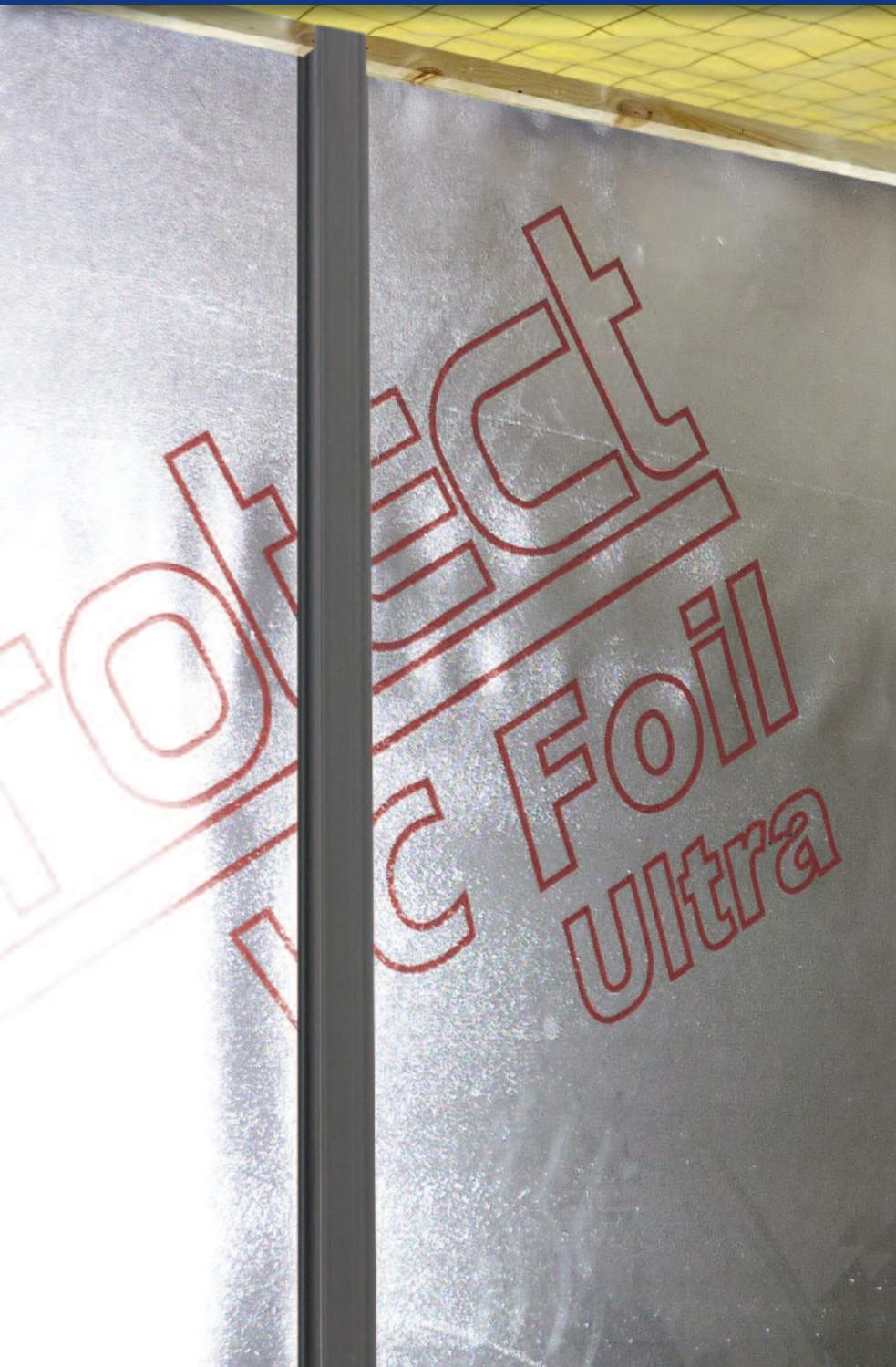


**protect**

**protect**  
**BarriAir**

## BUILDTIGHT™ RANGE





Improving the  
airtightness of  
buildings  
is increasingly  
important to  
reduce  
unnecessary  
heat loss and  
reduce carbon  
emissions

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## Why is airtightness important?

