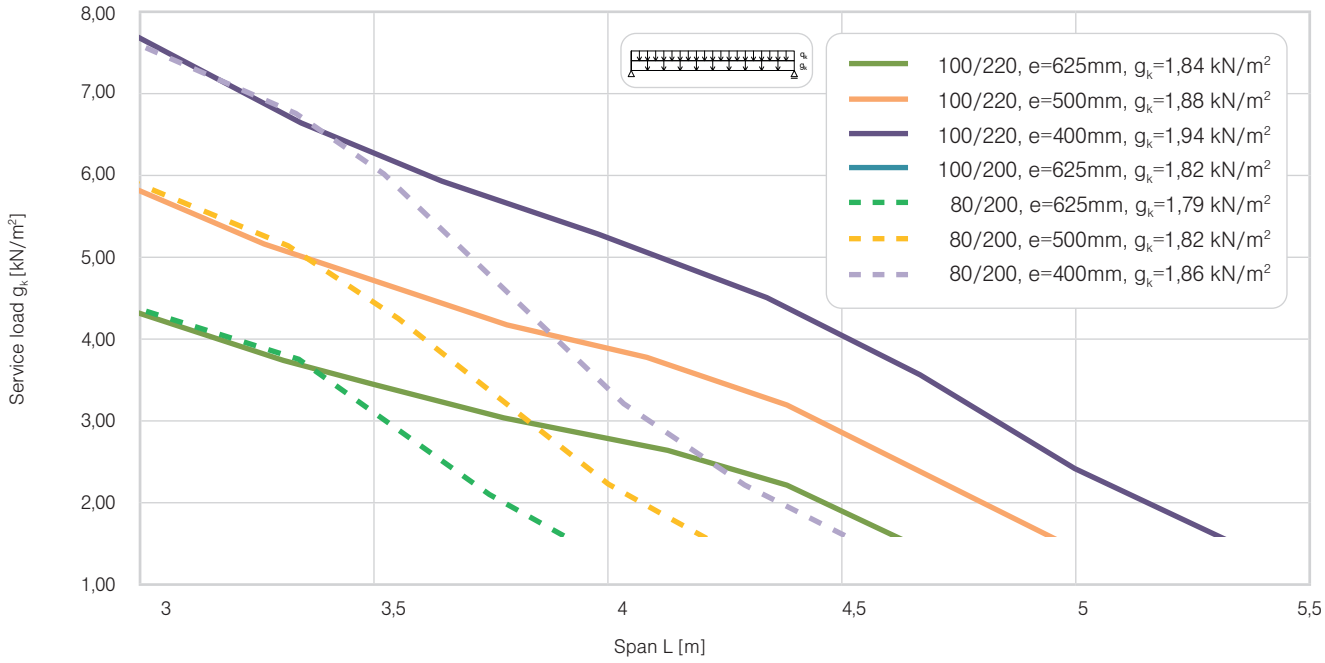


Composition (from the top)	00	01	02
	thickness in mm		
Floor covering	Laminate, vinyl, carpet,...		
OSB 3	2x 15	2x 15	2x 15
MW impact insulation	30	30	30
Load bearing layer – Concrete paving 400 x 400 mm	50	50	–
– Filling – aggregate 4-8 mm	–	–	70
Separation layer	–	–	2
OSB 3	min. 15	min. 15	min. 15
Wooden beams spaced 625 mm	80/200	80/200	80/200
Tep.izolace mezi trámy - MW	200	200	200
Wooden 40/60 laths spaced 400 mm	–	40	–
Thermal insulation between wooden battens	–	40	–
OSB Firestop	16	16	16

Airborne sound insulation R_w[dB]	≥ 54	56	≥ 54
Impact sound insulation $L_{n,w}$[dB]	≤ 61	59	≤ 61
Fire resistance [min.]	**REI 30**	**REI 30**	**REI 30**

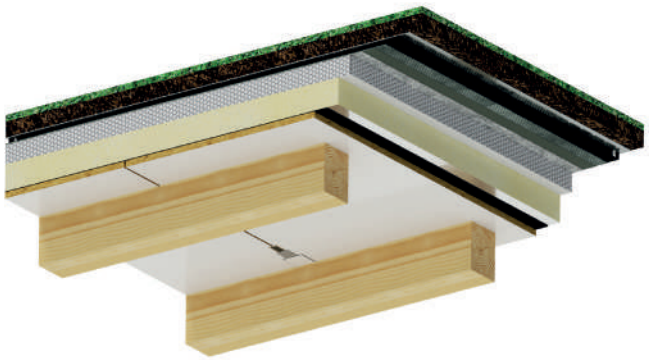
Benefits:
The composition of the ceiling structure with a soffit of OSB Firestop boards combines the final surface's properties with the requirements for non-flammability and impact resistance. It is especially suitable for administrative and operational buildings with storage facilities or workshop halls under office operations, etc.

