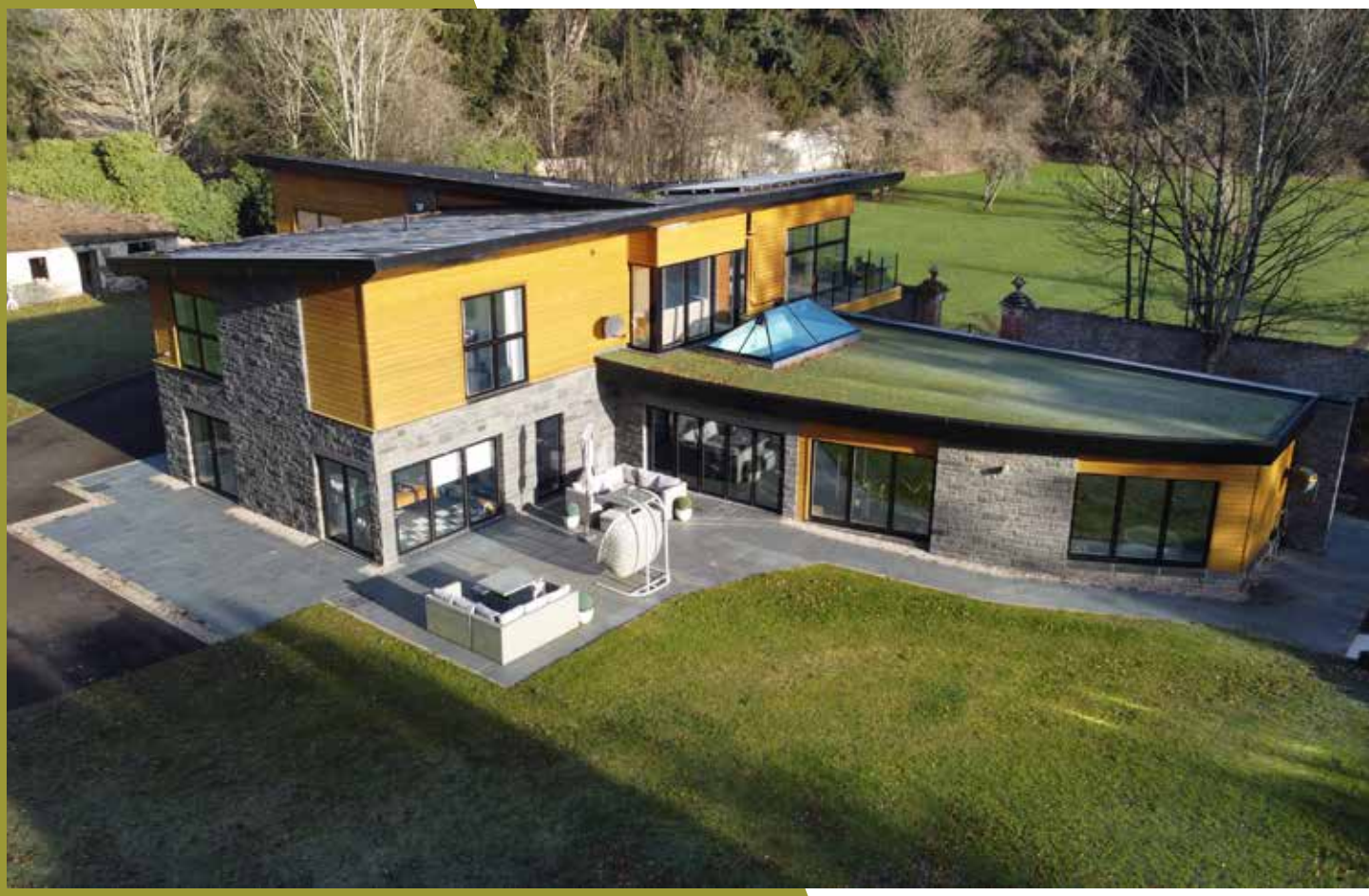
Proctor Passive

SYSTEMS FOR AIRTIGHTNESS,
HEAT, AIR & MOISTURE MOVEMENT



Product Solution Providers

Proctor Group

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Passive House

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Revised: February 2026
Version: 1.020
Next review due: February 2027