Home energy use is responsible for 27% of UK CO<sub>2</sub> emissions, and poor airtightness can be responsible for up to 40% of heat loss from buildings. Airtightness refers to the control of air leakage by eliminating unwanted draughts and heat loss through the external fabric of the building. There is little merit in improving U-value standards unless the levels of uncontrolled air leakage are also significantly reduced.

## Airtightness standards

Building Regulations Approved Document L1 (England and Wales), F1 (Northern Ireland) and Building (Scotland) Regulations set maximum permissible levels for air leakage for domestic and non-domestic buildings. Proposed revisions to Building Regulations Part L and the application of the Code for Sustainable Homes will require even higher standards of airtightness. Maximum levels are generally recognised in the industry to be 10m<sup>3</sup>/hr/m<sup>2</sup> with best practice levels down to 3m<sup>3</sup>/hr/m<sup>2</sup>.

Airtightness needs to be a priority throughout the whole process, before, during and after construction, and construction staff need to understand its importance.

The more they are aware of the issues and benefits the less likely that essential components will be engineered out of the design for cost savings, and the more they will understand the need for higher levels of workmanship and attention to detail.

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## AIRTIGHTNESS AND ENERGY EFFICIENCY

### Design and construction

Airtightness must be addressed at both the design and construction stages to be wholly effective. Whilst the minimum standards have been achieved on a number of new buildings, many fail to comply owing to inadequate design and poor site construction. Post-occupancy research published on the Sigma® Home (BRE Innovation Park) shows that despite the high fabric specification and attention to detail (designed to meet Code Level 5), the heat loss from the 'as-built' home is about 40% worse than predicted at the design stage.

### Air leakage paths

Common air leakage paths are shown in the diagram below. The airtightness strategy needs to address these problem areas by introducing air barriers into the structure which are well sealed at junctions and between the elements to reduce uncontrolled air leakage. Detailing should be as simple as possible to allow for ease of installation, to reduce the risk of damage on site by crossover trades and to reduce the dependence on workmanship.

### Build tight - ventilate right

Improving airtightness will reduce air leakage and the uncontrolled flow of air in and out of buildings. Provision of controlled ventilation is therefore imperative.

### Controlled ventilation

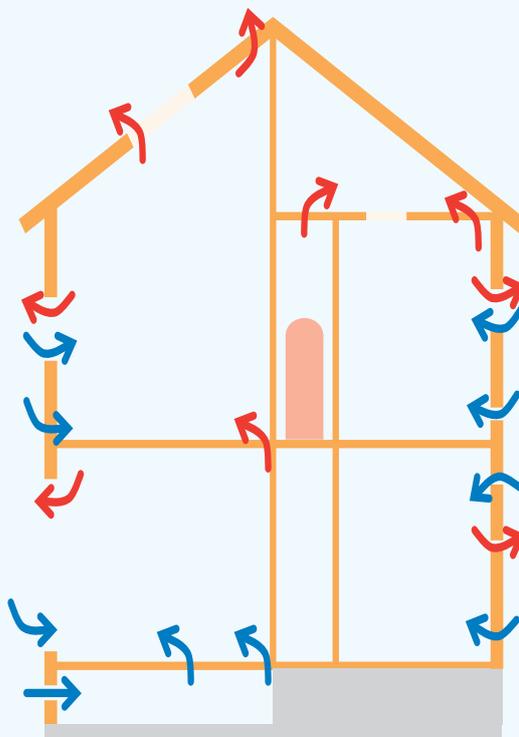
Sealing of the building fabric to eliminate air leakage will significantly reduce 'fortuitous' ventilation, so the need for controlled ventilation to provide good air quality and prevent condensation and mould growth becomes increasingly important. Ventilation is essential to remove moisture vapour, combat condensation, provide a comfortable environment avoiding stuffiness and nausea, and to dilute pollutants, notably carbon dioxide, promoting a healthier air quality. This is particularly important in timber frame construction as the vapour control layer is directly behind the internal plasterboard and therefore the building structure cannot absorb moisture in the same way as traditional masonry.

### Passivent ventilation

Our sister company Passivent offer a comprehensive range of high quality intelligent passive and mechanical ventilation products and systems to ensure that effective and efficient whole-house ventilation is provided at all times, including humidity-controlled options.

