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**Agrément  
 Certificate  
 No 05/4227**

Designated by Government  
 to issue  
 European Technical  
 Approvals

## PERMAVENT BREATHER MEMBRANES

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# Product




- THIS CERTIFICATE RELATES TO PERMAVENT BREATHER MEMBRANES, FOR USE AS AN UNSUPPORTED OR FULLY SUPPORTED ROOF LINING MATERIAL FOR TILED OR SLATED PITCHED ROOFS.
- The product prevents the ingress of wind-blown rain or snow.
- The product is resistant to tearing during installation and flexible at low ambient temperatures.

These Front Sheets must be read in conjunction with the accompanying Detail Sheet, which provides information for Permavent Breather Membranes.

## Regulations — Detail Sheet 1

### 1 The Building Regulations 2000 (as amended) (England and Wales)

 The Secretary of State has agreed with the British Board of Agrément the aspects of performance to be used by the BBA in assessing the compliance of roof waterproofing with the Building Regulations. In the opinion of the BBA, Permavent Breather Membranes, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements.

Requirement: C2(b)	Resistance to moisture
Comment:	Tests for weather resistance indicate that the products contribute towards a tiled or slated roof meeting this Requirement. See the <i>Weather-tightness</i> section of these Front Sheets.
Requirement: Regulation 7	Materials and workmanship
Comment:	The product is an acceptable material. See the <i>Durability</i> section of these Front Sheets.

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## 2 The Building (Scotland) Regulations 2004



In the opinion of the BBA, Permavent Breather Membranes, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and related Mandatory Standards as listed below.

Regulation:	8	Fitness and durability of materials and workmanship
Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The product can contribute to a construction satisfying this Regulation. See the <i>Durability</i> section of these Front Sheets and the <i>Installation</i> part of the accompanying Detail Sheet.
Regulation:	9	Building standards — construction
Standard:	3.10	Resistance to precipitation — Resistance to precipitation
Comment:		The product is an acceptable material, see clauses 3.10.1 <sup>(1)(2)</sup> , and 3.10.7 <sup>(1)(2)</sup> of this Standard. See the <i>Weathertightness</i> section of these Front Sheets.
Regulation:	12	Building standards — conversions
Regulation:	12	Building standards — conversions
Comment:		All comments given for this product under Regulation 9, also apply to Regulation 12. (1) Technical Handbook (Domestic) (2) Technical Handbook (Non-Domestic)

## 3 The Building Regulations (Northern Ireland) 2000



In the opinion of the BBA, Permavent Breather Membranes, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		The product is an acceptable material. See the <i>Durability</i> section of these Front Sheets.
Regulation:	C4	Resistance to ground moisture and weather
Comment:		The product will contribute to a roof satisfying this Regulation. See the <i>Weathertightness</i> section of these Front Sheets.

## 4 Construction (Design and Management) Regulations 1994 (as amended) Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

In the opinion of the BBA there is no information in this Certificate which relates to the obligations of the client, planning supervisor, designer and contractors under these Regulations.

## Technical Specification

### 5 Delivery and site handling

5.1 Rolls of Permavent Breather Membranes are delivered to site, individually wrapped in polythene sleeves bearing the BBA identification mark incorporating the number of this Certificate. Labels bearing the manufacturer's name, product name and product code are attached to the inside of each roll core.

5.2 Rolls should be stored flat or on end on a clean, level surface and kept under cover.

## Design Data

### 6 Weathertightness



6.1 Tests indicate that the product will resist the passage of water and wind-blown snow and dust into the interior of a building, under all conditions to be found in a roof constructed in accordance with the relevant clauses of BS 5534 : 2003.

6.2 The product resists penetration of liquid water and consequently may be used as temporary

waterproofing prior to the installation of slates or tiles. The period of such use should, however, be kept to a minimum. Advice should be sought from the Certificate holder.

### 7 Properties in relation to fire

7.1 The product has similar properties in relation to fire to those of traditional roof tile underlays, which are acceptable under BS 5534 : 2003.

7.2 When the product is used in a fully supported situation, the reaction to fire will be determined by the support.

7.3 When used unsupported, there is a risk fire can spread if the material is accidentally ignited during maintenance works, (eg roofer's or plumber's torch). As with all types of sarking material, care should be taken during building and maintenance to avoid the material becoming ignited.