A. Proctor Group

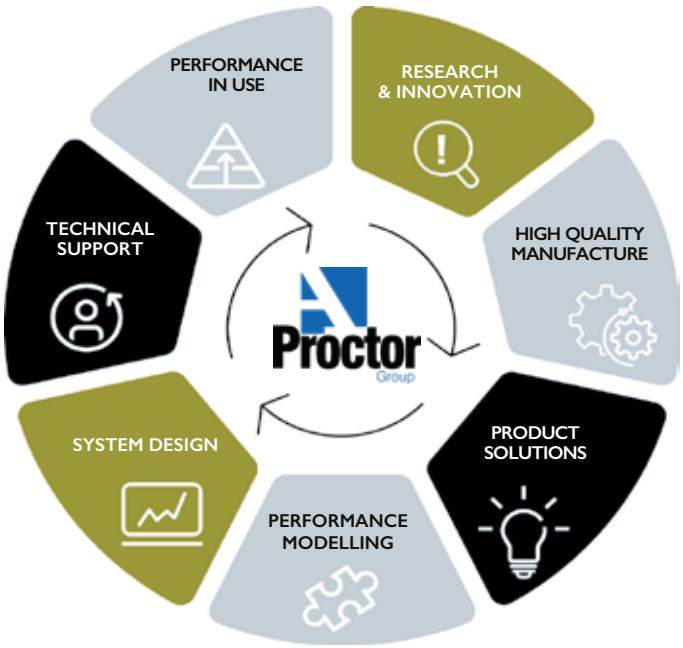
Experts in membrane systems

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

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

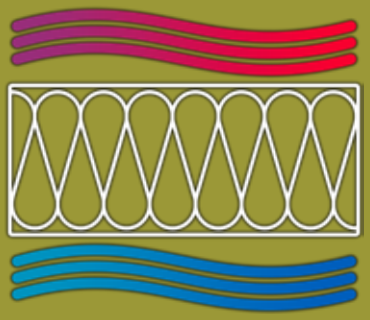
The Passive House concept is founded on five basic principles for good design:

- 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 todays increasing focus on both housing quality and energy consciousness serves to reiterate their importance.

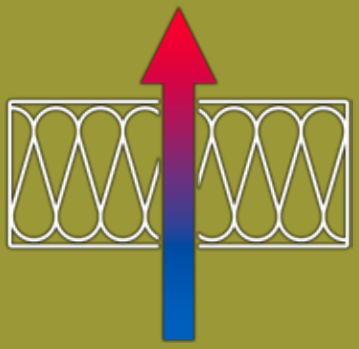
With solutions to simplify reducing air leakage rates and control cold bridging, the Proctor Passive range of solutions allows specifiers to adhere to these guiding principles without compromising in other areas. This ensures the delivery of best practice performance with the least impact on costs and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



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 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 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. 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.

Passive House Requirements - Ready Reckoner

	Properties				Function	Type of Building
Product	Airtightness	Thermal	Vapour Permeable	Vapour Tight		
Wraptite®	✓		✓		External airtight membrane	Residential, Commercial, High rise, Timber / Steel Frame
Wraptite® UV	✓		✓		Open-jointed façade membrane	Commercial Façades, High rise, Rainscreen cladding
Wraptite® Tape / Split Liner	✓		✓		Sealing Tape	All building types, joints and penetrations
Wraptite® Corners	✓		✓		Preformed Corners	All building types, windows and door junctions
Wraptite® Liquid Flashing	✓		✓		Liquid sealant	All building types, complex details, irregular junctions
Procheck® Adapt	✓			✓	Variable vapour control membrane	Residential & commercial, variable climates
Spacetherm® A1		✓			Aerogel insulation / detailing	Façades, junctions, window reveals, roller shutter cases, public / commercial retrofits
Reflectatherm® Plus	✓	✓		✓	Reflective vapour barrier	Residential & commercial, internal walls / ceilings
Probreathe® A2	✓		✓		Breathable façade membrane	High-rise, relevant buildings > 11m / 18m, façades
Proctorwrap Reflect®		✓	✓		Foil-faced breather membrane	Residential housing, timber / steel frame walls



