Modular & Offsite Solutions

SPECIALIST MEMBRANE SOLUTIONS
FOR CONSTRUCTION INCLUDING STEEL,
CONCRETE, CLT, SIPS & TIMBER

System Solution Providers

Proctor Group

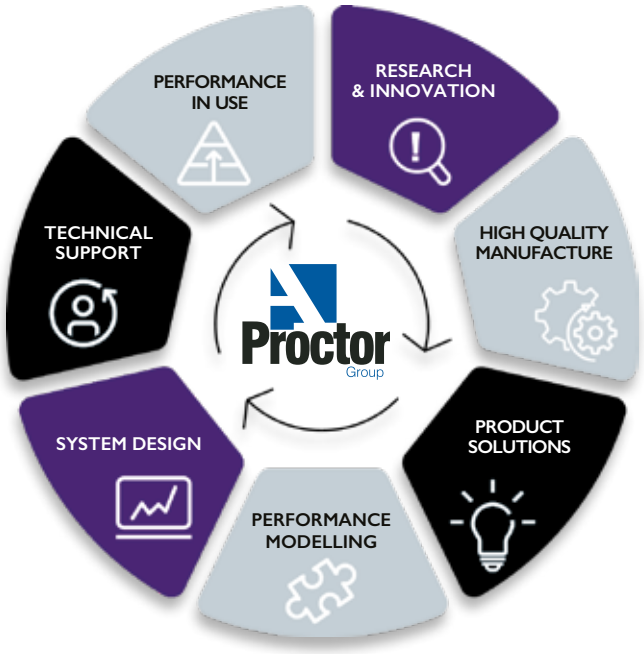
A. Proctor Group

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. A trusted brand with architects, developers and contractors, the range includes the industry's highest performing solutions such as Wraptite, an external air barrier solving the challenge of reliably achieving airtightness in buildings.

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.

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Revised: July 2025 Version: 1.025 Next review due: July 2026

Design for Manufacture and Assembly (DfMA)

**Design for Manufacture and Assembly (DfMA) is a design approach which combines the best of two key methodologies, Design for Manufacture and Design for Assembly.
The application of DfMA is ideally suited towards offsite modular construction, with its focus on ease and efficiency of both manufacture and assembly.**

The A. Proctor Group Ltd has been providing solutions to the construction industry for over 50 years, including an extensive range of high-performance vapour permeable membranes, vapour control layers and products suitable for modular and off-site construction.





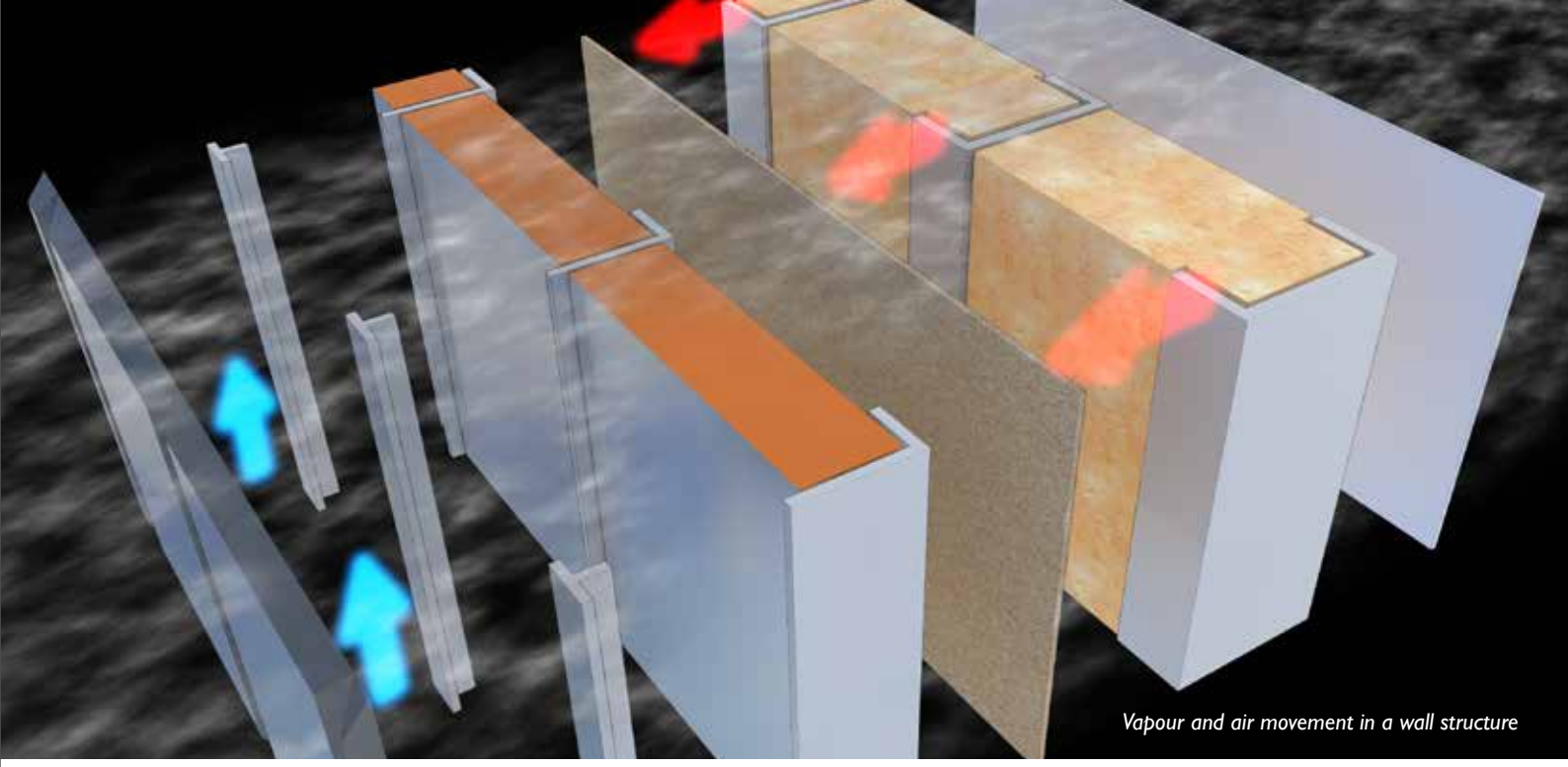

The A. Proctor Group range includes off-site solutions for the following sectors:

- Private and social/affordable housing
- Purpose built student accommodation
- Self-build projects
- Hotels
- Education and office buildings
- Healthcare including hospitals, health centres and healthcare facilities

Design Considerations

Designers and manufacturers of offsite modular buildings using best practice building design will consider the following key aspects:

- The importance of Heat, Air & Moisture Management (HAMM) in offsite building manufacture
- Building Regulations
- Modelling & Analysis
- External vs Internal Air & Vapour Control
- Fixing Options for Air & Vapour Control
- Guaranteeing Protection Factory to Site



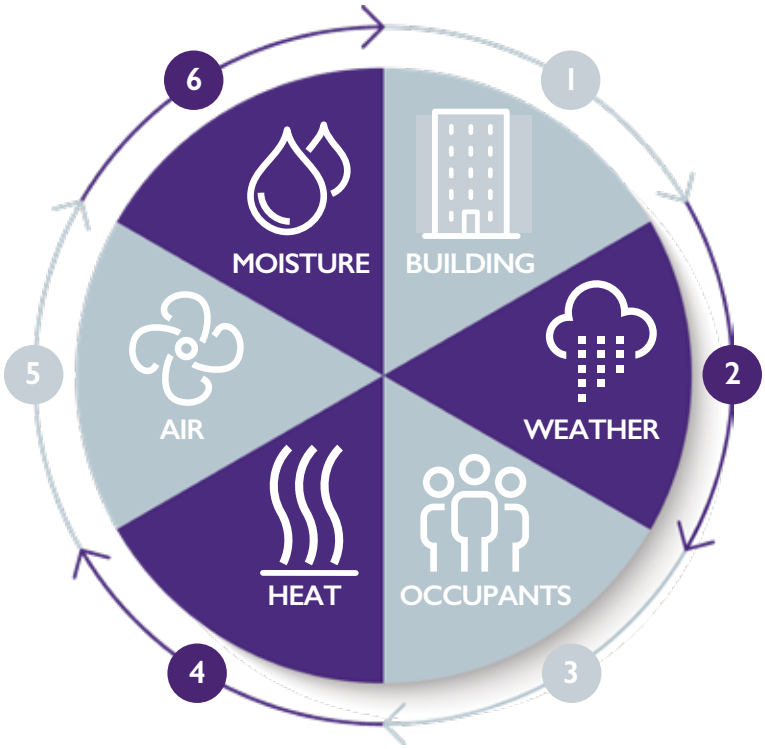
Vapour and air movement in a wall structure

Heat, Air & Moisture Management (HAMM) in offsite building manufacture

Based upon over 50 years of providing solutions and products for the construction sector we understand that a totally holistic approach is required to building design. This is equally essential in the design, manufacture, assembly and construction of offsite modular buildings.