PAVUS, PKO-20-042:	**5**	**6**	**5**
Deksoft: F.C.MW, F.C.MW.IG			

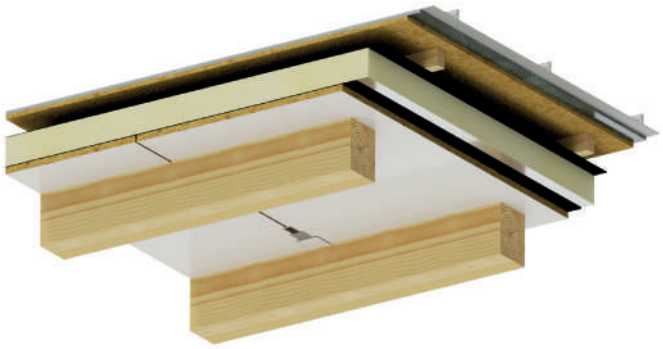


FLAT ROOF STRUCTURES WITH EXPOSED BEAMS AND OSB **Firestop** DECKING

Warm flat roof with waterproof membrane 00 or extensive greenery 01



Cold flat roof 02

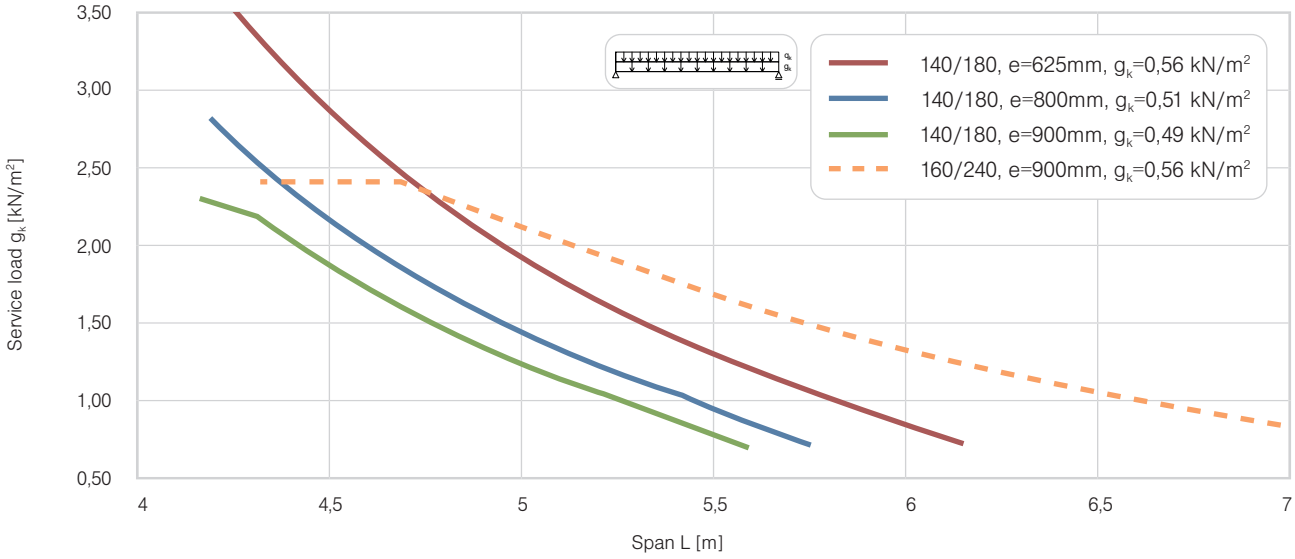


Composition (from the top)	**00**	**01**	**02**
	thickness in mm		
Vegetation layer	–	min. 80	–
Waterproofing (PVC-P, bitumen membrane, ...)	3	3	–
Folded sheet metal roofing	–	–	1
OSB 3	–	–	15
Ventilated air space + battens	–	–	min. 60
Protective waterproofing	–	–	1
Tapered thermal insulation (EPS polystyrene)	min.160	min.160	
Rigid board thermal insulation (PIR foam boards)	100	100	200
Vapour barrier - e.g., asphalt belt	3	3	3
OSB Firestop	23	23	23
Wooden beams spaced 833 mm	140/180	140/180	140/180