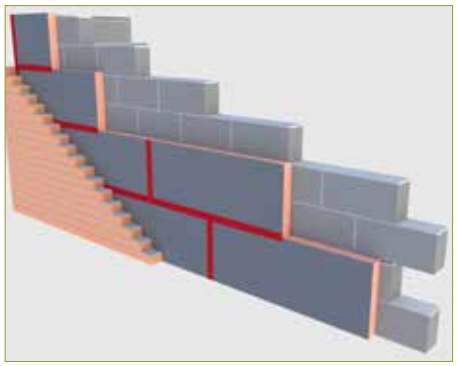
WRAPTITE®

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 achieve more quickly. Wraptite airtight membrane makes a 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
- 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.

BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE 15/5274

NBS

phA CERTIFIED COMPONENT Passive House Institute



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
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]

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

[2]free 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 13859-2:2010 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 properties of vapour permeability and air tightness in one 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.

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	
		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 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 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 sheathing to dry quickly and moisture vapour to escape. This ensures 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 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		

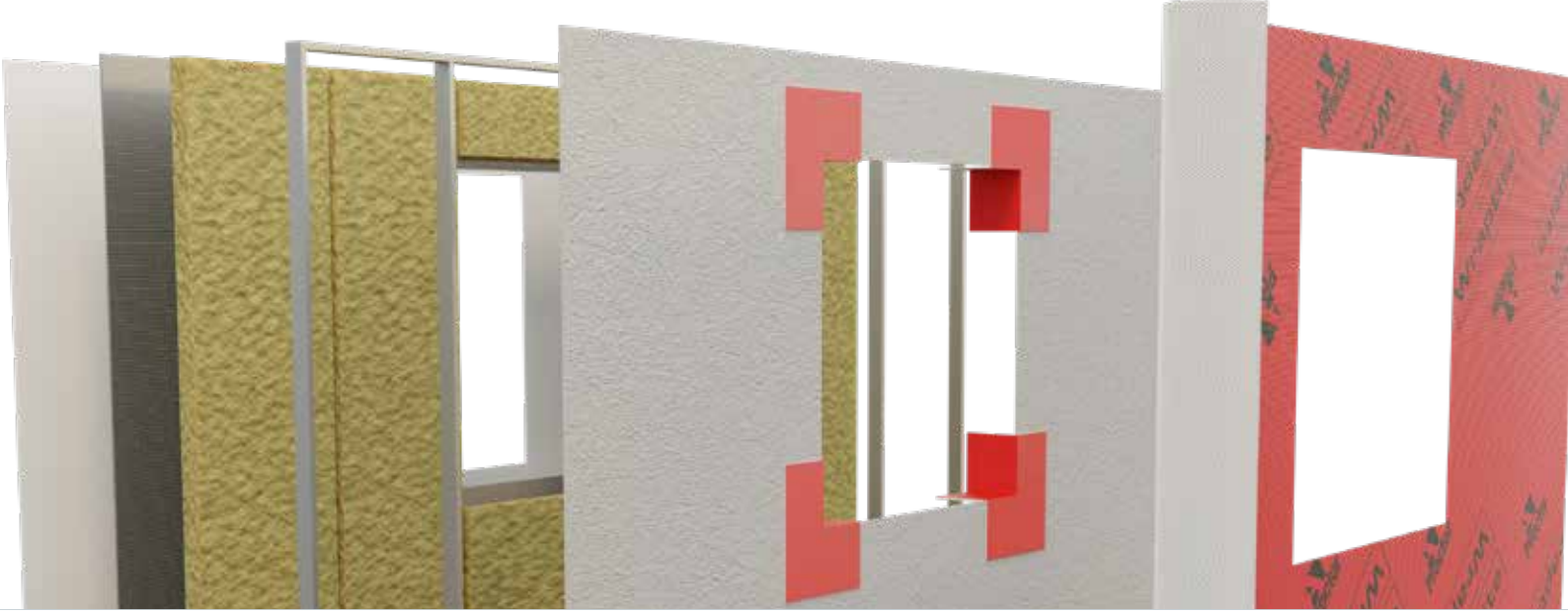
Please visit our website or Wraptite brochure for full product details

Key Benefits - Tape and Split Liner

- Vapour permeable tape used to protect exposed joints in insulation
- Simpler 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 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.

