Proctor Passive

SYSTEMS FOR AIRTIGHTNESS, HEAT, AIR & MOISTURE MOVEMENT

Product Solution Providers
The A. Proctor Group has, for 50 years, been serving the construction industry with an extensive portfolio of technically advanced thermal, acoustic and membrane products.

Founded in the German city of Darmstadt in the 1990s, the Passivhaus Institute aims to develop and promote best practice ideas in low energy housing design. These ideas are codified into the Passive House standard, which provides an independent framework for specifiers worldwide to exceed their local building standards and strive for excellence in energy performance.

From the first projects outside of Germany in the early 2000s, passive house certified buildings, specifiers and contractors can now be found all over the world.

As building regulations have developed, and energy performance becomes a more important consideration, elements and concepts from passive homes have become more and more integrated into modern housing practice.

These ideas are now increasingly moving from high end self built dwellings to be part of mainstream housing practice.
Passive House Construction

The Passive House concept is founded on five basic principles for good design.

• Thermal Insulation
• Thermal Bridge Free Design
• Airtightness
• Ventilation and Heat Recovery
• Passive House Windows

These five simple ideas, properly applied in a well constructed dwelling, facilitate a dramatic reduction in the energy required for space heating. This is achieved by maximising solar gains and harvesting waste heat, whilst minimising all mechanisms of heat loss from the envelope.

These are by no means new ideas, but today’s increasing focus on both housing quality and energy consciousness serves to reiterate their importance.

With innovative solutions to simplify reducing air leakage rates and control cold bridging, the Proctor Passive range of solutions allows specifiers to adhere to these guiding principles without compromising in other areas. This ensures the delivery of best practice performance with the least impact on costs and timescales.
External Airtight Membranes - an Introduction

Why are airtight membranes needed?
Air leakage through cracks, gaps, holes and improperly sealed elements such as doors and windows can cause a significant reduction in the performance of even thermally insulated building envelopes. Housebuilders have a key role to play in the installation of effective air barrier systems which have become essential in achieving the most effective means of controlling and reducing air leaks.

As thermal insulation requirements have increased over the last few years, the proportion of energy lost through air leakage has become more evident. The ever-increasing thermal insulation required will, however, be rendered largely ineffective unless the airtightness of the structure itself is addressed. Air leakage greatly reduces the effect of thermal insulation; therefore if energy efficiency is to be improved within buildings, this is the most critical area to focus on.

The two main ways to achieve airtightness in the building envelope are internally or externally, or in other terms, ‘inside of the services zone’ or ‘outside of the services zone’. For the housebuilder, the use of traditional internal air barriers can be more complex and costly to install, due to the need to accommodate building services such as electrical, lighting, heating and drainage systems. An internal air barrier is only as good as it’s installation. If all the service penetrations are not adequately sealed, performance will be compromised.

For many years, external air barriers have been commonly used in North American building design and construction. By moving the air barrier to the external side of the structural frame, external air barrier systems such as Wraptite® allow for an almost penetration-free airtight layer, which can be installed faster and more robustly. This offers an effective but simple system comprising a self-adhesive vapour permeable air barrier membrane, plus vapour permeable sealing tape, Wraptite Corners and Wraptite Liquid Flashing, and provides effective secondary weather protection while preventing trapped moisture and air leakage. Far simpler than internal options an external air barrier system like Wraptite will maintain the envelope’s integrity, with less building services and structural penetrations to be sealed, and less room for error.
The self-adhered nature of Wraptite allows for a simple and fast installation process, minimising the use of additional sealants and tapes, and requiring no specialist contractors to achieve a robust result. This one-step solution provides both a damage resistant air barrier layer and effective secondary weather protection in one installation process, allowing a wind and watertight envelope to be achieve more quickly than using traditional methods. Wraptite airtight membrane makes a significant contribution to a building’s thermal performance by preventing lateral air movement, but it also contributes to a healthy living environment and a healthy building, thanks to its vapour permeability.

It fully bonds to most substrates, with a key benefit being its ease of installation, negating requirement for sealants or tapes.

