Proctor Air®

THE AIR & VAPOUR PERMEABLE PITCHED ROOF UNDERLAY

Proctor Air®
Roofing simplified

Proctor Group

Contents
Proctor Air

Revised: October 2025
Version: 1.013
Next review due: October 2026

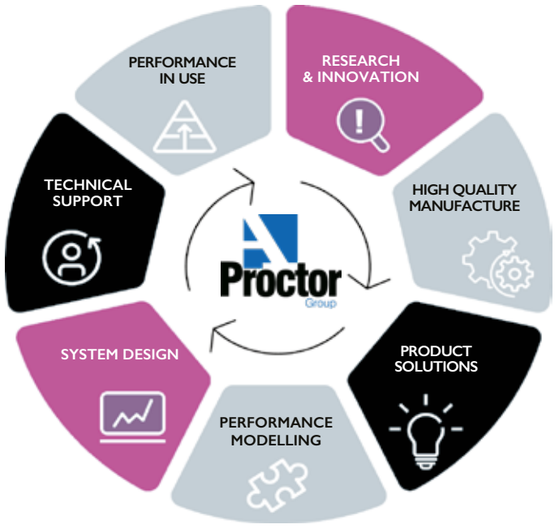
A. Proctor Group

Experts in membrane systems

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

The range offers solutions to address the challenges of interstitial condensation, hard to treat solid walls, airtightness, and includes a range of membranes with Class A Reaction to fire in roof and wall structures.

Total Solution Capabilities
From concept to completion



Our products are backed up by a dedicated team of technical experts, able to assist at every project stage from pre-planning to on site. We offer CAD detail reviews, installation guidance, condensation risk analysis, WUFI® calculations, U-Value calculations, ground gas system designs, telephone support & more. Our products also have a range of BIM Objects & Performance Specifications.

Condensation Control

High performing solutions

The A. Proctor Group is at the forefront of the development of vapour permeable membranes, vapour control layers and condensation control solutions for all areas of the building envelope.

Moisture vapour will pass through the various layers of any construction by both convection and diffusion. The objective is to ensure, by design, that the moisture vapour can disperse to the outside atmosphere without being cooled to below dewpoint temperature, thus eliminating condensation and associated problems such as mould growth.

Our range of proven solutions includes Proctor Air.

Condensation Control

Proctor Air

Roofing Design Considerations

Condensation Control and Ventilation

As Building Regulations demand ever-higher thermal efficiency, today's buildings are becoming increasingly airtight. While this is undoubtedly beneficial for building energy performance, architects and contractors must understand the implications for moisture and vapour management when considering roofing membranes.

Condensation control should be considered as part of the design process. Successful control will depend on factors such as prevailing winds, room layout, number of storeys and type of heating system as well as the more usually accepted aspects such as construction, heating, ventilation and moisture production. All these aspects, therefore, should be considered carefully and, as they are interdependent to a greater or lesser degree, they should be considered together.

The fundamental principle in designing to minimize condensation is to maintain a balance of the three factors 1. Thermal and vapour properties of the structure 2. Heat input and 3. Ventilation to achieve either low vapour pressure and/or high structural temperature.

The building fabric, typical weather conditions and anticipated occupancy patterns and uses will all interact to define the moisture risks associated with the construction. These "ground rules" form the basis of a good hygrothermal design strategy.

Once an understanding of the building, weather and occupancy are achieved, the designer can then focus on ensuring the heat, air and moisture movement within the structure is properly balanced. This ensures both a healthy environment for the occupants of the building and long life for the building.

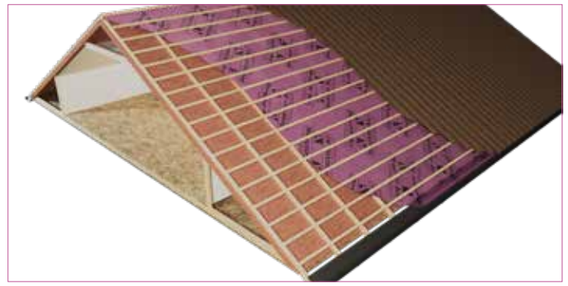
The Need for Breather Membranes

Since their introduction in the late 1980s, "breather membranes" have become an important part of the construction industry landscape, however, the term itself is widely misunderstood. "Breather membrane" relates to membranes used in timber frame walls, with a vapour resistance of Sd 0.12m (0.6MNs/g) or less, while for those membranes used on roofs, the term "vapour permeable underlay" is more appropriate, these membranes must have a vapour resistance of Sd 0.05m (0.25MNs/g) or lower. It can be argued that higher performance, air-permeable membranes such as Proctor Air, are "breathable" in the truest sense.