Airborne sound insulation R_w[dB]	–	–	–
Impact sound insulation $L_{n,w}$[dB]	0,13	0,13	0,13
Fire resistance [min.]	**REI 20**	**REI 20**	**REI 45**

PAVUS, PKO-20-042:	**2**	**4**	**3**
Deksoft: FR.EB.PIR.SEPS; FR.EB.PIR.GREEN; FR.EB.PIR.V-MET			

Benefits:
As with roof structures, the combination of OSB Firestop as structural roof decking with exposed beams is the modern concept of interiors. The benefit rests in the structure's simplicity and quick installation.

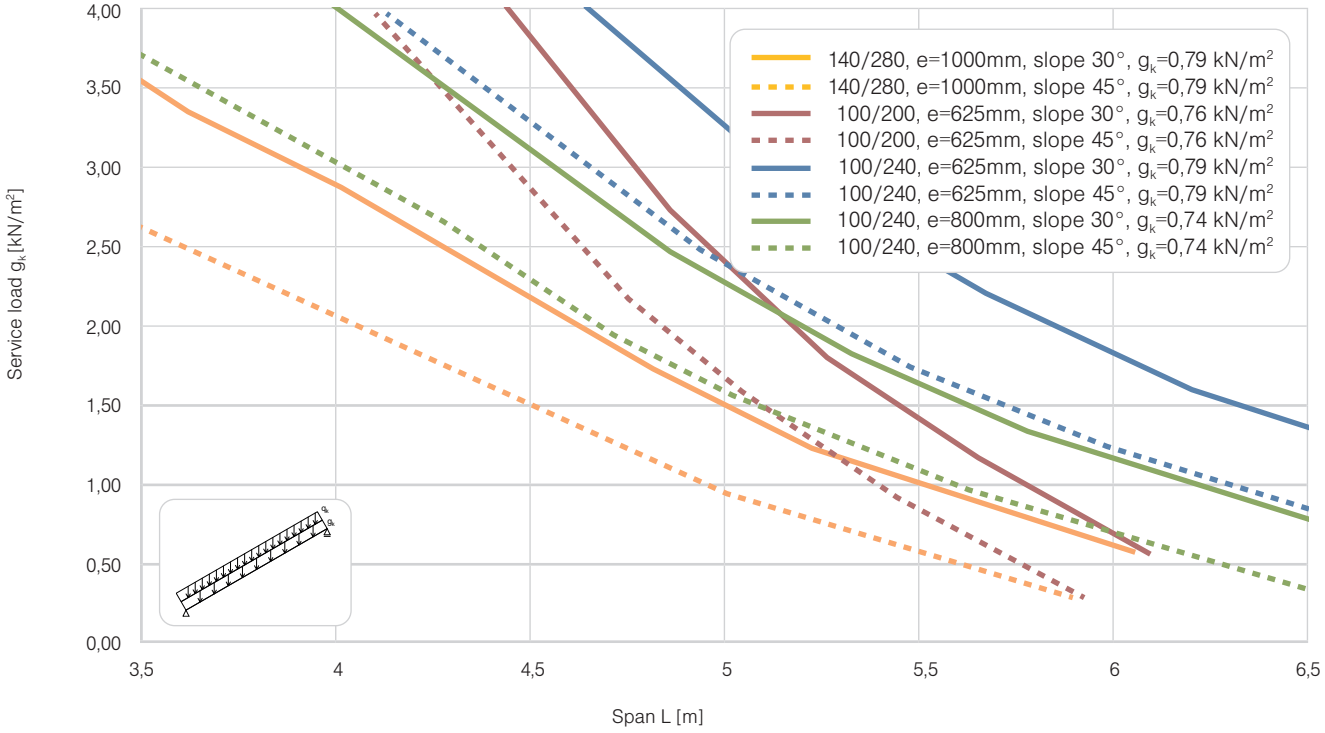


PITCHED ROOF STRUCTURE WITH EXPOSED RAFTERS AND OSB **Firestop** DECKING

Composition (from the top)	**00**	**01**	**02**
	thickness in mm		
Roofing tiles			
Roof battens	–	–	–
Counter battens + ventilated air space	–	–	–
Tilling undelays (protective waterproof membrane)	1	1	1
Rigid board thermal insulation (PIR foam boards)	100	160	200
Vapour barrier – e.g. bitumen membrane	3	3	3
OSB Firestop	19	19	19
Wooden rafters spaced 625 mm	100/200	100/200	100/200

Airborne sound insulation R_w [dB]	–	–	–
Thermal transmittance U-value [W/(m².K)]	0,24	0,16	0,13
Fire resistance [min.]	**REI 30**	**REI 30**	**REI 30**

PAVUS, PKO-20-042:	**1**	**1**	**1**
Deksoft: PR.EB.PIR			



EXPLANATIONS TO THE SPECIFIED FIRE RESISTANCE PARAMETERS:

All the specified fire-resistant structures are classified:
- For external walls from the interior to exterior (i→o)
- For interior walls from one side
- For ceilings and roofs from the bottom up
- In addition to REI, wall structures also feature their REW classification

Unless specified otherwise, the complete classification of wall fire resistance is determined as follows:
Pro REI 30: REI 30 DP3 / REW 30 DP3;
Pro REI 45: REI 45 DP3 / REW 45 DP3;
Pro REI 60: REI 60 DP3 / REW 60 DP3.

Fire resistance tests were performed on elements with sizes required by the test standard. Every test element was loaded with its proposed load specified in the composition description. Since each of the facility rooms with composition features its different floor plan dimensions, it is possible to change the structure's dimensions through the specified conditions - areas of application. It is always necessary to assess the limits of the maximum load set during fire tests per the required load.

The graphical representation of the floor and roof structures then helps quickly determine the minimum dimensions of beam elements and their maximum axial distance in order to make sure the structure passes its fire load tests based on their stated fire resistance for the required span L[m] and required imposed load q_k[kN/m^2].