### WRAPTITE®

**Key Benefits**

- Self adhered
- Airtight yet vapour permeable
- BBA certification no 15/5274
- Wraptite Tape recommended by Kingspan® for use with their Kooltherm® K106 Cavity Board (see graphic above)
- No primer required
- Tough facer laminate resists punctures and tears during construction
- Lightweight and easy to install
- Manufactured rolled goods ensure consistent properties and performance
- Wide service temperature range (-40°C - 100°C)
- Can be left exposed for up to 90 days (North America) or 120 days (UK) during construction*
- No VOC’s

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<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Mean Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roll Size</td>
<td>-</td>
<td>1.5m x 50m</td>
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<tr>
<td>Nominal Thickness</td>
<td>Calibrated Deadweight Micrometer</td>
<td>0.65mm</td>
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<td>Basis Weight</td>
<td>Electronic Weigh Scale</td>
<td>292 g/m²</td>
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<td>Application Temperature</td>
<td>-</td>
<td>Air &amp; surface: minimum -10°C maximum 60°C</td>
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<tr>
<td>Air Permeance</td>
<td>EN 12114</td>
<td>0.01 m³/m².h.30 Pa</td>
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<tr>
<td>Water Vapour Resistance</td>
<td>Sd EN 12572</td>
<td>0.039m</td>
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<tr>
<td>Water Vapour Transmission</td>
<td>BS 3177:1959</td>
<td>893 g/m².24hr</td>
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<tr>
<td>Peel Adhesion</td>
<td>EN 1939</td>
<td>5.01 N/10mm</td>
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<tr>
<td>Tensile Strength</td>
<td>EN 12311-1</td>
<td>Mean MD 417N Mean XD 252N</td>
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<tr>
<td>Tear Resistance</td>
<td>EN 12310-1</td>
<td>Mean MD 412N Mean XD 286N</td>
</tr>
<tr>
<td>Reaction to Fire</td>
<td>EN 11925-2 BS EN 13301-1</td>
<td>Class B, s1, d0²</td>
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</tbody>
</table>

*-tested over 12mm calcium silicate board / fibre cement board as per BS EN 12238:2010. All tests carried out to EN 13859-2 standard
WRAPTITE® TAPE

A useful way of stopping unnecessary air leakage around openings and overlaps is to use Wraptite Tape, an airtight, tear resistant tape with high vapour permeability for internal and external applications. Wraptite Tape’s flexibility facilitates ease of application and detailing, while its resilient composition resists punctures and tears during construction. It can be left exposed for up to 120 days during construction and has a wide operating temperature range (-40°C to +100°C). Wraptite Tape is also available with a split release liner for ease of installation.

It fully bonds to all standard substrates, with no primer required, suppressing air leakage around joints, openings and penetrations. It is also suitable for permanent airtight sealing of membrane overlaps and for taping insulation joints. Wraptite Tape’s high vapour permeability allows damp sheathing to dry quickly and moisture vapour to escape. This ensures good indoor air quality and reduces the likelihood of mould, mildew, condensation, timber distortion and metal corrosion. Wraptite Tape contains no VOC’s.

Key Benefits

- Vapour permeable tape used to protect exposed joints in insulation
- Airtight
- Easy to use when detailing joints
- Ultimate airtightness accessory
- Can seal joints in mechanically fastened air barrier

Please visit our website or Wraptite brochure for full product details.
Wraptite Liquid Flashing is a high-quality, gunable, elastomeric, polyether, liquid applied flashing and detailing membrane. It bonds to most construction materials, such as aluminium, brick, concrete, wood, vinyl, and exterior sheathing boards. Wraptite Liquid Flashing is compatible with the entire line of our vapour permeable products for joint detailing in exterior sheathing panels.

Wraptite Liquid Flashing is ideal for use in complex details. It can also be used to protect the leading edge of the Wraptite membrane or tape from water penetration if the edge cannot be protected by overlapping in a shingle fashion.

Key Benefits
- Airtight & vapour permeable
- Continuous seal and system approach
- Can be applied in damp conditions
- Does not peel back when left exposed
- Does not create build up in rough openings
- Non-sag
- 100% solvent free
- Non-shrinking
- Bonds to most construction materials
- Easily applied and spread
- Does not harm foam insulation
WRAPTITE® CORNERS

Wraptite Preformed Airtight Corners have been developed for the difficult areas around doors and windows where maintaining good air barrier continuity is difficult and time consuming. Wraptite Corners’ simple design and installation process makes sealing openings against air leakage simple, just peel off the release liner, stick the corners in place, then install the Wraptite membrane as normal. This helps achieve the best possible results in the shortest possible time.

Once installed, the corner sections provide the same vapour permeable air barrier performance as the Wraptite membrane itself, ensuring air leakage and water ingress are minimised without trapping construction moisture or causing condensation.

Key Benefits
- Easy installation
- Ensures continuity of airtightness measures
- Simplifies complex detailing
- Faster installation
Procheck Adapt is a high performance variable-permeability vapour control layer for use in a variety of commercial and residential applications. It is designed to protect the building fabric from potential risks of condensation and it will also act as an airtight barrier. Its variable permeability adapts to changes in humidity levels becoming more resistant in Winter and more permeable in Summer. This means the building fabric is protected from damaging moisture levels during cold, wet months of the year and it will allow the fabric to dry out effectively in warmer, drier months. Procheck Adapts’ translucent structure eases fixing to structural frames and in conjunction with its integral tape allows for a fast installation time.