All activities within a building, from initial construction and wet trades, to cooking and washing, generate substantial amounts of water vapour, which must be managed successfully to ensure the longevity of the building fabric and a healthy indoor environment. The vapour permeable structure used in these membranes allows this to be achieved without compromising temporary weather protection during construction or requiring complex and expensive passive or active ventilation systems and accessories.

Non-Ventilated Warm Roof Construction

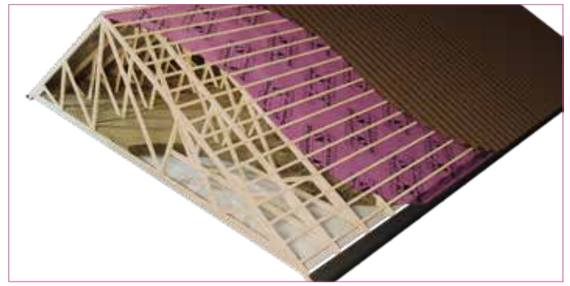
A "warm roof " is a roof construction where the insulation layer is placed either over or between the rafters, and follows the pitch of the roof from eaves to ridge. This configuration keeps the roof structure within the heated envelope of the building and allows spaces within the roof to be used as habitable spaces, or easily converted at a later date. Warm roofs are typically insulated using rigid boards, and the underlay may be installed either fully supported, or draped, depending on the location of the insulation.



Warm Roof Construction

Non-Ventilated Cold Roof Construction

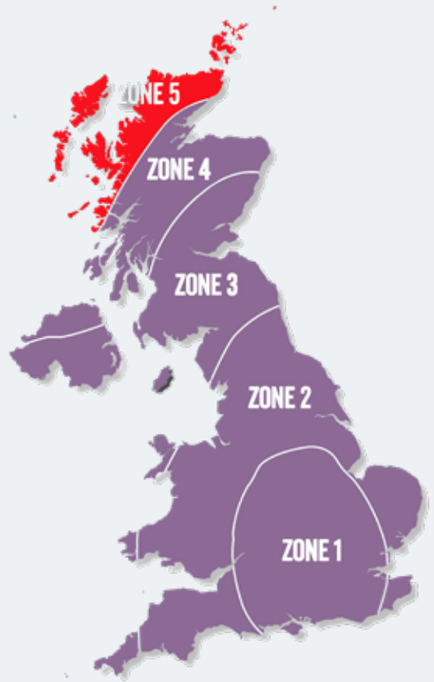
In a cold pitched roof construction, the insulation is placed horizontally at ceiling level, running from eaves to eaves, leaving the loft and roof structure above the heated envelope of the building. Traditionally, this cold loft space would require ventilation, but this can be impractical for some roof configurations, and avoiding such ventilation has long been desirable.



Cold Roof Construction

Wind Uplift Resistance

Batten Gauge	Declared wind uplift resistance Pa (N/m^2)	Accessories	Zone Suitability
≤345mm	1559.4	NONE	1 - 4
	3036.7	WRAPTITE TAPE	1-5
≤250mm	>3000	NONE	1 - 5



NO TAPE REQUIRED IN ZONES 1-4

Typical Roof Constructions

Cold Roof Slate Sarking Detail

1. Slate
2. Proctor Air
3. Timber sarking / Board
4. Rafter

Cold Roof Tile Detail

1. Tile
2. Batten
3. Proctor Air (draped)
4. Rafter

Metal Roof Profile Detail

1. Metal Cladding
2. Ventilation air space
3. Proctor Air
4. Insulation
5. Vapour Control Layer
6. Metal Lining

Warm Roof Slate Sarking Detail

1. Slate
2. Proctor Air
3. Timber sarking / Board
4. Insulation
5. Rafter

Warm Roof Tile Detail

1. Tile
2. Batten
3. Counter batten
4. Proctor Air
5. Insulation
6. Rafter

Warm Roof Tile Alternate Detail

1. Tile
2. Batten
3. Proctor Air (draped)
4. Counter batten
5. Insulation
6. Rafter

Warm Roof Tile with OSB Detail

1. Tile
2. Batten
3. Counter batten
4. Proctor Air
5. OSB
6. Insulation
7. Rafter

Warm Roof Tile with OSB Alternate Detail

1. Tile
2. Batten
3. Proctor Air (draped)
4. Counter batten
5. OSB
6. Insulation
7. Rafter

Standards & Building Regulations

With the increased spotlight and focus on building regulations and the suitability of materials specified for use within building construction, the correct selection and application of materials are at their most critical. The key guidance on meeting the requirements of Building Regulations for England, Ireland and Wales, and Building Standards (Scotland) relating to ventilation, thermal efficiency, moisture and condensation control is outlined within the Approved Documents and Technical Standards below.

