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Agrément Certificate
No 03/4053

WEB ROOF TILE UNDERLAYS

PRODUCT SHEET 1 — FOR USE IN COLD VENTILATED ROOFS AND WARM NON-VENTILATED PITCHED ROOF SYSTEMS

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Web UV Roof Tile Underlays for use in cold ventilated and non-ventilated warm pitched roof systems.

AGRÉMENT CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Weathertightness — as part of a complete roof, the products will resist the passage of water and wind-blown snow and dust into the interior of the building (see section 5).

Risk of condensation — the products are regarded as a low water vapour resistance (Type LR) underlay and can be used as part of a non-ventilated warm and ventilated cold roof system (see section 6).

Wind loading — when installed on appropriately spaced battens the products' physical properties are deemed adequate to resist the wind loads imposed on the underlay. The products will reduce the wind uplift forces acting on the roof covering (see section 7).

Strength — the products have adequate strength to resist the loads associated with the installation of the roof (see section 8).

Durability — under the normal conditions found in a roof space the products will have a service life comparable to a traditional roof tile underlay (see section 11).



The BBA has awarded this Agrément Certificate for Web UV Roof Tile Underlays to Web Dynamics Ltd as fit for their intended use provided they are installed, used and maintained as set out in this Agrément Certificate.

On behalf of the British Board of Agrément

Head of Approvals
— Materials

Chief Executive

Date of First issue: 24 October 2003

Date of Second issue: 17 July 2008

The BBA is a UKAS accredited certification body — Number 1113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, Web UV Roof Tile Underlays for use in cold ventilated and non-ventilated warm pitched roof systems, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:



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

Requirement:	C2(b)	Resistance to moisture
Comment:		The products will contribute to a roof meeting this Requirement. See section 5.1 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The products are acceptable. See section 11 and the <i>Installation</i> part of this Certificate..



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:		The products can contribute to a construction satisfying this Regulation. See sections 10 and 11, and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards – construction
Standard:	3.10	Precipitation
Comment:		The products will contribute to a roof satisfying clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.7 ⁽¹⁾⁽²⁾ of this Standard. See section 5.1 of this Certificate.
Regulation:	12	Building standards – conversions
Comment:		All comments given for these products 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).



The Building Regulations (Northern Ireland) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The products are acceptable. See section 10 and the <i>Installation</i> part of this Certificate.
Regulation:	B3(2)	Suitability of certain materials
Comment:		The products do not normally require maintenance. See section 11 of this Certificate.
Regulation:	C4(b)	Resistance to ground moisture and weather
Comment:		The products will contribute to a roof satisfying this Regulation. See section 5.1 of this Certificate.

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: 1 *Description* (1,2).

Non-regulatory Information

NHBC Standards 2007

NHBC accepts the use of Web UV Roof Tile Underlays for use in cold ventilated and warm non-ventilated pitched roof systems, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 7.2 *Pitched roofs*.

Zurich Building Guarantee Technical Manual 2007

In the opinion of the BBA, Web UV Roof Tile Underlays for use in cold ventilated and warm non-ventilated pitched roof systems, when installed and used in accordance with this Certificate, satisfy the requirements of the *Zurich Building Guarantee Technical Manual*, Section 4 *Superstructure*, Sub-section *Pitched roofs*.

General

This Certificate relates to Web UV Roof Tile Underlays for use in cold ventilated and warm non-ventilated pitched roof systems.

The products will also prevent the ingress of wind-blown rain or snow.

Technical Specification

1 Description

1.1 Web UV Roof Tile Underlays are manufactured by thermally bonding two layers of spunbond polypropylene 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.

1.2 The products' nominal characteristics are given in Table 1.

Table 1 Nominal characteristics

Characteristics (units)	Web UV 10	Web UV 15	Web UV 25
Mass per unit area (gm ⁻²)			
top layer	70	70	70
bottom layer	17	35	70
total	112	130	165
Roll length (m) ⁽¹⁾	50	50	50
Roll width (m) ⁽¹⁾	1 and 1.5	1 and 1.5	1 and 1.5
Colour ⁽²⁾			
top surface	black	black	black
bottom surface	white	black	black

(1) Other sizes available to order.

(2) Other colours available to order.

1.3 Quality control checks on the finished products include:

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

2 Delivery and site handling

2.1 The membrane is delivered to site in rolls wrapped in polyethylene. Labels bearing the company name, product name, product code, dimensions and the BBA identification mark incorporating the number of this Certificate are attached to each roll.

2.2 The rolls should be stored on their sides, on a level, clean surface, under cover and protected from sunlight.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Web UV Roof Tile Underlays for use in cold ventilated and warm non-ventilated pitched roof systems.

Design Considerations

3 General

3.1 Web UV Roof Tile Underlays are satisfactory for use as fully supported or unsupported underlays in tiled and slated cold ventilated and warm pitched roofs constructed in accordance with the relevant clauses of BS 5534 : 2003.

