

Proctor Passive

SYSTEMS FOR AIRTIGHTNESS,
HEAT, AIR & MOISTURE MOVEMENT



Product Solution Providers



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A. Proctor Group

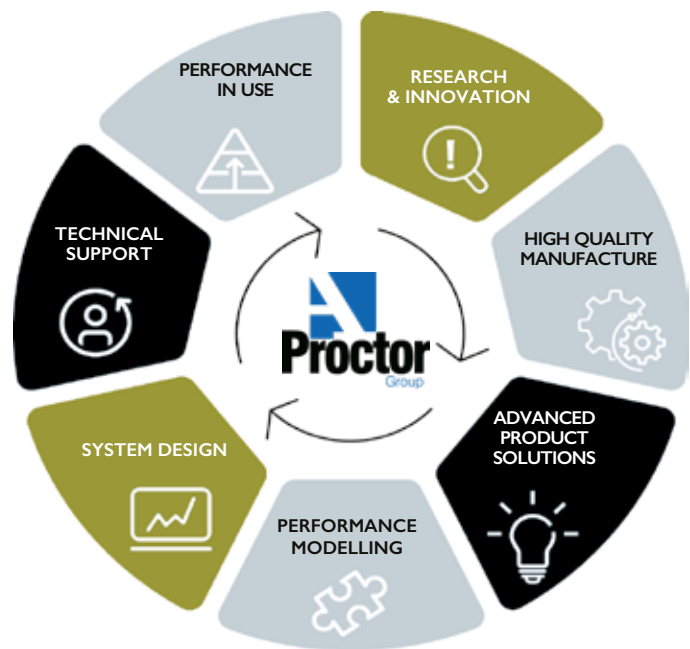
Experts in membrane systems

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

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

Total Solution Capabilities

From concept to completion



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

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

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





Passive House Construction

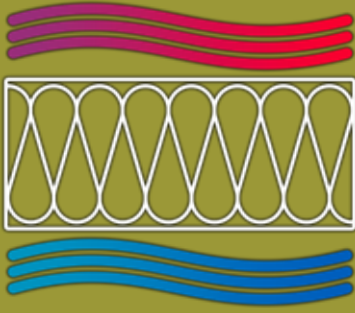
The Passive House concept is founded on five basic principles for good design:

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

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

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

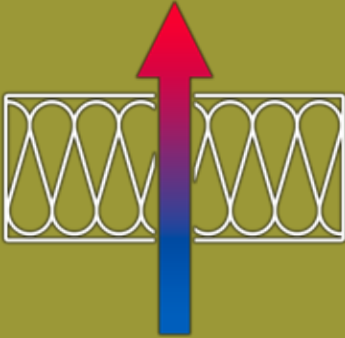
With innovative solutions to simplify reducing air leakage rates and control cold bridging, the Proctor Passive range of solutions allows specifiers to adhere to these guiding principles without compromising in other areas. This ensures the delivery of best practice performance with the least impact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



FABRIC INSULATION

Thermal insulation is what limits the loss of heat from the building envelope, and is the cornerstone of the fabric first approach to building design. This approach seeks to maximise the performance of the basic components of the building, rather than relying on mechanical or electrical systems.

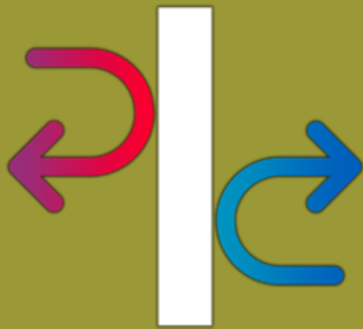
Limiting the thermal transmittance, or U-value, through roofs, walls and floors, while minimising the loss of space and ensuring moisture flows are properly managed is the principle challenge of low energy housing design.



THERMAL BRIDGE FREE DESIGN

A thermal bridge occurs either where a material of higher thermal conductivity intersects a less conductive material, or where building elements join, such as at floor zones or corners.