For specific advice on any of these please contact our technical support on 01250 872261.

Building Regulations

- Approved Document C Site Preparation and Resistance to Contaminants and Moisture 2013
- Technical Guidance Document C Site Preparation and Resistance to Moisture (Ireland 1997) Amendments 2020
- Building Standards Section 3 Environment (Scotland 2020)
- Approved Document L - Conservation of Fuel & Power (2021 incorporating 2023 amendments)
- Technical Guidance Document L - Conservation of Fuel and Energy (Ireland 2022)
- Building Standards Section 6 Energy (Scotland 2020)
- Approved Document B Fire Safety
- Approved Document F Means of Ventilation (England & Wales)
- Technical Guidance Document F - Ventilation (Ireland 2019)

Product & Performance Standards

- BS 5250: 2021 - Management of Moisture in Buildings. Code of Practice
- BS EN 15026:2007 Hygrothermal Performance of Building Components and Building Elements
- BS EN ISO 13788:2012 Hygrothermal performance of Building Components and Building Elements. Internal surface temperature to avoid critical surface humidity and interstitial condensation - Calculation methods.

Standards & Building Regulations

NFRC Technical Bulletin 6

Released by the National Federation of Roofing Contractors in 2012, Technical Bulletin 6 outlines best practice for roof system installers. TB6 aligns itself with the NHBC technical standards by recommending high-level ventilation where airtight type LR underlays are used. As with the NHBC standard, however, it is recognised that this provision is unnecessary where the underlay is both vapour and air permeable, therefore Proctor Air is exempt from this recommendation.

Proctor Air - Air & Vapour Permeable Pitched Roof Underlay

Proctor Air

Why Proctor Air?

Proctor Air is an air permeable low resistance (APLR) underlay for pitched roof applications.

While the majority of APLRs in use today utilise an airtight, vapour permeable, film layer to achieve their performance, Proctor Airs' SMS (Spunbond Meltblown Spunbond) structure allows high levels of airflow in addition to the transport of moisture vapour, making the formation of condensation virtually impossible.

Independent studies of the effect of air permeability have confirmed that lofts using air permeable underlays have more consistent air-flow through the roof than those found in traditionally ventilated lofts, according to BS5250, so whatever side of the vents/no vents debate you sit on, Proctor Air has it covered.

Its heavyweight 170gsm three-layer structure also containing a hydrophobic in every layer, gives a Class W1 rating under the latest EN13859-1 specifications.

15 YEAR WARRANTY

Proctor Air - Key Features

VAPOUR PERMEABLE
Proctor Air has an Sd-value of 0.015m and a vapour resistance of 0.075 MNs/g, making Proctor Air one of the highest performing vapour-permeable membranes on the market.

FULLY AIR PERMEABLE
Air permeable membranes allow air movement through the roof, as well as allowing moisture to escape by diffusion. This means that condensation is far less likely to form on the membrane itself, and also allows the membrane to deal with much higher moisture levels within the building, for example during the drying out period.

HIGHLY WATER RESISTANT
Proctor Air is rated W1 under EN13859-1, and has a hydrophobic additive in all 3 layers. The membrane can be left exposed to provide temporary weather protection to the building envelope for up to three months (see FAQs, page14-15). Proctor Air has a Hydrostatic Head of water of over 1m as recommended by NFRC Technical Bulletin 6. It is good practice not to leave the underlay exposed longer than necessary.

WIND UPLIFT RESISTANCE COMPLIES WITH BS5534
Based on fully independent 3rd party testing, Proctor Air can be utilised across the UK. This, in addition to no requirement for high level ventilation or the use of a vapour control layer, ensures Proctor Air remains the simplest and most cost effective method of achieving regulation compliance.

MORE UNIFORM AIRFLOW THAN VENTS
The air permeability of Proctor Air means a non-ventilated roof fitted with Proctor Air allows a more consistent air flow through the roof than a roof ventilated as per BS5250, without expensive and time consuming ventilation hardware fitted to the roof.

BBA CERTIFICATE 24/7147
Proctor Air is fully BBA certified for use in non-ventilated warm or cold roof applications.

