# DIFFUTHERM

## External Wall Insulation Board that can be Rendered Directly - ETICS

pavatex

Construct. Insulate. Relax.

## Diffutherm Characteristics

**Produced According to EN 13171**

**Pavatex Diffutherm External Wall Insulation (EWI)** wood fibre boards are water resistant, but breathable, and are installed onto the outside of new or existing external walls, which can be constructed from solid or cavity masonry, CLT or timber frame constructions. Vapour control membranes are not required. Diffutherm (60 to 120mm thick) is composed of multiple board layers of different densities to give an optimal insulation solution. Diffutherm EWI boards offer superior thermal resistance when installed externally, as the entire structure is wrapped in insulation so cold bridges through junctions are avoided e.g. where the wall meets the roof and in the corners. This significantly enhances the thermal efficiency of the building and helps to meet Building Regulation requirements by taking Y-values for thermal bridging into account as well as U-values. The Diffutherm boards are then rendered with a breathable render e.g. lime, clay or mineral based renders, so as well as improving the energy efficiency of the building, it can also update the property cosmetically. The CE marked Pavatex wood fibre boards are produced from renewable, natural raw materials sourced from FSC and PEFC certified timber off-cuts from local sawmills, so they ensure a healthy, comfortable indoor climate. The Diffutherm system is also BBA certified.

Diffutherm boards have a favourable Vapour Diffusion Factor so they are designed to be used in diffusion-open or breathable constructions. This ability hinders the accumulation of interstitial condensation, thereby protecting the structure of the building by keeping it dry and preventing mould growth, wet rot and dry rot. This is particularly important in older historic or heritage buildings with solid walls where the breathability of the structure is critical. The building fabric is safeguarded against high moisture content so the long-term health of the building is catered for – unlike most conventional insulation systems. A dry building is a warm building.

Diffutherm's high density ensures very good acoustic insulation values and so reduces airborne noise e.g. traffic or airplane noise, travelling through the external walls. Wood fibre is the densest, and has the highest thermal capacity (c = 2,100 J/kgK), of all insulation materials which means that it adds thermal mass to the building and so protects the interior living space from overheating. It does this by storing the solar gain heat from the sun for as much as 10-12 hours when it will then be released as temperatures drop, whereas other insulation materials can only provide 5-8 hours lag time. This is particularly important in timber and metal framed buildings and in contemporary buildings which have a lot of south and west facing glazing which all tend to overheat in the summer. Likewise the internal heat during the winter will be stored during the day and will then be released at night-time as the building cools.

### Diffutherm

| Thickness (mm) | Weight (kg / m²) | Overall Board Size (cm) | Coverage Area (cm) | No. Boards per Pallet | M² per Pallet - Coverage | KG per Pallet | Edge Profile |
|---|---|---|---|---|---|---|---|
| 60 | 10.98 | 145 x 58 | 143 x 56 | 36 | 28.83 | 370 | Tongue & Groove |
| 80 | 15.20 | 145 x 58 | 143 x 56 | 28 | 22.42 | 383 | Tongue & Groove |
| 100 | 19.20 | 145 x 58 | 143 x 56 | 22 | 17.62 | 376 | Tongue & Groove |
| 120* | 23.10 | 145 x 58 | 143 x 56 | 18 | 14.41 | 370 | Tongue & Groove |

*** Available in full pallets only and allow 2-3 weeks for delivery**

### Diffutherm Reveal Board

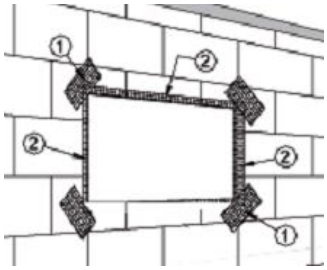
| Thickness (mm) | Weight (kg / m²) | Overall Board Size (cm) | Coverage Area (cm) | No. Boards per Pallet | M² per Pallet Coverage | KG per Pallet | Edge Profile |
|---|---|---|---|---|---|---|---|
| 20 | 3.6 | 110 x 60 | 110 x 60 | 96 | 63.36 | 249 | Square Edge |
| 40 | 7.2 | 110 x 60 | 110 x 60 | 48 | 31.68 | 249 | Square Edge |

