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BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

Designated by Government to issue European Technical Approvals

Agrément Certificate No 04/4179
*Second issue**

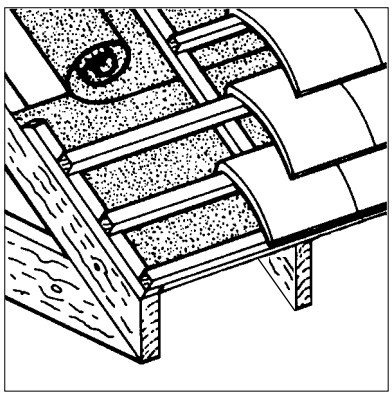
WEB BREATHER UNDERLAYS IN COLD NON-VENTILATED PITCHED ROOF SYSTEMS

Système de revêtement
Dachbelagsystem

Product

- *THIS CERTIFICATE RELATES TO WEB BREATHER UNDERLAYS IN COLD NON-VENTILATED PITCHED ROOF SYSTEMS, AS ROOF TILE UNDERLAYS IN TILED OR SLATED PITCHED ROOFS.*
- *The product comprises one part of a non-ventilated cold pitched roof system and it is important that designers, planners, contractors and/or installers ensure that the roof and ceiling are constructed in accordance with the Certificate holder's instructions and this Certificate.*
- *Advice on the use of the product in these applications can be sought from the Certificate holder.*
- *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.*
- *The product is permeable to water vapour, but will not allow liquid water to pass through.*
- *The product is marketed in the UK by the Certificate holder at the address shown on the front page.*

These Front Sheets must be read in conjunction with the accompanying Detail Sheets, which provide information on specific systems.



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 tile underlay with the Building Regulations. In the opinion of the BBA, Web Breather Underlays in Cold Non-Ventilated Pitched Roof Systems, 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:		The product will contribute to a roof meeting this Requirement. See the tinted areas in the *Weathertightness* section of these Front Sheets.
Requirement:	C2(c)	Resistance to moisture
Comment:		The product can enable a roof to meet this Requirement. See the tinted areas in the *Risk of condensation* section of the accompanying Detail Sheets.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The product is an acceptable material. See the tinted area in the *Durability* section of these Front Sheets.

2 The Building (Scotland) Regulations 2004

In the opinion of the BBA, Web Breather Underlays in Cold Non-Ventilated Pitched Roof Systems, 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 the tinted area in the *Durability* section and *Installation* part of these Front Sheets.
Regulation:	9	**Building standards — construction**
Standard:	3.10	Precipitation
Comment:		The product will contribute to a roof satisfying clauses 3.10.1[1] and 3.10.7[1]. See the tinted areas in the *Weathertightness* sections of these Front Sheets.
Standard:	3.15	Condensation
Comment:		The product can enable a roof to satisfy this Standard. See the tinted areas in the *Risk of condensation* section of the accompanying Detail Sheets.
Regulation:	12	**Building standards — conversions**
Comment:		All comments given for this product under Regulation 9, also apply to this Regulation with reference to clause 0.12.1[1][2] and Schedule 6[1][2].

(1) Technical Handbook (Domestic).
(2) Technical Handbook (Non-Domestic).

3 The Building Regulations (Northern Ireland) 2000

In the opinion of the BBA, Web Breather Underlays in Cold Non-Ventilated Pitched Roof Systems, 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 tinted area in the *Durability* 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 tinted areas in the *Weathertightness* sections of these Front Sheets.
Regulation:	C5	Condensation
Comment:		The product can enable a roof to satisfy this Regulation. See the tinted areas in the *Risk of condensation* section of the accompanying Detail Sheets.

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

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See sections: 10 *Procedure* (10.8) of these Front Sheets and 1 *Description* (1.2) of the relevant accompanying Detail Sheets.

Design Data

5 General

5.1 Web Breather Underlays in Non-Ventilated Cold Pitched Roof Systems are satisfactory for use in dwellings with non-ventilated tiled or slated roofs of any conventional plan and of any size. Features[1] successfully assessed include:

- duo pitched
- mono-pitched
- hipped
- mansard
- gable ends
- verges
- abutments
- valleys
- room in roof[2]
- dormers
- timber sarking[3].