AREA OF DIRECT APPLICATION OF FIRE RESISTANT STRUCTURES

The specified compositions of structures may be further slightly modified. The fire resistance classification results may also be applied to structures, which have undergone one or more of the changes listed below and which are such that the structures comply with their relevant design standard in relation to the structural component.

Wall application area:
- Height reduction (≤ 3,000 mm)
- Wall thickness increase
- Increase in the thickness of component materials (except for the wooden grate between a wooden post and board)
- Reduction of the board's longitudinal dimensions, but not its thickness
- Reduction of stud spacing (≤ 625 mm)
- Reduction in distance of fixing centres
- Increase of the number of horizontal joints (e.g., connection of OSB boards based on tongue and groove)
- Reduction of applied load
- Increase in element width (wall panel length)

Floor and roof application area:
- Maximum moments and shear forces calculated on the same basis as the test load must not be greater than those tested. The specified load values are based on 1 m of floor structure width - see Table.

Acronyms in the composition description marking:
EW – External wall, V-A – Ventilated facade with air gap, CEPS- Contact insulation by EPS or mineral insulation, MW – Mineral wool, BI – Blown insulation (pulp-based), IG – Installation gap, PR – Pitched roof, FR – Flat roof

Structure (PAVUS)		Fire resistance	Structure pitch	Total maximum moments (imposed load and self-weight)	Total maximum shear forces (imposed load and self-weight)
1	PR.ER.PIR	REI 30	From 15° to 45°	5,79 kNm	4,87 kN
2	FR.EB.PIR.SEPS	REI 20	Up to 15°	6,59 kNm	6,28 kN
3	FR.EB.PIR.V-MET	REI 45	Up to 15°	6,59 kNm	6,28 kN
4	FR.EB.PIR.Green	REI 20	Up to 15°	6,59 kNm	6,28 kN
5	F.C.MW	REI 30	Up to 15°	5,34 kNm	5,08 kN
6	F.C.MW.IG	REI 30	Up to 15°	5,34 kNm	5,08 kN
7	F.EB.PIR	REI 60	Up to 15°	6,59 kNm	6,28 kN
8	F.EB.PIR.2	REI 60	Up to 15°	6,59 kNm	6,28 kN

BOARD FEATURES

OSB Firestop boards are manufactured and tested according to valid European standards (OSB type 3 according to EN 300). Features of these boards comply with the harmonized standard EN 13986 and other valid regulations of the European Union. General requirements for OSB boards based on the standards EN 300 are listed in the Kronobuild catalog, Chapter 2, section OSB boards.

