technical guide

a comprehensive

to the specification of

vapour control layers
Partnerships in action

THE PROBLEM

Moisture in today’s buildings can be a continuous problem if not tackled professionally. Equally, new and existing buildings, particularly those that will house hi-tech machinery and computer equipment, need to be guarded against condensation and its consequences.

Homes fitted with double glazing no longer have natural outlets for moisture; while industry demands a higher level of comfort for its workers.

The loft conversion market, too, seeks faster, more effective production methods that will bring confidence in guarantees.

THE SOLUTION

The A.Proctor Group, with its history of successful technical solutions, recognised these problems and has linked with two manufacturers to offer total solutions to all the traditional problems of vapour control.

All the manufacturers use state of the art plant and production equipment, and operate within recognised quality standards.

These total solution products offer the most comprehensive range available. Each one is fully researched and tested to ensure complete satisfaction and guaranteed performance.

THE KNOWLEDGE

The A.Proctor Group has, for over 40 years, been serving the construction industry with an extensive portfolio of technically advanced thermal, acoustic and membrane products.

This commitment to develop a complete membrane range, covering Vapour Control Layers and Breather Membranes in pitched roofing and industrial cladding, has resulted in a unique, exclusive partnership with two of the U.K’s largest and most respected membrane manufacturers.

BSk, based in Strood, Kent, manufacture the U.K’s only reinforced polyethylene and polyethylene/foil Vapour Control Layers to a carefully determined specification. ISO 9000 quality procedures ensure product reliability and performance.

Don and Low Nonwovens have now added Roofshield, for domestic pitched roofing, to Cladshield and Frameshield, the U.K’s top brands in the industrial cladding and timber frame markets.

A nationwide technical specification team, together with Tecline Advice Centre, ensure professional response to the industry’s requirements. A national network of distribution outlets ensure prompt and effective service.
OBJECTIVE OF TECHNICAL GUIDE

This Technical Guide offers good advice on the specification and installation of membranes to control water vapour within roof and wall constructions. By adopting the practical measures given in this Technical Guide, the design and build team can reduce the risks of condensation, water ingress and excessive heat loss after the building has been completed.
The Importance of Vapour Control

**INTRODUCTION**

It has been long recognised that condensation within buildings can be a problem. But how can it be minimised? The starting point is to look at the sources of moisture within a building.

**SOURCES OF MOISTURE WITHIN A BUILDING**

**Domestic Functions**

Cooking, washing and drying clothes, dish washing, bathing and showering are all everyday activities that result in the internal air coming into contact with water and turning to steam or “vapour”.

**People**

Our bodies perspire, especially when we are exercising. It has been estimated that a person typically generates 1.2 litres of moisture per day. This becomes much more of an issue when large groups of people are gathered together, such as in a school, a theatre or a sports hall.

**Industrial Processes**

Many industrial processes will involve vapour generation for example textile and paper mills, laundries, printing houses. Indoor heated swimming pools and leisure pools will also create moisture which requires control.

**Construction**

Wet finishes such as concrete slabs, screeds, masonry and plaster are installed with a lot of water within them. For example, a 150mm thick concrete slab would have approximately 27 litres within each square metre when first cast and drying out takes many months, often long after the roofing and walling have enclosed the slab.

**WATER VAPOUR PRESSURE**

Internal conditions within a building are measured in terms of:

- air temperature in °C
- relative humidity in %

Using the “psychometric chart” the vapour pressure in kiloPascal can be read off.

The greater the vapour pressure within the building, the greater the condensation risk

With the information about what is likely to be going on in the building, the designer is in a position to take the design forward.
The Importance of Vapour Control

CONDENSATION

The air around us holds moisture in the form of a colourless vapour; the warmer the air, the greater the amount of moisture it can hold. If the air is cooled, then it cannot hold as much moisture and there comes a point at which the water changes from a vapour to a liquid, which we see in the form of "condensate". At this point the "relative humidity" is 100%.

As an example, we can see this when we take a cold bottle of wine out of the fridge. The air containing water vapour is cooled as it passes over the glass bottle, such that the air can no longer hold the water vapour and a film of water droplets forms as condensate on the bottle. Another everyday example of condensation is on a mirror in a bathroom. As we have a bath or shower, vapour is released into the air, thus the humidity levels increase. As the vapour laden air passes the mirror the temperature drops and the vapour is released on the mirror in the form of water.