(1) For roofs incorporating other features, non-conventional roof geometries or construction materials, the advice of the Certificate holder should be sought.

(2) When a room-in-roof results in part of a roof pitch being insulated, ie a warm roof, design and detailing of that part of the roof should comply with the relevant guidance in Certificate No 03/4053.

(3) As Scottish practice, with slates nailed through the breather membrane directly onto timber planks (nominally 150 mm wide with a 2 mm gap) without battens.

5.2 The product can be installed by draping over rafters and securing with tiling battens, or installed taut over rafters and secured with counter battens and tiling battens.

5.3 In conventionally-ventilated roof constructions, energy loss by ventilation can account for up to 25% of the total heat lost through the roof. The non-ventilated system will substantially reduce this mechanism of heat loss.

5.4 In non-ventilated roof systems, the risk of condensation is equivalent to, or less than, that attending conventionally-ventilated cold roof systems.

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, however, should 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 as those of traditional polyethylene roof tile underlays, which are acceptable under BS 5534 : 2003.

7.2 When the product is used unsupported, there is a risk that fire can spread if the materials are accidentally ignited during maintenance works, eg by a 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 underlays can be repaired easily prior to the installation of slates or tiles by the 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 to that of traditional roof tile underlays, provided they are not exposed to sunlight for long periods (see section 10.3 of these Front Sheets). Advice regarding exposure can be obtained from the Certificate holder.

Installation

10 Procedure

10.1 Web Breather Underlays in Non-Ventilated Cold Pitched Roof Systems must be installed and fixed in accordance with the Certificate holder's instructions, this Certificate 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.

10.2 The product, when installed as unsupported systems, are fixed in the traditional method for roof tile underlays, ie draped over the rafters.

10.3 For both open and closed eaves construction, eaves guards should be used to conduct water into the gutter and protect the underlay from UV light.

Overlaps

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

Table 1 Minimum overlaps

Roof pitch (°)	Horizontal lap (mm)	Vertical laps (mm)
12.5 to 14	225	100
15 to 34	150	100
35+	100	100

10.5 Vertical laps should be staggered by at least 300 mm and detailed to occur at rafters, where the membrane can be secured by battens.

10.6 When detailing hips and valleys, laps must be a minimum of 300 mm.

Timber plank sarking

10.7 For fully supported roofs (traditional Scottish), the slates can be nailed through the underlay into the timber plank sarking, normally 150 mm wide with a 2 mm gap.

Safety

10.8 The product, when wet, have a low coefficient of friction and care should be taken when moving or standing on a surface covered by the materials, during or after wet weather.

11 Finishing

11.1 Detailing of abutments, verges and hips must be in accordance with the Certificate holder's instructions.

11.2 To achieve a convection-tight loft space, it is important that the following details are maintained (see also section 5.5 of the accompanying Detail Sheets):

- all penetrations, eg pipework, electrical fittings to the loft space, must be sealed
- the loft hatch must be securely sealed to ensure a draught-free fit
- the insulation must be pushed into the eaves and against the underlay to avoid gaps.

11.3 The tiling and slating must be carried out in accordance with the relevant clauses of BS 5534 : 2003, BS 8000-6 : 1990 and the Certificate holder's instructions, especially when using tightly-jointed slates or tiles.

Bibliography

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

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

Conditions of Certification

12 Conditions

12.1 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.

12.2 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.

12.3 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.

12.4 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.

12.5 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.

BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

In the opinion of the British Board of Agrément, Web Breather Underlays in Cold Non-Ventilated Pitched Roof Systems are fit for their intended use provided they are installed, used and maintained as set out in this Certificate. Certificate No 04/4179 is accordingly awarded to Web Dynamics Ltd.