Thermal bridges have two principle negative effects. Firstly they increase the overall heat loss by providing an easier pathway for heat to escape, and secondly they create cold spots internally. Condensation and mould growth can occur in these areas, which has a detrimental effect on the indoor environment.



AIR LEAKAGE RATES

Limiting this air movement is a critical part of low energy design, as even highly insulated buildings will have poor energy performance if the movement of air is not controlled. Both the building regulations and passive house standard therefore include pressure testing and minimum performance levels, but there are some important differences.

As levels of fabric insulation in buildings increase, the influence of air leakage on the overall energy performance of the structure becomes an ever more important aspect of the design.



VENTILATION & HEAT RECOVERY

Mechanical ventilation incorporating heat recovery (MVHR) systems utilise a heat exchanger to recover heat from extracted air in order to pre-warm incoming supply air.

This improves the efficiency of the building by reducing heat wasted by the extract airflow, and such systems are generally required as part of a the passive house certification. Without heat recovery ventilation systems it can be difficult to meet the space heating energy requirements.



HIGH PERFORMANCE GLAZING

Passive and low energy homes must pay particular attention to the specification of windows used, as poorly insulating windows can not only affect the overall heat loss, but as with cold bridges, can also create cold spots and "cold radiation". This phenomenon occurs where the influence of a cold surface can be felt nearby, often leading to a perception that a space is colder than it really is.



External Airtight Membranes - an Introduction

Why are airtight membranes needed?

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

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

The two main ways to achieve airtightness in the building envelope are internally or externally, or in other terms, 'inside of the services zone' or 'outside of the services zone'. For the housebuilder, the use of traditional internal

air barriers can be more complex and costly to install, due to the need to accommodate building services such as electrical, lighting, heating and drainage systems. An internal air barrier is only as good as it's installation. If all the service penetrations are not adequately sealed, performance will be compromised.

For many years, external air barriers have been commonly used in North American building design and construction. By moving the air barrier to the external side of the structural frame, external air barrier systems such as Wraptite® allow for an almost penetration-free airtight layer, which can be installed faster and more robustly. This offers an effective but simple system comprising a self-adhesive vapour permeable air barrier membrane, plus vapour permeable sealing tape, Wraptite Corners and Wraptite Liquid Flashing, and provides effective secondary weather protection while preventing trapped moisture and air leakage. Far simpler than internal options an external air barrier system like Wraptite will maintain the envelope's integrity, with less building services and structural penetrations to be sealed, and less room for error.



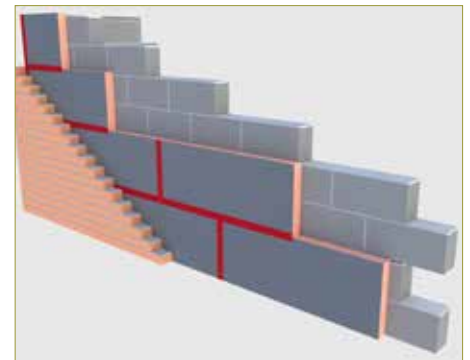
WRAPTITE®

The self-adhered nature of Wraptite allows for a simple and fast installation process, minimising the use of additional sealants and tapes, and requiring no specialist contractors to achieve a robust result. This one-step solution provides both a damage resistant air barrier layer and effective secondary weather protection in one installation process, allowing a wind and watertight envelope to be achieved more quickly than using traditional methods. Wraptite airtight membrane makes a significant contribution to a building's thermal performance by preventing lateral air movement, but it also contributes to a healthy living environment and a healthy building, thanks to its vapour permeability.

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

Key Benefits

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



*Please contact the A. Proctor Group's technical department for advice on specific geographical locations.



See www.proctorgroup.com for Wraptite Warranty Application form.





