

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.

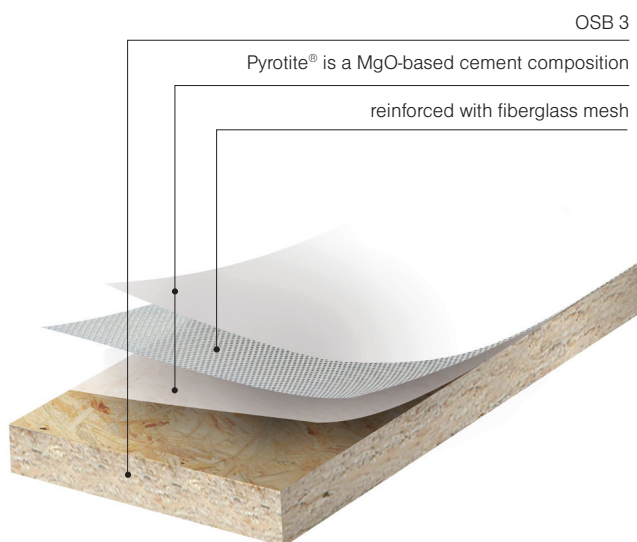
That is why today's visionary constructors rely on sophisticated materials such as OSB Firestop which provides structural

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, to EN 300 standard, 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.

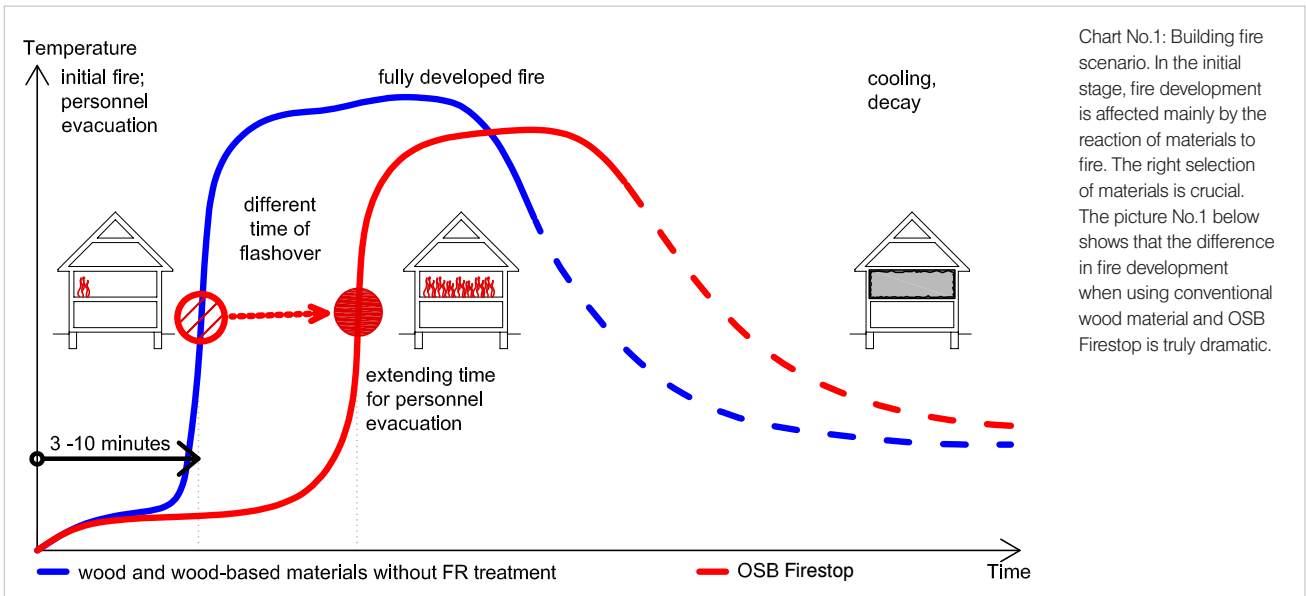
ADVANTAGES

- Mechanical strength and load capacity in OSB class 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.



Picture No. 1

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.