SOLAR / PV PANELS
A unique feature of Proctor Air's BBA certificate is the clarification that it can be used on roofs featuring solar PV. Consideration may be required with regards to specific installation criteria for the PV assembly being used. In line PV assemblies can be used, without any additional ventilation or counter battens, when installed with a minimum of two tile zones around the perimeter of the PV Assembly. Alternatively, at the ridge, the two tile zone can be replaced with a dry ridge system above the PV Panel. PV assemblies mounted above the slates or tiles do not require any additional consideration.

NO VCL REQUIRED
Installing Proctor Air will mean that a vapour control layer is not required for non-ventilated cold pitched roof constructions.

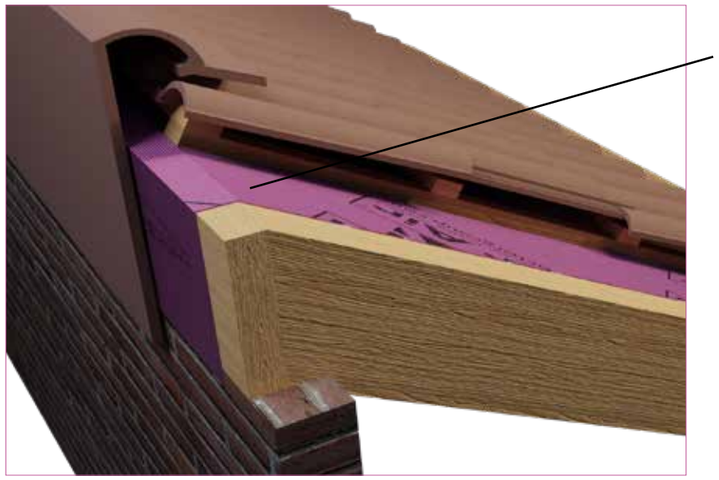
15 YEAR WARRANTY
Proctor Air's 15-year warranty provides peace of mind on any project.

ENERGY EFFICIENCY
Energy Loss by ventilation in conventionally ventilated cold roofs will be significantly reduced by the non-vented system.

