



COMPOSITE FACED BOARD.

IS IT:

Product

Technology

Equipment

APPLICABLE FOR:

Restoration

Rehabilitation

New Construction

APPLICABLE ON:

1. Foundations and underground structures

2. Vertical structures

3. Horizontal structures and vertical connections

4. Roof and terraces

5. Façade and building envelope

6. Finishes and completion elements

7. Integrated services

8. General strategies for building recovery

Related companies: PIR (polyisocyanurate) Boards.

DESCRIPTION

PIR insulation products are suitable for new construction, low-energy, passive, and zero-energy construction, as well as for supplementary thermal insulation for older buildings.

PIR insulation can be used to create very thin and leak-proof structures. In constructing low energy, passive or zero-energy houses, structural thicknesses will barely increase when compared to conventional houses built using traditional insulation products.

WHY TO USE

Polyisocyanurate is one of the most efficient insulation materials used in construction. This product is an improvement of previously used PUR boards (polyurethane), typically produced as a foam and used as rigid thermal insulation. This type of insulation offers many advantages when compared with other traditional insulating materials, and over its useful life will save 80 times more energy than was used to make it. Most popular type of PIR insulation board comprises a rigid PIR insulation core sandwiched between two high performance aluminum foil facings to create a tough, durable, light weight insulation board that performs whilst reducing the overall cost to build.

Finnfoam and PIR insulation products are used widely as vapor barrier in wall or roof structures that utilize mineral wool. They also improve the thermal insulation capacity of the structure, while reducing its overall thickness. Finnfoam and PIR insulation panels also function as excellent molds for mineral wool in roofs. Working carefully, Finnfoam and PIR insulation panels provide an easy way to create highly leak-proof buildings. Leak-proofing is very important for the energy efficiency of a building and proper moisture performance of structures.

HOW TO USE AND APPLY

Insulation thickness based on the U value. In a so-called hybrid structure, wind-proofing is installed on the outside of the studs in a regular manner, a mineral wool insulation is placed between the studs, and a continuous layer of PIR insulation panels is installed on the inside, the seals seamed with elastic foam sealant and tape. The thickness of insulation is determined according to the desired U

value. This will create an absolutely leak-proof and energy efficient structure.

The framework of the exterior wall can also consist of concrete, brick, or breeze block, in which case the insulation panels are installed as a continuous layer on the outside of the internal framework.

Technical procedure:

PIR insulation products can be used in exterior walls with various framework materials. When the framework is made from wood, the structure can be constructed as a so-called full PIR wall, where a 100 or 150 mm PIR K600 panel is installed between studs with on-center spacing of 600 mm (K600). A second continuous layer of panels is installed on the inside or outside of the structure. If the second layer is installed on the inside, its thickness may be chosen freely based on suitability (30–150 mm). Where the second layer is installed on the outside of a load-bearing framework, the exterior insulation must be as thick or thicker as the FF-PIR insulation in between the framework elements to insure proper moisture performance.

TECHNICAL CHARACTERISTICS

FF-PIR is an insulating material with an extremely low coefficient of thermal conductivity ($\lambda_D = 0.022 \text{ W / mK}$), so its installation creates a very effective and up to two times thinner insulation layer. These panels are rigid, so the frame is supported on them and fastened to the base with long anchor bolts through the insulating material. This reduces heat loss through the frame elements and reduces the thickness of the thermal insulation layer by up to 20%.

FF-PIR panels are airtight, which ensures the tightness of the entire building. PIR panels are resistant to moisture, so the ventilated facade does not require additional windproof films or other materials, these panels do not undergo internal convection. The resulting structure does not need to be ventilated as moisture does not accumulate in the FF-PIR panels.

The FF-PIR ventilated facade system meets fire requirements as the PIR is exposed to flame retardants and stops the spread of fire. In case of increased fire resistance requirements of the facade, FF-PIR FR panels can be used, which are covered with a special fire protection coating. These panels have a flammability



class of B-s1, d0 and can be used to insulate high-rise buildings.