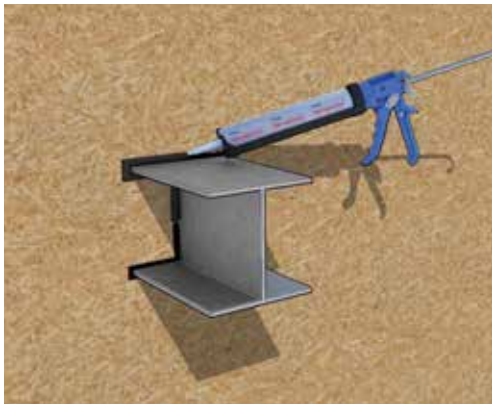
Key Benefits

- Ensures continuity of airtightness measures
- Simplifies complex detailing
- Simpler installation
- 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
- Does not peel back when left exposed
- Does not create build up in rough openings
- 100% solvent free
- Bonds to most construction materials
- Does not harm foam insulation

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

PROCHECK® ADAPT

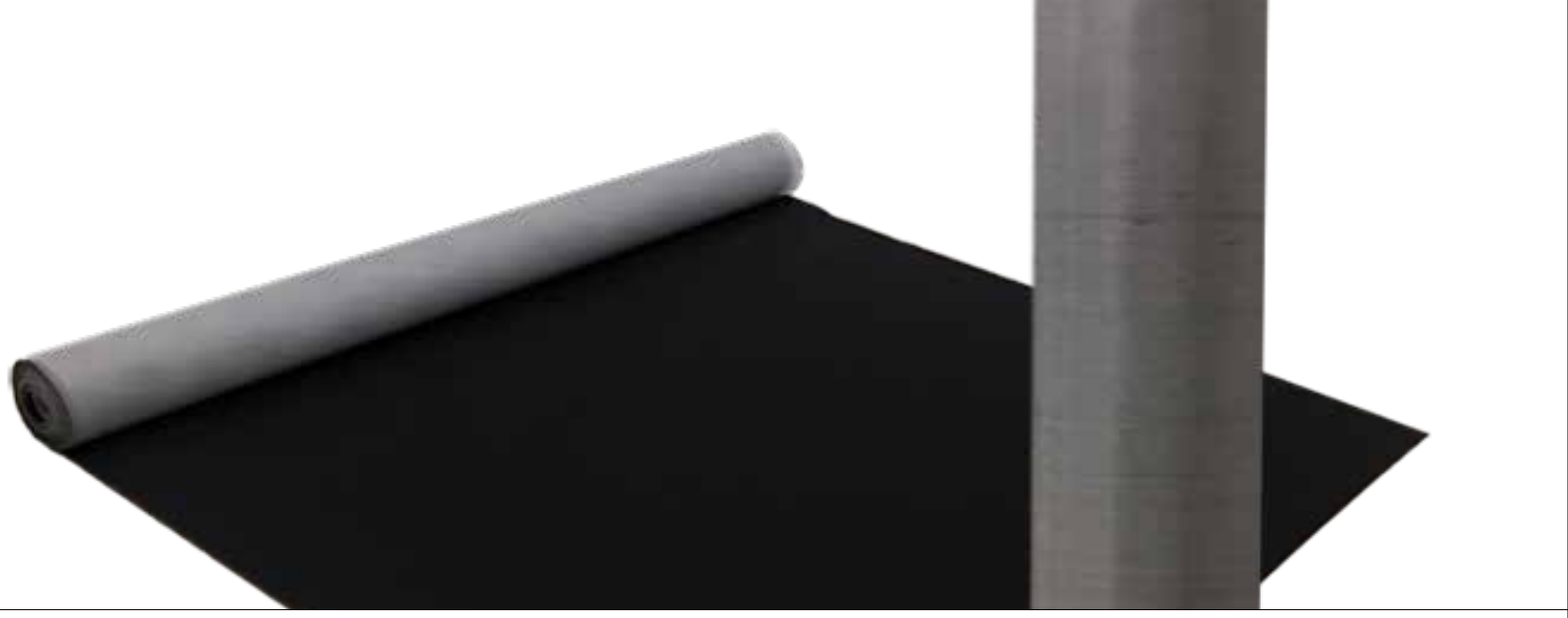
Procheck Adapt is a variable-permeable vapour control layer for use in a variety of commercial and residential applications. It protects the building fabric from potential risks of condensation and it will also act as an airtight barrier. Its variable permeability adapts to changes in humidity levels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