Condensation occurs within roof and wall constructions if the heated internal air escapes through the lining and insulation then comes into contact with the cold outer surfaces, forming condensation which can drip back down into the building. Alternatively with a metal roof on a cold clear night the surface temperature of the metal sheets may be significantly less than the surrounding ambient temperature. Significant quantities of ice and/or condensation may form on the underside of the weather sheet. Such effects are caused by night radiation and wind chill.

The threshold between the 'high/moderate' internal vapour pressure is taken as 20°C 60%RH (=1.4kPa).
The threshold between the 'moderate/low' internal vapour pressure is taken as half of the upper threshold (=0.7kPa).

<table>
<thead>
<tr>
<th>Type of building</th>
<th>Dry Bulb Air Temperature °C</th>
<th>Relative Humidity %</th>
<th>Vapour Pressure kPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Factories and heated warehouses</td>
<td>15</td>
<td>35</td>
<td>0.6</td>
</tr>
<tr>
<td>B Offices</td>
<td>20</td>
<td>40</td>
<td>0.9</td>
</tr>
<tr>
<td>C Schools</td>
<td>20</td>
<td>50</td>
<td>1.2</td>
</tr>
<tr>
<td>D Houses and flats</td>
<td>20</td>
<td>55</td>
<td>1.3</td>
</tr>
<tr>
<td>E Textile factories</td>
<td>20</td>
<td>70</td>
<td>1.6</td>
</tr>
<tr>
<td>F Swimming pool halls</td>
<td>25</td>
<td>70</td>
<td>2.2</td>
</tr>
</tbody>
</table>

Table 1 - Notional internal conditions, taken from BS6229
The Importance of Vapour Control

AFFECTS ON BUILDING FABRIC

Condensation within roof and wall constructions can lead to serious problems:

- Timber can rot, causing severe structural weakening reducing life of structure.
- Wetting can cause timber and other hygroscopic materials to swell, resulting in distortion and permanent damage to sarking boards and wall plates.
- Corrosion may occur on unprotected metal surfaces, including components such as roof truss nailplates.
- Insulation materials may absorb moisture and lose their thermal effectiveness.
- Ceilings and decorations can be damaged by condensation soaking through.
- Mould growth can form, presenting a health hazard.
- Condensation may effect electrical wiring within the hidden roof and wall spaces.
- Items such as furniture stored in a loft space can be permanently damaged.

With the continuing trend to increase the thickness of thermal insulation, the risk of unwanted condensation forming will be ever present and hence the need for care in dealing with vapour control in buildings. Solving condensation problems after a building is completed is not straightforward, and sometimes requires the total dismantling of the roof or wall, which is a costly repair.

TACKLING CONDENSATION

Reduce the internal vapour pressure.

Where possible remove the source of moisture within the building. Improve the internal ventilation and airflow, such as by opening windows and providing ventilation.

Provide a continuous barrier to stop vapour entering the roof or wall.

The vapour control layer needs to be continuous and impose a substantially greater vapour resistance than the total of the elements above, i.e. the insulation / breather membrane / roofing or walling. A continuous vapour control layer will have the added benefit of reducing the amount of heated air escaping from a building. By stopping these "draughts" and reducing air convection losses the thermal performance of a building can be significantly improved.

Promote the release of moisture above the vapour control layer

Any vapour that does get past the vapour control layer needs to have a path out of the building with effective ventilation. Therefore minimise the external vapour resistance and allow the external skin to breathe. (See illustration left)
The Importance of Vapour Control

MEASURES TO IMPROVE THE EFFECTIVENESS OF A VAPOUR CONTROL LAYER

1. **Respect the vapour control layer**

Through all stages of the construction sequence a high standard of care and attention must be given, from the original specification, detailing stages, storage of materials on site through to installation and final inspection. All members of the design and construction team should be fully aware that a roof with an ineffective vapour control layer can only be repaired properly by stripping the entire roof and starting again or by over-roofing.

2. **Select a vapour control layer with high vapour resistance**

Industry guidance suggests that the vapour resistance of a vapour control layer within high risk roofs should be at least 500 MNs/g. The addition of an aluminium foil greatly enhances the vapour resistance.

3. **Select a vapour control layer with good tear resistance - The importance of multifilament reinforcement.**

The vapour control layer is often subjected to reversals of wind pressure, causing the membrane to ‘drum’ against supports. If there is room for movement and there are sharp edges, then the membrane can tear. It has been found that monofilament reinforced vapour control layers often have small pockets of air entrapped either side of their relatively bulky reinforcement, which reduces the tear resistance.