Property	Test Method	Mean Results
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
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 ^{1,2}

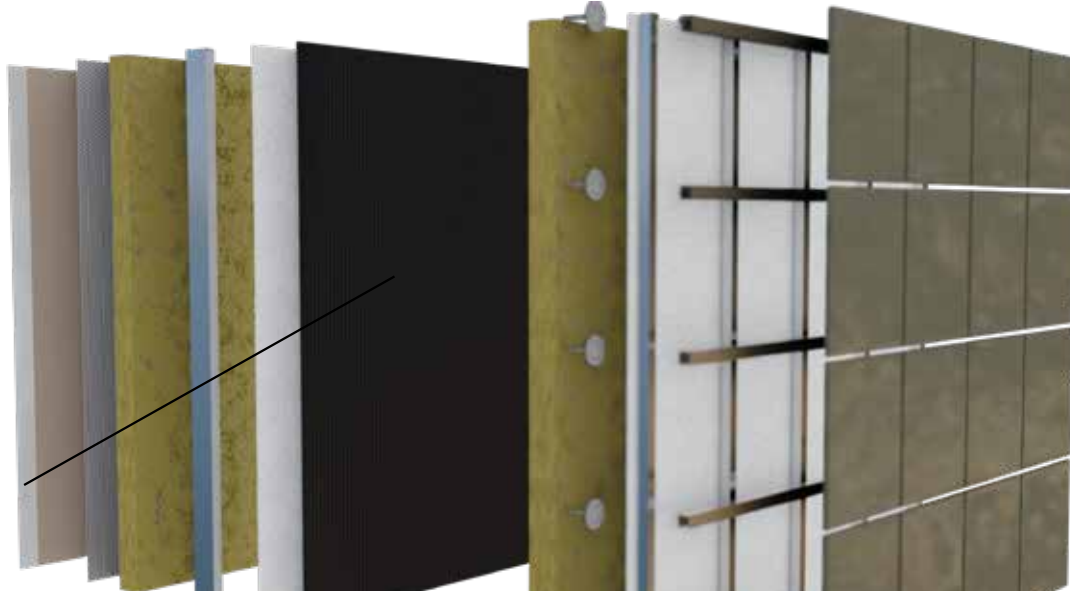
¹tested over 12mm calcium silicate board / fibre cement board as per BS EN 13238:2010.

²free hanging. It is unlikely that any breathable membrane in this application, including Wraptite would be free hanging due to either the self-adhered backing in Wraptite or the tapes used in installing non-self-adhered membranes. This test result is included to allow product specifiers to objectively compare Wraptite to other membranes tested using this method, and does not constitute a recommendation that Wraptite is installed free-hanging. Clients are urged to discuss their individual project with the Technical Department to ensure the suitability for any given project taking into account substrate, building height and boundary proximity.

All tests carried out to EN 13859-2 standard.

Please see the Wraptite brochure for technical details and information on the full Wraptite range of accessories.

Wraptite UV



WRAPTITE® UV

Wraptite UV is a Class B-s2,d0 fire rated membrane that combines the best 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 exceptional water resistance and UV resistance to provide a “shadow” appearance within open rainscreen façades.

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.

Property		Mean Results	
Roll Size		1.5m x 50m	
Nominal thickness		0.38mm	
Basis Weight		392 g/m ² (incl. liner)	
Water penetration	Before ageing	Class WI (before ageing)	
	After ageing	Class WI (after ageing)	
Water Vapour Permeability		Sd 0.06m	
Tensile strength	Before ageing	MD 490N/50mm	CD 330N/50mm
	After ageing	MD 480N/50mm	CD 310N/50mm
Tear resistance		MD 327.38N CD 453.38N	
Reaction to Fire		Class B-s2,d0*	
Resistance to penetration of air		<0.01 m ³ /(m ² .h.50Pa)	
UV resistance uncovered		9 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
- Lightweight and easy to install
- Manufactured rolled goods ensure consistent properties and performance
- Wide service temperature range
- Can be left exposed for up to 9 months (UK climate)

Accessories

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

Please see pages 9-10 for details

WRAPTITE® TAPE

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

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



WRAPTITE TAPE - SPLIT LINER

Whilst Wraptite 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 Tape to be adhered to the substrate, prior to the second portion, and can allow panels to be easily 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.