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Mean Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roll Size</td>
<td></td>
<td>1.5m x 50m</td>
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<tr>
<td>Weight</td>
<td>ISO 536</td>
<td>110 g/m²</td>
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<tr>
<td>Nail Tear Resistance</td>
<td>EN 12310-1</td>
<td>MD 350N CD 375N</td>
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<td>Tensile Strength</td>
<td>EN 12311-1</td>
<td>MD 350N/50mm CD 315N/50mm</td>
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<tr>
<td>Elongation</td>
<td>EN 12311-1</td>
<td>MD 20% CD 20%</td>
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<td>Vapour Resistance</td>
<td>EN 12572</td>
<td>Sd 0.4m - 90m</td>
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<tr>
<td>Reaction to Fire</td>
<td>EN 13501-1</td>
<td>Class E</td>
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<tr>
<td>Air Permeability</td>
<td>BS EN 12114:2000</td>
<td>0.00 m³/m²/hr @ 50 Pa</td>
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</tbody>
</table>

**Key Benefits**

- Variable permeability adapts to changes in humidity
- Wide Sd range guarantees performance in demanding climatic conditions
- Ensures effective drying out of building materials
- Suitable for variety of commercial and residential applications
- Provides airtightness to structure as well as vapour control
- Translucent material allows for ease of installation onto framework
Spacetherm® Aerogel offers specifiers a flexible yet robust insulation blanket solution. Combining a silica aerogel with a fibre matrix, it is a superior material which is suitable for a wide range of challenging applications where thermal performance is crucial.

With a thermal conductivity of 0.015 W/mK, Spacetherm Aerogel’s performance credentials qualify it as one of the best insulation materials available worldwide. Engineered for unsurpassed thermal performance in space-critical applications, the product offers low thermal conductivity plus breathability allied to hydrophobic characteristics. It is also reassuring for specifiers to know it retains its thermal properties for over 50 years.

Spacetherm can be supplied bonded to a variety of facing materials dependent to suit projects requirements, and can be supplied in cut to size panels on request.

| Blanket size  | 2400 x 1200mm  
|              | 1200 x 1200mm |
| Thickness    | 5mm / 10mm     |
| Density      | 0.15 g/cm³     |
| Weight       | 0.745 - 1.56 kg/m³ |
| Thermal Conductivity | 0.015W/mK |
| Water Vapour Permeability, µ-Value | 5 |
| Reaction to fire | C - sl - d0 |
| Specific Heat Capacity | 1kJ / kgK |

**Key Benefits**
- Thin insulation system for hard to treat walls
- Class-leading performance
- Minimum loss of room space
- 50 year continued thermal performance
- Direct fix to solid walls
- Non-hazardous material
- Easy to install

**Product range**
- Spacetherm Multi
- Spacetherm Wallboard
- Spacetherm Directfix
- Spacetherm Cold Bridge Strip
- Spacetherm Window Reveal Board
- Spacetherm Blanket

*More details on the product range can be found on our website.*

*Other thicknesses available on request.*
Reflectashield TF 0.81 is a water resistant, non-woven polypropylene foil faced laminate with a unique patented three layer composition, providing excellent breathability, as well as secondary protection to the building during construction. Reflectashield TF 0.81 is vapour permeable, has low emissivity and an enhanced foil surface designed to improve the thermal resistance of timber and steel frame structures. It has a high strength to weight ratio. The product is installed on the external face of the timber frame, foil side face out, similar to that of a traditional breather membrane but with added thermal benefits.

Reflectashield TF 0.81 complies with the low vapour resistance requirements set out by BS 4016, TRADA and the NHBC. The existing legislation requires a breather membrane in walls to have a vapour resistance not greater than 0.60 MNs/g. Reflectashield TF 0.81 has a vapour resistance of 0.41 MNs/g.

We can provide a range of solutions, with U-values down to as low as 0.17W/m²K in standard timber frame walling applications.

