**PAVATHERM-COMBI**

**Roof Sarking Board and External Wall Insulation Board behind a Ventilated Façade**

**Pavatherm-Combi Characteristics**

Pavatherm-Combi boards are breathable sarking insulation boards with tongue and groove joints. They are suitable for externally insulating roofs and walls which are finished with a ventilated tile space or ventilated cladding, including brick cladding. They are not very water resistant though so need to be protected with the Pavatex ADB Vapour Control Membrane on roofs, particularly in Rain Zones 3 and 4. The Pavatherm-Combi boards do not need to be protected with the ADB Membrane on walls, with the exception of the 40mm boards. Alternatively a layer of the water resistant Isorooft wood fibre board can replace a membrane. These universal boards can also be used internally against timber frame roof and wall structures (not solid masonry) and can be plastered with breathable plaster. Due to its very favourable Vapour Diffusion Factor, Pavatherm-Combi allows water vapour to be safely drawn away from inside to outside so that condensation will not get trapped in the middle of the structure which could cause mould growth, wet rot or dry rot.

Pavatherm-Combi boards are slightly less dense and therefore better thermally than Pavatherm-Plus with a thermal conductivity of 0.041 W/mK. They are a good value alternative option to Pavatherm-Plus. These boards have a high specific heat capacity and a long thermal lag time so they keep buildings warmer in winter and cooler in summer in all climates by adding thermal mass to the fabric of the building. The building will remain at a more ambient, comfortable temperature all year round, because the excess solar gain heat in summertime and the heat from the central heating during wintertime will be stored in the wood fibre, and released slowly into the building as the temperature drops between 10 and 12 hours later. This will reduce the internal daytime temperature by at least 4ºC in summer. This inherent quality should be borne in mind when comparing Pavatex wood fibre insulation to other conventional insulation products which have the same thermal conductivity value, but don’t have high thermal mass. Summer time overheating is particularly prevalent in timber frame buildings and in converted loft spaces due to their lightweight structures, so wood fibre adds extra density to these structures.

Pavatherm-Combi greatly enhances the sound insulation through the walls or roof due to its high density and absorbent fibrous structure. Its high compression strength makes the insulation boards ideal for use in roof constructions above the rafters or in external wall insulation constructions behind a ventilated façade. Thermal bridges are greatly diminished due to the entire structure being insulated, including all the junctions. The studs or rafters can then be filled with a flexible insulation such as Pavaflex flexible wood fibre. This combination greatly helps towards meeting the current, stricter Building Regulation requirements especially when Y-values for thermal bridging are taken into account. In a renovation project, the Pavatherm-Combi boards can be placed under the roof rafters or to the inside of a timber frame wall structure and they can be plastered with lime or clay plaster, or finished with battens and plasterboard.

If Pavatherm-Combi boards are protected with the Pavatex ADB vapour control membrane or the water resistant Isorooft boards, they can be left exposed on roofs or walls for up to three months without compromising the integrity of the thermal insulation product. If a vapour control membrane is not used, they must be protected from the elements within one week if placed on roofs and within 2 months if placed on walls (60 and 80mm only). In addition, all non-tongue and groove edges such as at penetrations and perimeter edges must be primed and taped with Pavatape. The boards are installed so that the side with the Pavatex branding faces the inside of the building, and the tongues are nearest the external side.

**Pavatherm-Combi**

<table>
<thead>
<tr>
<th>Thickness (mm)</th>
<th>Weight (kg / m²)</th>
<th>Overall Board Size (cm)</th>
<th>Coverage Area (cm²)</th>
<th>Number of Boards</th>
<th>M² per Pallet - Coverage</th>
<th>KG per Pallet</th>
<th>Edge Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>6.2</td>
<td>180 x 58</td>
<td>178 x 56</td>
<td>56</td>
<td>55.82</td>
<td>387</td>
<td>Tongue &amp; Groove</td>
</tr>
<tr>
<td>60</td>
<td>9.3</td>
<td>180 x 58</td>
<td>178 x 56</td>
<td>36</td>
<td>35.88</td>
<td>375</td>
<td>Tongue &amp; Groove</td>
</tr>
<tr>
<td>80</td>
<td>12.4</td>
<td>180 x 58</td>
<td>178 x 56</td>
<td>28</td>
<td>27.91</td>
<td>387</td>
<td>Tongue &amp; Groove</td>
</tr>
</tbody>
</table>
ingress wood fibre due to a construction error, ensure that it is filled in with wood fibre.

The panels can be cut with normal timber cutting tools e.g. a jigsaw with Pava blades or a circular saw. If a hole or gap occurs in the wood fibre due to a construction error, ensure that it is filled in with wood fibre offcuts and prime and tape this area to prevent water ingress. Keep the boards dry when in storage and protect from damage. Do not stack any more than 4 pallets on top of each other.