Property	Test Method	Mean Results
Roll sizes	-	75mm x 50m 100mm x 50m 150mm x 50m 300mm x 50m
See page 7 for Physical Properties		

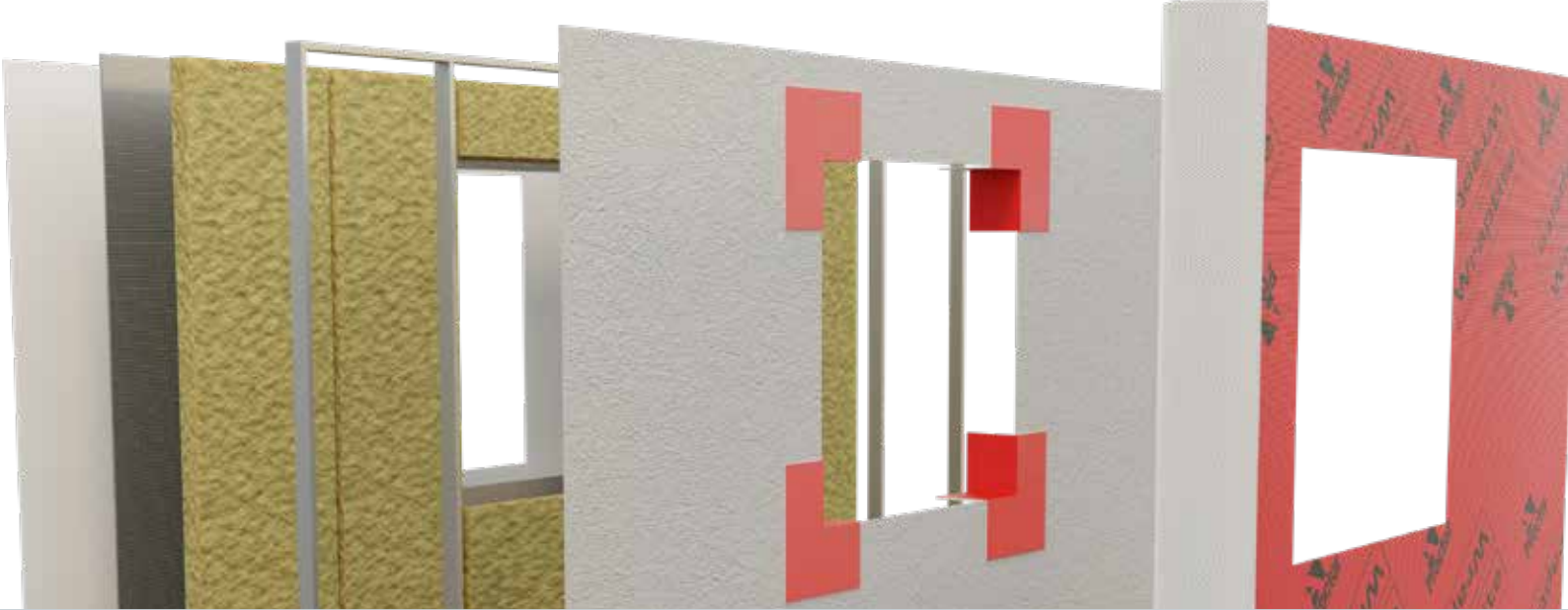
Please visit our website or Wraptite brochure for full product details

Key Benefits - Tape and Split Liner

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

Key Benefits - Wraptite 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



WRAPTITE® CORNERS

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

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

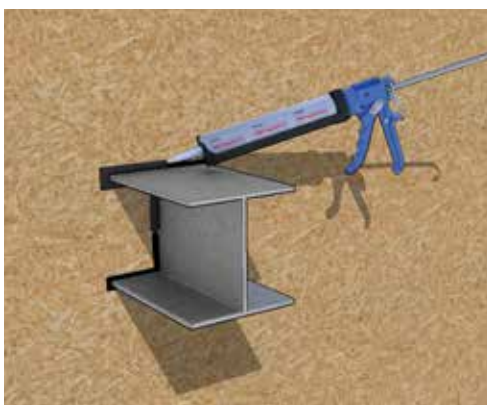
Key Benefits

- Easy installation
- Ensures continuity of airtightness measures
- Simplifies complex detailing
- Faster installation
- Lightweight and flexible

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 our entire range of vapour permeable products for joint detailing in exterior sheathing panels.