### 8 Maintenance

Damage to the underlay can be repaired easily prior to the installation of slates or tiles by replacement of the damaged sheet or for limited areas, by patching and sealing correctly. Care should be taken to ensure that the weathertightness of the roof is maintained.

## 9 Durability



The product will be virtually unaffected by the normal conditions found in a roof space and will have a life comparable with that of traditional roof tile underlays, provided they are not exposed to sunlight for long periods (see section 6.6 of the accompanying Detail Sheet). Advice regarding exposure can be obtained from the Certificate holder.

## Bibliography

BS 5534 : 2003 *Code of practice for slating and tiling (including shingles)*

## Conditions of Certification

### 10 Conditions

10.1 This Certificate:

- (a) relates only to the product that is named, described, installed, used and maintained as set out in this Certificate;
- (b) is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Certificate;
- (c) is valid only within the UK;
- (d) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- (e) is copyright of the BBA;
- (f) is subject to English law.

10.2 References in this Certificate to any Act of Parliament, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

10.3 This Certificate will remain valid for an unlimited period provided that the product and the manufacture and/or fabrication including all related and relevant processes thereof:

- (a) are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA;
- (b) continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine; and
- (c) are reviewed by the BBA as and when it considers appropriate.

10.4 In granting this Certificate, the BBA is not responsible for:

- (a) the presence or absence of any patent, intellectual property or similar rights subsisting in the product or any other product;
- (b) the right of the Certificate holder to market, supply, install or maintain the product; and
- (c) the actual works in which the product is installed, used and maintained, including the nature, design, methods and workmanship of such works.

10.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future statutory, common law or other duty of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the installation and use of this product.



In the opinion of the British Board of Agrément, the Permavent Breather Membranes are fit for their intended use provided they are installed, used and maintained as set out in this Certificate. Certificate No 05/4227 is accordingly awarded to Permavent Limited.

On behalf of the British Board of Agrément

Date of issue: 13th May 2005

Chief Executive

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**British Board of Agrément**

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For technical or additional information, contact the Certificate holder (see front page).  
For information about the Agrément Certificate, including validity and scope, tel: Hotline 01923 665400, or check the BBA website.



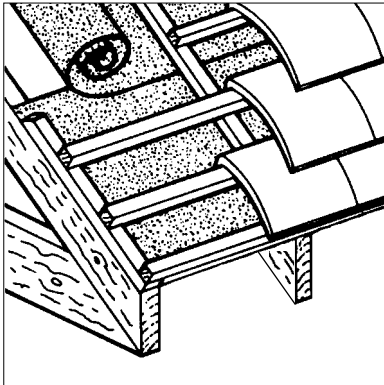
Permavent

Certificate No 05/4227

DETAIL SHEET 2

## PERMAVENT BREATHER MEMBRANE

## Product



• THIS DETAIL SHEET RELATES TO PERMAVENT BREATHER MEMBRANE, FOR USE IN NON-VENTILATED WARM AND VENTILATED COLD ROOF SYSTEMS.

This Detail Sheet must be read in conjunction with the Front Sheets, which give the product's position regarding Building Regulations, general information relating to the product, and the Conditions of Certification.

## Technical Specification

## 1 Description

1.1 Permavent Breather Membrane is a three-layer composite with outer layers of non-woven polypropylene and a breathable film in the centre.

1.2 The product has the nominal characteristics of:

thickness (mm)	0.5
weight (gm <sup>2</sup> )	115
roll length (m)	50
roll width (m)	1.00, 1.50
roll weight (kg)	5.75, 8.62
colour	blue

1.3 Quality control checks are carried out on the incoming materials, during production and on the finished product. Quality control checks on the finished product include:

- weight
- tensile strength and elongation
- tear
- water penetration.

## Design Data

## 2 General

Permavent Breather Membrane is satisfactory for use as a fully supported or unsupported underlay in tiled and slated pitched roofs constructed in accordance with the relevant clauses of BS 5534 : 2003.

## 3 Strength

The product will resist the loads associated with the installation of the roof.

## 4 Wind loading

4.1 Project design wind speeds should be determined and wind uplift forces calculated, in accordance with BS 6399-2 : 1997.

4.2 The product, when fully supported, has adequate resistance to wind uplift forces.

4.3 When used in unsupported applications, draped, wind loading on the underlay should be calculated in accordance with BS 5534 : 2003, Section 5.5.2.3 (see *Tests* section of this Detail Sheet for acceptable wind loads with specific batten spacings for the draped product, using a 25 mm deep tiling batten).