3.2 The products have a high coefficient of friction, when dry, giving a slip-resistant surface for increased safety during the installation of the covering. Care should be taken in wet conditions during installation work due to a reduction in slip resistance.

3.3 When used in direct contact with treated timber the advice of the Certificate holder should be sought on compatibility.

4 Practicability of installation

Installation can be carried out easily by slaters/tilers experienced with this type of installation.

5 Weathertightness



5.1 Tests indicate that the products 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.

5.2 The products resist 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 (see section 16, Table for *Physical properties — general*).

6 Risk of condensation

6.1 For design purposes, the products' water vapour resistance may be taken as not more than 0.25 MNsg^{-1} , and for roofs designed in accordance with BS 5534 : 2003 or BS 5250 : 2002, Section 8.4, they may be regarded as a Type LR membrane.

6.2 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 ceilings and services evaporating or venting moisture into cold spaces.

6.3 The risk of condensation is highest in new-build construction during the first heating period, where there is high moisture loading due to wet trades, such as in-situ cast concrete slabs or plaster. The risk of condensation diminishes as the building naturally dries out. See *BBA Information Bulletin No 1 – Roof Tile Underlays in Cold Roofs during the Drying-out Period*.

Ceiling and insulation horizontal (cold ventilated roof)

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

Ceiling and insulation inclined (warm roof)

6.5 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 non-ventilated roof)

6.6 Where an insulated ceiling only spans part of the roofline, resulting in cold roof spaces, the installation should be executed in accordance with Product Sheet 2 of this Certificate.

7 Wind loading

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

7.2 The products, when fully supported or draped over counter battens, have adequate resistance to wind uplift forces.

7.3 For a cold ventilated system, wind loading on the underlay should be calculated in accordance with BS 5534 : 2003, Section 5.5.2.7. For acceptable wind loads with specific batten spacings for the draped product, using a 25 mm deep tiling batten, see section 16 (Table for *Physical properties – general*).

8 Strength

The products will resist the loads associated with installation of the roof (see section 16, Table for *Physical properties – directional*).

9 Properties in relation to fire

9.1 The products will melt and shrink away from heat, but will burn in the presence of a naked flame.

9.2 When the products are used unsupported, there is a risk that fire can spread if they are accidentally ignited during maintenance works, eg by a roofer's or plumber's torch. As with all types of underlay, care should be taken during building and maintenance to avoid the material becoming ignited.

9.3 When the products are used in a fully supported situation, the reaction to fire will be determined by the support.

10 Maintenance



As the products are confined to a roof space, there are no maintenance requirements. However, it must be ensured that damage occurring before enclosure is repaired (see section 14).

11 Durability



The products 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 12.5). Advice regarding exposure can be obtained from the Certificate holder.

Installation

12 General

12.1 Web UV Roof Tile Underlays must be installed and fixed in accordance with the Certificate holder's instructions, provisions of 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.

12.2 The products are installed with the printed side uppermost and lapped to shed water out and down the slope.

12.3 Overlaps must be provided with the minimum dimensions given in Table 2. Vertical laps should be staggered a minimum of 300 mm and detailed to occur along the rafter lines. All horizontal laps can be taped and sealed using a double-sided tape, if required.

Table 2 Minimum overlaps

Roof pitch (°)	Horizontal lap (mm)		Vertical laps (mm)
	Not fully supported	Fully supported	
12.5 to 14	225	150	300
15 to 34	150	100	300
35+	100	75	300

12.4 Minimum overlaps at hips should be 150 mm, and in valleys 300 mm.

12.5 Where possible, eaves guards should be used to protect the products from sunlight and to direct water into the gutter.

13 Procedure

Fully supported

13.1 The products may be used over sarking boards of softwood or other sarking materials as defined in BS 5534 : 2003 and installed in accordance with BS 5250 : 2002, and either with continuous insulation or insulation placed between the rafters.

13.2 The products are secured to the support with counter battens at least 25 mm thick to create drainage and vapour dispersal space⁽¹⁾ between the products and the tiles.

(1) This space should be ventilated in accordance with BS 5250 : 2002 when using tight-fitting roof coverings.

13.3 The counter battens are fixed with corrosion-resistant staples at a maximum of 300 mm centres coinciding with the rafters. Tiling battens are secured to the counter battens and rafters with appropriate fixings.

13.4 Care must be taken to minimise the risk of interstitial condensation as described in section 6.5 particularly for timber sarking which may be below the dew-point for extended periods during winter months.

Unsupported

13.5 The products, when installed as an unsupported system, are fixed in the traditional method for roof tile underlays, ie draped between the rafters to allow drainage of liquid water under the tiling battens.

14 Finishing

14.1 Detailing of abutments, verges and hips must be in accordance with the Certificate holder's instructions. Ingress of moisture to the roof space should be restricted by sealing around pipes and other penetrations and details.