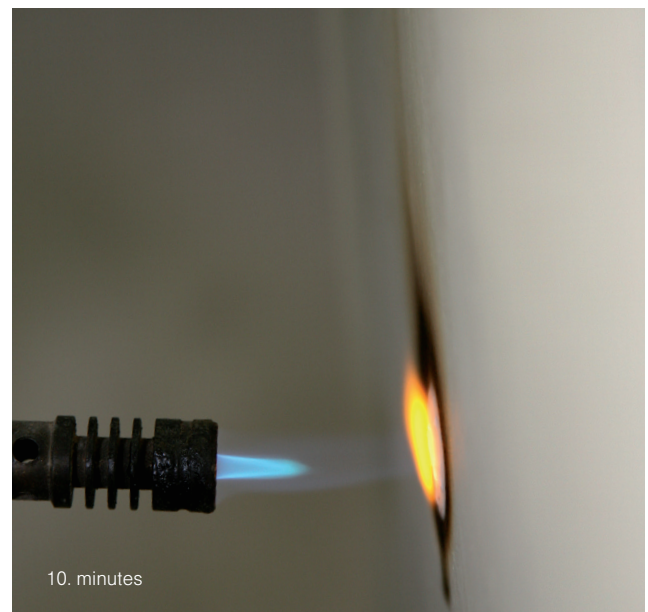
Pyrotite® is environmentally friendly. It contains no hazardous chemical substances. There is no need for the special treatment or storage of waste residues. It is installed as standard cladding without the need for special tools and protective equipment.

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 No. 2.: Using OSB boards with Pyrotite® coating can extend the time to flashover from several minutes to a few tens of minutes.

REACTION TO FIRE CLASSIFICATION BASED ON EN 13501-1

COMMON EUROPEAN CLASSIFICATION SYSTEM

Reaction to fire classification varies not only for individual products and materials, but also in the evaluation and testing under different national rules and methods, which is often very confusing and misleading.

A better comparison of how materials contribute to the fire intensity and development and how they behave during combustion in the initial stages of fire, is provided by a unified European classification system for reaction to fire (Euroclass system), defined in the EN 13501-1 standard.

The system recognizes seven basic classes A1, A2, B, C, D, E, F (F class is the worst). Most classes are also specified by additional classification in terms of smoke (s - smoke) and falling off particles (d - drops).

Production of smoke is an important criterion for flammable materials therefore it is required for classes A2 to D. There are three levels of smoke intensity: s1, s2 and s3, based on visual measuring of smoke density. Level s1 is considered the best, i.e. without smoke production.

Falling flaming particles may cause further spread of the fire, that's why they are required for the classes A2 to E and are similarly sorted from best d0, d1 to d2.

Note: A more detailed description and basic information on the comparison of national classification systems, and also information on the classification of all Kronobuild boards in individual reaction to fire classes can be found in the Kronobuild catalogue in Chapter 6, Fire Protection.

REFERENCE TEST (ROOM CORNER TEST)

The Common European classification system for reaction to fire is directly related to the perception of risk in the course of fire.

The system is based on the definition of building materials accor-

ding to their propensity to contribute to the overall ignition of fire (flashover).

The collapse limit (flashover) during fire occurs when combustible gases reach a temperature of around 600°C, heat release increases dramatically and smoke production rises. In real conditions flammable gases may reach a temperature of 600 to 1300°C.

The classification system for reaction to fire is derived from large-scale fire tests in the corner of a room, from a so-called reference test carried out in accordance with EN ISO 9705 (Room Corner Test). This method is used as an evaluation tool by some international insurance companies.