## 5 Risk of condensation

5.1 Permavent Breather Membrane has a significantly lower water-vapour resistance than that quoted as a minimum for conventional roof tile underlays in BS 5534 : 2003 (see Table 1 of this Detail Sheet), which also describes the factors to be considered in reducing condensation to a satisfactory minimum.

Table 1 Water vapour resistance

Material	Water vapour resistance (MNsg <sup>-1</sup> )
Permavent (maximum)	0.20
Traditional felt underlay (maximum)	570
Polyethylene sheet (0.15 mm)	450

5.2 When used unsupported or over uninsulated sarking board the product may be treated as a permeable underlay when considering the need for additional ventilation of the roof space over the minimum required in BS 5250 : 2002, Section 8.4.2.

5.3 When laid directly over insulation with an unventilated roof space, the product may be used without ventilated air space below the underlay provided the passage of moisture through the rest of the roof structure is controlled, and the system is convection-tight.

5.4 Condensation risk assessment calculations in accordance with BS 5250 : 2002 should be carried out for specific applications. When using thermal insulation with a low vapour resistance, a vapour control layer on the warm side of the insulation may be required. Where the roof may be subject to high humidity conditions (eg kitchens, swimming pools, bathrooms) a vapour control layer should be considered with all types of insulation.

5.5 The product may be used supported in roofs using sarking boards of either softwood, C4 grade chipboard or water-resistant grade plywood, with either continuous insulation or insulation placed between rafters. The insulation used should have a low vapour permeability (eg expanded or extruded polystyrene, PUR and PIR) so it can be considered as a vapour check. However, since the roof decking may be significantly below the dew-point for long periods during winter conditions with no significant ventilation, then the following conditions should be observed:

- insulation boards should be tightly butted against the rafter and details
- joints between insulation boards should be tightly fitted and taped
- sources of moisture (eg water tanks) in the roof should be covered and placed so they are well ventilated
- cold roof spaces should be ventilated in accordance with the minimum requirements of BS 5250 : 2002
- ingress of moisture to the roof space should be restricted by sealing around pipe penetrations etc and consideration given to a vapour control layer at ceiling level.

## Installation

### 6 Procedure

6.1 Permavent Breather Membrane must be installed and fixed in accordance with the Certificate holder's instructions and the relevant recommendations of BS 5534 : 2003 and BS 8000-6 : 1990. Installation can be carried out under all conditions normal to roofing work.

6.2 The lining, when installed as a fully supported system, is laid over the support with the blue side uppermost, and secured, with counter battens at least 10 mm thick, to the support or rafters using corrosion-resistant staples or galvanized clout nails. The battens for tiling are fixed to the counter battens leaving an air space between the roof sheet lining and the tiles for drainage and ventilation.

6.3 The lining, when installed as an unsupported system, is fixed in the traditional method for roof tile underlays, ie draped between the rafters.

6.4 Laps should be installed to shed water out and down the slope.

6.5 Overlaps must be provided with the minimum dimensions given in Table 2.

Roof pitch	Horizontal lap (mm)		Vertical lap (mm)
	Partially supported	Fully supported	
12.5° to 14°	225	150	100
15° to 34°	150	100	100
35°+	100	75	100

6.6 In closed eaves construction, it is recommended to use eaves guards, to conduct water into the gutter.

6.7 Hips and valleys should be covered with a 600 mm wide strip of Permavent Breather Membrane.

6.8 When the product is laid directly onto insulation without a ventilation gap, in a convection-tight system, the vapour resistance of the insulation material should be taken into account when deciding if a vapour control layer is required (see section 5).

## Technical Investigations

The following is a summary of the technical investigations carried out on Permavent Breather Membrane.

### 7 Tests

Samples of Permavent Breather Membrane were obtained from the company for testing. The result of the tests carried out by, or on behalf of, the BBA, which show typical results for the material, are summarised in Tables 3 to 5.

Test (units)	Method <sup>(1)</sup>	Mean result
Mullen burst strength (kNm <sup>-2</sup> )	BS 3137	427
Head of water (cm)	BS EN 20811	424

(1) The test documents are detailed in the *Bibliography*. Numbers in the table refer to sections/parts of the various documents.

## 8 Investigations

8.1 The manufacturing process was assessed, including the method adopted for quality control, and details were obtained of the quality and composition of the materials used.