RECOMMENDATIONS AND OTHER INFORMATION

The working temperature of FF-PIR insulation is -50...+120 °C, but they can momentarily withstand temperatures of up to +200 °C, thus ensuring that they can be safely used in saunas.

Polyurethane insulation products are divided into PUR and PIR insulations according to the material mixture. As the FF-PIR brand name denotes, Finnfoam Oy only uses PIR insulation materials whose fire endurance is significantly better than that of PUR insulation materials. The fire rating of the insulating foam component of FF-PIR insulation is D-s2, d0 . The CE marked FF-PIR is also a mold-proof and safe material in terms of moisture performance.

EXAMPLES

Thermal insulation boards are mainly used for insulation of walls, flat and sloping roofs, insulation of walls from the inside, insulation of frame and three-layer masonry walls, as well as insulation of other structures where highly effective thermal insulation is required.

REFERENCES / SOURCES AND LITERATURE

https://www.insulationshop.co/pir_rigid_insulation_boards.html

<https://www.finnfoam.com/applications/walls/thermal-insulation-for-exterior-walls-using-ff-pir-polyurethane-insulation-products>

WEBSITE OF THE COMPANY

<https://www.finnfoam.com>



IMAGES AND CAPTIONS

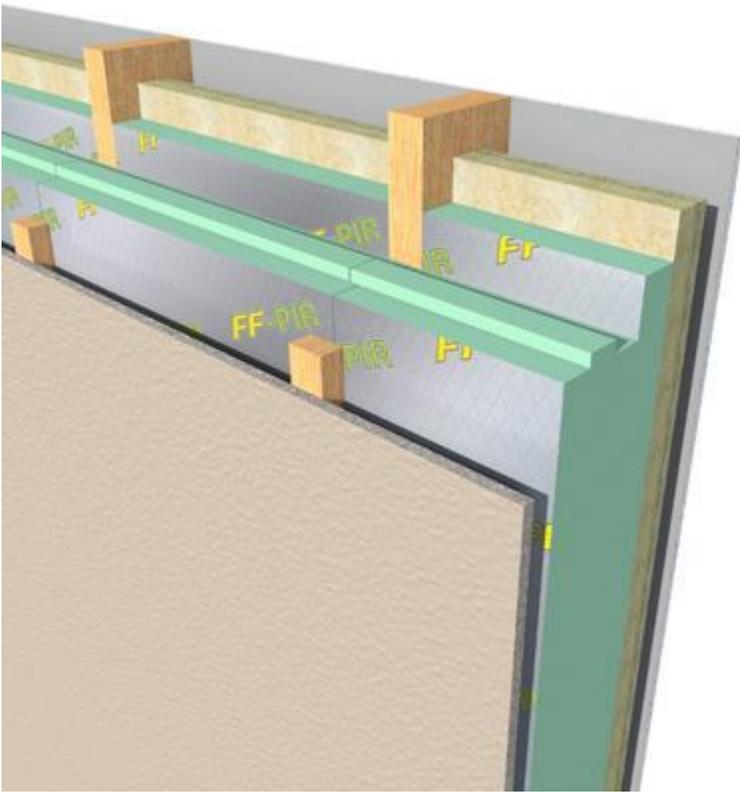


Fig.1: Thermal insulation of the wall. Insulating the ventilated facade with polyurethane panels FF-PIR reduces the thickness of the thermal insulation layer, eliminates heat loss through the insulation fixing frame and ensures the tightness of the entire building.