In doing so, we consider six core aspects in the process:

- Building
- Weather
- Occupants
- Heat
- Air
- Moisture



For any building to be an energy efficient, healthy, moisture free building envelope there is a clear need to manage the balance of Heat, Air and Moisture movement throughout the process of the building's life cycle from design, construction, completion and use.

Understanding the importance of these key elements upon the building envelope is crucial to the successful design, construction and operation of a building.

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 airtightness, energy efficiency, moisture and condensation control as well as fire safety are 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 2023)
- 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 2023)
- 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

Amendment to Approved Document B: December 2022

Guidance on how external walls can meet the Building Regulations requirement for resisting fire spread is set out in Approved Document B. Following the Independent Review of Building Regulations and Fire Safety, and subsequent Interim Report by Dame Judith Hackitt, the Government introduced an amendment to Approved Document B: Fire Safety. This has a significant impact on the design and construction of relevant buildings and those over 11m/18m. Published in November 2018, the new regulations came into force on 21 December 2018, and was updated in December 2022.

Use of membranes as part of the external wall construction.
It is important to note that with specific reference to membranes the Regulation provides an exemption and further clarification is found within Regulation 7, as stated below:

- 10.21 Particular attention is drawn to the following points: a. Membranes used as part of the external wall construction should achieve a minimum classification of European Class B-s3, d0.

In summary, the amendment stipulates significant changes to which membranes can now be used and limits these to a minimum rating of Class B,s3,d0.

Modelling & Analysis

Energy Performance

Calculating the heat flows and energy performance can be achieved by using a variety of modelling tools such as U value, SAP and SBEM calculation to more sophisticated BIM models. These models can account for insulation levels, complex life cycle assessments, and allow for optimisation of the building's design.

Condensation Risk

Key guidance on assessment methods in relation to the risk of condensation in buildings is given within BS EN ISO 13788:2012. Traditionally, methods of assessment have been based on the Glaser method – a standard static interstitial moisture calculation based on average monthly temperatures, vapour pressure and steady state conduction of heat to determine if critical condensation points are reached within one year.

BS5250 (Management of Moisture in Buildings - Code of Practice) has been amended to specify the conditions when the traditional simplified Glaser modelling is not appropriate, and when more sophisticated modelling to BS EN 15026 is needed.

Hygrothermal assessment is based upon the analysis of heat; vapour and moisture transfer through the elements of a building. The data provided by this method provides an accurate measure to the temperature, relative humidity and water content within the elements of a building measured over a specified time period.

The use of hygrothermal assessment employs sophisticated computer modelling to simulate the interactions between building envelopes, building services and the use of buildings. Hygrothermal analysis will consider different climatic conditions and realistically evaluate the potential moisture levels in building components, identifying weaknesses, and thus enabling these to be corrected at the design stage.

The A. Proctor Group uses WUFI software, which is fully compatible with BS EN 15026, and dynamically predicts moisture movement and storage as well as condensation for each location.

WUFI Analysis can help identify:

- The effectiveness of condensation control with and without a VCL
- How to achieve faster drying out times

External vs Internal Air & Vapour Control

The two main ways to achieve airtightness and manage vapour control in the building envelope are internally or externally, or in other terms, "inside of the services zone' or 'outside of the services zone'. The use of an effective external air barrier can offer the following benefits:

- External air barrier vs internal VCL - An external barrier such as Wraptite can lead to the removal of the VCL - **Achieving airtightness and moisture control, whilst reducing the level of insulation thickness required, gaining more space.**
- External line vs internal line – **External detailing can remove the risk of weaknesses created by internal works penetrating through the VCL and compromising airtightness and vapour control.**

Traditional use of 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 its' installation.
If all the service penetrations are not adequately sealed, performance will be compromised.

By moving the air barrier to the external side of the structural frame, an external air barrier system such as Wraptite provides an almost penetration-free airtight layer.

Far simpler than internal options Wraptite external air barrier system will maintain the envelope's integrity, with less building services and structural penetrations to be sealed, and less room for error.

Fixing Options for Air & Vapour Control

The traditional forms of VCLs and airtightness membranes will often require mechanical fixing. The self-adhered nature of Wraptite allows for a simple installation process, minimising the use of additional sealants and tapes, and requiring no specialist contractors.

This one-step solution provides both an air barrier layer and effective secondary weather protection in one installation process, allowing a wind and watertight envelope to be achieved.

Protection from Factory to Site

One of the challenges facing manufacturers and developers using modular and offsite construction methods is how to ensure that the performance of any factory fitted membrane is not compromised during transportation from factory to site.
The exposure to the elements of the UK climate experienced during transportation to site can in some cases adversely affect the quality of the membrane, resulting in damage due to wind, rain, and more.

The Wraptite air barrier system offers a simplified membrane system and provides a fully self-adhered vapour permeable air barrier certified by the BBA and combines the important properties of vapour permeability and airtightness. The self-adhesive membrane can be applied in the factory, bonded externally to the substrate, and ensures that the membrane is held firmly in place, even during transportation, maintaining the quality of the system from installation to build and completion.

- A fully self-adhered system ideally suited to offsite modular factory manufacture and transportation – **Provides total protection externally from factory to site – removes the requirement to provide additional wrapping of units before leaving the factory – saves time, cost, maintaining system integrity and preventing damage to the building.**

Product Selector


Airtightness


Thermal Insulation


Condensation Control

Application	Product	Page No.
Airtightness		
The Wraptite membrane has been developed to provide a simple solution to the challenges of reducing air leakage.	• Wraptite	14
	• Wraptite UV	15
	• Wraptite Corners	16
	• Wraptite (UV) Tape / Split Liner	17
	• Wraptite Liquid Flashing	18
	• Probreathe A2	19
Thermal Insulation		
Spacetherm's remarkable performance is achieved through the use of flexible aerogel blankets.	• Wraptherm	22
	• Spacetherm A1	23
Condensation Control		
Our technical services include condensation risk assessments for individual projects to confirm suitability of our membrane systems.	• Probreathe A2 Air	26
	• Fireshield	27
	• Procheck Adapt	28
	• Proctor Air	29
	• Procheck FR200	30
	• Procheck A2	31

Airtightness

Air Permeability & Airtightness

Air movement is important in the building envelope, both infiltration and exfiltration. We need to control interior conditioned air escaping (whether heated or cooled) and exterior air infiltrating as it puts more pressure on heating or cooling mechanisms internally.

Airtight membranes are an obvious choice in this area whether vapour open/closed or variable.

Airtightness

Air Leakage Control Strategies

As Building Regulations have imposed more stringent energy performance criteria on the building envelope improvements have often been driven through higher standards of insulation for roofs, walls, windows and floors. In the drive for higher standards, the significance of localised areas of reduced insulation or thermal bridging leading to air leakage has become even more crucial.

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 envelopes, in some cases reducing their effectiveness by up to 70%. As thermal insulation requirements increase, this reduction in performance is becoming a critical issue; a consensus has emerged in the industry that, discrepancies between 'as-built' and 'as designed' performance are largely attributable to uncontrolled air leakage.