| Technical Details | Diffutherm |
|---|---|
| | |
| Density (kg / m³) | 190 |
| Declared Thermal Conductivity λ D (W/mK) | 0.043 |
| Vapour Diffusion Factor μ | 5 |
| Specific Heat Capacity - C (J/kgK) | 2100 |
| Tensile Strength Perpendicular to Plane of Board (kPa) | 10 |
| Compressive Stress at 10% Compressive Deformation (kPa) | 80 |
| Fire Behaviour (EN 13501-1) | Class E |

## Application

The Diffutherm wood fibre boards are mounted onto walls which must be must be dry and reasonably flat so that the T&G insulation boards join together neatly. If the walls have undulations of about 8mm or more, then they should first be levelled out with a lime parge coat. If the existing render has broken away in parts or is in poor condition, it needs to be removed. The same applies if the existing render has a high cement content which is not vapour-open, as this will trap the water within the wall and it will not be able to evaporate to the outside. The bare walls can be rendered firstly with a breathable lime render, if desired, but it is not necessary.

The wood fibre panels can be cut with normal timber cutting tools e.g. an electric circular saw or a jigsaw using Pavatex jigsaw blades. It is recommended to use suction equipment to minimize dust. If a hole or gap occurs in the wood fibre due to a construction error, ensure that it is filled in with small pieces of wood fibres and apply a reinforcing mesh patch at least 200 mm larger than the damaged area. Keep the boards dry when in storage and protect the edges from damage. Do not stack any more than 4 pallets on top of each other.




The board joints should not align with the corners of the windows or doors as it will weaken the strength of the Diffutherm system. Fix a reinforcing mesh strip diagonally into some base coat render at the corners and all around the window and door openings – see the drawing. The door and window reveals must be insulated too with 20 or 40 mm thick reveal boards. For best results these should be bonded to the window or door reveals using the lime render base coat, Baumit MC55W, by applying this to the back of the render board with a trowel. There must be an airtight fit around these thermal weak points so seal the outer edge of the reveal boards to the structure with ISO-BLOCO expanding foam tape.

**Externally:** Fix the base rails at a minimum of 30 cm above finished ground level. XPS waterproof insulation should be fitted in the plinth area below this base rail and extending down as far as possible below finished ground level. This means that the wood fibre boards at ground level will not get permanently moistened from driving rain. The XPS insulation is bonded to masonry walls with Baumit DS27 sealant mixed 1:1 with Portland cement.

The Diffutherm insulation boards are installed in a brick-work formation with the vertical joints staggered by a minimum of 30 cm so there are no cross joints. The horizontal tongues must face upright towards the roof so that rain will not sit in the grooves. Diffutherm is secured to the wall with specialist insulation fixings with a plastic washer – usually 9 fixings per board into masonry. The wood fibre boards at all openings, corners and penetrations should be sealed to the building with ISO-BLOCO expanding foam tape to ensure a weather tight joint. The wood fibre insulation boards can be left exposed for up to 60 days but they must be allowed to dry before they are rendered.

**Rendering:** The wood fibre and plinth boards are rendered with Baumit MC55W lime base coat at a depth of 6 - 9mm. Any of the plinth board that will be below finished ground level must then be sealed with Baumit DS27 mixed 1:1 with Portland cement. A reinforcing mesh is embedded into the base coat and there are a choice of top coat renders that can be used. A self-coloured silicate render called Baumit SilikonTop is very popular because it is highly water repellent but vapour permeable, so is very resilient. The base coat must be primed first before applying Silikon Top. Alternatively a lime mineral render can be used called Baumit SEP, which will require painting with a silicate based paint. A primer is not required with SEP top coat.

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