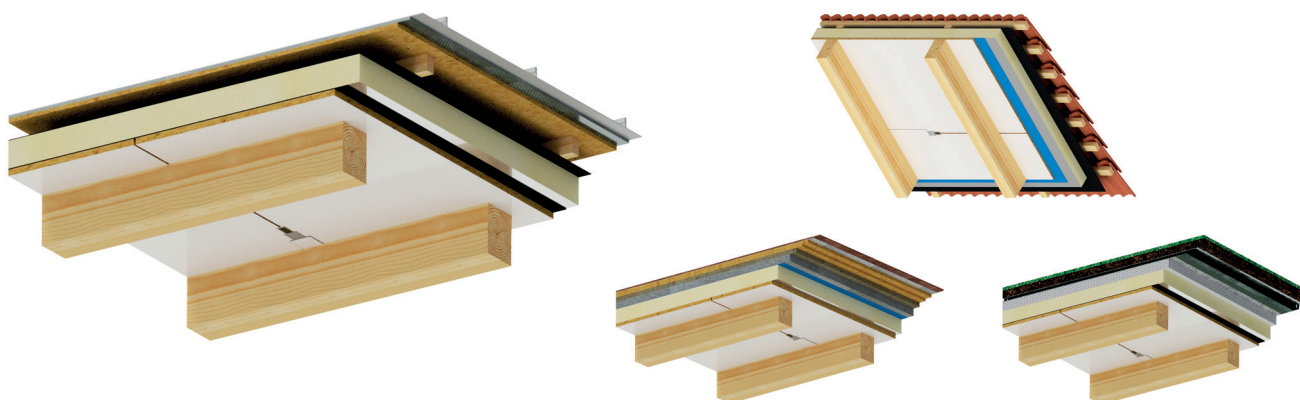
A reference test according to EN ISO 9705 consists of igniting the burner in one corner of the room, usually with the dimensions of 2,4 x 3,6 m and a height of 2,4 m. The test is terminated immediately after the overall ignition (flashover), or after 20 minutes of exposure to flames. The relationship between reaction to fire class and the overall ignition is shown in the table below.

OSB Firestop

According to the results of tests in accordance with EN 13501-1, OSB Firestop boards reach the reaction to fire class B-s1, d0. The boards do not produce smoke during the fire, no burning particles fall off neither do they contribute to overall ignition. These are the qualities that are required for materials used as final wall and ceiling linings in rooms with high risk of fire.

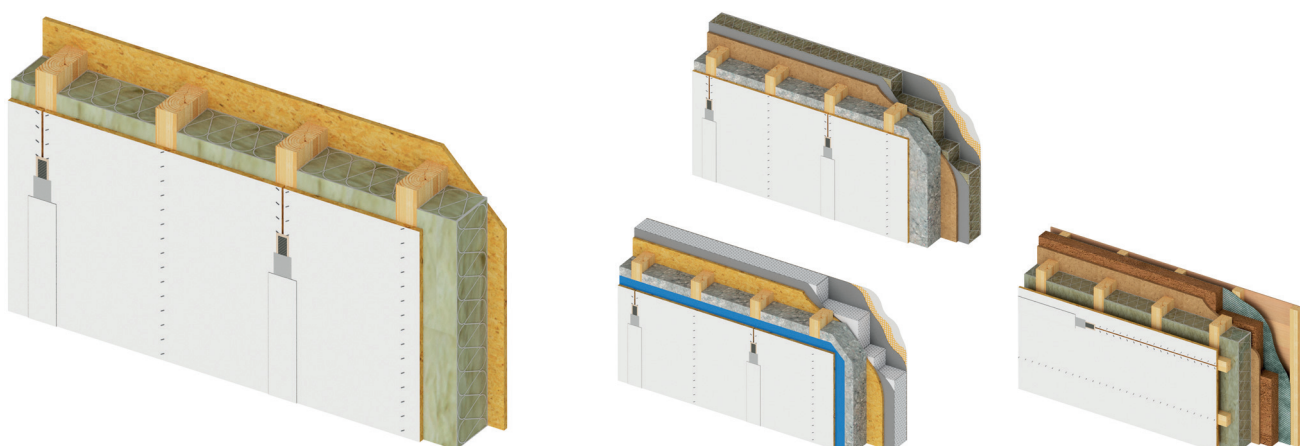
| Class | Material reaction to fire | Flashover during the reference test |
|-------|---|-------------------------------------|
| A1 | Without contribution to fire | No |
| A2 | No significant contribution to growth of fire | No |
| B | Very limited contribution to growth of fire | No |
| C | Limited 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 |

FLOORS AND ROOFS WITH VISIBLE BEAMS:



| Layers of structures | Pitched roof | Flat roof | | Floor structure | |
|------------------------|---------------------------|---------------------------|-------------------|---------------------------------|----------------------|
| | | Ventilated | Green | | |
| Top layer | Heavy tiled roof covering | Sheet metal roof covering | Vegetation layers | Floating floor layers | |
| Load bearing layer | | - | | Concrete tiles or heavy filling | |
| Thermal insulation | mineral wool | mineral wool or PIR | | PIR panel | - |
| Decking | OSB Firestop 16 mm | OSB Firestop 23 mm | | OSB Firestop 23 mm | OSB Firestop 31 mm |
| Rafters/beams | 100/200 mm by 833 mm | 140/180 mm by 625 mm | | 140/180 mm by 625 mm | 140/180 mm by 833 mm |
| Fire resistance | REI 30 | REI 30 | REI 20 | REI 60 | REI 60 |