4. **Provide good support**

On cold roof constructions where the vapour control layer is draped between purlins, the laps are extremely difficult to seal. This arrangement is best avoided and must not be used in high risk areas. Instead a rigid safe lining sheet should be provided for laying, jointing and sealing the vapour control layer.

For advice on high risk areas please contact APG Techdesk.

Warm roof constructions have the benefit of a structural deck directly below and offering good support. Rigid structural decks and safe walkable lining sheets are recommended to give full support for laying and sealing the vapour control layers. This is one of the reasons why the BRE recommends a warm deck roof above swimming pools. Over trapezoidal decking, the side laps should be above the crown of the profile, and the end laps should be supported on flat plates bridging the troughs.

5. **Minimise the number of laps**

Where possible reduce the number of end laps to a minimum by using full rolls of sheeting. The laps should be at least 150mm wide.

6. **Attention to detail**

The vapour control layers must be properly closed, sealed and fully integrated with wall structure, masonry, roof upstands, glazing heads, the roof perimeter and penetrations such as soil and vent pipes. Consider a clamped fixing arrangement which reduces the amount of air leakage. It is important that someone within the design team prepares large scale details of how these closures should be formed, ensuring that the materials will be readily available on site.

7. **Good site practice.**

This is probably the most important factor of all in achieving an effective vapour control layer. It is essential that the site tradesmen are fully aware of the importance of the vapour control layer above warm and humid buildings, especially since their completed work will quickly be covered over as the roof is assembled.

Weather plays an important part, particularly when dealing with lightweight membranes which blow around in the wind. With lap details ensure a butyl tape is used, which can be used in damp and cold climates. Probond would meet this criteria. Finally, any minor scuffs and punctures through a completed vapour control layer must be promptly repaired.
The Importance of Vapour Control

**CONDENSATION RISK ANALYSIS**

The risk of condensation forming within a roof or wall construction can be predicted using the method described in BS 5250. It is usual for this analysis to be undertaken on computer, and this service is provided by the A Proctor Group Tecline.

The starting point is to input the different layers of the construction, adding the thickness (mm), thermal resistivity (mK/W) and vapour resistivity (MNs/m.g) for each material. Next the internal conditions are required, preferably from site measurements. However, if they are not known, then the notional conditions for different building types can be taken from Table 1. The external summer and winter conditions averaged for a 60 day period are normally taken from BS 6229.

The computer software computes the temperatures to the different interfaces of the construction and determines the associated saturated vapour pressure (svp). The cumulative vapour resistance is also computed, and where this is the same as the svp for any interface, then condensation is predicted. This can be plotted graphically as shown in the figure. Where the line meets the svp line, then condensation will occur.

If the analysis does predict condensation it is important to assess the long term risk to the fabric. Will the timber rot? Would the insulation become ineffective? Could condensate drip into the building and stain ceiling tiles?

There are limitations using condensation risk analysis as it is simply a one dimensional steady state model with a number of assumptions. However, the results can highlight the potential risk for a given construction and provide a timely warning.
The Importance of Vapour Control

DIFFERENT TYPES OF MEMBRANE TO CONTROL WATER VAPOUR

The A Proctor Group is unique in that they supply two different “families” of membranes to control water vapour within roof and wall constructions, each serving a different purpose.

The Vapour Control Layer is a continuous membrane laid on the warm side of the insulation to reduce the amount of moist air escaping into the roof or wall construction.

The Breather Membrane allows any moist air within the construction to pass out of the building while offering some weather protection from driving rain and snow.

Table 2

<table>
<thead>
<tr>
<th>Membrane Type</th>
<th>Allows passage of water</th>
<th>Go to page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Water as a liquid</td>
<td>Water as a gas</td>
</tr>
<tr>
<td>Vapour Control Layer</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Breather Membrane</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

TO SUMMARISE, THE KEY POINTS ARE

The vapour control layer must be:
- on the warm side of the insulation
- continuous
- treated with respect
- sealed at all laps
- sealed to and integrated with other elements such as wall heads, glazing heads, glazing upstands and soil and vent pipes.