8.2 Test data on the condensation risk in warm roof constructions, and specifically those containing sarking boards, incorporating Permavent Breather Membrane were examined.

**Table 4** Physical properties — directional

Test (units)	Method <sup>(1)</sup>	Mean result
Tensile strength (N per 50 mm) unaged	EN 12311-1	
long <sup>(2)</sup>		258
trans <sup>(3)</sup>		158
UVA/heat ageing <sup>(4)</sup>		
long <sup>(2)</sup>		201
trans <sup>(3)</sup>		127
Wet strength <sup>(5)</sup>		
long <sup>(2)</sup>		276
trans <sup>(3)</sup>		166
Elongation at break (%) unaged	EN 12311-1	
long <sup>(2)</sup>		93
trans <sup>(3)</sup>		130
UVA/heat ageing <sup>(4)</sup>		
long <sup>(2)</sup>		50
trans <sup>(3)</sup>		75
wet strength <sup>(5)</sup>		
long <sup>(2)</sup>		95
trans <sup>(3)</sup>		121
Tear resistance (nail) (N) unaged	BS EN 12310-1	
long <sup>(2)</sup>		136
trans <sup>(3)</sup>		187

- (1) The test documents are detailed in the *Bibliography*. Numbers in the table refer to sections/parts of the various documents.  
 (2) Longitudinal direction.  
 (3) Transverse direction.  
 (4) UV/heat aged at 50°C UVA/heat ageing for 90 days at 70°C ±2.  
 (5) Wet strength soak at 23°C for 24 hours — tested surface wet.

**Table 5** Service performance

Test (units)	Method <sup>(1)</sup>	Mean result
Water vapour permeability at 25°C/75% RH (gm <sup>-2</sup> day <sup>-1</sup> )	BS 3177	1373
Vapour resistance (MNsg <sup>-1</sup> )	BS 3177	0.15
Dimensional stability	BS EN 1107-2	
long <sup>(2)</sup>		0.5
trans <sup>(3)</sup>		+0.3
Slip resistance (coefficient of friction)	T1/10 <sup>(1)</sup>	
dry		0.9
wet		0.7
Resistance to water penetration	EN 1928	
aged		pass
UV/heat aged <sup>(4)</sup>		pass
Spray test	MOAT 69 : 4.2.2	no leakage
Resistance to wind loads	T1/O3 <sup>(5)</sup>	
batten spacing 350 mm		0.5 <sup>(6)</sup>
batten spacing 330 mm		0.5 <sup>(6)</sup>
batten spacing 300 mm		0.5 <sup>(6)</sup>
batten spacing 250 mm		1.5 <sup>(6)</sup>
batten spacing 200 mm		2.5 <sup>(6)</sup>

- (1) The test documents are detailed in the *Bibliography*. Numbers in the table refer to sections/parts of the various documents.  
 (2) Longitudinal direction.  
 (3) Transverse direction.  
 (4) UV/heat aged at 50°C UVA/heat ageing for 90 days at 70°C ±2.  
 (5) BBA test method.  
 (6) Maximum pressure achieved.

## Bibliography

BS 3137 : 1972 *Methods for determining the bursting strength of paper and board*

BS 3177 : 1959 *Method for determining the permeability to water vapour of flexible sheet materials used for packaging*

BS 5250 : 2002 *Code of practice for control of condensation in buildings*

BS 5534 : 2003 *Code of practice for slating and tiling (including shingles)*

BS 6399-2 : 1997 *Loading for buildings — Code of practice for wind loads*

BS 8000-6 : 1990 *Workmanship on building sites — Code of practice for slating and tiling of roofs and claddings*

BS EN 1107-2 : 2001 *Flexible sheets for waterproofing — Determination of dimension stability — Plastic and rubber sheets for roof waterproofing*

BS EN 12310-1 : 2000 *Flexible sheets for waterproofing — Determination of resistance to tearing (nail shank) — Part 1 — Bitumen sheets for roof waterproofing*

BS EN 20811 : 1992 *Textiles. Determination of resistance to water penetration. Hydrostatic pressure test*

EN 1928 : 2000 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of watertightness*

EN 12311-1 : 2000 *Flexible sheets for waterproofing — Determination of tensile properties — Part 1 — Bitumen sheets for roof waterproofing*

MOAT No 69 : 2004 *UEAtc Technical Report for the Assessment of Discontinuous Roofing Underlay Systems*



On behalf of the British Board of Agrément

Date of issue: 13th May 2005

A handwritten signature in black ink, appearing to read 'P. C. Newson'.