Proctor Air Details

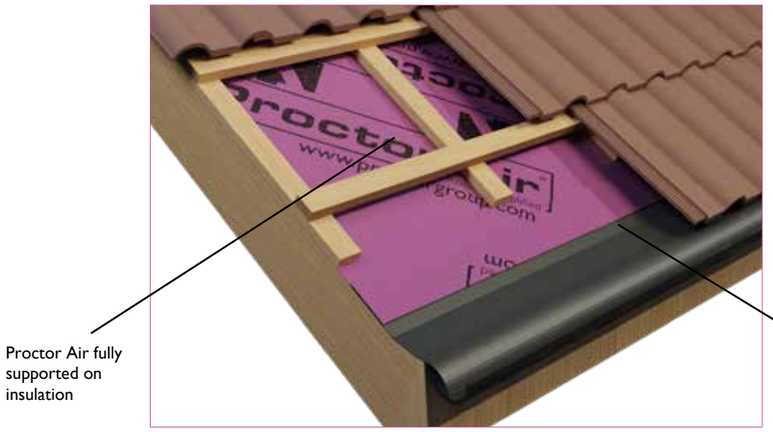
DUOPITCH RIDGE DETAIL

MONOPITCH RIDGE DETAIL



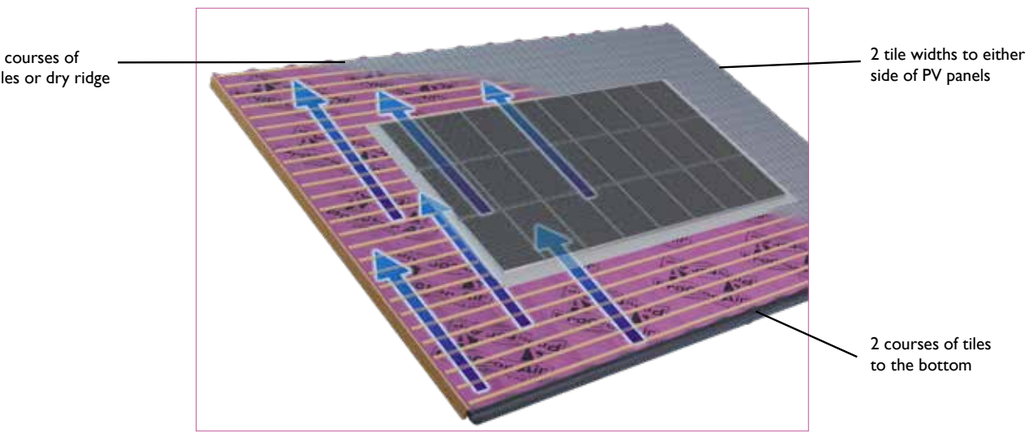
Proctor Air Details

EAVES DETAIL



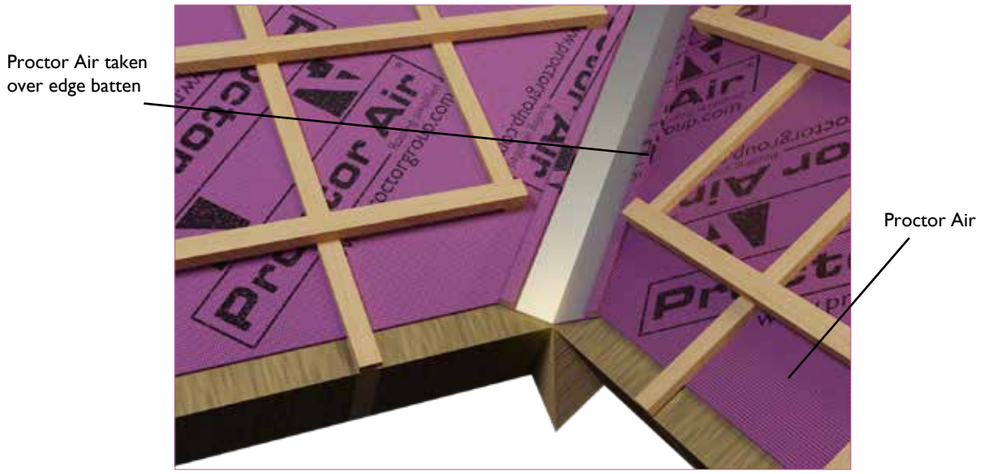
VERGE-ABUTMENT DETAIL

SOLAR / PV DETAIL

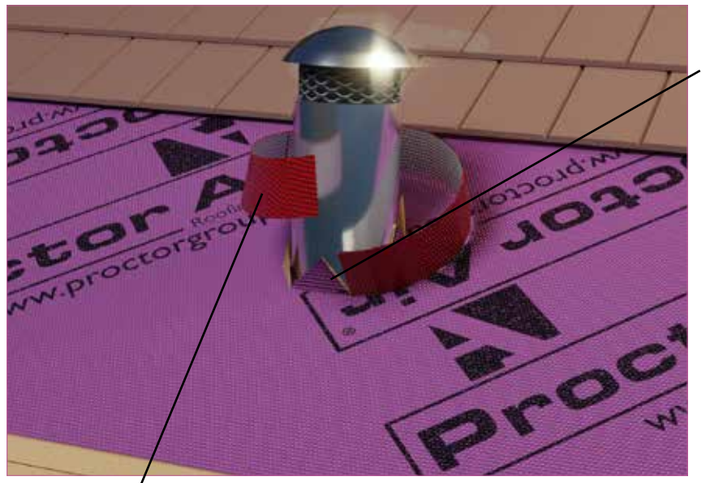


Proctor Air Details

VALLEY DETAIL



PIPE DETAIL



Proctor Air - Physical Properties

Property		Test Method	Mean Results	
		BS EN 13859-1:2010		
Standard Roll Size			1m x 50m & 1.5m x 50m	
Mass per unit area		EN 1849-2	170g/m^2	
Reaction to Fire		EN 13501-1 (EN 11925-2)	Class E	
Water vapour resistance Sd		EN ISO 12572	0.015m	
Vapour resistance		EN ISO 12572	0.075 MNs/g	
Air permeability (Average)		EN 12114	35 m^3/m^2.h.50Pa	
Water penetration		EN 1928	Class W1	
Hydrostatic Head of Water		ISO 811	>1m	
Tensile Strength	Before ageing After ageing	EN 12311-1	MD 330 N/50mm MD 280 N/50mm	CD 270 N/50mm CD 225 N/50mm
Elongation	Before ageing After ageing	EN 12311-1	MD 56% MD 39%	CD 68% CD 48%
Tear resistance		EN 12310-1	MD 188N	CD 172N
Mullen Burst Strength	Upper face Lower face	BS 3137:1972	1124 kPa 1115 kPa	
Slip Resistance	Dry Wet	BBA Internal Test	MD 78 MD 64	CD 79 CD 68