On behalf of the British Board of Agrément

Date of Second issue: 24th November 2005

Chief Executive

**Original Certificate issued on 8th April 2005. This amended version was issued to include revised national Building Regulations and additional information regarding room-in-roof.*

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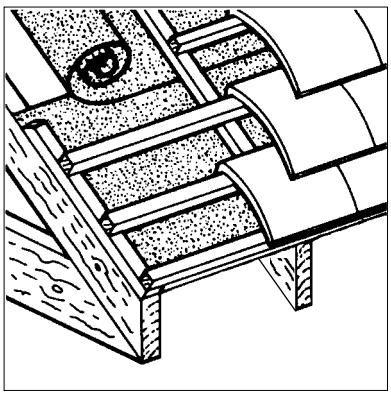
CI/SfB

(27.9) Ln6

Web Dynamics Ltd

WEB BREATHER UNDERLAYS IN COLD NON-VENTILATED PITCHED ROOF SYSTEMS (BBA CERTIFICATE No 04/4179)

IRISH BUILDING REGULATIONS STATEMENT



- *THIS STATEMENT RELATES TO WEB BREATHER UNDERLAYS IN COLD NON-VENTILATED PITCHED ROOF SYSTEMS AND SETS OUT THE OPINION OF THE BBA ON THE POSITION OF THE PRODUCT UNDER THE BUILDING REGULATIONS IN THE REPUBLIC OF IRELAND.*
- *It must be read in conjunction with the Front Sheets and relevant Detail Sheets of BBA Certificate No 04/4179.*
- *It will remain valid provided BBA Certificate No 04/4179 is valid.*

The Building Regulations 1997–2002 (Ireland)

In the opinion of the BBA, Web Breather Underlays in Cold Non-ventilated Pitched Roof Systems, if used in accordance with the provisions of Certificate No 04/4179, will satisfy or contribute to satisfying the relevant requirements.

Requirement:	C4	Resistance to weather and ground moisture
Comment:		Tests for weather resistance indicate that the product will contribute towards a tiled or slated roof meeting this Requirement. See sections 6.1 and 6.2 of the Front Sheets of BBA Certificate No 04/4179.
Requirement:	D1	Materials and workmanship
Comment:		The products are proper materials. See section 9 of the Front Sheets of BBA Certificate No 04/4179.
Requirement:	F2	Condensation in roofs
Comment:		The products can enable a roof to satisfy this Requirement. See the tinted areas in the *Risk of condensation* section of the relevant Detail Sheet to BBA Certificate No 04/4179, read in conjunction with Section 2 Technical Guidance Document F of the Irish Building Regulations 2002.

On behalf of the British Board of Agrément

Date of issue: 27th May 2005

Chief Executive

CI/SfB
(27.9) Ln6

BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

Web Dynamics Ltd

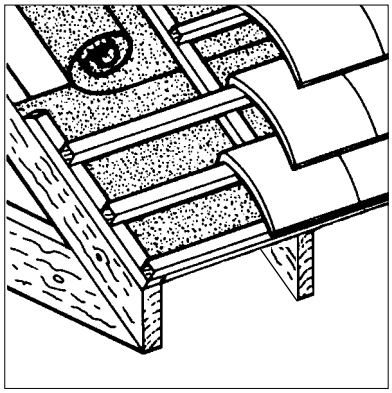
WEB UV15 BREATHER UNDERLAY IN COLD NON-VENTILATED PITCHED ROOF SYSTEMS

Certificate No 04/4179

DETAIL SHEET 2

*Second issue**

Product



- *THIS DETAIL SHEET RELATES TO WEB UV15 BREATHER UNDERLAY IN COLD NON-VENTILATED PITCHED ROOF SYSTEMS.*

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

Technical Specification

1 Description

1.1 WEB UV15 Roof Tile Underlay is manufactured by thermally bonding two spunbonded polypropylene fabric layers, (70 gm^{-2} and 35 gm^{-2}) with a microporous film, between the two layers, to form a breathable waterproof membrane. For recycling purposes, the polymer content of the membrane is 100% polypropylene. The membrane is produced with a blue upper surface and a grey lower surface. Other colours are available to order.

1.2 The product has the nominal characteristics of:

roll width (m)(1)	1.5
roll length (m)(1)	50
weight per unit area (gm^{-2})	130

(1) Other sizes are available to order.

1.3 Quality control checks are carried out on the finished product. Quality control checks include:

- weight
- tensile strength and elongation
- nail tear strength
- hydrostatic head.