<table>
<thead>
<tr>
<th>Property</th>
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<th>Mean Results</th>
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</thead>
<tbody>
<tr>
<td>Roll Sizes</td>
<td>n/a</td>
<td>1.45m x 50m, 2.7m x 100m, 2.9m x 100m</td>
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<tr>
<td>Mass per unit area</td>
<td>EN 1849-2</td>
<td>134g/m²</td>
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<tr>
<td>Reaction to Fire</td>
<td>EN 11925-2</td>
<td>Class E</td>
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<tr>
<td>Water vapour resistance Sd</td>
<td>EN 1931</td>
<td>0.083 m</td>
</tr>
<tr>
<td>Water penetration</td>
<td>EN 1928</td>
<td>Class W2 (Before and After ageing)</td>
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<tr>
<td>Thermal performance (R)</td>
<td>BS EN ISO 8990:1996</td>
<td>0.81 m²K/W</td>
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</tbody>
</table>

Key Benefits
- Ensures breathability of building envelope
- Protects structure during construction
- Class leading thermal performance reducing insulation requirements
- Maximises emissivity whilst providing robustness
- Can be ‘own’ branded for client
- 3rd party approved for use behind ventilated façades
- UK manufactured
- Achieves R-value of 0.81m²K/W when facing ≥19mm cavity
**REFLECTATHERM® PLUS**

Reflectatherm Plus is a reflective, high resistance vapour barrier for internal walls, ceilings and floors, specifically designed to improve the thermal performance and airtightness when placed on the warm side of the insulation.

The membrane should be installed with the foil side facing the cavity. In ceilings the product is placed between the underside of the rafters and the ceiling lining. Adjacent sheets should be lapped by 150mm and sealed with Reflectafoil Tape. Penetrations caused by services must be minimised to ensure effectiveness, and all joints need to be sealed.

Reflectatherm Plus will help meet the requirements of the new ‘Part L’ in England and Wales and ‘Section 6’ in Scotland.

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Mean Results</th>
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<tbody>
<tr>
<td>Roll Size</td>
<td>n/a</td>
<td>1.5m x 50m 2.7m x 100m 3m x 100m</td>
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<td>Mass per unit area</td>
<td>EN 1849-2</td>
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<td>Reaction to Fire</td>
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<td>Water vapour resistance Sd</td>
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<td>Tensile strength</td>
<td>EN 12311-2</td>
<td>MD 255 N/50mm CD 200 N/50mm</td>
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<td>Elongation</td>
<td>EN 12311-1</td>
<td>MD 59% CD 70%</td>
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**Thermal Performance**

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<tr>
<th>Vertical air cavity - horizontal heat flow</th>
<th>BS EN ISO 8990:1996</th>
<th>0.78 (m²K)/W</th>
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<tbody>
<tr>
<td>45 degree air cavity - upward heat flow</td>
<td>BS EN ISO 8990:1996</td>
<td>0.61 (m²K)/W</td>
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<tr>
<td>Horizontal air cavity - upward heat flow</td>
<td>BS EN ISO 8990:1996</td>
<td>0.58 (m²K)/W</td>
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<tr>
<td>Horizontal air cavity - downward heat flow</td>
<td>BS EN ISO 6946 Annex B</td>
<td>1.41 (m²K)/W</td>
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</table>

**Key Benefits**

- Low emissivity
- Reduces condensation risk within the building envelope
- Certified highest performing reflective VCL
- Can be own branded
- Improves airtightness

*When tested to EN 11925-2 over a rock wool substrate*
Case Study - “Tighétébhu”, Perthshire

An impressive new contemporary award-winning Eco House in Perthshire is set to benefit from the superior airtightness performance qualities of Wraptite. The house “Tighétébhu” was constructed by SIPS Scotland and has been chosen as the winner of the Best SIPs Home in the Build It Awards 2018.

The new property is a self-build project designed by Allan Corfield Architects, Dunfermline who are specialists in Self Build.

Wraptite, the only self-adhering external vapour permeable air barrier certified by the BBA, was installed as part of the Structural Insulated Panel (SIPs) construction of the home.

The use of Wraptite in the construction makes a significant contribution to a building’s thermal performance by preventing lateral air movement. It also provides high vapour permeability in a continuously sealed, self-adhered, airtight membrane.

The split-level eco-house was designed with two main elements, the first is the L-shaped 2-storey accommodation and the second is a large sweeping single storey curved entertaining area. Both elements are seamlessly linked by a large 2-storey atrium which gives access to all areas of the home.

The combination and introduction of an integrated approach within the construction have ensured that the final outcome is an award-winning, A-Rated energy efficient house, which has been designed with best practice principles of managing the balance of Heat, Air, Moisture movement (HAMM).
“ I believe the success of the A. Proctor Group is down to a solid foundation of innovation backed up by an excellent, loyal and committed team, every one of them playing an important role in our continued success. Scotland provides us with a unique platform to launch our ideas, systems and products. I am fiercely proud of this heritage and our brand.”

Keira Proctor  
Managing Director, A. Proctor Group Ltd