STRUCTURAL PHYSICAL FEATURES		
Feature	Test procedure	OSB Firestop
Air permeability (at 50 Pa)	EN 12114	0,002 $m^3/m^2.h$
Coefficient of thermal conductivity λ	EN 12664	0,11 W/m.K
Coefficient of diffusion resistance μ	EN 12752	170 (dry) / 150 (wet)
Airborne sound insulation Rw (C;Ctr)	EN ISO 717-1	16 mm: 27 (-1; -2) dB
		19 mm: 27 (-2; -2) dB
		23 mm: 26 (0; -1) dB
Reaction to fire	EN 13501-1	B-s1,d0

TECHNICAL SPECIFICATIONS

OSB Firestop meets the general requirements of EN 300. Demands for strength and moisture resistance meet the requirements for OSB/3 type according to EN 300. Note: Assessment of strength parameters must be set to measure of OSB board itself. E.g. for OSB Firestop in thickness 16mm the measurement refers to the load bearing board OSB Firestop reduced by 1 mm nominal thickness, so the strength properties are assessed as OSB/3 15 mm.

SPECIAL REQUIREMENTS FOR PYROTITE® SURFACE		
Properties		Requirement
Tolerance on nominal dimensions	thickness of fiberglass mesh layer Pyrotite®	Min. 1 mm
	distance of fiberglass mesh Pyrotite® from edge of the OSB board	straight edge +0 / -5 mm T&G +0 / -2 mm
Difference in surface flatness of the Pyrotite® layer (thickness of layer, blistering, cracks etc.)		+/-0,5 mm
Height difference of T&G joint (only from the Pyrotite® side)*		Max. 0,8 mm
Color differences of the Pyrotite® surface*		- *

* It is understood that color differences will be unified by a top coat (e.g., interior acrylic paint).

ACCESSORIES FOR FIRESTOP OSB BOARDS

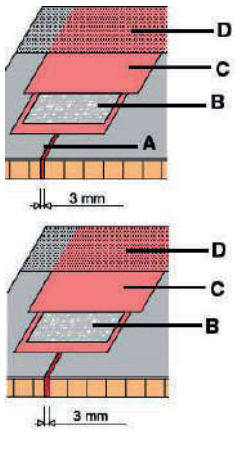
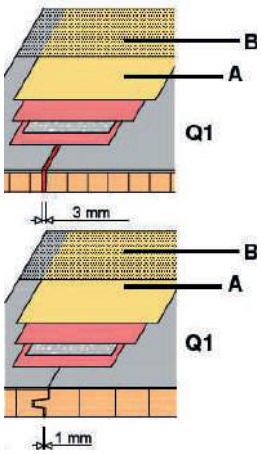
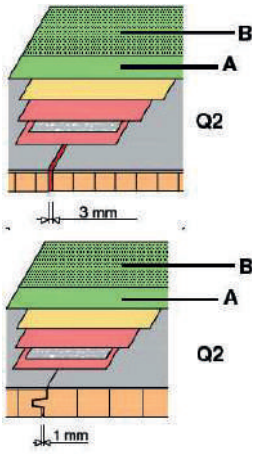
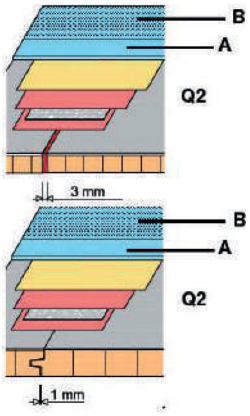
Putties for basic and final bonding including reinforcing tape are available for Firestop OSB boards. Putties are applied in similar way as when bonding gypsum based boards.

Firestop Basic Putty (14 kg)
Fire retardant acrylic putty applied with a wide spatula for basic and final bonding between boards with a flexible reinforcing tape inserted on top of the putty to cover the surface of the gap. High elasticity of the putty results in lower grindability. If you need to create a smooth surface, you must also apply „Firestop finish putty“ on the basic putty.