2 Delivery and site handling

2.1 Rolls are delivered to site individually wrapped in polyethylene film. Labels bearing the Certificate holder's name, product name, product code, dimensions and the BBA identification mark incorporating the number of this Certificate are attached to each roll.

2.2 Rolls should be stored flat on a clean, level surface and kept under cover away from sunlight.

Design Data

3 Strength

WEB UV15 Breather Underlay will resist the loads associated with installation.

4 Wind loading

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

4.2 Wind loading on the underlay should be calculated in accordance with BS 5534 : 2003, Section 5.5.2.7 (see the *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 0.25 $MNsg^{-1}$. 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 The complete roof construction, ceiling boards to roof tiles, must be considered as a total system with regard to condensation risk. It is important that the products are laid in accordance with the Certificate holder's instructions and this Certificate to prevent excessive condensation as defined in the national Building Regulations and Standards thus:

England and Wales

Approved Document C

Scotland

Mandatory Standard 3.15

Northern Ireland

Regulation C5.

5.3 All penetrations into and out of the roof space must be properly sealed in accordance with the Certificate holder's instructions. Vent stacks, boiler flues, for example, passing through the roof space must additionally be sealed along their length.

5.4 Subsequent penetrations into the roof space must be properly sealed to ensure the integrity of the non-ventilated, cold pitched roof system is maintained. This can be achieved by using a butyl adhesive tape.

5.5 It is essential to limit the rate of water vapour transfer into the loft space from the dwelling below. Appropriate measures include:

- the dwelling below the roof must be ventilated in accordance with national Building Regulations and Standards for the dispersal and rapid dilution of water vapour
- for rooms that may experience high humidity, such as kitchens, utility rooms and bathrooms — the ventilation rates should be in accordance with the guidance documents supporting current national Building Regulations and Standards
- all water tanks in the loft space must be covered and all pipework lagged
- ceiling penetrations must be sealed and loft hatches made convection tight by using a compressible draught seal.

5.6 For additional protection, the use of a vapour control layer/vapour check plasterboard can be considered.

Technical Investigations

The following is a summary of the technical investigations carried out on WEB UV15 Breather Underlay in Cold Non-Ventilated Pitched Roof Systems.

6 Tests

6.1 Samples of the underlay 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 1 and 2.

Table 1 Physical properties

Test (units)	Method[1]	Mean result
Mullen burst strength (kNm^{-2})	BS 3137	507
Water vapour permeability ($gm^{-2}day^{-1}$)	BS 3177 (25°C/75% RH)	1079
Water vapour resistance ($MNsg^{-1}$)	BS 3177 (25°C/75% RH)	0.19

(1) The test documents are detailed in the *Bibliography*.

Table 2 Service performance

Test (units)	Method[1]	Mean result
Hydrostatic pressure (mm)	BS EN 20811	
minimum		6160
mean		6700
Wind loading (kPa)[2]	MOAT 69 : 4.2.1	
batten spacing 350 mm		0.5
batten spacing 330 mm		0.5
batten spacing 300 mm		1.0
batten spacing 250 mm		2.5
Dynamic friction	T1/10[3]	
dry		86
wet		35

(1) The test document is detailed in the *Bibliography*.

(2) Batten depth 25 mm with a 10 mm membrane drape.

(3) BBA test method.

6.2 Testing on the following properties was also carried out:

- thickness
- width
- weight per unit area.

7 Investigations

7.1 The quality control procedures for the final product were assessed.

7.2 Calculations on the condensation risk in cold non-ventilated roof constructions.

7.3 The following tests were carried out on a product of similar composition, but lower specification:

- resistance to water spray
- low temperature flexibility
- tensile strength and elongation
- nail tear.