The breather membrane must be:
- behind the external weathering face
- continuous
- able to shed water out of the building
- of a high moisture vapour permeability

NBS SPECIFICATION

Full NBS Specifications are available on the web site or alternatively contact our Techdesk.
Tel No: 01250 872261
Web: www.proctorgroup.com
# Product Selector

## Vapour Control Layers

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>Procheck Standard 300</th>
<th>Procheck Premier 500</th>
<th>Procheck Premier FR 400</th>
<th>Profoil FS1</th>
<th>Profoil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
<td>850</td>
<td>859</td>
<td>835</td>
<td>862</td>
<td>861</td>
</tr>
<tr>
<td>Reinforced</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Translucent</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminium Foil</td>
<td></td>
<td></td>
<td></td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Corrosion Resistant in chlorine environments</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>UV Stabilised</td>
<td>•</td>
<td>•</td>
<td></td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Fire Resistant</td>
<td></td>
<td></td>
<td></td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

## APPLICATION

- **Low humidity**
- **Moderate humidity**
- **High humidity**

| Page Ref: | 11 | 11 | 12 | 12 | 11 |

*Table 3*
Membrane Information Sheets

Procheck Standard 300
A lightweight reinforced polyethylene vapour control layer for use within roof and wall constructions to prevent warm, moist air escaping from inside the building and condensing within the insulation. The woven polypropylene multifilament scrim reinforcing provides good resistance to tears and punctures.

<table>
<thead>
<tr>
<th>Physical Properties</th>
<th>Test Method</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Weight</td>
<td></td>
<td>152 g/m²</td>
</tr>
<tr>
<td>Nominal Thickness</td>
<td></td>
<td>0.29 mm</td>
</tr>
<tr>
<td>Tensile Strength across the roll</td>
<td>BS 4415 Part 2</td>
<td>3.4 kN/m</td>
</tr>
<tr>
<td>Nail Tear Resistance across the roll</td>
<td>MOAT No: 27 : 5.4.1</td>
<td>60 N</td>
</tr>
<tr>
<td>Water Vapour Resistance</td>
<td>ISO 9932 : 1990</td>
<td>336 MNs/g</td>
</tr>
</tbody>
</table>

Roll Specification:
- Standard Roll Size: 50m x 2.0m
- Weight: 15 kg/roll
- Colour: Translucent
- Product Code: 850

Procheck Premier 500
A strong reinforced polyethylene vapour control layer with good vapour resistance. The woven extruded polypropylene multifilament scrim reinforcing provides improved nail tear resistance. The sheet is translucent to ease the installation and later inspection of support arrangements, and is the grade utilised by many leading system manufacturers.

<table>
<thead>
<tr>
<th>Physical Properties</th>
<th>Test Method</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Weight</td>
<td></td>
<td>236 g/m²</td>
</tr>
<tr>
<td>Nominal Thickness</td>
<td></td>
<td>0.37 mm</td>
</tr>
<tr>
<td>Tensile Strength across the roll</td>
<td>BS 4415 Part 2</td>
<td>6.2 kN/m</td>
</tr>
<tr>
<td>Nail Tear Resistance across the roll</td>
<td>MOAT No: 27 : 5.4.1</td>
<td>180 N</td>
</tr>
<tr>
<td>Water Vapour Resistance</td>
<td>ISO 9932 : 1990</td>
<td>533 MNs/g</td>
</tr>
</tbody>
</table>

Roll Specification:
- Standard Roll Size: 50m x 2.0m
- Weight: 23.6 kg/roll
- Colour: Translucent
- Product Code: 859

Profoil
A heavyweight reinforced vapour control layer with aluminium foil core to give a high water vapour resistance. The woven extruded polypropylene multifilament scrim reinforcement gives good resistance to tears and punctures. The aluminium foil is protected on both faces by polyethylene for corrosive situations, such as chlorine in swimming pools.