### Common air leakage paths

- Leakage through ceiling from gaps around loft hatch frame or inadequate seals between the hatch and frame.
- Gaps around electrical services, cables, sockets, light fittings, ceiling roses and recessed lights.
- Partition junctions, particularly with external walls or ceilings.
- Gaps between floorboards or blocks, particularly around the perimeter / gaps at the junctions of floors and external walls.
- Gaps around windows and external doors, eg window frame and wall reveals, between doors and frames, door thresholds etc.
- Gaps around extractor fans, boiler flues and cooker hoods.
- General leakage through walls - gaps in mortar joints or missing joints around blockwork on the inner leaf.
- Gaps around service pipes, eg plumbing supply, central heating and soil pipes, particularly behind sinks, baths and WC's.
- Cuts and holes in vapour control membrane to accommodate service penetrations.



Protect would always recommend the creation of a service cavity either by using 25mm battens or using Protect VC Foil Ultra with Cavit-E Clip to avoid compromising the integrity of the vapour control layer.

### Protect solutions

Correct detailing and use of a vapour control layer or air barrier in conjunction with sealing tapes can dramatically reduce air leakage and significantly reduce energy consumption in buildings.

The Protect Buildtight™ range of barrier materials and sealing tapes are specially developed to enable high levels of airtightness to be achieved. These barriers are also less likely to be affected by settlement over the life of the building.

There is in addition a Glidevale range of high performance accessory products such as loft access traps which incorporate closed cell vapour seals to limit air leakage in these key areas.

## BARRIAIR

### BENEFITS

- Provides an airtight system when installed with sealed laps.
- Dramatically reduces heat loss through the building fabric.
- Improves the thermal performance of all insulants by reducing convection flows.
- Tough, durable with high tear resistance.
- Easy to cut and lightweight to handle in 1.5 x 50m rolls.
- Provides support to mineral wool and rock fibre when fixed to timber frame studs or rafters.
- Helps to avoid interstitial condensation risk within insulation in accordance with BS 5250.

Protect BarriAir with integrated lap and sealing tapes is a high performance and multi-purpose coated non-woven membrane which forms a highly effective air leakage barrier with vapour control qualities.

The yellow semi-translucent material has a grid printed across the whole surface which promotes simple alignment with timber studs or joists. The integrated tapes are located on the outer edges of the membrane following the dotted overlap line. On one side the tape is on the upper surface, on the other side the tape is on the lower surface. This layout ensures that the membrane overlap is jointed and sealed by applying the two layers of adhesive to one another, providing a more effective seal than a traditional overlap tape even when joined without an underlaying substrate.

There is an additional benefit in that any mechanical fixings applied through the double layered strips will have reduced air leakage as the adhesive will act as a sealant.

#### Installation

Protect BarriAir is installed on the warm side of the structure immediately adjacent to the insulation and can be used on walls and ceilings to significantly reduce air leakage in any construction helping to meet Building Regulations and Airtightness Standards.

#### Roll size

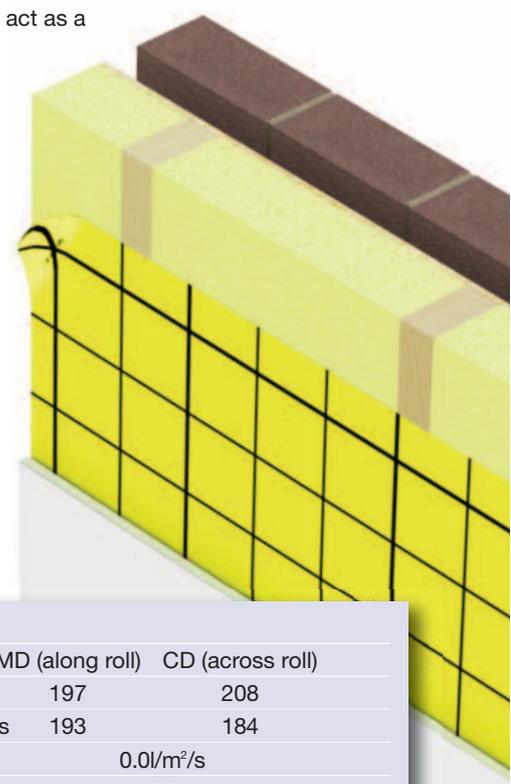
1.5m wide x 50m.