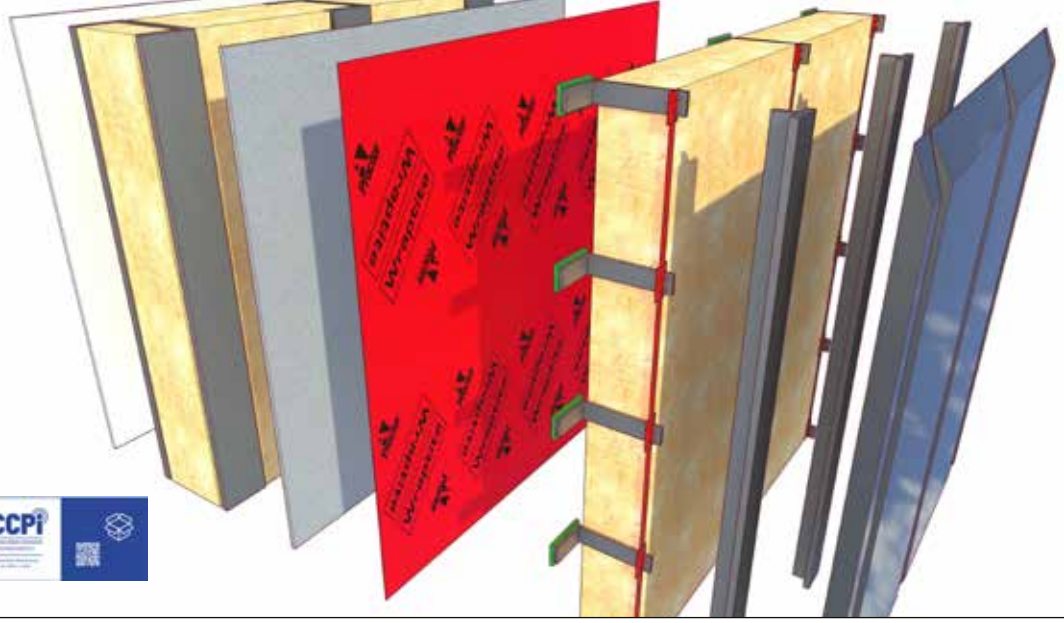
Architects and developers are increasingly turning to air barrier membranes as an essential part of the design process in achieving the most effective means of controlling and reducing air leaks.

Product Range

- Wraptite
- Wraptite UV
- Wraptite Corners
- Wraptite Tape
- Wraptite Liquid Flashing
- Probreathe A2

Benefits of air-tight buildings

- More thermally efficient
- Reduce energy costs
- Lower CO_2 emissions
- Reduce interstitial condensation
- Improved performance of HVAC
- Improved health and comfort for occupants



Applications

- SIPs panels
- Steel and timber framed constructions
- Façade systems
- Cassette Floor construction
- Unventilated warm roofs
- Exterior Gypsum Sheathing
- Aluminium (painted or mill finish)
- OSB
- Rigid insulation
- Cast-in-place concrete
- Rigid vinyl
- Pre-painted steel
- Galvanized metal
- Precast concrete
- Steel
- Concrete block
- Plywood

WRAPTITE®

Wraptite is a patented external airtight and vapour permeable, self-adhered membrane which solves the problem of reliably achieving airtightness in buildings. Applying Wraptite to the outside of the building will mean there are fewer penetrations for services therefore the likelihood of expensive remedial work is greatly reduced. Wraptite fully bonds to virtually any substrate, with a key benefit being its speed and ease of installation, negating any requirement for sealants or tapes. This new approach saves on both the labour and material costs associated with meeting the demands of modern energy efficiency requirements in both commercial and residential buildings.

Wraptite has received BBA certification for use in roofs, walls and modular floor construction making it an ideal choice for commercial projects with large uninterrupted façades. Its patented technology means it is the only self-adhering vapour permeable air barrier certified by the BBA. Wraptite is compliant with Part B regulation changes for use in the external wall systems of relevant buildings and those over 11m/18m in height, both as a continuous layer on sheathing board, behind fire classified insulation, and for use to tape joints in insulation behind rainscreen. See www.proctorgroup.com for Wraptite Warranty Application form.

Property	Test Method	Mean Results
	BS EN 13859-1/2:2010	
Roll Size	-	1.5m x 50m
Nominal Thickness	Calibrated Deadweight Micrometer	0.65mm
Basis Weight	Electronic Weigh Scale	292 g/m^2
Application Temperature	-	Air & surface: minimum -10°C maximum 60°C
Service Temperature	-	-40°C to +100°C
Water Penetration	EN 1928 : 2000 Method A	Class W1 (before ageing) Class W1 (after ageing)
Air Permeance	EN 12114	0.01 m^3/m^2.h.50 Pa
Water Vapour Resistance Sd	Sd EN 12572	0.039m
Water Vapour Transmission	BS 3177:1959	893 g/m^2.24hr
Peel Adhesion	EN 1939	5.01 N/10mm
Tensile Strength	EN 12311-1	Mean MD 417N Mean XD 252N
Tear Resistance	EN 12310-1	Mean MD 412N Mean XD 286N
Reaction to Fire	EN 11925-2 BS EN 13501-1	Class B-s1,d0*

Key Benefits

- Water resistant yet vapour permeable and airtight membrane
- Self adhered to avoid air bypass
- Full adhesion avoids damage during transportation of modular timer frame kits to site
- Part B compliant for relevant buildings and those over 11m/18m
- Class B-s1,d0 on A2-s1,d0 or A1 substrate with minimum density of 653kg/m^3 and 9mm thickness
- Can reduce wall thickness
- Leading airtightness performance
- Removes requirement for complex internal detailing and may negate requirement for VCL internally
- Reduces thermal by-pass
- Allows temporary protection until primary external covering
- Provides a reduced risk of tears and subsequent remedial work
- Patented technology
- Continuous airtight seal
- Simple detailing at junctions and corners - less EPDM required
- BBA Certificate No. 15/5274

tested over 12mm calcium silicate board / fibre cement board as per BS EN 13238:2010. All tests carried out to EN 13859-2:2010 standard.

WRAPTITE® UV

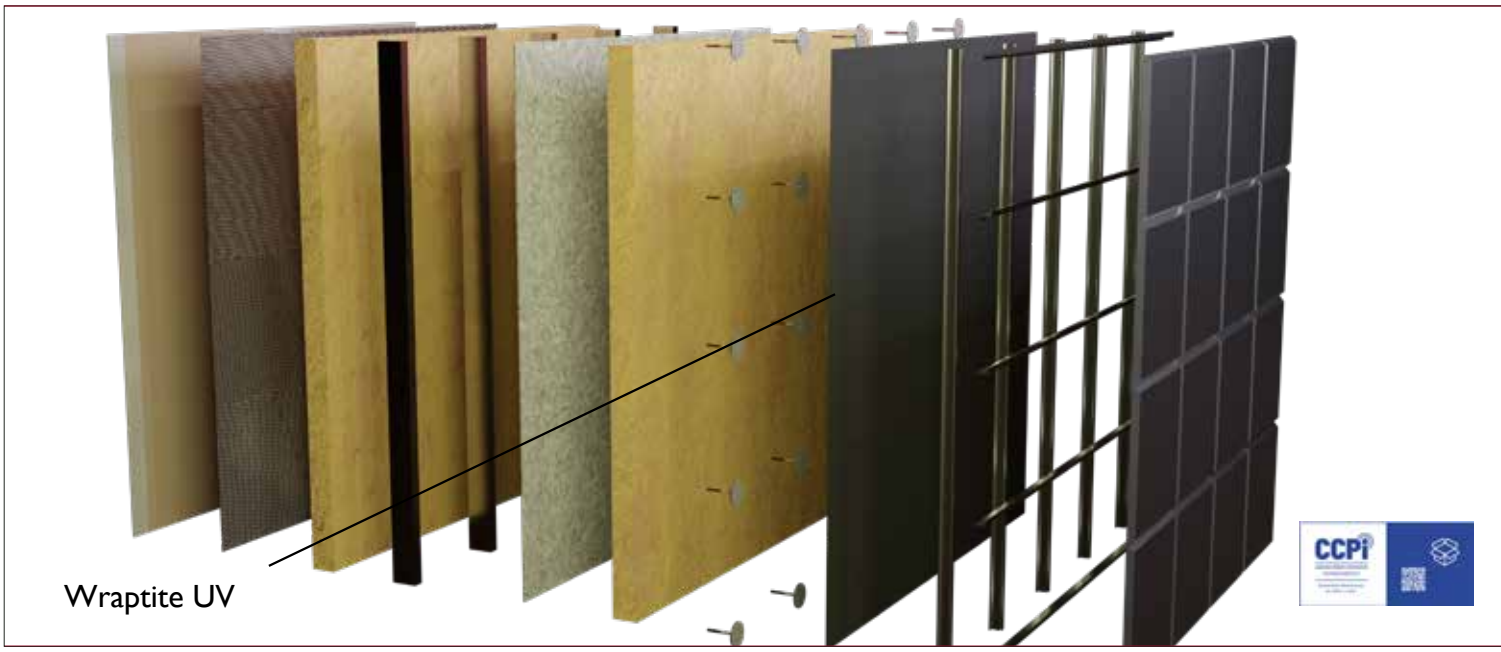
Wraptite UV is a Class B-s2,d0 fire rated membrane that combines the properties of vapour permeability and air tightness in one innovative, self-adhering product, which is specifically designed for use behind open jointed cladding.