Proctor Air® Warranty
Specify Responsibly

BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE 24/7147

CE

UK CA

MAR MASTER ROOFING

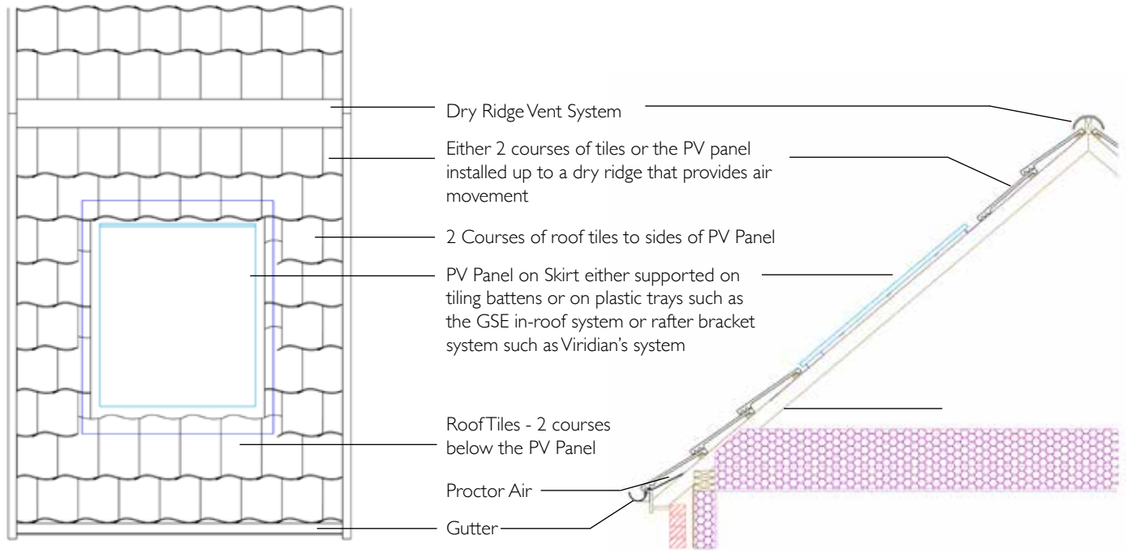
CONFEDERATION OF ROOFING CONTRACTORS APPROVED MEMBER

5 PP

Polypropylene is recyclable. Mechanical recycling is the primary option, depending of the requirements of the application and the intended article specification. It can also be valorised for energy recovery, its high calorific value is around 44 MJ/kg.

Polyolefins are neither biodegradable nor compostable.

Proctor Air and the use of PV Panels



The BBA includes the use of photovoltaic panels. This is the only certificate which mentions PV panels and how they can be used without additional ventilation. Where in line PV panels are to be installed on pitched roofs with Proctor Air, vapour and air permeable underlay, there is no requirement for ventilation in the loft space below the underlay or in the batten cavity above the underlay. This is assuming:

- Proctor Air is installed which has an air permeability of no less than 35 m^3/m^2.h.50 Pa
- To ensure adequate air flow below the PV panel, there must be a minimum of 2 courses of tiles below the PV panel. Above the PV panel can be either 2 courses of tiles or the PV panel installed up to a dry ridge that provides air movement.
- The above assumes a tile assembly that would not be classed as airtight i.e. If the Tiles are tested as per BS 5534, Annex L. If the pressure drop coefficient, K, measured at a pressure difference of 2 N/m^2, is less than 25000 the roof covering will allow sufficient air movement without additional vents.
- There should be a minimum of 2 tiles (around 600mm) to either side of the PV panel to ensure adequate air flow.
- The underlay should be sufficiently draped below the tile battens as per BS 5534, alternatively, a plastic tray such as GSE integrated solar mounting tray or a fixing system such as the Viridian rafter/ batten bracket system.

Proctor Air - Technical Support

Our products are backed up by a dedicated team of technical experts, able to assist at every project stage from pre-planning to on site. We offer CAD detail reviews, installation guidance, condensation risk analysis, WUFI calculations, U-Value calculations, ground gas system designs, telephone support & more. Our products also have a range of BIM Objects & Performance Specifications.

Customer Focused

- Online Technical Advice
- Members Area / Onsite App
- WUFI & U-Value Calculations
- Condensation Risk Analysis
- CAD Design
- Site Advice
- CPD Presentations
- Accreditations

Expertise and know-how to support your project

CONDENSATION RISK ANALYSIS

Condensation can significantly reduce the effectiveness of insulation, and result in damage to the building fabric.
A Condensation Risk Analysis evaluates the likelihood of interstitial condensation in your roof or wall construction. These calculations are regularly required by building control to demonstrate compliance with building regulation requirements. Calculations are performed free of charge when using our products. Online U-Value calculator & condensation risk analysis software available to use.