#### Specification clause

Air barrier to be Protect BarriAir supplied by Protect Membranes, 2 Brooklands Road, Sale, Cheshire M33 3SS, Telephone: 0161 905 5700 Fax: 0161 905 2085.

Email: [info@protectmembranes.com](mailto:info@protectmembranes.com)  
Air barrier to be coated non-woven membrane of twin ply construction with integrated sealing tapes on opposing edges of the roll and vapour control qualities offering water vapour resistance of 95MN/g. Air barrier to be installed with sealed laps and to be fitted into wall/ceiling/floor\* in accordance with BS 5250, BS 9250 and manufacturer's instructions.

\* delete as appropriate



### PERFORMANCE

	MD (along roll)	CD (across roll)
Nail Tear Strength (N) to EN 12310-1 with mods	197	208
Tensile Strength (N/50mm) to EN 12311-1 with mods	193	184
Air permeability at 200Pa	0.0l/m <sup>2</sup> /s	
Water vapour resistance (MN/g) to EN 1931	95	
Weight g/m <sup>2</sup>	100	

## VC FOIL ULTRA

Protect VC Foil Ultra with newly integrated lap and sealing tapes is a robust highly reflective low emissivity vapour control layer which has been developed to enhance the thermal performance of walls, ceilings and floors and offers Class 1 Surface Spread of Flame to BS 476-7.

It provides a significant thermal benefit along with strength and performance enhancements over conventional vapour control layer materials when used with a service cavity. The new integrated lap & sealing tape speeds up installation when compared to traditional overlap tapes.

Protect VC Foil Ultra is of triple ply construction and the innovative design incorporates an adhesive strip located on the outer edges of the membrane and follows the dotted overlap line. Along one edge the tape is on the upper surface, on the opposite edge the tape is on the lower surface. This layout allows ease of application, quick installation and ensures that the overlap is correctly jointed and sealed by securing the two strips of integrated tape together. This provides a more reliable, effective seal than a traditional overlap tape even when joined without an underlying substrate.

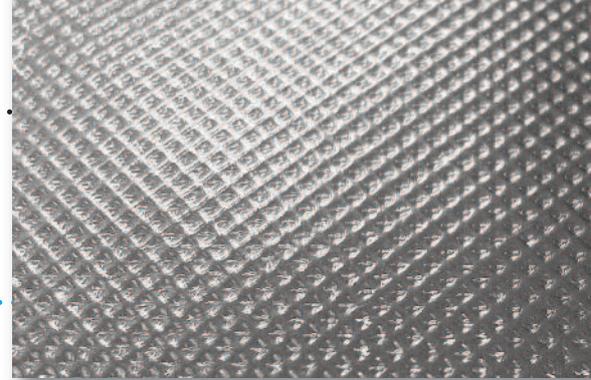
Additionally, when applying any mechanical fixings through the double layered sealing laps, the integrated tape acts as a secondary sealant and reduces air leakage in these otherwise problematic areas.

### Installation

Protect VC Foil Ultra is installed on the warm side of the structure immediately adjacent to the insulation and can be used on walls and ceilings to significantly improve thermal performance and reduce air leakage in any construction helping to meet Building Regulations and Standards requirements for airtightness.

### Roll sizes

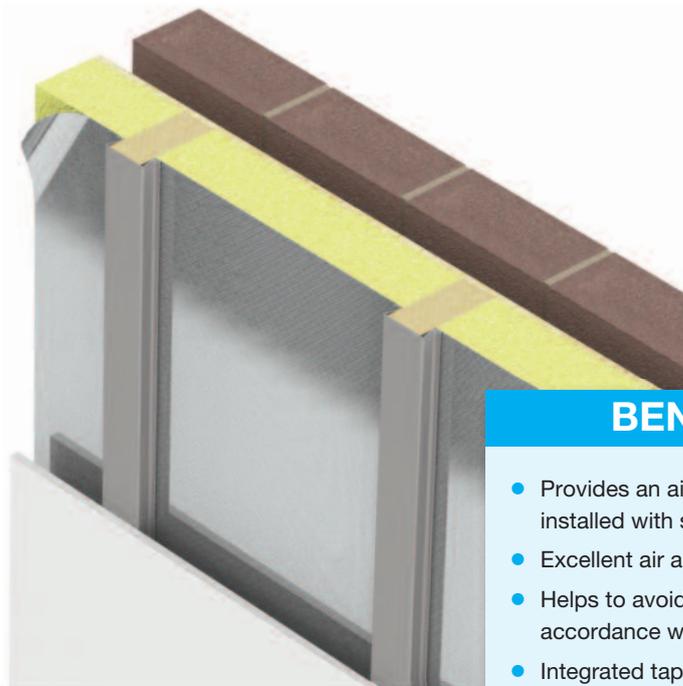
1.35m x 50m, 1.5m x 50m (with integral lap and sealing tapes), 2.7m x 50m and 3.0m x 100m.