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

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

BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

On behalf of the British Board of Agrément

Date of Second issue: 24th November 2005

Chief Executive

**Original Detail Sheet issued on 8th April 2005. This amended version includes revised* Risk of condensation *section and information given in Table 2.*

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BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

Web Dynamics Ltd

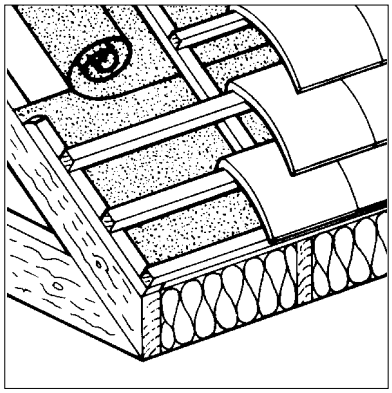
WEB UV25 BREATHER UNDERLAY IN COLD NON-VENTILATED PITCHED ROOF SYSTEMS

Certificate No 04/4179

DETAIL SHEET 3

*Second issue**

Product



• *THIS DETAIL SHEET RELATES TO WEB UV25 BREATHER UNDERLAY IN COLD NON-VENTILATED PITCHED ROOF SYSTEMS.*

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

Technical Specification

1 Description

1.1 WEB UV25 Roof Tile Underlay is manufactured by thermally bonding two spunbonded polypropylene fabric layers (each 70 gm^{-2}) with a microporous film, between the two layers, to form a breathable waterproof membrane. For recycling purposes, the polymer content of the membrane is 100% polypropylene. The membrane is produced with a black upper and lower surface. Other colours are available to order.

1.2 The product has the nominal characteristics of:

roll width (m)(1)	1.5
roll length (m)(1)	50
weight per unit area (gm^{-2})	165

(1) Other sizes available to order.

1.3 Quality control checks are carried out on the finished product. Quality control checks include:

- weight
- tensile strength and elongation
- nail tear strength
- hydrostatic head.

2 Delivery and site handling

2.1 Rolls are delivered to site individually wrapped in polyethylene film. Labels bearing the Certificate holder's name, product name, product code, dimensions and the BBA identification mark incorporating the number of this Certificate are attached to each roll.

2.2 Rolls should be stored flat on a clean, level surface and kept under cover away from sunlight.

Design Data

3 Strength

WEB UV25 Breather Underlay will resist the loads associated with installation.

4 Wind loading

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

4.2 Wind loading on the underlay should be calculated in accordance with BS 5534 : 2003, Section 5.5.2.7 (see the *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 0.25 $MNsg^{-1}$. 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 The complete roof construction, ceiling boards to roof tiles, must be considered as a total system with regard to condensation risk. It is important that the products are laid in accordance with the Certificate holder's instructions and this Certificate to prevent excessive condensation as defined in the national Building Regulations and Standards thus:

England and Wales

Approved Document C

Scotland

Mandatory Standard 3.15

Northern Ireland

Regulation C5.

5.3 All penetrations into and out of the roof space must be properly sealed in accordance with the Certificate holder's instructions. Vent stacks, boiler flues, for example, passing through the roof space must additionally be sealed along their length.

5.4 Subsequent penetrations into the roof space must be properly sealed to ensure the integrity of the non-ventilated, cold pitched roof system is maintained. This can be achieved by using a butyl adhesive tape.

5.5 It is essential to limit the rate of water vapour transfer into the loft space from the dwelling below. Appropriate measures include:

- the dwelling below the roof must be ventilated in accordance with national Building Regulations and Standards for the dispersal and rapid dilution of water vapour
- for rooms that may experience high humidity, such as kitchens, utility rooms and bathrooms — the ventilation rates should be in accordance with the guidance documents supporting current national Building Regulations and Standards
- all water tanks in the loft space must be covered and all pipework lagged
- ceiling penetrations must be sealed and loft hatches made convection tight by using a compressible draught seal.

5.6 For additional protection, the use of a vapour control layer/vapour check plasterboard can be considered.

Technical Investigations

The following is a summary of the technical investigations carried out on WEB UV25 Breather Underlay in Cold Non-Ventilated Pitched Roof Systems.

6 Tests

6.1 Samples of the underlay 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 1 to 3.

Table 1 Physical properties

Test (units)	Method[1]	Mean result
Mullen burst strength (kNm^{-2})	BS 3137	780
Water vapour permeability ($gm^{-2}day^{-1}$)	BS 3177 (25°C/75% RH)	975
Water vapour resistance ($MNsg^{-1}$)	BS 3177 (25°C/75% RH)	0.21

(1) The test documents are detailed in the *Bibliography*.