BIM DATA

Available through NBS Chorus and NBS Source, specifiers can now access a full suite of digital products and technical specifications for many of our product solutions. The collaboration with NBS provides architects and designers with a comprehensive technical specification writing service. In addition, specifiers have easy access to the manufacturer's specification data, BIM objects, literature and third-party certifications.

PRODUCT DIVISIONS

We provide a wide range of high quality, innovative solutions which are manufactured to meet the continuously evolving requirements of the construction industry.

Product divisions include:

- Condensation Control
- Acoustics Floor Solutions
- External Airtight Barriers
- Ground Gas Protection
- Thermal Solutions

Get in touch for more information
www.proctorgroup.com | +44 (0) 1250 872261
contact@proctorgroup.com

Frequently Asked Questions

How "Breathable" is Proctor Air?

While "Breathability" is a commonly used term, it is more technically accurate to refer to a material's "vapour permeability". As Proctor Air is air permeable as well as vapour permeable, it can certainly be argued that it does breathe, as it allows air movement, but this does not hold true for all "breathable" materials. In terms of vapour permeability, Proctor Air, with an Sd-value 0.015m and a vapour resistance of 0.075MNs/g, is one of the most vapour permeable membranes on the market, as well as benefitting from the additional advantage of air permeability.

What difference does air permeability make?

Proctor Air, in addition to having one of the lowest vapour resistance available, is also air permeable. Industry research concluded that air permeability, combined with very low vapour resistance, inhibits the formation of condensation in a pitched roof to the point where it's virtually impossible for condensation to occur under normal conditions.

Studies conducted by the BRE and Glasgow Caledonian University have concluded that not only does an air permeable roofing underlay outperform conventional airtight underlays, but may provide a higher air change rate than a roof ventilated according to the recommendations in BS5250.

Does Proctor Air suffer from "tenting"?

As anyone who's slept in a cheap tent can tell you, some vapour permeable fabrics can lose their water resistance if anything happens to touch the underside. Where the use of underlays fully supported on timber sarking board is standard practice, ensuring Proctor Air does not suffer from this effect was always an important consideration for the A. Proctor Group. In fact while the first generation of VPUs suffered from this problem, most modern roof underlays are unaffected by this phenomenon.

So vents aren't required?

The A. Proctor Group have undergone extensive testing to prove that ventilation is not required to the underside of the underlay.

The sole remaining situation where ventilation to the roofspace is required is in a cold roof with Plywood or OSB sarking. If in doubt, our team of technical experts can assist specifiers in achieving the most appropriate solution for their specific project.

Frequently Asked Questions

How about high level vents?

Although non-ventilated roofs have been specified successfully for many years, recently BS5250, the NHBC technical standards and NFRC Technical Bulletin 6 have recommended that ridge only ventilation equivalent to 5mm per metre is used when vapour permeable underlays are specified. In both cases, the exception to this is where the underlay specified is both vapour AND air permeable.

Does Proctor Air "chatter" in the wind?

Wind blowing up into the eaves of a roof can cause a 'chatter' type noise with some types of underlay. Proctor Air is silent in such situations. As Proctor Air does not suffer from this problem, the membrane does not have to be pulled taut and does not have any special fixing instructions compared to that of some underlays. Counterbattens can be provided to increase the air movement when used with close-fitting slates or tiles, or to provide drainage below the tile battens when used fully supported, but otherwise Proctor Air may simply be draped between the rafters as normal.

Can I use Proctor Air with timber treatments?

All three layers of the Proctor Air underlay have additives to increase the water hold out of the membrane. Timber treatments containing fungicides, insecticides and wood preservatives are extensively used in the building trade to protect rafters, sarking boards and tile battens. Treatments should be dry before installing Proctor Air.

What is the "drying out period"?

This is the period immediately after the building is completed, during which there are significantly higher amounts of moisture within the building. These include moisture in damp timber, from wet trades (concrete, plaster etc) and moisture that may have found its way in, prior to the building shell being wind and watertight. Although this moisture will eventually dry out, condensation is more likely to occur as it does so. This will usually be most apparent in the first winter when the building is heated. Proctor Air roofs are far less prone to this effect. See BBA Bulletin No1 - Roof Tile Underlay in Cold Roofs during the Drying Out Period.

Frequently Asked Questions

Is Proctor Air expensive?

In terms of the cost per roll, Proctor Air is more expensive than a traditional non-breathable felt, however if we consider the costs associated with ventilation hardware using Proctor Air will save you money. Desktop studies of installation costs show that Proctor Air can offer savings when compared with either impermeable felt and full ventilation, or a lower specification VPU with high level ventilation only. The full cost report is available for download at www.proctorgroup. com.