### Specification clause

Air and Vapour control layer to be Protect VC Foil Ultra supplied by Protect Membranes, 2 Brooklands Road, Sale, Cheshire M33 3SS, Telephone: 0161 905 5700 Fax: 0161 905 2085. Email: info@protectmembranes.com Air and vapour control layer to be independently approved and of triple ply construction with non-woven core and solid corrosion resistant aluminium layer to provide 0.78 thermal resistance and integrated sealing tapes on opposing edges of the roll. Air and vapour control layer to be fitted into wall/ceiling/floor\* in accordance with BS 5250, BS 9250 and manufacturer's instructions.

\* delete as required



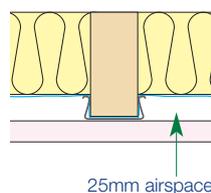
## BENEFITS

- Provides an airtight system when installed with sealed laps.
- Excellent air and vapour resistance.
- Helps to avoid condensation risk in accordance with BS 5250.
- Integrated tapes for quicker installation and reliable, effective joint sealing.
- Low emissivity reflective surface enhances the thermal performance of the structure into which it is incorporated (still air cavity required).
- Corrosion and damage resistant reflective surface.
- Excellent nail tear resistance.
- High burst strength, tough and durable.
- Easy to cut and lightweight to handle.
- BM TRADA independently certified for all applications.

### PERFORMANCE

	MD (along roll)	CD (across roll)
Nail Tear Strength (N) to EN 12310-1 with mods	160	160
Tensile Strength (N/50mm) to EN 12311-1 with mods	229	226
Water vapour resistance (MNs/g) to EN 1931	>589	
Thermal resistance m <sup>2</sup> K/W heat flow horizontal	0.78	
Weight g/m <sup>2</sup>	150	

**The Cavit-E clip** has been designed specifically for use with Protect VC Foil Ultra to enhance thermal performance of timber frame walls and warm roofs. It simply clips over the studs or rafters, holding Protect VC Foil Ultra in place and creating a 25mm unventilated airspace.



## PROTECT TAPES

### Specification clause

All laps and service penetrations to be sealed with Protect high tack/ double-sided/Reveal single-sided/reflective reinforced single-sided/ reflective single-sided/nail sealing\* tapes as indicated on drawings/ details supplied. All supplied by Protect Membranes, 2 Brooklands Road, Sale, Cheshire M33 3SS, Telephone: 0161 905 5700 Fax: 0161 905 2085. Email: info@protectmembranes.com \*delete as appropriate

### Protect Sealing Tapes range

The Protect range of sealing tapes has been developed to complement the Protect range of roofing underlays, timber frame/cladding membranes and vapour control layers, to help reduce uncontrolled air leakage in both domestic and non-domestic buildings. There is a range of single and double-sided high tack tapes including reflective tapes, suitable for applications such as lap sealing, butt joints, nail penetrations and service penetrations.

All surfaces to be bonded must be clean and dry, and free of dust, grease, debris and standing water.

### Protect Reveal Tape range

Protect Reveal tape is a single-sided, high-tack, extremely durable, woven reinforced reflective tape ideal for dressing into awkward details without tearing. Performs the airtightness function between the internal AVCL and the external cladding or membrane in and around doors and window reveals.

**Applications:** for sealing laps of timber frame membranes, air barriers and vapour control layers.

Available in a range of widths for different uses, including;

**50mm x 50m roll:** structural reveal of the building to the edge of the window frame.

**75mm x 50m roll:** corners, wall to floor and wall to ceiling junctions.

**200mm x 50m and 300mm x 20m rolls:** window and door reveals to both line the reveal and maintain the integrity of the AVCL.

### Protect Double-sided Tape

Double-sided high-tack tape, for sealing between laps of Protect membranes.