Reinforcing Tape
A flexible reinforcing strip or tape is applied into the Basic Firestop putty.
Tape increases the ductility and strength of the putty between boards.
The tape is 60 mm wide and 100 m long.

Firestop Finish Putty (14 kg)
Firestop Finish putty may be applied only after the Basic Firestop putty has completely dried out (at least 24 hours). The putty is applied with a flat fine spatula over joints, gaps fasteners, and over irregularities on the surface. If necessary, the entire surface may be resealed. After drying, Firestop Finish putty may be sanded with an abrasive mesh.

BOARD JOINT AND GAP BONDING

Surface finish quality	Q1	Q2	Q3	Q4
Quality requirements	**None**	**Regular**	**High**	**Top**
Finish level	Basic preparation, certain visibility of joints accepted	Standard quality requirements for ceiling and wall surfaces	Above standard surface quality requirements	The highest surface quality requirements
Esthetical requirements	No optical requirements, accepted visibility of joints between boards	Accepted visible signs of bonding procedure/work under side-lighting	Accepted visible signs of bonding procedure under side-lighting (lower visibility than specified under Q2)	Minimum visibility of bonding signs and minimum visibility of shadows under side-lighting
Application requirements	Joints and gaps filled with Firestop basic putty together with reinforcing tape	Joints and gaps filled with: - Firestop basic putty and Firestop finish putty in order to achieve seamlessness and continuous transfer from to board, if necessary sending may be applied	Joints and gaps filled with: - Firestop basic putty and Firestop finish putty (Q2 standards) + wider joint bonding + dents or imperfections in the board surface filled with putty	Joints and gaps filled with: - Firestop basic putty and Firestop finish putty (Q2 standards) + the entire surface covered with putty or putty layer at least 1 mm thick
Straight edge **Tongue and groove**				
Procedure	1. Gap/joint filled with basic Firestop putty (A) 2. Reinforcing tape (B) inserted into an acrylic putty (C) 3. Penetration (D)	1. Bonding Q1 2. Bonding using the Firestop finish putty (A) 3. Penetration (B)	1. Bonding Q2 2. Wider application of Firestop finish putty (A), or possibly putty applied to entire surface 3. Penetration (B)	1. Bonding Q2 2. Screed at least 1 mm thick applied to the entire surface (A) 3. Penetration (B)
Use	Tiles: - Ceramic tiles - Stone tiles	Tiles with moderately coarse texture: - textured wallpapers - matt coatings applied with a structured roller - top plaster layers	Tiles with fine texture: - matt coatings without texture - fine top plaster layers, up to 1 mm grain size	Tiles with fine texture: - glaze coatings and glossy paints - smooth and glossy wallpapers

INSTRUCTING VIDEO - INSTALLATION

SIMPLE AND SAFE INSTALLATION

The OSB Firestop boards can be processed and installed as standard OSB boards. Cutting and drilling can be carried out using standard wood processing tools, installation on a wooden structure can then be made using screws, clamps or nails. It is possible to make contacts, edges or corners of OSB Firestop boards in a similar way like with plasterboard. The surface of the board can be finished in the same way using standard painting techniques.
Consequently after installation and sealing, it is necessary to treat the surface by primer and finish with interior paint preferably within 2 days. Acrylic or vinyl paints (such as Ecolor UNI or ECOLOR IN Vinyl) applied with a structured roller or painting brush in one or two layers are suitable.

PROTECTION AGAINST WATER AND HUMIDITY

The boards must be under any circumstances protected against direct effects of water both at storage and building works and consequent use. The boards should be protected with corresponding insulation against unfavourable weather effects on the external surface of the building, on walls and on the roof applied immediately after installation. The boards which are stressed with intensified effects of humidity, shape changes such as mild swelling in thickness, especially on the board edges may occur.
During the period of board use, it is also necessary to protect the boards against high moisture of ambient environment and long-term exposure to high air humidity in combination with changes of temperature around the freezing point. For that reason, it is necessary to avoid using boards in wet plants such as simple cladding of production halls (without thermal insulation) where production processes with open water surface or excessive production of water vapour, etc. are carried out for long-term period