<table>
<thead>
<tr>
<th>Physical Properties</th>
<th>Test Method</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Weight</td>
<td></td>
<td>310 g/m²</td>
</tr>
<tr>
<td>Nominal Thickness</td>
<td></td>
<td>0.4 mm</td>
</tr>
<tr>
<td>Tensile Strength across the roll</td>
<td>BS 4415 Part 2</td>
<td>7.3 kN/m</td>
</tr>
<tr>
<td>Nail Tear Resistance across the roll</td>
<td>MOAT No: 27 : 5.4.1</td>
<td>215 N</td>
</tr>
<tr>
<td>Water Vapour Resistance</td>
<td>ISO 9932 : 1990</td>
<td>Greater than 533 MNs/g</td>
</tr>
</tbody>
</table>

Roll Specification:
- Standard Roll Size: 50m x 2.0m
- Weight: 31 kg/roll
- Colour: Blue (top), Reflective Silver (bottom)
- Product Code: 861
**Membrane Information Sheets**

**Profoil FS1**
A heavyweight reinforced vapour control layer with aluminium faces and good fire resistance properties. The multifilament polyester scrim reinforcement gives good resistance to tears and punctures. The exposed aluminium foil on both faces gives a high water vapour resistance and ensures low flame spread characteristics.

<table>
<thead>
<tr>
<th>Physical Properties</th>
<th>Test Method</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Weight</td>
<td></td>
<td>297 g/m²</td>
</tr>
<tr>
<td>Nominal Thickness</td>
<td></td>
<td>0.45 mm</td>
</tr>
<tr>
<td>Tensile Strength along the roll</td>
<td>BS 4415 Part 2</td>
<td>10.5 kN/m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9.3 kN/m</td>
</tr>
<tr>
<td>Nail Tear Resistance</td>
<td>MOAT No: 27 : 5.4.1</td>
<td>150 N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150 N</td>
</tr>
<tr>
<td>Water Vapour Resistance</td>
<td>ISO 9932 : 1990</td>
<td>Greater than 20,600 MNs/g</td>
</tr>
<tr>
<td>Moisture Vapour Transmission Rate</td>
<td>ISO 9932 : 1990</td>
<td>Less than 0.01 g/m²/day</td>
</tr>
</tbody>
</table>

**Roll Specification:**
- Standard Roll Size: 50m x 1.5m
- Weight: 23 kg/roll
- Colour: Reflective Silver
- Product Code: 862

**Procheck FR 400**
A strong reinforced polyethylene vapour control layer with good vapour resistance. The woven polypropylene multifilament scrim reinforcing provides improved nail tear resistance. The addition of fire resisting compounds means that the material will not readily ignite and, although it will melt, will not continue to burn in small fires.

<table>
<thead>
<tr>
<th>Physical Properties</th>
<th>Test Method</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Weight</td>
<td></td>
<td>240 g/m²</td>
</tr>
<tr>
<td>Nominal Thickness</td>
<td></td>
<td>0.37 mm</td>
</tr>
<tr>
<td>Tensile Strength along the roll</td>
<td>BS 4415 Part 2</td>
<td>6.2 kN/m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6.1 kN/m</td>
</tr>
<tr>
<td>Nail Tear Resistance</td>
<td>MOAT No: 27 : 5.4.1</td>
<td>170 N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>160 N</td>
</tr>
<tr>
<td>Water Vapour Resistance</td>
<td>ISO 9932 : 1990</td>
<td>428 MNs/g</td>
</tr>
<tr>
<td>Moisture Vapour Transmission Rate</td>
<td>ISO 9932 : 1990</td>
<td>0.48 g/m²/day</td>
</tr>
<tr>
<td>Fire Resistance to Spread of Flame</td>
<td>DIN 4102</td>
<td>B2</td>
</tr>
</tbody>
</table>

**Roll Specification:**
- Standard Roll Size: 50m x 2.0m
- Weight: 24 kg/roll
- Colour: Opaque
- Product Code: 835

**Cladshield**
A single layer spun bonded polypropylene breather membrane designed for use primarily in lightweight industrial cladding systems. During site construction Cladshield is satisfactory if left open in fair weather prior to covering, but it cannot be regarded as temporary weather protection against wind driven rain and snow. Cladshield can also be used as a separation layer between some types of insulation and single ply membranes.