Chief Executive



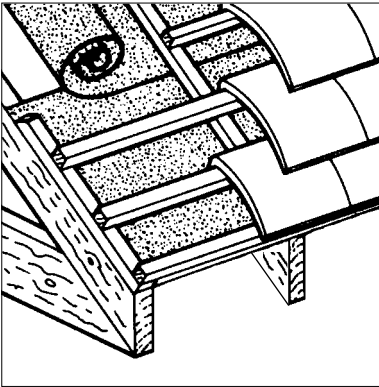
Permavent

Certificate No 05/4227

DETAIL SHEET 3

## PERMAVENT-MAX BREATHER MEMBRANE

## Product



• THIS DETAIL SHEET RELATES TO PERMAVENT-MAX BREATHER MEMBRANE, FOR USE IN NON-VENTILATED WARM AND VENTILATED COLD ROOF SYSTEMS.

*This Detail Sheet must be read in conjunction with the Front Sheets, which give the product's position regarding Building Regulations, general information relating to the product, and the Conditions of Certification.*

## Technical Specification

**1 Description**

1.1 Permavent-Max Breather Membrane is a three-layer composite with outer layers of non-woven polypropylene and a breathable film in the centre.

1.2 The product has the nominal characteristics of:

thickness (mm)	0.7
weight per unit area (gm <sup>2</sup> )	140
roll length (m)	50
roll width (m)	1.00, 1.50
roll weight (kg)	7, 10.5
colour	beige

1.3 Quality control checks are carried out on the incoming materials, during production and on the finished product. Quality control checks on the finished product include:

- weight
- tensile strength and elongation
- tear
- water penetration.

## Design Data

**2 General**

Permavent-Max Breather Membrane is satisfactory for use as a fully supported or unsupported underlay in tiled and slated pitched roofs constructed in accordance with the relevant clauses of BS 5534 : 2003.

**3 Strength**

The product will resist the loads associated with the installation of the roof.

**4 Wind loading**

4.1 Project design wind speeds should be determined and wind uplift forces calculated, in accordance with BS 6399-2 : 1997.

4.2 The product, when fully supported, has adequate resistance to wind uplift forces.

4.3 When used in unsupported applications, draped, wind loading on the underlay should be calculated in accordance with BS 5534 : 2003, Section 5.5.2.3 (see *Tests* section of this Detail Sheet for acceptable wind loads with specific batten spacings for the draped product, using a 25 mm deep tiling batten).

**5 Risk of condensation**

5.1 For design purposes, the underlay's resistance to water vapour transmission may be taken as not more than 0.2 MNsg<sup>-1</sup>. This value can be used in roof designs shown in Section 8.4 of BS 5250 : 2002. For roofs designed in accordance with BS 5534 : 2003 it may be regarded as a type LR' membrane.

5.2 In common with all roofs, care must be taken in the overall design and installation to minimise the risk of water vapour coming into contact with cold parts of the construction. Factors to be considered and minimised include, moisture diffusion through the ceiling, infiltration through unsealed

openings/penetrations in the ceiling and services evaporating or venting moisture into cold spaces.

## Ceiling and insulation horizontal (cold roof)

5.3 Roofs designed and constructed in accordance with BS 5250 : 2002 will adequately limit the risk of interstitial condensation.

## Ceiling and insulation inclined (warm roof)

5.4 For roofs with an insulated inclined ceiling, ventilation above or below the underlay will not be required provided that the passage of moisture by diffusion and by convection is controlled, eg, by a vapour control layer or a continuous envelope of insulation with a high vapour resistance.

## Ceiling and insulation partially inclined (warm roof and cold roof)

5.5 Where an insulated ceiling only spans part of the roofline, resulting cold roof spaces should be ventilated in accordance with BS 5250 : 2002. Section 8.4.2.5 and 8.4.2.6.

## Installation

### 6 Procedure

6.1 Permavent-Max Breather Membrane must be installed and fixed in accordance with the Certificate holder's instructions and the relevant recommendations of BS 5534 : 2003 and BS 8000-6 : 1990. Installation can be carried out under all conditions normal to roofing work.

6.2 The lining, when installed as a fully supported system, is laid over the support with the beige side uppermost, and secured, with counter battens at least 10 mm thick, to the support or rafters using

corrosion-resistant staples or galvanized clout nails. The battens for tiling are fixed to the counter battens leaving an air space between the roof sheet lining and the tiles for drainage and ventilation.