**Roll size:** 50mm x 50m

**Applications:** Designed for sealing overlaps of roofing underlays, timber frame membranes, air barriers and vapour control layers and for sealing Protect membranes to smooth surfaces.

External or internal use.

### Protect Reflective Reinforced Tape

Single-sided, high-tack, reflective aluminium spunbond reinforced tape.

**Roll size:** 50mm x 50m

**Applications:** Designed for sealing overlap of timber frame membranes, air barriers and vapour control layers and for sealing around service penetrations.

External or internal use.

### Protect VC Foil Tape

Single-sided, high-tack, reflective aluminium tape.

**Roll size:** 50mm x 50m

**Applications:** Designed for sealing overlaps of Protect VC Foil Ultra. For internal use only.

### Protect Butyl (Nail) Sealing Tape

Double-sided, high-tack butyl tape.

**Roll size:** 30mm x 25m

**Applications:** Designed to form a moisture tight seal between Protect membranes and rafters, timber studs or counterbattens (when release liner left in place). External or internal use.

### Protect Reinforced Universal Tape

Single-sided, high-tack, UV and heat stabilised spunbond reinforced tape.

**Roll size:** 50mm x 50m

**Applications:** Designed as a general purpose tape for sealing overlaps of timber frame membranes, air barriers and vapour control layers.

Available in blue, green or black, can be used for external or internal use.



## PROTECT PWAB PACK

### Protect PWAB (Party Wall Air Barrier)

Approved Document Part L requires party walls to be assigned a U-value, which is used in SAP calculations in the building. Party wall cavities allow a significant amount of air movement in the cavity, and so movement of heat to other areas of the building, and therefore greater heat loss than was thought. Previously the party wall was assumed to not lose any heat and so have a U-value of 0.0W/m<sup>2</sup>/K. In order to claim that value now, the wall must have a fully filled cavity and be effectively edge sealed with membrane.

If the cavity is unfilled but has effective edge sealing, the given U-value is 0.2W/m<sup>2</sup>/K.

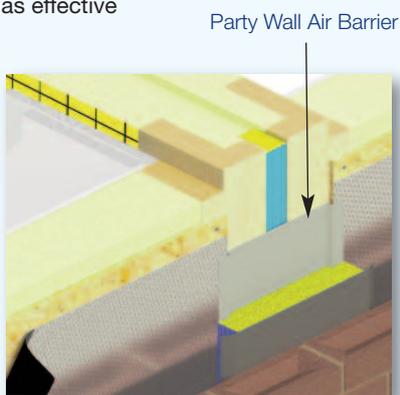
The PWAB Pack includes the Protect Reinforced Universal Tape to make an airtight seal on the roll edges.

PWAB roll size: 300mm x 25m.

Reinforced Universal Tape: 50mm x 50m.

### Specification clause

Create an airtight seal around the party wall perimeter using Protect PWAB airtight vapour permeable party wall air barrier pack, comprising 1 no. roll of 300mm x 25m PWAB roll and 1 no. 50mm x 50m Protect Reinforced Universal Tape supplied by Protect Membranes, 2 Brooklands Road, Sale, Cheshire, M33 3SS, Telephone: 0161 905 5700 Fax: 0161 905 2085 Email: info@protectmembranes.com



## PROTECT FCM750

### Protect Floor Cassette Membrane

Protect FCM750 is a high performance, airtight, vapour-permeable membrane which offers a simple practical solution to maintaining the integrity of the airtightness system at difficult intermediate floor junctions. Embossed grey upper and white lower surface, printed with product branding for ease of identification.

Roll sizes: 0.75m x 50m and 1.0m x 50m.

### Specification clause

Floor cassette to be airtight sealed using Protect FCM750 floor cassette membrane supplied by Protect Membranes, 2 Brooklands Road, Sale, Cheshire M33 3SS, Telephone: 0161 905 5700 Fax: 0161 905 2085. Email: info@protectmembranes.com Floor cassette membrane to be of triple ply construction with waterproof and vapour permeable core protected between two layers of non woven spun bonded polypropylene with water vapour transmission resistance of 0.17 MNs/g. To be installed with sealed laps and in accordance with manufacturer's instructions.



### Sealing the ceiling

Air leakage through ceilings transfers more moisture into the roof by convection than passes through the ceiling materials by diffusion. In colder conditions this air movement also takes with it heat from the building. Sealing the ceiling will reduce both moisture transfer and heat loss.