Wraptite UV has water resistance and UV resistance to provide a "shadow" appearance within open rainscreen façades. Manufactured from polyester and a functional coating, with a proprietary acrylic moisture vapour permeable adhesive and silicone-coated PET release liner.

Wraptite UV bonds (no mechanical attachment) to multiple substrates for air tightness and ease of installation, negating the requirement for a primer, sealants or tapes. Adhesive curing time is approximately 6hrs depending on environmental conditions.

Wraptite UV prevents lateral air movement enhancing the buildings thermal performance. With a rating of Sd 0.06m it provides a high vapour permeability in a commercial quality, self-adhered, airtight breathable membrane.

To protect the membrane from mechanical damage, the joint openings in the façade covering have to be less than 40% of the area, and maximum 50mm wide.



Wraptite UV

Property		Mean Results	
		BS EN 13859-2:2010	
Roll Size		1.5m x 50m	
Nominal thickness		0.38mm	
Basis Weight		392 g/m² (incl. liner)	
Water penetration	Before ageing After ageing	Class W1 (before ageing) Class W1 (after ageing)	
Water Vapour Permeability		Sd 0.06m	
Tensile strength	Before ageing After ageing	MD 490N/50mm MD 480N/50mm	CD 330N/50mm CD 310N/50mm
Tear resistance		MD 327.38N CD 453.38N	
Reaction to Fire		Class B-s2,d0*	
Resistance to penetration of air		<0.01m³/(m².h.50Pa)	
UV resistance uncovered		12 months (Climate:Central Europe)	

**tested over 12mm calcium silicate board as per BS EN 13238:2010*

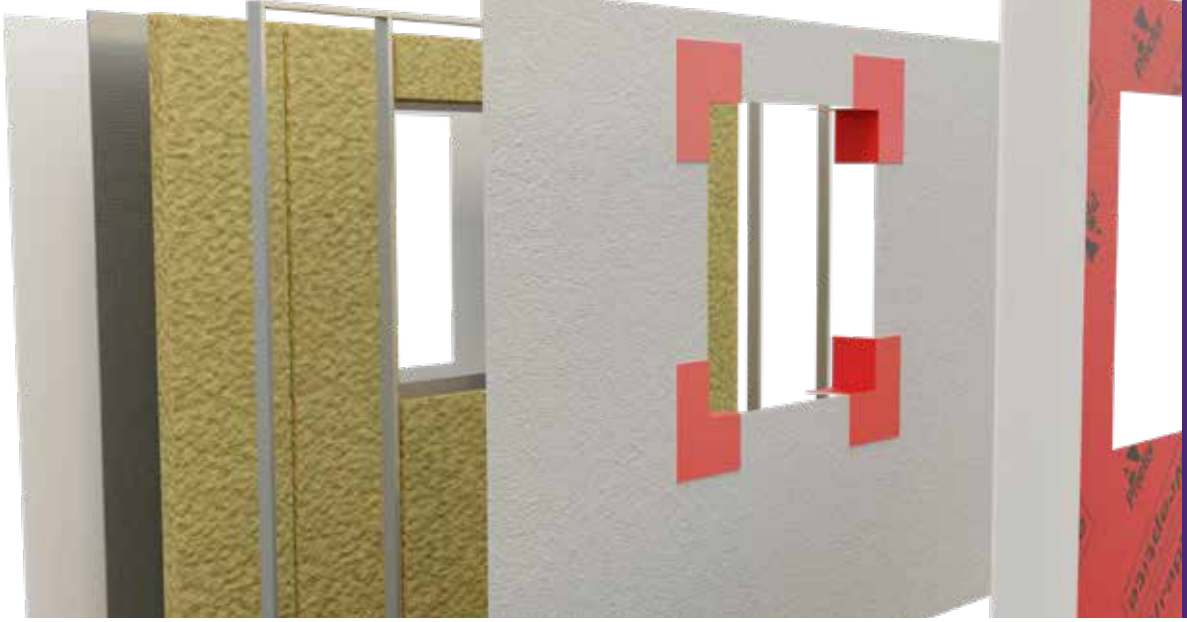
Key Benefits

- Airtight yet vapour permeable
- No primer required
- Tough facer laminate resists punctures and tears during construction
- Manufactured rolled goods ensure consistent properties and performance
- Wide service temperature range
- Can be left exposed for up to 12 months (UK climate)

Accessories

- Wraptite UV Tape
- Wraptite UV Tape Split Liner
- Wraptite UV Corners
- Wraptite LF

Please see pages 16-18 for details



Applications

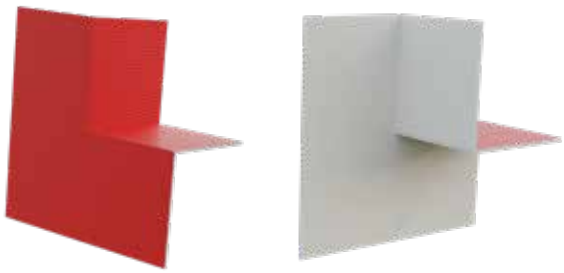
- Ensuring that windows are made airtight
- Reducing reliance on taped detailing

WRAPTITE® CORNERS

Wraptite Preformed Airtight Corners have been developed for the difficult areas around doors and windows where maintaining 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.

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.

Please note: Colour may vary



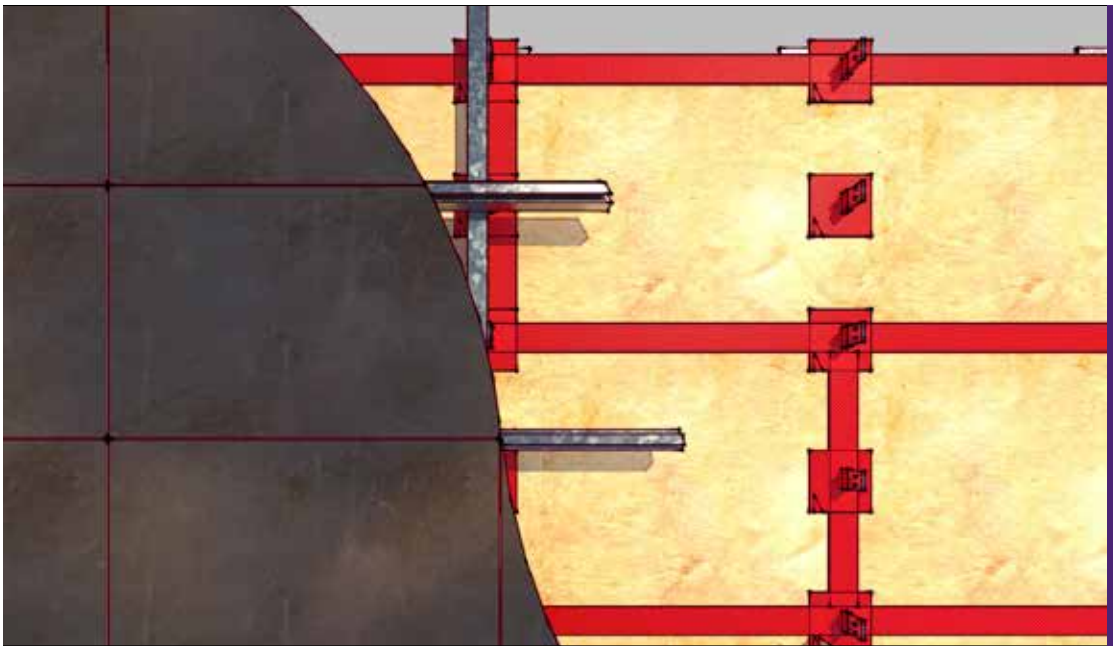
Key Benefits

- Ensures continuity of airtightness measures
- Simplifies complex detailing

WRAPTITE® / WRAPTITE UV TAPE

A useful way of stopping unnecessary air leakage around openings and overlaps is to use Wraptite (UV) Tape, an airtight tape with high vapour permeability for internal and external applications. Wraptite (UV) 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 (UV) Tape's high vapour permeability allows damp sheathing to dry quickly and moisture vapour to escape. This reduces the likelihood of mould, mildew, condensation, timber distortion and metal corrosion. Wraptite (UV) Tape contains no VOC's.