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



Key Benefits

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

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

PROCHECK[®] ADAPT

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

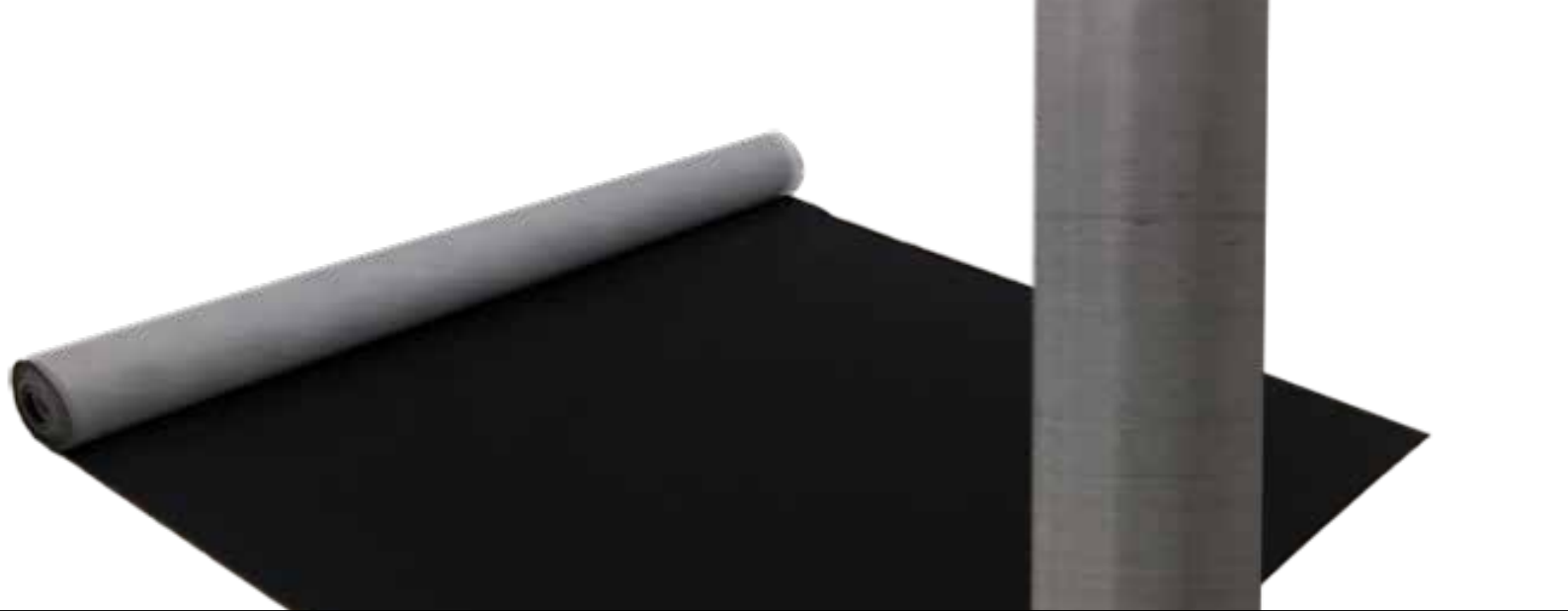


Property	Test Method	Mean Results
Roll Size	-	1.5m x 50m
Weight	ISO 536	110 g/m ²
Nail Tear Resistance	EN 12310-1	MD 350N CD 375N
Tensile Strength	EN 12311-1	MD 350N/50mm CD 315N/50mm
Elongation	EN 12311-1	MD 20% CD 20%
Vapour Resistance	EN 12572	Sd 0.4m - 90m
Reaction to Fire	EN 13501-1	Class E
Air Permeability	BS EN 12114:2000	0.00 m ³ /m ² .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