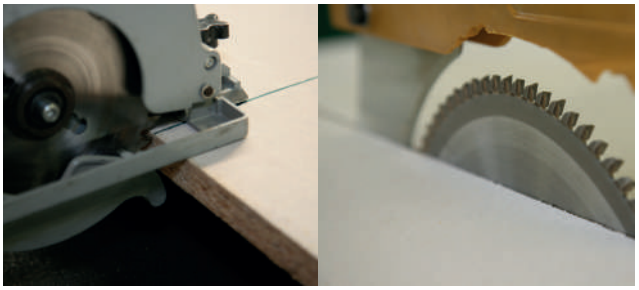


Figure No. 3: Cutting with hand or table circular saw.

Figure No. 4: Mounting of the boards with clamps or screws.

Figure No. 5: Basic sealing.

Figure No. 6: Reinforcement tape – technological break at least for 24 hours follows.

Figure No. 7: Top sealing; Firestop finish sealant polishing (if necessary).

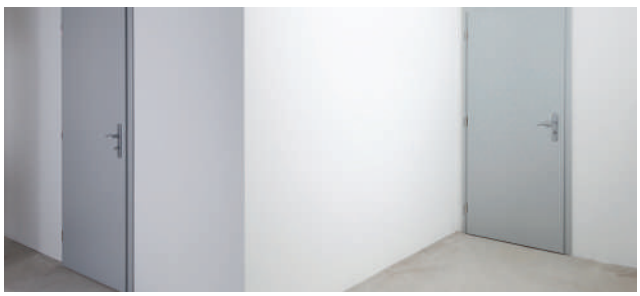


Figure No. 8: Final treatment - primer (such as acrylic) and standard interior paint.

INSTRUCTIONS FOR USE

• **Transport and manipulation**

Boards on vehicles must be securely fixed against movement during transport and protected against damage by fixing ropes, straps or other bandages. Boards must be suitably protected from direct exposure to water. In particular, the edges must be protected from rain or accidental soaking. When loading, unloading and handling board packages, it is recommended to use a forklift and necessary to avoid any damage to the surface and especially the T&G edges.

• **Packaging, storage**

The boards are supplied in packages fastened with tape. The edges of boards are painted and the top board is protected with cardboard. Board packages must always be stacked horizontally on a flat surface. OSB Firestop boards must be stored horizontally on a level, non corrugated surface to keep them from flexing and twisting. The boards must be stored so that the whole surface fits tightly on each other with mating edges. Underlying prisms are oriented in the direction of the shorter edge of the board with a maximum spacing of 600 mm, the length corresponds to the width of the board. The minimum distance of board packages from the ground is 100 - 300 mm to avoid contact with the ground, water or vegetation. When stored outdoors it is necessary to protect the boards properly from direct sunlight, excessive heat and rain.

• **Boards air-conditioning and protection against water and moisture**

Before construction assembly it is required to acclimate the boards for at least 48 hours due to moisture equilibrium corresponding to the location of use.
When stored on site and during installation, the boards must be completely protected against direct exposure to water. It is recommended to cover the outer walls and roof with protective insulation (sheet, foil) immediately after their installation.
To prevent damage of the structural components of OSB boards, it is necessary to avoid excessive moisture increase by installing overly-damp or wet materials, installation on wet-based processes at non-dried construction sites, errors in isolation, inadequate protection against atmospheric conditions, etc.

• **Boards installation**

Boards can be installed using known methods, standard tools and fasteners (screws, clips, etc.).
It has been demonstrated in tests that OSB Firestop board surface coatings do not have an effect on the corrosion of fasteners.