Applications

- On site airtightness between modules
- Detailing around penetrations
- Repairs
- Can be supplied with a split release liner, allowing a connection to later components
- Taping joints of insulation boards

SPLIT LINER

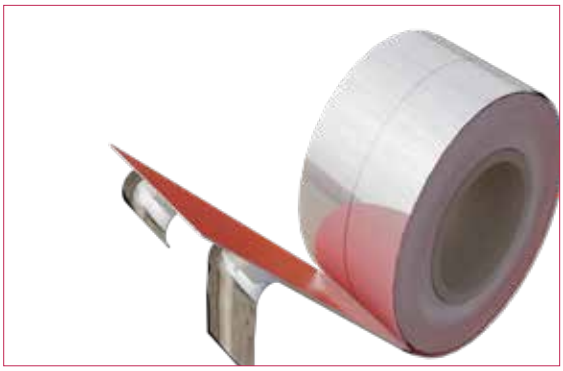
Whilst Wraptite (UV) Tape is suitable for most applications there are some details, such as panel joints, cassette edges, complex detailing, where the benefit of a split liner is advantageous. The split liner allows one part of the Wraptite (UV) Tape to be adhered to the substrate, prior to the second portion, and can allow panels to be sealed on site. It can also be used for complex detailing where you need to protect part of the tape from bonding to areas until its needed. The split can be accommodated at any position across the reverse of the tape allowing flexibility of taped lap.

Key Benefits - Tape and Split Liner

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

Key Benefits - Wraptite (UV) Tape Split Liner only

- Easier removal of backing
- Location of split can be bespoke
- Aids accurate detailing
- Maintains adhered edge until installation phase
- Easier installation non-linear application ie pipe or window flashing



Please visit our website or Wraptite brochure for full product details

Applications

- Sealing around service and structural penetrations
- Window details
- Sealing around bracketry components
- Protecting the leading edge of the exposed membrane

WRAPTITE® LIQUID FLASHING

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
- Does not harm foam insulation

Wraptite accessories are available for both Wraptite and Wraptite UV applications.

PROBREATHE® A2

Probreathe® A2 is an A-rated breather membrane with an airtight woven glass fibre membrane with a PU coating. The membrane combines breathability, water resistance and airtightness in one membrane. It has a Reaction to Fire classification of A2-s1,d0 when installed free-hanging or onto a substrate which is minimum A2-s1,d0.

Property	Test Method	Mean Results
	BS EN 13859-2:2010	
Roll Size		1.5m x 50m
Weight		230 g/m²
Thickness		0.20mm
Temperature range		-36°C to 150°C
Water vapour resistance	EN 12572	Sd 0.095m
Reaction to Fire	EN 13501-1	A2-s1,d0 B-s2, d0 over timber

Key Benefits

- A2 Reaction to Fire Classification
- BBA Certificate No. 25/7384
- Increased airtightness over traditional breather membranes
- Vapour permeable membrane for use either directly onto sheathing or over insulation.
- Ideal for use in rainscreen/facade construction
- Suitable for applications in relevant buildings and those over 11m/18m
- Allows temporary protection of the building until the primary external covering is installed

ACCESSORIES

- Probreathe FR Duo Tape (50mm x 25m)
- Probreathe FR Tape (75mm x 50m)

Thermal Insulation

Thermal insulation – managing heat flow

Depending on climate and location “heat” is keeping heat in or keeping heat out, therefore when we are considering heat we are mainly concerned with thermal insulation. The effects of heat flow can have a significant impact on the energy efficiency of a building. Managing energy efficiency from design to construction is increasingly important.

Thermal Insulation

The Impact of Heat Flow

To maximise the design of a building's energy efficiency a holistic approach is required to provide a total system which embraces the principles of HAMM, considering an integrated approach to airtightness and condensation control.

Incorrect specification or installation of effective thermal barriers will lead to unmanaged heat loss, impacting directly on the energy efficiency of the building and its systems. In recent years, schemes by the UK and European governments have sought to improve the energy efficiency of buildings.

In many cases, insulation has been a "silver bullet" to address these needs. However, whilst insulation has a key part to play, the most effective solutions will demand a total system approach from the outset.

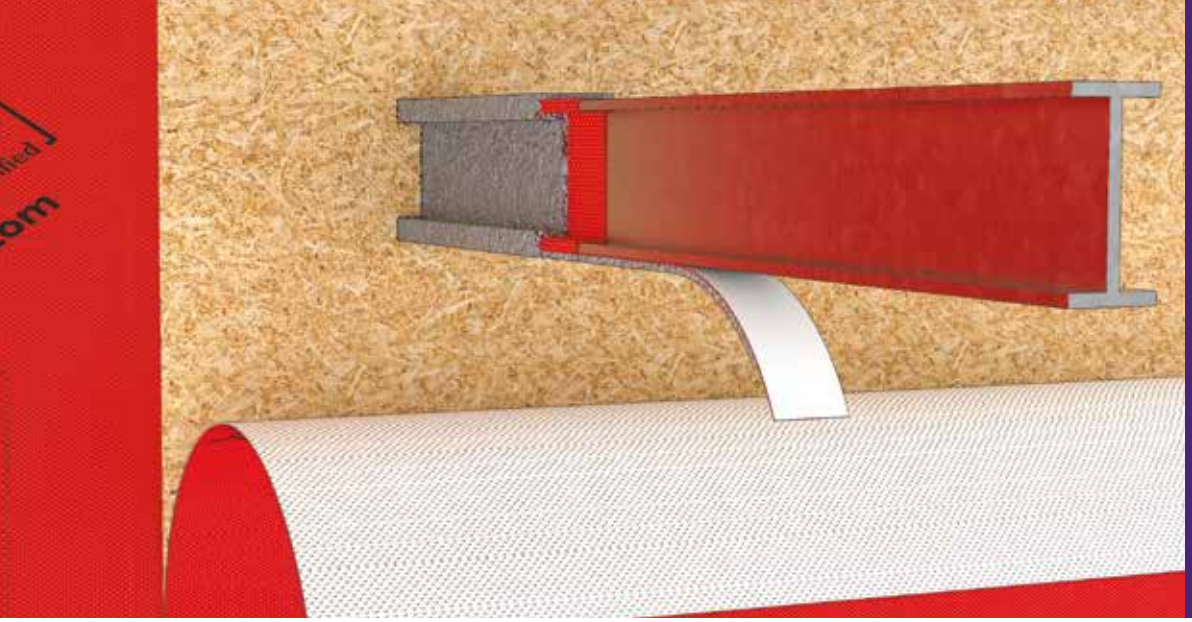
The A. Proctor Group has 50 years experience in the Thermal Insulation sector. We offer a complete range of thermal insulation products and technical support including U-value calculations. Our fabrication facilities offer the ability to cut our Spacetherm aerogel insulation to almost any required size, thickness or shape.

Product Range

- Wraptherm
- Spacetherm A1

Guidance on thermal insulation

- 'U' Value calculations



Applications

- Wrapping structural penetrations
- Reduces cold bridging
- Ties into airtight layer
- Apply to internal face of existing façade to enhance both the thermal and airtightness performance of the building

WRAPTHERM®

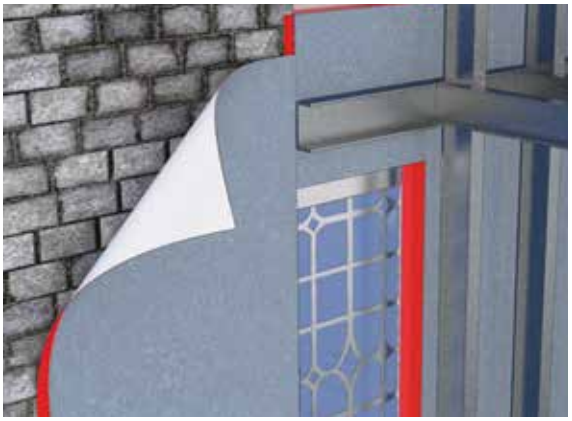
Wraptherm is a composite comprising 10mm Spacetherm Aerogel Insulation blanket bonded to the face of Wraptite® vapour permeable, airtight self-adhesive membrane. Use of Wraptherm provides improved airtightness levels combined with a reduction in thermal bridging. Wraptherm was developed for use in the refurbishment of existing buildings where there was a requirement to enhance both the thermal and airtightness performance of the building but can also be used in new build. Wraptherm can be applied to the internal face of the existing façade, providing a vapour neutral yet airtight layer, fully self-adhered to the substrate layer with the added benefit of a 10mm thick layer of Spacetherm insulation. Over this airtight/thermal composite, framing can be installed with the cold bridging being reduced thanks to the Spacetherm layer. Additional thermal insulation can be included within the frame to meet the u values required for the refurbishment.