<table>
<thead>
<tr>
<th>Physical Properties</th>
<th>Test Method</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Weight</td>
<td></td>
<td>100 g/m²</td>
</tr>
<tr>
<td>Nominal Thickness</td>
<td></td>
<td>0.5 mm</td>
</tr>
<tr>
<td>Tensile Strength: 56 days aged @ 60°C along the roll</td>
<td>BS 2782:320A</td>
<td>6.0 kN/m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.0 kN/m</td>
</tr>
<tr>
<td>Nail Tear Resistance</td>
<td>MOAT No: 27 : 5.4.1</td>
<td>110 N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>90 N</td>
</tr>
<tr>
<td>Burst Strength, wet/dry</td>
<td>BS 3137</td>
<td>500 kN/m²</td>
</tr>
<tr>
<td>Water Vapour Resistance</td>
<td>BS 3177</td>
<td>0.17 MNs/g</td>
</tr>
<tr>
<td>Moisture Vapour Permeability</td>
<td>BS 3177</td>
<td>1100 g/m²/day</td>
</tr>
<tr>
<td>Resistance to Water Penetration (Eosin Test)</td>
<td>BS 4016</td>
<td>Pass</td>
</tr>
<tr>
<td>Fire Resistance to Spread of Flame</td>
<td>DIN 4102</td>
<td>B2</td>
</tr>
</tbody>
</table>

**Roll Specification:**
- Standard Roll Size: 100m x 1.6m 100m x 3.0m
- Weight: 16 kg/roll, 30 kg/roll,
- Colour: Grey
Details and Installation

INSTALLATION OF VAPOUR CONTROL LAYERS

Delivery and Site Handling

Rolls of vapour control layers are delivered to site with tape identifying the product grade or membrane, or overprinted, clearly identifying product name and grade. Rolls should be stored flat or upright on a clean, level surface and kept under cover.

Weather Conditions

Laying lightweight membranes in high wind conditions is difficult and appropriate precautions should be taken during installation.

Preparation of the Base

Before installing the vapour control layer ensure that the surfaces to be covered are firmly fixed, clean, dry and smooth.

Laps

Lay the vapour control layer loose, flat and without wrinkles. Laps should be preferably sealed with two continuous runs of 15mm wide Probond RG tape. (see photo above) The minimum width of a lap should be 150mm. Adhesive PVC should not be used for sealing and jointing laps in vapour control layers.

Puncture Damage

Where puncture damage is unavoidable, apply good sized patches over the puncture, ensuring that there is a continuous bead of tape all the way around the hole. For small scuff type damage of less than 25mm as an alternative Profoil Tape may be used.

Details

Attention to detail is important. The vapour control layer needs to be continuous and particular care is required sealing around penetrations and at the perimeters where roofs and walls meet.
Details and Installation

INSTALLATION OF BREATHER MEMBRANES

Delivery and Site Handling

Rolls of breather membrane are delivered to site, individually wrapped in a polythene sleeve. The sleeve has an identification tape with Product Name and Supplier Information.

Rolls may be stored flat or upright on a clean, level surface and kept under cover.

Metal roofs

For sheet roof applications, the breather membrane should be laid either horizontally or vertically up the slope such that it forms a continuous membrane over the entire area of the roof, allowing any water to drain down to the gutters.

On a low pitch metal roof, the draping of the breather membrane between purlins can result in ponding which is unsatisfactory and should be avoided. It is preferable for the breather membrane to be fully supported to give a clear drainage path. If this is not practical on low slope roofs then the laps should be taped using Proctor Breather Adhesive Tape to prevent water finding its way down onto the insulation below.

At penetrations, such as vent pipes and rooflights, an additional piece of breather membrane should be laid upslope and taped in position, to channel water away to each side of the opening.

Laying lightweight membranes in high wind conditions is difficult and appropriate precautions should be taken during installation.

Wall Cladding

For vertical Metal Cladding Application the breather Membrane should be installed on the outer side of the insulation. The membrane is usually installed vertically with laps of 100mm minimum as work progresses.

Detailing of the membrane is important to ensure that the building is temporarily protected from rain during installation and that condensation will drain away once the external sheeting has been applied.

Details

Attention to detail is important. Avoid blockages where possible that would otherwise prevent the free drainage of water. A preferred specification is the use of an eaves carrier.
BUILT UP METAL ROOF/ METAL SIDE CLADDING

Key point to watch:
Ensure Vapour Control Layer is continuous and all laps and penetrations are sealed effectively

Key point to watch:
The lap between the vapour control layers should be sealed with two continuous runs of 15mm wide Probond Tape.

Key points to watch:
1. The vapour control layer in the wall needs to be effectively sealed to the vapour control layer in the roof.
2. The roof breather membrane drains freely into the gutter.

Key point to watch:
1. Ensure the Vapour Control Layer is fully sealed to the Top Hat with Probond Tape. Also ensure the Top Hat is sealed to the pipe using a suitable sealant.
2. Ensure Breather membrane is turned up around pipe to prevent condensate draining into roof void.