Property	Test Method	Mean Results
	BS EN 13984:2013	
Roll Size	-	1.5m x 50m
Weight	-	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



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

Key Benefits

- A2 Reaction to Fire Classification
- BBA Certificate No. 25/7384
- Increased airtightness
- 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 50m)
- Probreathe FR Tape (75mm x 25m)

BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE 25/7384

NBS

CCPi

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.

With a thermal conductivity of less than 0.02 W/mK, Spacetherm A1 performance credentials qualify it as one of the lowest thermal conductivity available worldwide. Engineered for space-critical applications, the product offers compression strength, plus breathability allied to hydrophobic characteristics. Spacetherm A1 can be also be supplied in a variety of finishes, the substantial layers meeting the requirements for A1 classification (insulation, MgO and plasterboard).



Key Benefits

- Reaction to Fire A1 non-combustible
- Non-combustibility
- Water vapour diffusion open
- Permeable
- Flexible
- Thinnest A-Rated 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.



PROCTORWRAP REFLECT®

Proctorwrap Reflect is a non-woven polypropylene, foil faced laminate with a patented three layer composition, providing breathability, as well as secondary protection to the building during construction. Proctorwrap Reflect is vapour permeable, has low emissivity and an enhanced foil surface 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.

Proctorwrap Reflect complies with the low vapour resistance requirements set out by TRADA and the NHBC. The existing legislation requires a breather membrane in walls to have a vapour resistance not greater than Sd 0.12m / 0.6 MNs/g. Proctorwrap Reflect has a vapour resistance of Sd 0.08m / 0.4 MNs/g.

We can provide a range of solutions, with U-values down to as low as 0.18W/m^{2}K in standard timber frame walling applications.

Property	Test Method	Mean Results
	BS EN 13859-2:2010	
Roll Sizes	n/a	1.5m x 50m 2.7m x 100m 3m x 100m
Mass per unit area	-	140 +/- 5% g/m^2
Reaction to Fire	EN 13501-1	Class E
Water vapour resistance Sd	EN 12572, Condition C	0.08 m
Water penetration	EN 13111:2010	Class W2 (Before and After ageing)
Thermal performance (R)		0.71 m^{2}K/W
Emissivity	EN 13976	<0.05

Key Benefits

- R value 0.71.
- Competitively priced.
- Enhanced foil surface.
- Low vapour resistance - complies with TRADA and NHBC requirement.
- High strength to weight ratio.
- 1.5, 2.7 & 3 metre wide rolls.

REFLECTATHERM® PLUS

Reflectatherm Plus is a reflective, high resistance vapour barrier for internal walls, ceilings and floors, which will 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 ' Part L' in England and Wales and 'Section 6' in Scotland.



Property	Test Method	Mean Results	
	BS EN 13984:2013		
Roll Size	n/a	1.5m x 50m 2.7m x 100m 3m x 100m	
Mass per unit area	-	140 +/- 5% g/m^2	
Reaction to Fire	EN 13501-1	Class E	
Sd value	EN 1931	>150m	
Resistance to water penetration	EN 13111:2010	Class W1	
Emissivity	EN 15976	<0.05	
Tensile force	EN12311-1, mod with EN 13859-2:2014 Annex A	MD 150 N/50mm	CD 140 N/50mm
Elongation		MD 50%	CD 40%
Tearing resistance	EN 12310-1, mod with EN 13859-2:2014	MD 180N	CD 180N

Key Benefits

- R value of 0.72 m^{2}K/W when used with a minimum 19mm service cavity.
- High vapour resistance.
- Creates service void.
- Creates an unbroken vapour control layer.
- Sd Value of >150m.
- Help meets the requirements of the Part L in England and Wales, Section 6 in Scotland, and Technical Guidance Document L in Ireland.



" 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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