Table 2 Physical properties — directional

Test (units)	Method[1]	Mean result	
		Long[2]	Trans[3]
Tensile strength (Nmm^{-2})	BS 2782-3.320A to 320F ($500\ mm\ min^{-1}$)		
unaged		13.9	8.6
heat aged[4]		12.8	7.3
wet strength[5]		14.4	8.9
water soak[6]		13.1	7.5
UV aged[7]		8.0	5.2
Elongation (%)	BS 2782-3.320A to 320F		
unaged		52	63
heat aged[4]		43	49
wet strength[5]		51	65
water soak[6]		50	59
UV aged[7]		37	31
Tear strength (N)	MOAT 27 : 5.4.1		
unaged		193	151
heat aged[4]		191	144
water soak[5]		193	149

(1) The test documents are detailed in the *Bibliography*.

(2) Longitudinal direction.

(3) Transverse direction.

(4) Heat aged for 56 days at 70°C.

(5) Water immersion for 24 hours at 23°C and tested wet.

(6) Water immersion for 56 days at 23°C and tested dry.

(7) Ultraviolet aged for 500 light hours using UVB lamps with a cycle of 4 hours condensation at 50°C and 4 hours light at 50°C.

Table 3 Service performance

Test (units)	Method[1]	Mean result
Hydrostatic pressure (mm)	BS EN 20811	
minimum		7160
mean		8780
Wind loading (kPa)[2]	MOAT 69 : 4.2.1	
batten spacing 350 mm		1.0
batten spacing 330 mm		1.0
batten spacing 300 mm		1.5
batten spacing 250 mm		2.5
Dynamic friction	BBA T1/10[3]	
dry		86
wet		35

(1) The test document is detailed in the *Bibliography*.

(2) Batten depth 25 mm with a 10 mm membrane drape.

(3) BBA test method.

6.2 Tested on the following properties was also carried out:

- thickness
- width
- weight per unit area.

7 Investigations

7.1 The quality control procedures for the final product were assessed.

7.2 Calculations on the condensation risk in cold non-ventilated roof constructions.

7.3 The following tests were carried out on a product of similar composition, but lower specification:

- resistance to water spray
- low temperature flexibility
- coefficient of dynamic friction.

Bibliography

BS 2782-3.320A to 320F : 1976 *Methods of testing plastics — Mechanical properties — Tensile strength, elongation and elastic modulus*

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

MOAT No 27 : 1983 *General Directive for the Assessment of Roof Waterproofing Systems*

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

BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

On behalf of the British Board of Agrément

Date of Second issue: 24th November 2005

Chief Executive

**Original Detail Sheet issued on 8th April 2005. This amended version was issued to include revised* Risk of condensation *section and information given in Table 2.*

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BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

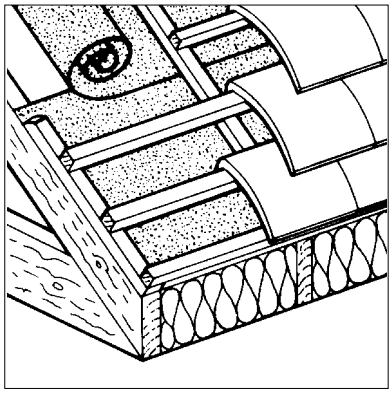
Web Dynamics Ltd

WEB UV10 BREATHER UNDERLAY IN COLD NON-VENTILATED PITCHED ROOF SYSTEMS

Certificate No 04/4179

DETAIL SHEET 4

Product



• *THIS DETAIL SHEET RELATES TO WEB UV10 BREATHER UNDERLAY IN COLD NON-VENTILATED PITCHED ROOF SYSTEMS.*

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

Technical Specification

1 Description

1.1 WEB UV10 Roof Tile Underlay In Cold Non-Ventilated Pitched Roof Systems is manufactured by bonding two spunbonded polypropylene fabric layers (70 gm^{-2} and 17 gm^{-2}) with a microporous film, between the two layers, to form a breathable waterproof membrane. For recycling purposes, the polymer content of the membrane is 100% polypropylene. The membrane is produced with a light grey upper surface and a white lower surface. Other colours are available to order.