BS 5250 and BS 9250 recognise that a totally airtight ceiling is extremely difficult to achieve in practice but provides very specific advice on how to construct what has been termed a 'well-sealed ceiling' and sets specific performance criteria for loft traps as part of a well-sealed ceiling.



## LOFT ACCESS TRAPS

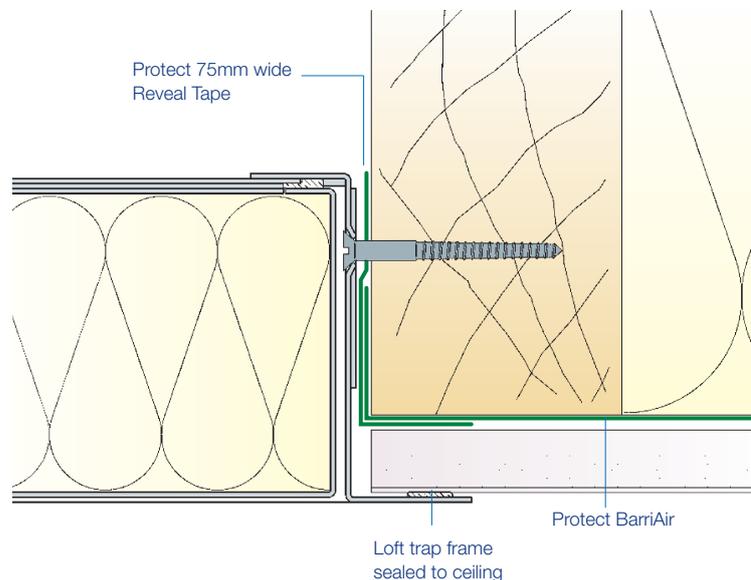
### Glidevale loft access traps

Glidevale loft access traps are complete units comprising frame and trap door with integral closed-cell air/vapour seals and thermal insulation. The seals virtually eliminate heat loss by air movement around the trap door and exceed the airtightness requirements of BS 5250: 2011. The traps provide continuity of thermal insulation at ceiling level with options to meet the minimum U-value requirements of Building Regulations Part L.

Glidevale loft access traps can provide the simple answer to meeting current air leakage requirements and improving the thermal performance of the ceiling.

### Specification clause

Loft access traps to be Glidevale complete Loft Access Trap and frame units with injection moulded polypropylene frame with closed cell vapour seals to comply with the performance requirements of BS 5250 and BS 9250 available from Glidevale, 2 Brooklands Road, Sale, Cheshire M33 3SS, Tel: 0161 905 5700 Fax: 0161 905 2085. Email: info@glidevale.com. See Glidevale Loft Access Brochure for more detailed information and individual specification clauses.



## PRODUCT RANGE



### PROTECT ROOFING UNDERLAYS

The Protect range of roofing underlays provides the complete solution for all types of slate or tile roofs and they can be used as a temporary roof covering.

The range includes both vapour permeable (Type LR) and impermeable (Type HR) underlays.

Vapour Permeable (Type LR)	Impermeable (Type HR)
VP400 Plus <sup>LR</sup>	A1T3
Zytec	A1
VP300	Wunderlay

### PROTECT CONSTRUCTION MEMBRANES

The Protect range of building membranes are designed and developed to provide cost-effective innovative solutions for the construction standards of today and the future. The range includes the latest in reflective technology and airtightness.

Wall	AVCL	Floor	Other
TF200 <sup>®</sup>	VC Foil Ultra	FCM750	PWAB
TF200 Thermo	BarriAir	F1	Sealing Tapes & Accessories
5000 Facade			

For more information or to request a brochure, email: [info@protectmembranes.com](mailto:info@protectmembranes.com) or visit [www.protectmembranes.com](http://www.protectmembranes.com)

Stockist's stamp



### PROTECT MEMBRANES

2 Brooklands Road, Sale, Cheshire M33 3SS

Tel: 0161 905 5700 Fax: 0161 905 2085

Email: [info@protectmembranes.com](mailto:info@protectmembranes.com) Web: [www.protectmembranes.com](http://www.protectmembranes.com)

Protect Membranes maintains a policy of continuous development and reserves the right to amend product specifications without notice.



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