LOAD BEARING INTERNAL AND EXTERNAL WALLS:



| Fire resistance | Structural sheathing from interior | Timber studs KVH (C24), by 625 mm | Insulation between studs | Structural sheathing from the other side | Other layers at external walls |
|-----------------|--|-----------------------------------|--------------------------|---|---|
| REI 30 | OSB Firestop, thickness 16 mm, joints sealed | 60 x120 mm | Blown cellulose | OSB Firestop 16 mm or OSB 15 mm or DFP board, thickness 16 mm | ETICS (External thermal insulation compact system) or ventilated facade |
| REI 45 | | 60 x120 mm | Mineral insulation | | |
| REI 60 | | 60 x140 mm | Mineral insulation | | |

The table to the max. wall height 3.0 m and standard design load at fire of 32 kN/m.

More detailed information and other compositions of load bearing walls, ceilings and roofs can be found in the brochure OSB Firestop System Solution.

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 R_w (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* | | - * |

* je rozumné, že barevné rozdíly budou sjednoceny vrchním nátěrem (např.: interiérová akrylová barva)

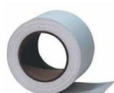
ACCESSORIES FOR FIRESTOP OSB BOARDS

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 (300 ml)

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

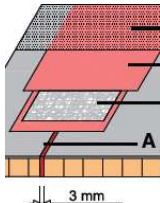
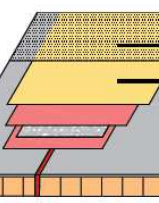
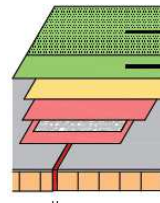
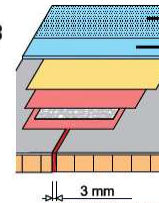
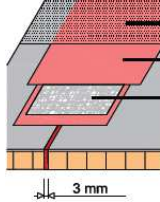
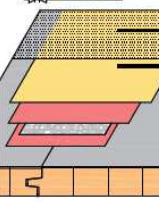
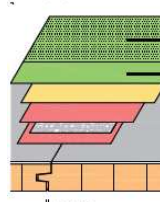
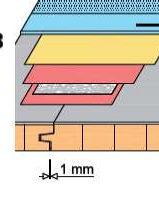
A flexible reinforcing strip or tape is applied into the Basic Firestop putty. Tape increases the ductility and strength of the putty between boards. The tape is 60 mm wide and 100 m long.



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 seamless 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.

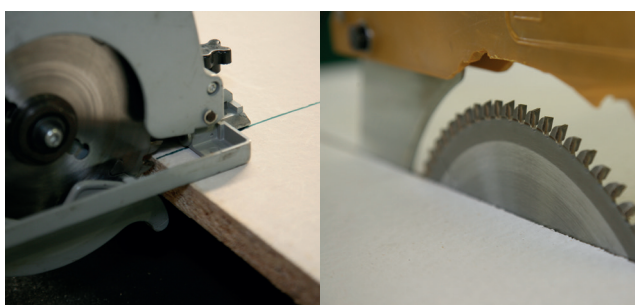


Figure No. 3: Cutting with hand or table circular saw.

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. 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).

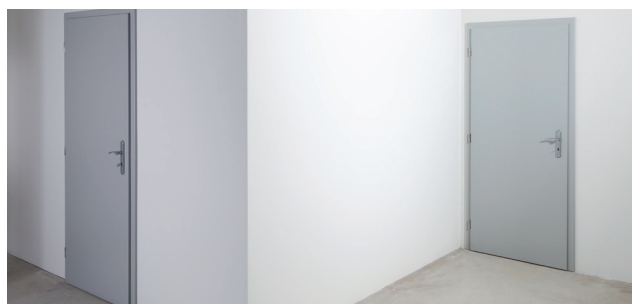


Figure No. 8: Final treatment - primer (such as acrylic) and standard interior paint.