6.3 The lining, when installed as an unsupported system, is fixed in the traditional method for roof tile underlays, ie draped between the rafters.

6.4 Laps should be installed to shed water out and down the slope.

6.5 Overlaps must be provided with the minimum dimensions given in Table 1.

Table 1 Minimum overlaps

Roof pitch (°)	Horizontal lap (mm)		Vertical lap (mm)
	Not fully supported	Fully supported	
12.5 to 14	225	150	100
15 to 34	150	100	100
35+	100	75	100

6.6 In closed eaves construction, it is recommended to use eaves guards, to conduct water into the gutter.

6.7 Hips and valleys should be covered with a 600 mm wide strip of Permavent-Max Breather Membrane.

6.8 When the product is laid directly onto insulation without a ventilation gap, in a convection-tight system, the vapour resistance of the insulation material should be taken into account when deciding if a vapour control layer is required (see section 5).

## Technical Investigations

The following is a summary of the technical investigations carried out on Permavent-Max Breather Membrane.

### 7 Tests

7.1 Samples of Permavent-Max Breather Membrane were obtained from the company for testing. The result of the tests carried out by, or on behalf of, the BBA, which show typical results for the material, are summarised in Tables 2 and 3.

*Table 2 Physical properties — directional*

Test (units)	Method <sup>(1)</sup>	Mean result
Tensile strength (N per 50 mm) unaged	EN 12311-1	
long <sup>(2)</sup>		310
trans <sup>(3)</sup>		199
Elongation at break (%) unaged	EN 12311-1	
long <sup>(2)</sup>		78
trans <sup>(3)</sup>		108
Tear resistance (nail) (N) unaged	BS EN 12310-1	
long <sup>(2)</sup>		167
trans <sup>(3)</sup>		193

(1) The test documents are detailed in the *Bibliography*. Numbers in the table refer to sections/parts of the various documents.

(2) Longitudinal direction.

(3) Transverse direction.

*Table 3 Service performance*

Test (units)	Method <sup>(1)</sup>	Mean result
Water vapour permeability at 25C/75% RH (gm <sup>-2</sup> day <sup>-1</sup> )	BS 3177	1343
Vapour resistance (MNsg <sup>-1</sup> )	BS 3177	0.15
Resistance to wind loads	T1/O3 <sup>(2)</sup>	
batten spacing 350 mm		0.5 <sup>(3)</sup>
batten spacing 330 mm		0.5 <sup>(3)</sup>
batten spacing 300 mm		1.0 <sup>(3)</sup>
batten spacing 250 mm		2.0 <sup>(3)</sup>
batten spacing 200 mm		2.5 <sup>(3)</sup>

(1) The test documents are detailed in the *Bibliography*. Numbers in the table refer to sections/parts of the various documents.

(2) BBA test method.

(3) Maximum pressure achieved.

7.2 Test data relating to Permavent Breather Membrane (covered by Detail Sheet 2 of this Certificate) was assessed:

- effect of UV and heat ageing
- wet strength
- dimensional stability
- slip resistance
- resistance to water penetration
- spray test
- head of water
- mullen burst strength.

### 8 Investigations

8.1 The manufacturing process was assessed, including the method adopted for quality control, and details were obtained of the quality and composition of the materials used.

8.2 Test data on the condensation risk in warm roof constructions, and specifically those containing sarking boards, incorporating the membrane were examined.

## Bibliography

BS 3177 : 1959 *Method for determining the permeability to water vapour of flexible sheet materials used for packaging*

BS 5250 : 2002 *Code of practice for control of condensation in buildings*

BS 5534 : 2003 *Code of practice for slating and tiling (including shingles)*

BS 6399-2 : 1997 *Loading for buildings — Code of practice for wind loads*

BS 8000-6 : 1990 *Workmanship on building sites — Code of practice for slating and tiling of roofs and claddings*

BS EN 12310-1 : 2000 *Flexible sheets for waterproofing — Determination of resistance to tearing (nail shank)— Part 1 — Bitumen sheets for roof waterproofing*

EN 12311-1 : 2000 *Flexible sheets for waterproofing — Determination of tensile properties — Part 1 — Bitumen sheets for roof waterproofing*



On behalf of the British Board of Agrément

Date of issue: 19th July 2005

Chief Executive