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### Technical Details

<table>
<thead>
<tr>
<th>Property</th>
<th>Pavatherm-Combi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density (kg / m³)</td>
<td>145</td>
</tr>
<tr>
<td>Declared Thermal Conductivity λ D (W/mK)</td>
<td>0.041</td>
</tr>
<tr>
<td>Vapour Diffusion Factor µ</td>
<td>3</td>
</tr>
<tr>
<td>Specific Heat Capacity - C (J/kgK)</td>
<td>2100</td>
</tr>
<tr>
<td>Tensile Strength Perpendicular to Plane of Board (kPa)</td>
<td>10</td>
</tr>
<tr>
<td>Compressive Stress at 10% Compressive Deformation (kPa)</td>
<td>100</td>
</tr>
<tr>
<td>Fire Behaviour (EN 13501-1)</td>
<td>Class E</td>
</tr>
</tbody>
</table>

### Isoroor Sarking Boards
- Water resistant: 20 and 35mm thick
- Pavatherm-Combi: Sarking Boards – Not very water resistant: 40, 60 and 80mm thick
- Isolar Sarking Boards – Water resistant: 100, 120, 140, 160, 180 and 200mm thick
- Pavatherm-Plus Sarking Boards – Water resistant: 60, 80, 100, 120, 140 and 160mm thick

### Roof Insulation Panels

Pavatherm-Combi overlaid with Pavatex ADB Vapour Control Membrane safely seals and protects the roof construction when the rigid boards are laid down above the rafters, ensuring a dry building for the construction work to continue. Pavatherm-Combi can be used on both new build and renovation projects. An airtightness membrane or airtight OSB board taped at the joints should be placed internally under the roof. There is no need to prime and tape all the cut or exposed Pavatherm-Combi board edges and penetrations if a vapour control membrane is in place. The membrane itself must be well sealed to each other and to the structure of the building. Do NOT use Pavatherm-Combi on roofs with pitches of less than 5°.

### External Wall Insulation on Timber Frame or Masonry Walls

Pavatherm-Combi is used in timber frame or masonry constructions as an external wall sarking board behind a ventilated façade. The boards can be rendered directly in Rain Zones 1 and 2 only (please contact us for advice). 60 and 80mm Pavatherm-Combi can be left exposed on walls for up to 60 days. 40mm Pavatherm-Combi must be protected with the ADB Vapour Control Membrane. Wood fibre insulation cannot be fixed below the Damp Proof Course level so waterproof insulation such as XPS should be used in this area. An airtightness membrane or racking board incorporating an airtightness detail should be inserted on the internal side of the timber frame. If Pavatherm-Combi insulation is being used behind ventilated cladding on a masonry wall, the wall must be dry and reasonably flat so if it consists of large protruding stone, it should be rendered first with Baumit MP69 PLUS to smooth out the hollows. If the wall is already rendered with a high cement containing render, this must be removed because it is not very vapour-open so will trap water in the wall.

### Installation

Pavatherm-Combi panels should be fixed directly to the rafters or studs with the tongue facing upwards towards the apex. The cut-off piece at the end of one row should be used as the first piece on the next row so that the joints are in a brickwork formation and will increase the structural strength. The Pavatherm-Combi boards are fixed to the structure using insulation screw fixings, as advised, so that the fixings are anchored into the timber stud or rafter by at least 40 mm. On masonry walls, fixings are typically embedded by at least 50 mm. Generally 6 fixings are required per m².

On walls, all non-tongue and groove edges, openings and penetrations should be primed and taped with Pavatex Primer and aluminium butyl Pavatape to ensure the integrity of the wood fibre insulation. Vertical battens are then secured to walls to create a ventilated façade. On roofs, secure the Pavatherm-Combi panels to the timber rafters with 2 screws approx. Then fit the Pavatex ADB Vapour Control Membrane which has self-integrated adhesive strips down its sides. Secure the membrane to the structure with Pavatape. All porous surfaces will need to be primed first before taping. Then secure the vertical battens to the roof using fixings as advised, ensuring that fixings go through the battens, VCL, Pavatherm-Combi and 40mm into the rafters below. Next fit the counter-battens and roof covering. When working on the roof, only walk above the rafters rather than between the rafters.

### Cutting and Storing the Wood Fibre Softboards

The panels can be cut with normal timber cutting tools e.g. a jigsaw with Pavatex blades or a circular saw. If a hole or gap occurs in the wood fibre due to a construction error, ensure that it is filled in with wood fibre offcuts and prime and tape this area to prevent water ingress. Keep the boards dry when in storage and protect from damage. Do not stack any more than 4 pallets on top of each other.

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