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 insu-

lation (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.

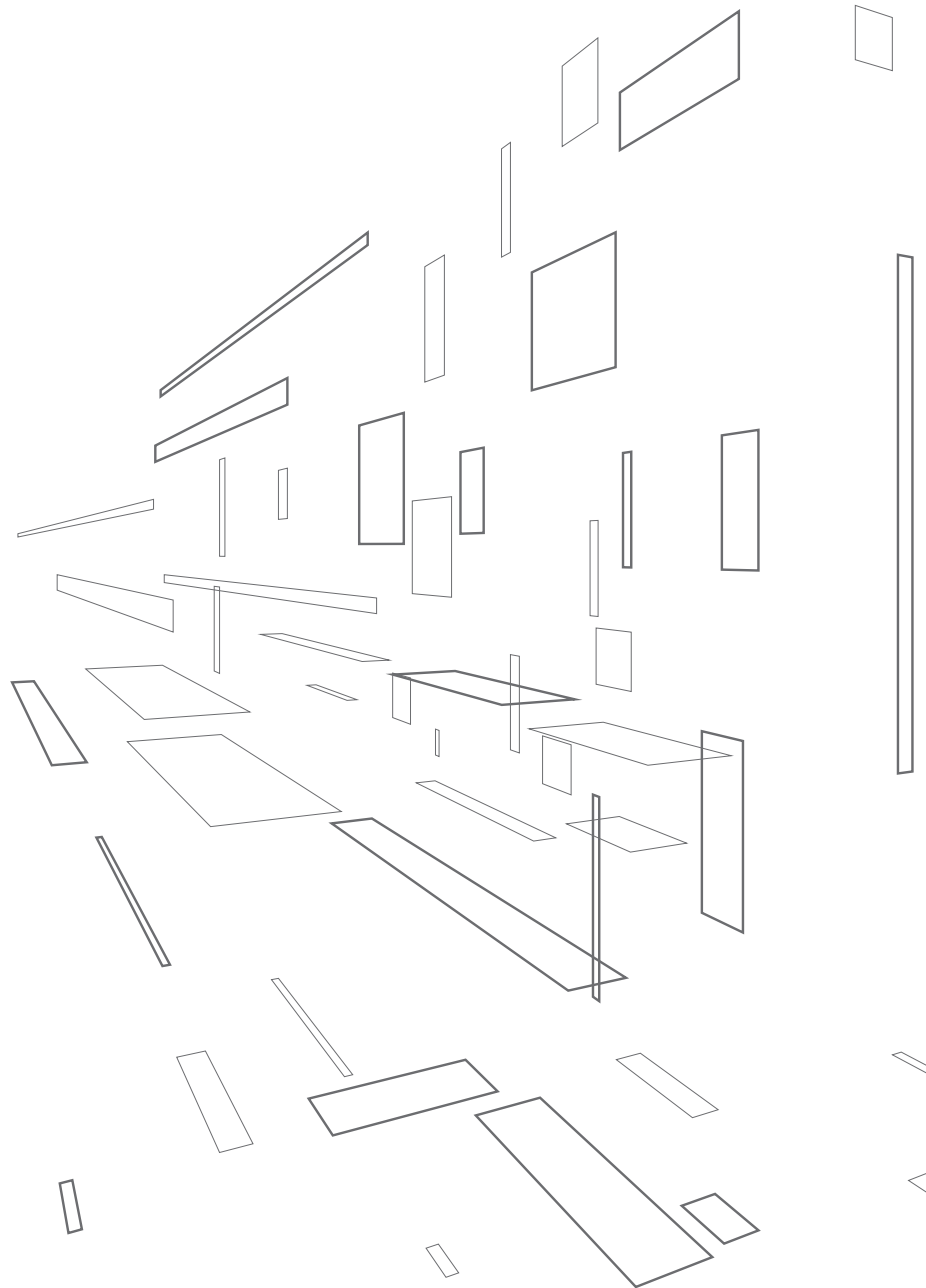
Saw blades and other tools for cutting OSB Firestop boards can be sanded or replaced about 20% more often than during the cutting of standard panels.

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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