• **Cutting, milling, drilling**

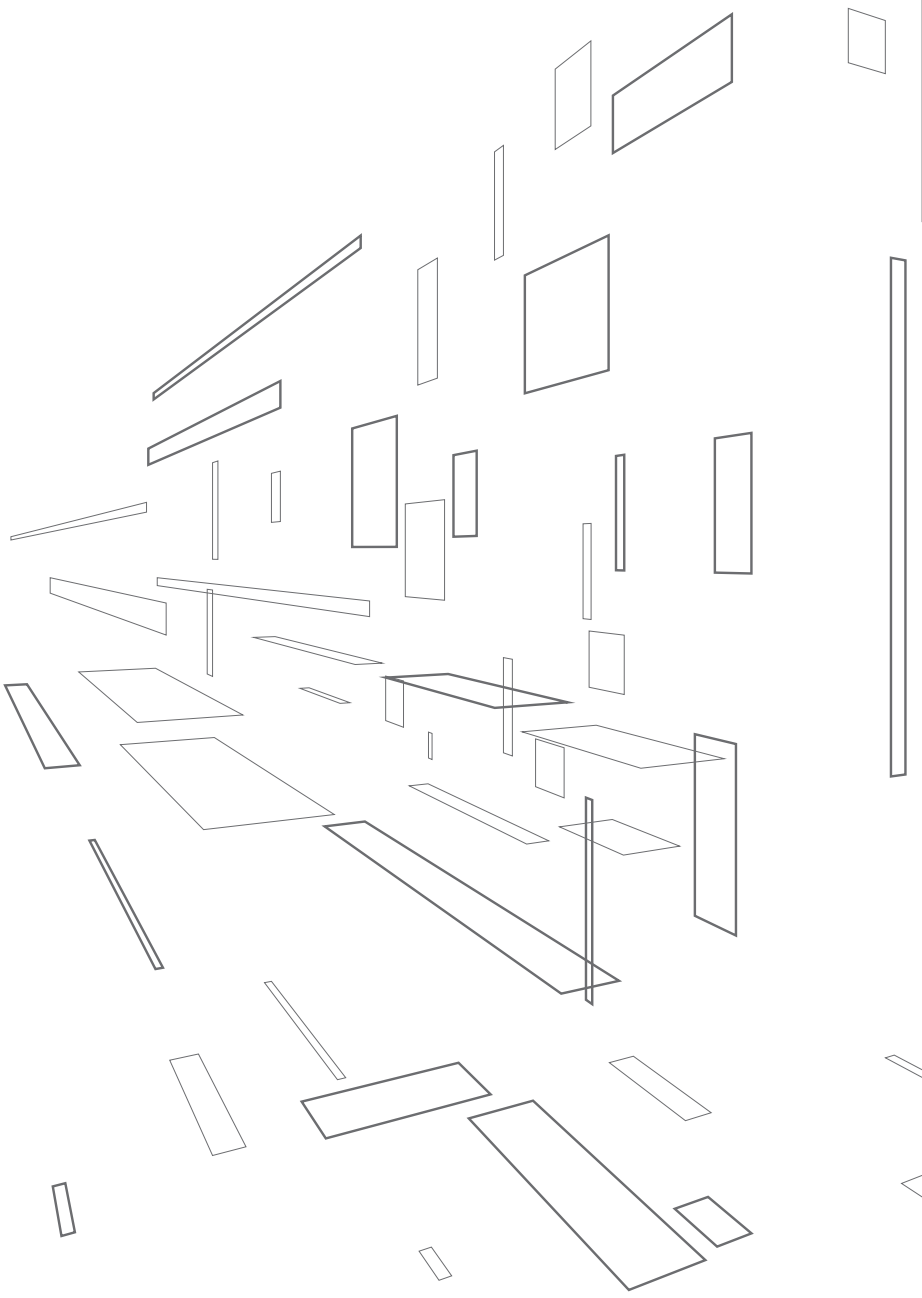
It is not necessary to use special tools. OSB Firestop boards can be cut, drilled or milled using conventional woodworking tools. The feed of saw blade when cutting depends on the tool used. It is generally recommended that the values be slightly lower than for solid wood processing. Boards should be fastened so they cannot vibrate. Cutting with portable power tools is also possible. It is recommended to use cutting or drilling tools with cutting edges made of cemented carbide.
Saw blades and other tools for cutting OSB Firestop boards can be sanded or replaced about 20% more often than during the cutting of standard panels.

More information can be found in the Kronobuild catalog Chapter 5 – Instructions for use of load bearing boards.

ASSORTMENT

OSB FIRESTOP					
Board type	Size [mm]	Thickness [mm] / pcs in package			Packing / truck
		16	19	23	
Straight edge	2500 x 1250	44	37	30	15
	2800 x 1250	44	37	30	14
4T&G	2500 x 1250	44	37	30	15
	2500 x 625	44	37	30	30

Technical details and print errors are subject to change.



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