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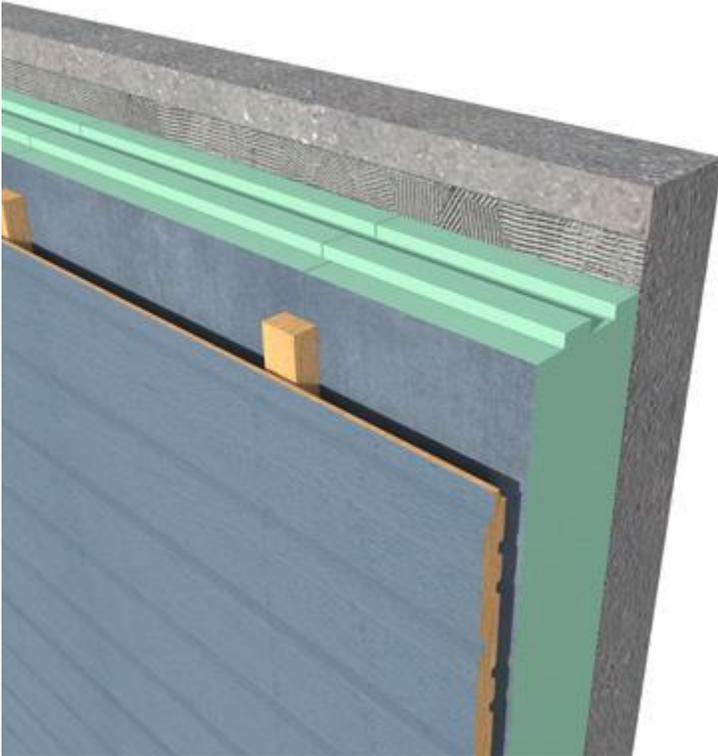


Fig.2: Thermal insulation of the wall.

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Fig.3: Thermal insulation as vapor barrier. © <https://www.finnfoam.com/applications/walls/finnfoam-and-ff-pir-insulation-as-vapor-barrier>

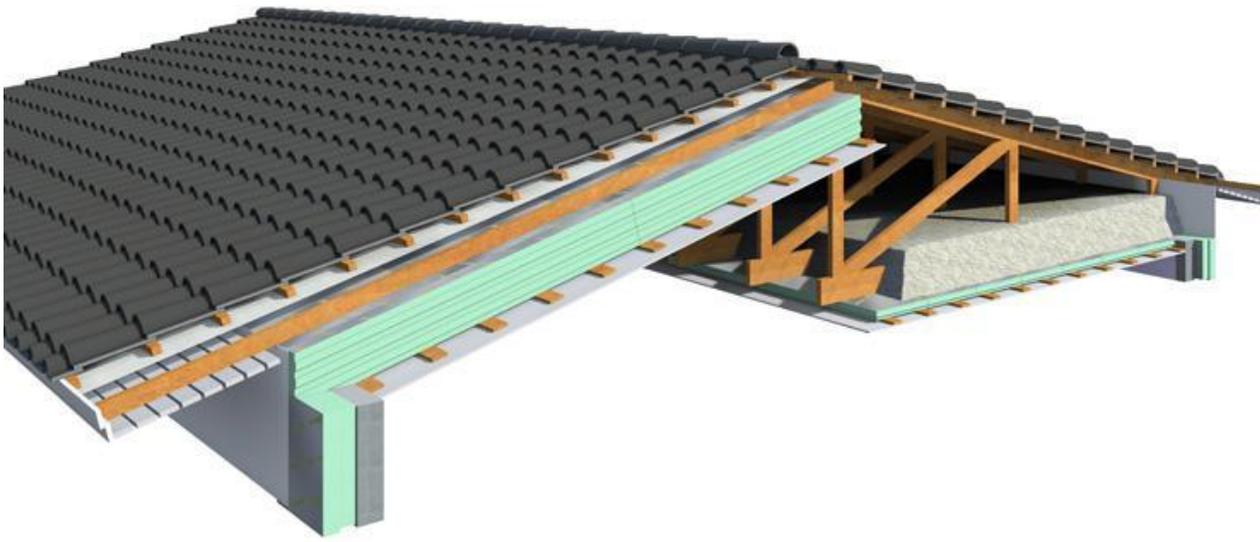


Fig.4: Thermal insulation of the roof. When installing a pitched roof or frame wall, wool is inserted between the rafters. In such a construction it is necessary to install a vapor barrier layer from the inside. By using a single layer of FF-PIR insulation from the inside, it is possible not only to form a tight and reliable vapor barrier, but also to provide additional insulation to the structure.

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Fig.5: Attic insulation. © <https://www.finnfoam.com/applications/insulating-the-ceiling-and-walls-of-an-older-attic>