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, good 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
Roll Size		1.5m x 50m
Weight		230 g/m ²
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

Key Benefits

- A2 Reaction to Fire Classification
- 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
- Robust & Durable wall membrane
- Allows temporary protection of the building until the primary external covering is installed

ACCESSORIES

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

SPACETHERM[®] A-RATED

Spacetherm A-Rated is a flexible, high-performance, 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 A-Rated is also useful in minimising thermal bridges around windows in areas such as window reveals and roller shutter cases.

With a thermal conductivity of less than 0.02 W/mK, Spacetherm A-Rated performance credentials qualify it as one of the best insulation materials available worldwide. Engineered for space-critical applications, the product offers low thermal conductivity, superior compression strength, plus breathability allied to hydrophobic characteristics.



Key Benefits

- Class leading reaction to fire classification from an Aerogel insulation
- Superior thermal performance
- Limited combustibility
- Water vapour diffusion open
- Permeable
- Flexible
- Thinnest aerogel insulation available

For specific details please contact technical for further information.

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



REFLECTASHIELD® TF 0.8I

Reflectashield TF 0.8I is a water resistant, non-woven polypropylene foil faced laminate with a unique patented three layer composition, providing excellent breathability, as well as secondary protection to the building during construction. Reflectashield TF 0.8I is vapour permeable, has low emissivity and an enhanced foil surface designed to improve the thermal resistance of timber and steel frame structures. It has a high strength to weight ratio. The product is installed on the external face of the timber frame, foil side face out, similar to that of a traditional breather membrane but with added thermal benefits.

Reflectashield TF 0.8I complies with the low vapour resistance requirements set out by BS 4016, TRADA and the NHBC. The existing legislation requires a breather membrane in walls to have a vapour resistance not greater than 0.60 MNs/g. Reflectashield TF 0.8I has a vapour resistance of 0.41 MNs/g.

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

Property	Test Method	Mean Results
Roll Sizes	n/a	1.45m x 50m 2.7m x 100m 2.9m x 100m
Mass per unit area	EN 1849-2	134g/m ²
Reaction to Fire	EN 11925-2	Class E
Water vapour resistance Sd	EN 1931	0.083 m
Water penetration	EN 1928	Class W2 (Before and After ageing)
Thermal performance (R)	BS EN ISO 8990:1996	0.81 m ² K/W
Emissivity	BS EN 15976:2011	0.05

Key Benefits

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



REFLECTATHERM® PLUS

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

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

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



Property	Test Method	Mean Results
Roll Size	n/a	1.5m x 50m 2.7m x 100m 3m x 100m
Mass per unit area	EN 1849-2	142g/m ²
Reaction to Fire	EN 11925-2	Class E*
Water vapour resistance Sd	EN 1931	150m
Vapour resistance	EN 1931	750 MN/sg
Water penetration	EN 1928	Class W1 (Before and After ageing)
Tensile strength	EN 12311-2	MD 255 N/50mm CD 200 N/50mm
Elongation	EN 12311-1	MD 59% CD 70%
Thermal Performance		
Vertical air cavity - horizontal heat flow	BS EN ISO 8990:1996	0.78 (m ² K)/W
45 degree air cavity - upward heat flow	BS EN ISO 8990:1996	0.61 (m ² K)/W
Horizontal air cavity - upward heat flow	BS EN ISO 8990:1996	0.58 (m ² K)/W
Horizontal air cavity - downward heat flow	BS EN ISO 6946 Annex B	1.41 (m ² K)/W
Emissivity	BS EN 15976:2011	0.04

*When tested to EN 11925-2 over a rock wool substrate

Key Benefits

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





“ 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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