The offset nature of the Spacetherm insulation layer, over the Wraptite backing, allows sealing of the joints in the panel to ensure the continuity and integrity of the airtight layer.

Property	Test Method	Mean Results
Coverage	-	2400mm x 1200mm or 1200mm x 1200mm
Nominal Thickness	-	11.5mm
Weight	-	2.40kg or 1.2 kg per sheet
Water Vapour Resistance Sd	BS EN 12086	0.101m
Water Vapour Diffusion μ	BS EN 12086	8.806
Thermal Resistance		0.667 m^2K/W (Insulation - membrane negligible)

Key Benefits

- Single product airtightness and thermal bridging solution
- Ideal for Refurbishment and Façade Retention projects
- Water resistant yet vapour permeable membrane
- Reduces thermal bridging
- Continuous airtightness seal
- Low vapour resistance



SPACETHERM® A1

Spacetherm A1 is a flexible, silica aerogel-based insulation material of limited combustibility used for exterior and interior applications. The product is used to optimise the thermal performance and fire properties of façade systems in a number of ways. These include enhancing the thermal performance of the ventilated façade, and addressing thermal bridging in the façade. Spacetherm A1 is also useful in minimising thermal bridges around windows in areas such as window reveals and roller shutter cases.

Spacetherm Aerogel's low thermal conductivity qualifies it as one the the most thermally efficient materials available worldwide. Engineered for space-critical applications, the product offers breathability allied to hydrophobic characteristics.

Applications

- Ideal where insulation with increased fire resistance is required
- Reduces cold bridging
- Wrapping structural penetrations
- Window reveals
- Roller shutter cases
- Column/ Slab faces
- Façade Systems
- For use in space critical applications

Key Benefits

- Reaction to Fire A1 non-combustible
- Non-combustibility
- Water vapour diffusion open
- Permeable
- Flexible
- Thinnest A1 Aerogel insulation available

For specific details please contact technical for further information.

Please note, only the Spacetherm A1 material is fire rated - for any components laminated to this product, it will no longer achieve this.

Condensation Control

Moisture - designing for condensation control in buildings

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.

Our range of membrane solutions includes Fireshield (vapour permeable walling membrane with a fireproof surface), Procheck Adapt (high performing variable resistance vapour control layer), and Proctor Air (air and vapour permeable pitched roof underlay).

Condensation Control

Managing moisture – effective vapour control

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.

Controlling the moisture flow in a building is fundamental to the core principals of HAMM and maintaining the durability of the building envelope. Well managed moisture maximises energy efficiency by reducing adverse effects on fabric insulation, in addition to protecting the health and safety of the occupants.

Product Range

- Probreathe A2 Air
- Fireshield
- Procheck Adapt
- Proctor Air
- Procheck FR200
- Procheck A2

Guidance on condensation control

- Condensation risk assessments
- 'U' Value calculations
- Overcoming condensation in the roofspace

PROBREATHE® A2 AIR

Probreathe® A2 Air is a woven glass fibre membrane designed to provide water resistance and breathability to the building fabric. This membrane is air permeable, and will be installed either directly to the sheathing board, or over the insulation, providing a Reaction to Fire classification of A2-s1,d0.

Property	Test Method	Mean Results
	BS EN 13859-2:2010	
Roll Size		1.5m x 50m
Weight		210 g/m²
Thickness		0.18mm
Air permeability	EN 12114:2000	27m³/(h.m²)
Vapour permeability	EN 12572	Sd 0.03m
Temperature range		-36°C to 150°C
Resistance to water penetration	EN 1928	W2
Reaction to Fire*	EN 13501-1	A2-s1,d0

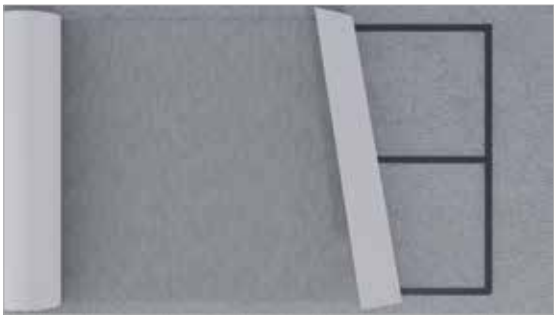
**free-hanging*

Key Benefits

- A2 Reaction to Fire Classification
- Vapour permeable membrane for use either directly onto sheathing or over insulation.
- Ideal for use in rainscreen/facade construction
- Suitable for applications of relevant buildings and those over 11m/18m

ACCESSORIES

- Probreathe FR Duo Tape (50mm x 25m)
- Probreathe FR Tape (75mm x 50m)

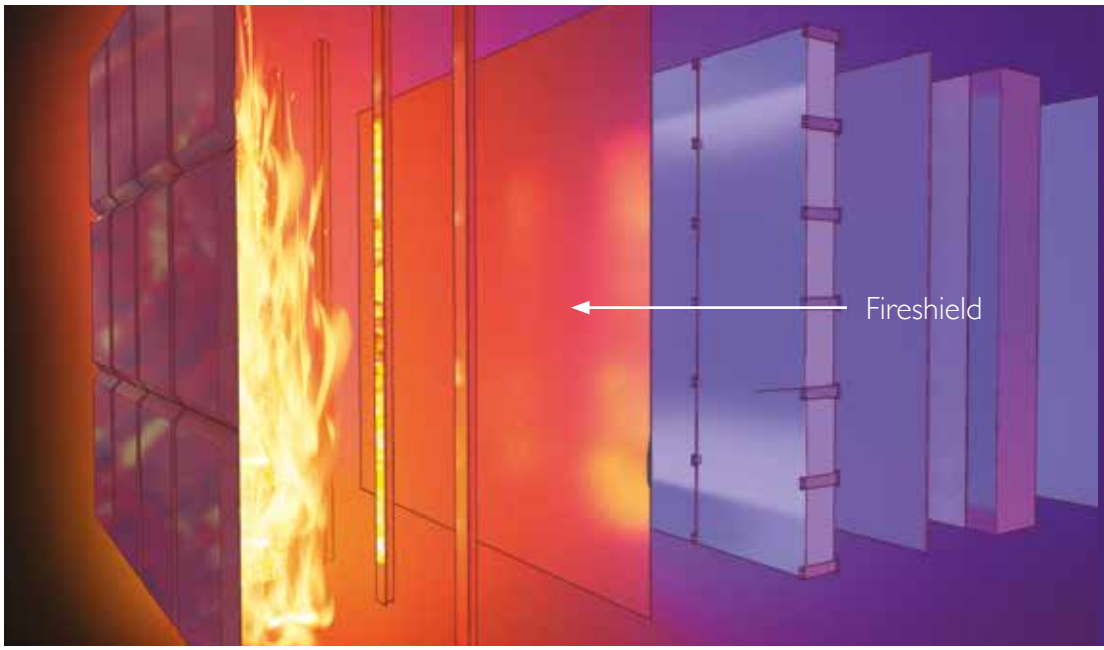


FIRESHIELD®

Fireshield is a vapour permeable walling underlay with an intumescent coated surface. Fireshield is suitable for all walling applications including those in multiple storey buildings. The intumescent coating helps protect the substrate by reducing the risk of fire taking hold and reduces the formation of droplets and smoke. It is installed and fixed to the substrate in the same manner as standard breather membranes using mechanical fixings.

Fireshield can also be used on the external cavity face to improve the fire robustness of closed panel assemblies when installed to the external sheathing alongside suitable non-combustible internal linings.

Fireshield is the first vapour permeable membrane of its kind approved for inclusion in the structural timber association tested product listing for fire robustness during construction. As part of such a construction, Fireshield will be part of a system to limit the spread of fire to adjacent properties, which can allow for reduced spacing to adjacent properties.