1.2 The product has the nominal characteristics of:

roll width (m)(1)	1.5
roll length (m)(1)	50
weight per unit area (gm^{-2})	112

(1) Other sizes available to order.

1.3 Quality control checks are carried out on the finished product. Quality control checks include:

- weight
- tensile strength and elongation
- nail tear strength
- hydrostatic head.

2 Delivery and site handling

2.1 Rolls are delivered to site individually wrapped in polyethylene film. Labels bearing the Certificate holder's name, product name, product code, dimensions and the BBA identification mark incorporating the number of this Certificate are attached to each roll.

2.2 Rolls should be stored flat on a clean, level surface and kept under cover away from sunlight.

Design Data

3 Strength

WEB UV10 Roof Tile Underlay In Cold Non-Ventilated Pitched Roof Systems will resist the loads associated with installation.

4 Wind loading

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

4.2 Wind loading on the underlay should be calculated in accordance with BS 5534 : 2003, Section 5.5.2.7 (see the *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 0.25 $MNsg^{-1}$. 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 The complete roof construction, ceiling boards to roof tiles, must be considered as a total system with regard to condensation risk. It is important that the products are laid in accordance with the Certificate holder's instructions and this Certificate to prevent excessive condensation as defined in the national Building Regulations and Standards thus:

England and Wales

Approved Document C

Scotland

Mandatory Standard 3.15

Northern Ireland

Regulation C5.

5.3 All penetrations into and out of the roof space must be properly sealed in accordance with the Certificate holder's instructions. Vent stacks, boiler flues, for example, passing through the roof space must additionally be sealed along their length.

5.4 Subsequent penetrations into the roof space must be properly sealed to ensure the integrity of the non-ventilated, cold pitched roof system is maintained. This can be achieved by using a butyl adhesive tape.

5.5 It is essential to limit the rate of water vapour transfer into the loft space from the dwelling below. Appropriate measures include:

- the dwelling below the roof must be ventilated in accordance with national Building Regulations and Standards for the dispersal and rapid dilution of water vapour
- for rooms that may experience high humidity, such as kitchens, utility rooms and bathrooms — the ventilation rates should be in accordance with the guidance documents supporting current national Building Regulations and Standards
- all water tanks in the loft space must be covered and all pipework lagged
- ceiling penetrations must be sealed and loft hatches made convection tight by using a compressible draught seal.

5.6 For additional protection, the use of a vapour control layer/vapour check plasterboard can be considered.

Technical Investigations

The following is a summary of the technical investigations carried out on WEB UV10 Breather Underlay in Cold Non-Ventilated Pitched Roof Systems.

6 Tests

6.1 Samples of the underlay 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 1 and 2.

Table 1 Physical properties

Test (units)	Method[1]	Mean result
Mullen burst strength (kNm^{-2})	BS 3137	507
Water vapour permeability ($gm^{-2}day^{-1}$)	BS 3177 (25°C/75% RH)	983
Water vapour resistance ($MNsg^{-1}$)	BS 3177 (25°C/75% RH)	0.21

(1) The test documents are detailed in the *Bibliography*.

Table 2 Service performance

Test (units)	Method[1]	Mean result
Hydrostatic pressure (mm)	BS EN 20811	
minimum		2270
mean		4520
Wind loading (kPa)[2]	MOAT 69 : 4.2.1	
batten spacing 350 mm		0.5
batten spacing 330 mm		0.5
batten spacing 300 mm		0.5
batten spacing 250 mm		1.5
batten spacing 200 mm		2.5
Dynamic friction	T1/10[3]	
dry		86
wet		35

(1) The test document is detailed in the *Bibliography*.

(2) Batten depth 25 mm with a 10 mm membrane drape.

(3) BBA test method.

6.2 Tested on the following properties was also carried out:

- thickness
- width
- weight per unit area.

7 Investigations

7.1 The quality control procedures for the final product were assessed.

7.2 Calculations on the condensation risk in cold non-ventilated roof constructions.

7.3 The following tests were carried out on a product of similar composition, but lower specification:

- resistance to water spray
- low temperature flexibility
- tensile strength
- nail tear.

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*

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