What about severe weather conditions?

The British Board of Agrement has also issued an Information Bulletin (No. 2) relating to good site practice when using permeable roof underlays. This highlights:-

- An underlay is not a total waterproof barrier and if used as a temporary waterproof covering then rain penetration may occur
- In certain conditions, particularly if there is heavy rainfall combined with subsequent severe freeze/thaw conditions, an underlay should not be exposed for more than a few days.

BS 5534

APLR underlays should always be considered as water resistant membranes, based on their function as secondary protection below slates or tiles.

As per section 4.9 Roofing Underlay and Clause 4.9.1 e) 'provide temporary weather protection before the installation of the primary roof covering. An exposed underlay is subjected to UV light which might lead to premature failure; therefore, the exposure periods should be kept to a minimum. In certain conditions, particularly if there is persistent heavy rainfall combined with subsequent sever freeze/thaw conditions, an underlay should not be exposed for more than a few days.

Note 2: *If an underlay has to be left without a roof covering for a period of time when adverse weather rainfall and weather is expected, a tarpaulin or similar protective sheeting may be used to protect the underlay until such time that the roof covering can be completed.'*

A full copy of this BBA Information Bulletin No.2 - Permeable Roof Tile Underlay Guide to Good Site Practice is available from the BBA web site: www.bbacerts.co.uk.

Why is the NHBC Standards statement different between the two Product Sheets?

Product Sheet 1 – which is for Non-Ventilated Cold Pitched Roofs – states that with Proctor Air, it "*can satisfy the relevant requirements of Chapter 7.2 without the need for additional high-level ventilation.*"

However, you will see on Product Sheet 2 – Warm Non-Ventilated Roofs and Cold Ventilated Roofs – that the statement does not specifically include "without additional high level ventilation". High Level ventilation is a typical NHBC requirement for ventilated cold pitched roofs which would also be ventilated at eaves level. This does not apply to non-ventilated warm roofs, therefore the statement is slightly different depending on application.

Can Proctor Air be used in all Wind Zones?

Yes. Proctor Air is one of the very few membranes which are suitable for use in Wind Zones 1-4 **without the requirement for additional measures** such as taping the joints or additional battens. This will be required in Zone 5, however it would be more typical in Zone 5 for slates to be used with sarking. As the membrane is fully supported in this case, wind uplift is not an issue.

Although Ireland is not covered by the BBA certificate, the following wind zones for Ireland shows that Proctor Air is compliant for all areas as well as the maximum being Zone 4.

Frequently Asked Questions

Mullen Burst Strength – What is this?

Mullen Burst strengths are now also being added into certificates and is a measure of how robust membranes are during the construction phase.

We have an excellent result for Proctor Air. This helps during the construction phase and will 'resist the loads associated with the installation of the roof'.

Water Resistance

Proctor Air has a confirmed classification of W1.

The BBA also states that the Hydrostatic Head is a pass and is greater than 1m. This is not quoted in all certificates and is a good indication of water hold out and compliance with NFRC Technical Bulletin 6, which is referred to in BS5534.

How is the air permeability stated?

The BBA confirms the air permeability as being 20m^3/m^2.h @50 Pa and is confirmed as a PASS. It says greater than or equal to 20, as this is the minimum requirement to be able to claim a membrane as being air permeable under BS 5534.

We have carried out extensive testing and from this, declare a nominal value of 35m^3/m^2.h@50Pa which complies with NHBC requirements.

What does the Slip Resistance mean?

This is a newer addition to BBA certificates where they have assessed the slip resistance of the underlays. This is not part of the harmonised standards but are included to ensure health and safety of operatives. The figures for Proctor Air are higher compared to similar membranes, with the statement in clause 4.1.2 that Proctor Air **'has a high coefficient of friction, giving a slip resistance surface for increased safety during the installation of the covering'.**

Note- Normal safe roofing practices still should be observed.

Is a VCL required?

No – Clause 9.1.8 of BBA certificate 24/7417 confirms that a vapour control layer is not required in a cold roof application.

Note – in a warm roof construction, you do need to use either a high resistance insulation/thermal laminate or a vapour check, this could be vapour check plasterboard. In most cases foam insulation, i.e. PIR, will be used which means no VCL is required.

Can PV panels be used with Proctor Air?

Yes. The BBA includes the use of photovoltaic panels. This is the only certificate which mentions PV panels and how they can be used without additional ventilation.

" 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

www.proctorgroup.com | +44 (0) 1250 872261
contact@proctorgroup.com