Applications

- For use in timber, masonry and steel frame wall applications
- Open clad applications
- Applications where increased fire resistance is required
- Suitable for use in buildings over 18m / 11m in Scotland

Property	Test Method	Mean Results
	BS EN 13859-2:2010	
Roll Sizes	-	1.1m x 20m
Weight	EN 1849-2	737g/m²
Thickness	EN 1849-2	1.2mm
Nail Tear Resistance	EN 12310-1	MD 273N CD 330N
Resistance to Water Penetration	EN 13859-1	Class W1
Tensile Strength	EN 12311-1	MD 300N/5cm CD 275N/5cm
Elongation	EN 12311-1	MD 2-3% CD 2-3%
Water Impermeability	EN 20811	Minimum Value: 2m
UV Resistance	Internal Method, UVB	3 Months
Water Vapour Transmission Properties	EN ISO 12572 Conditions C	Sd=0.08m
Flexibility at Low Temperature	EN 1109	-20°C
Reaction to Fire	EN 13501-1 Test Method: EN 11925-2 & EN 13823 (SBI)	B-s1,d0
Resistance to Air Penetration	EN 12114	1m³/m²/hr@50Pa
Artificial ageing (5000h uv + 90 days 70°C) Tensile strength after ageing Resistance to water penetration after ageing	EN 13859-1	MD: 290N/5cm CD 240N/5cm Class W1

Key Benefits

- Part B compliant for relevant buildings and those over 11m/18m
- The unique intumescent coating helps protect the substrate
- Vapour permeable walling membrane for use either directly onto sheathing or insulation
- Class B-s1,d0 but performs differently to other similar class products
- Complies with BS5250 & NHBC requirements for vapour permeable walling underlays
- BBA Certificate No. 19/5653
- Airtight for enhanced energy efficiency

BBA APPROVAL INSPECTION TESTING CERTIFICATION CERTIFICATE 19/5653

NBS

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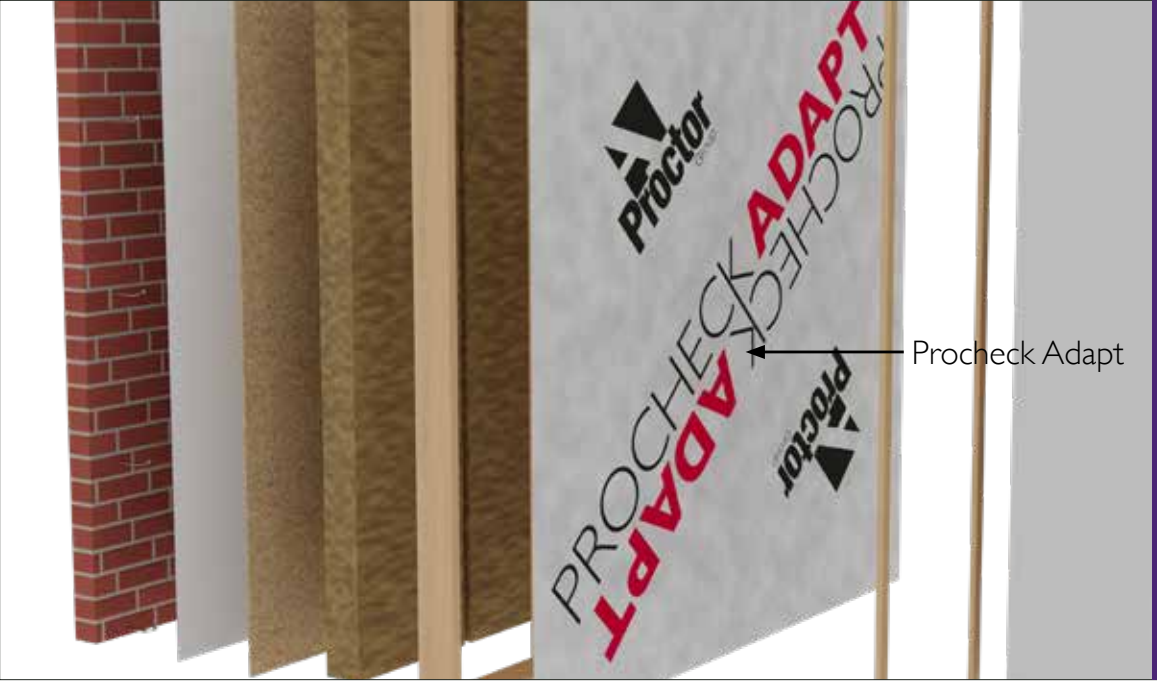

Applications

- Situations with varying vapour requirements
- Allows concrete/masonry to dry internally
- Suitable for commercial and residential applications

PROCHECK® ADAPT

Procheck Adapt is a 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 an efficient installation time.

Property	Test Method	Mean Results
	BS EN 13984:2013	
Roll Size	-	1.5m x 50m 3m x 50m
Weight	ISO 536	110 g/m²
Nail Tear Resistance	EN 12310-1	MD 350N CD 375N
Tensile Strength	EN 12311-1	MD 350N/50mm CD 315N/50mm
Elongation	EN 12311-1	MD 20% CD 20%
Vapour Resistance	EN 12572	Sd 0.4m - 90m
Reaction to Fire	EN 13501-1	Class E
Air Permeability	BS EN 12114:2000	0.00 m³/m².hr @ 50 Pa

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

PROCTOR AIR®

Proctor Air is the result of this quarter century of experience on sites and on drawing boards, listening and responding to the challenges faced by the industry. Proctor Air has been developed and manufactured to our precise specifications and requirements. This ensures the on-site performance of our material mirrors the off-site performance, while a 15 year warranty ensures peace of mind for any project, now and in the future. Hydrophobic additive in all three layers amplifies water holdout, and this, alongside optimised levels of permeability to both air and moisture vapour, Proctor Air delivers the most dependable performance.

Proctor Air is an air and vapour permeable, highly water resistant roofing underlay. Its characteristics allow even very complex pitched roofs to breathe, without the need for air gaps or secondary venting.

The meltblown core at the heart of Proctor Air allows natural air movement to 'supercharge' the passage of moisture vapour from the roofspace, making the formation of condensation in the roofspace virtually impossible.

Applications

- Non ventilated pitched roof applications, including warm roof, cold roof and room in the roof designs.

Property	Test Method	Mean Results
	BS EN 13859-1:2010	
Roll Size	-	1m x 50m 1.5m x 50m
Mass per unit area	EN 1849-2	170 g/m²
Reaction to Fire	EN 13501-1	Class E
Water Vapour Resistance Sd	EN 12572	0.015m
Vapour Resistance	EN 12572	0.075 MNs/g
Air Permeability (average)	EN 12114	35 m³/m².h.50Pa
Water Penetration	EN 1928	Class W1 (before ageing)

Key Benefits

- No ventilation required
- BBA Certificate No. 24/7147
- More uniform airflow than vents
- Highly water resistant
- Wind uplift resistance complies with BS5534
- High degree of vapour permeability greatly reduces the risk of condensation
- Reduces condensation risk and negates requirement for ridge ventilation
- Ensures continuity of air movement in loft
- Energy loss by ventilation in conventionally ventilated cold roofs will be reduced by the non-vented system.
- No reliance on different trades to install VCL
- Fully air permeable
- 15 year warranty

BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE 24/7147

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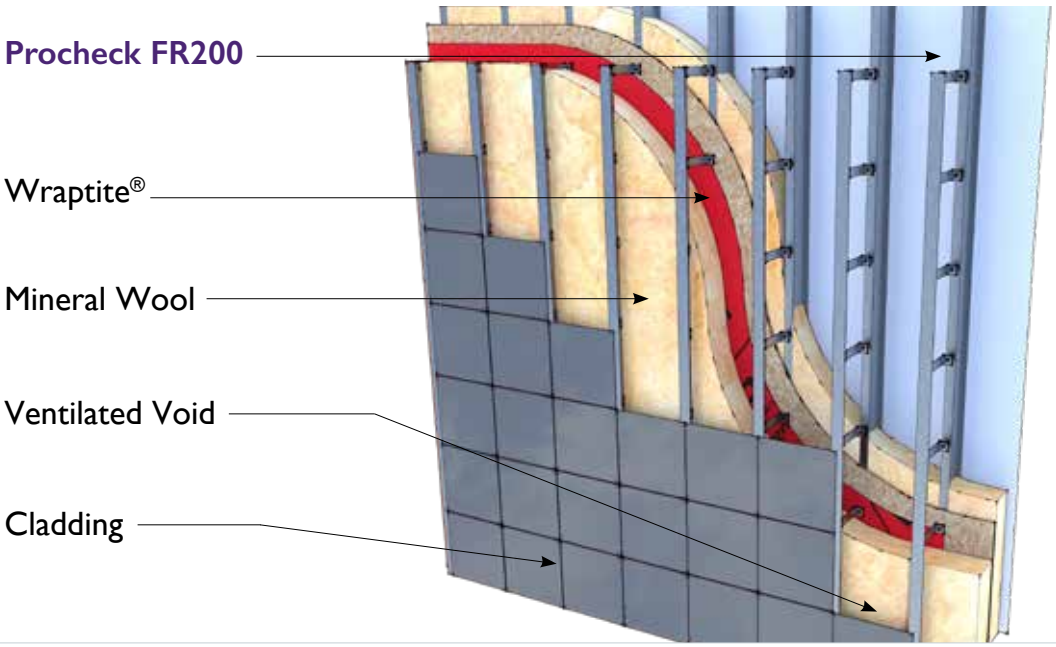

Applications

- Internal fire resistance
- Suitable for use in New Build and Renovation projects
- For use in walls and ceilings where increased fire classification is required
- Provides vapour resistance and airtightness

PROCHECK® FR200

Procheck FR200 is used as a vapour control layer in roof and wall structures in new build and renovation projects. It has a Reaction to Fire classification of B-s1,d0 which provides assurance of fire performance for the structure and is air and vapour tight improving the energy efficiency of the building while also reducing the condensation risk.

Property	Test Method	Mean Results
	BS EN 13984:2013	
Roll Size	n/a	1.6m x 50m
Thickness		0.16mm
Weight	EN 1849-2	94g/m^2
Colour		Black / White
Water Vapour Resistance	EN 1931	44m Sd 220 MNs/g
Service Temperature		100°C
Water resistance (after ageing)	EN 1928	W1
Reaction to fire	EN 13501-1	B-s1,d0[1,2]

[1] *Tested on 12.5mm paper-faced gypsum plasterboard*
[2] *Tested on 25mm standard Rockwool Substrate*

Key Benefits

- Independent assurance of fire performance (EN 13501-1 B-s1,d0)
- Reduced condensation risk
- Withstands tough site conditions

PROCHECK® A2

Procheck® A2, is a vapour and airtight membrane. BS EN 13501-1 confirms that Procheck A2 is considered to have limited combustibility and will not significantly contribute towards the fire load and fire growth. This composition affords the membrane its Class A2 performance as well as giving it a high degree of vapour controlling properties. The membrane comes with a high vapour resistance, as well as being airtight, which allows its use as an AVCL in the construction. Providing high levels of airtightness can ensure the thermal efficiency of the building.

The integral foil layer, with its protective clear lacquer coating, gives this A2 membrane the added benefit of having a low emissivity surface. This means that the membrane, when installed with the foil face next to a service cavity, with a minimum depth of 19mm, will provide additional thermal performance to the overall wall construction.

Procheck A2 air and vapour tight membrane improves energy efficiency and reduces the risk of condensation.

Applications

- For use in walls and ceilings where A2 fire classification is required
- Low emissivity face improves thermal performance
- HIgh Rise and Modular Constructions

Property	Test Method	Mean Results
	BS EN 13984:2013	
Roll Size	-	1.2m x 50m
Weight	EN 1849-2	165 g/m²
Sd value	EN 1931	>1500m
Reaction to fire	EN 13501-1	A2-s1,d0
Water tightness	EN 1928	W1
Tensile strength	EN 12311-1	MD 700 N/50mm CD 400 N/50mm
Elongation	EN 12311-1	MD 3% CD 3%
Tear resistance	EN 12310-1	MD 170N CD 130N
Thermal resistance of an adjacent airspace	-	0.606 m²K/W

Key Benefits

- Reaction to Fire classification to A2-s1,d0
- Water vapour diffusion tight
- Reflective material, emissivity <0.05
- BBA Certificate No. 21/5982
- Clear lacquered aluminium surface allows for low emissivity surface
- Able to withstand tough site conditions
- Suitable for use in relevant buildings and those over 11m/18m

BBA APPROVAL INSPECTION TESTING CERTIFICATION CERTIFICATE 21/5982

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Case Study - East Broadway Residences, New York

An exciting project to create a seven-story modular building featuring a series of modern New York apartments has been fitted out with the high-performing Wraptite airtight membrane. An ideal solution for offsite developments, Wraptite delivers huge benefits to the combination of in-factory manufacture and on-site construction.

East Broadway Residences is located on the Lower East Side of Manhattan, New York. The building has been designed and manufactured as a volumetric offsite project by Brooklyn based architects Think! Architects to create an apartment block consisting of 63 volumetric modules. OCCA Offsite based in Istanbul, Turkey is the manufacturing contractor for the volumetric modules.

One key benefit of Wraptite concerning offsite is that it is designed to ensure that the performance of the factory fitted membrane is not compromised during transportation from factory to site.

The self-adhesive membrane was applied in the factory, bonded externally to the exterior walls and roof. Ensuring the membrane was held firmly in place was critical to maintaining the quality of the system during ocean transportation and stacking at the construction site.

Applied externally on the outside of the structural frame, Wraptite simplified the process of maintaining the envelope's integrity, as there are fewer building services and structural penetrations to be sealed. Window frames were installed offsite and detailed with the Wraptite self-adhesive membrane to attain a watertight window and facade system. Each of the volumetric modules was fully furnished with bathrooms and kitchens including MEP systems and as well as fire sprinkler systems. A site installed rainscreen facade from natural stone was mechanically installed on site.

The installation of Wraptite was a rapid process due to its simple to apply self-adhesive design and ensured complete water tightness during all phases of manufacturing and the final installation on-site.

The high vapour permeability of Wraptite allows the substrate beneath to dry quickly and moisture vapour to escape, and reduces the likelihood of mould, mildew, condensation, timber distortion and metal corrosion.

Case Study - Anglesey Council Social Housing

The airtightness performance of Wraptite delivered huge benefits to both the in-factory and on-site construction of a series of new modular social housing for Anglesey Council.

Specialist contractor Kenton Jones was commissioned by the Isle of Anglesey County Council to construct the new homes using a high-performance timber frame system. Managing Director, Kenton Jones explains how Wraptite was key to achieving a quality airtightness solution which was suited to modular build.

"After 10 years of building an open panel high-performance timber frame system, we moved to a factory insulated closed panel system which had the airtightness and VCL applied in the factory and simply taped on-site. This worked well when the airtightness layer was fully accessible before services were installed on site.

"In 2019 we built a new module factory and delivered our first set of modules early 2020, it was then we realised internal airtightness was going to be a difficult detail. When building modules that are fully factory finished internally but need to be craned together on-site to form the same dwelling both in a vertical and horizontal joint, we identified that there would be areas of the building which would remain inaccessible after installation on site.

"The first stage of the project was supplied with internal airtightness applied off-site that had very technical, vulnerable details to continue the airtightness around the dwelling within the small access areas left for finishing on-site after installation. This method proved very time consuming in the

factory swapping from our usual airtightness board to flexible airtightness membranes between the modules. The cost of this was not sustainable so we needed to look for an alternative.

"We chose Wraptite to achieve the low value airtightness we required for the module system. The benefits of having the airtightness layer externally were a huge saving in time in the factory and impressive simplifying of details to achieve the same quality results. Wraptite was installed off-site in a factory environment for speed and ease and simply taped together on-site between modules to achieve the airtightness."

"Overall we saved time and money with Wraptite, we now have a set of high performance technical details for the airtightness in our module system which are easy to achieve and help maintain a robust quality control system."

Wraptite offers airtight solution for Offsite construction

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'. In offsite manufacture, 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. 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.

A simple, airtight installation

The traditional forms of VCLs and airtightness membranes will often require mechanical fixing. In the case of timber structures using steel staples, and on concrete using a separate double-sided adhesive tape. The self-adhered nature of Wraptite allows for a simple installation process, minimising the use of additional sealants and tapes, and requiring no specialist contractors. This one-step solution provides an effective secondary weather protection in one installation process, allowing a wind and watertight envelope to be achieved more quickly than using traditional methods.

TopHat incorporates Wraptite into the design

One of the UK's leading modular housing manufacturers TopHat has successfully incorporated Wraptite into the design of its high-quality timber-framed homes. Wraptite is a patented external air barrier membrane system, which offers manufacturers and designers of modular and off-site buildings the ability to reliably and comfortably exceed current airtightness requirements. Wraptite is the only self-adhering vapour permeable air barrier certified by the BBA and combines the important properties of vapour permeability and airtightness in one self-adhering membrane.

The A. Proctor Group provides a range of high-performance membranes to address the requirements of heat, air, moisture management within the building element, and provides guidance to designers and manufacturers of offsite construction using modelling & analysis tools to ensure compliance and guide on best practice related to DfMA.

Specialist Services and Technical Support

Our technical back-up has always been an integral part of our strategic development, with an outlook based on advanced technical solutions, rather than commodity driven.
Our dedicated technical team is focused on providing high quality advice and support to our customers all the way from drawing board to site.

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.

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 technical specification writing service. In addition, specifiers have 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 designed to meet the continuously evolving requirements of the construction industry.

Product divisions include:

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

Get in touch for more information
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" 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

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