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

15 Repair

Damage to the product can be repaired easily prior to the installation of slates or tiles by replacing the damaged areas, by patching and sealing correctly. Care should be taken to ensure that the watertightness of the roof is maintained.

Technical Investigations

16 Tests

16.1 Samples of Web UV Roof Tile Underlays were obtained from the Certificate holder for testing. The results of the tests carried out by, or on behalf of, the BBA are summarised in Tables 3 and 4.

Table 3 *Physical properties — directional*⁽¹⁾

Test (units)	Mean result		Method ⁽²⁾
	Long ⁽³⁾	Trans ⁽⁴⁾	
Tensile strength (N per 50 mm)			BS 2782-3.320A (500 mm min ⁻¹)
unaged	13.9	8.6	
heat aged ⁽⁵⁾	12.8	7.3	
wet strength ⁽⁶⁾	14.4	8.9	
water soak ⁽⁷⁾	13.1	7.5	
UV aged ⁽⁸⁾	8.0	5.2	
Elongation at break (%)			BS 2782-3.320A (500 mm min ⁻¹)
unaged	52	63	
heat aged ⁽⁵⁾	43	49	
wet strength ⁽⁶⁾	51	65	
water soak ⁽⁷⁾	50	59	
UV aged ⁽⁸⁾	37	31	
Tear resistance – nail (N)			MOAT 27 : 5.4.1
unaged	193	151	
heat aged ⁽⁵⁾	191	144	
water soak ⁽⁷⁾	193	143	

(1) Tests carried out on Web UV 25.

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

(3) Longitudinal direction.

(4) Transverse direction.

(5) Heat aged for 56 days at 70°C.

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

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

(8) 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 4 *Physical properties — general*

Test (units)	Mean result			Method ⁽¹⁾
	Web UV 10	Web UV 15	Web UV 25	
Water vapour transmission at 25°C/75% RH (gm ⁻² day ⁻¹)	983	1079	975	BS 3177
Vapour resistance (MNsg ⁻¹)	0.21	0.19	0.21	BS 3177
Hydrostatic pressure (mm)				BS EN 20811
minimum	2270	6160	7160	
mean	4520	6700	8780	
Burst strength (kNm)	507	507	708	BS 3137
Slip resistance (coefficient of friction)				T1/10 ⁽²⁾
dry	86	–	–	
wet	35	–	–	
Resistance to wind loads (kPa) ⁽³⁾				BBA T1/03 ⁽⁴⁾
batten spacing 350 mm	0.5 ⁽⁵⁾	1.0 ⁽⁵⁾	1.0 ⁽⁵⁾	
batten spacing 300 mm	0.5 ⁽⁵⁾	1.5 ⁽⁵⁾	1.5 ⁽⁵⁾	
batten spacing 250 mm	1.5 ⁽⁵⁾	2.0 ⁽⁵⁾	2.0 ⁽⁵⁾	
batten spacing 200 mm	2.5 ⁽⁵⁾	2.5 ⁽⁵⁾	2.5 ⁽⁵⁾	

(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) Test carried out using 25 mm thick battens and a 600 mm rafter spacing.

(4) BBA Test Method T1/03 now converted to MOAT 69, test 4.2.1.

(5) Maximum pressure achieved.

16.2 The directional properties of Web UV 10 and Web UV 15 were assessed on the basis of results from a similar lower specification Web product.

16.3 An examination was also made of test data on the following properties:

- thickness
- width
- mass per unit area.

17 Investigations

17.1 The condensation risk in warm roof constructions incorporating the products was examined.

17.2 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.

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

18 Conditions

18.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English law.

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

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

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

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

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

18.5 Any information relating to the manufacture, supply, installation, use and maintenance of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used and maintained. It does 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; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any 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 manufacture, supply, installation, use and maintenance of this product/system.

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Agrément Certificate
No 03/4053

WEB ROOF TILE UNDERLAYS

PRODUCT SHEET 2 — FOR USE IN COLD NON-VENTILATED PITCHED ROOF SYSTEMS

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate replaces Certificate No 04/4179 relates to Web UV Roof Tile Underlays for use in cold non-ventilated pitched roof systems.

AGRÉMENT CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Weathertightness — as part of a complete roof, the products will resist the passage of water and wind-blown snow and dust into the interior of the building (see section 5).

Risk of condensation — the products are regarded as a low water vapour resistance (Type LR) underlay and can be used as part of a non-ventilated warm and ventilated cold roof system (see section 6).

Wind loading — when installed on appropriately spaced battens the products' physical properties are deemed adequate to resist the wind loads imposed on the underlay. The products will reduce the wind uplift forces acting on the roof covering (see section 7).

Strength — the products have adequate strength to resist the loads associated with the installation of the roof (see section 8).

Durability — under the normal conditions found in a roof space the products will have a service life comparable to a traditional roof tile underlay (see section 11).



The BBA has awarded this Agrément Certificate for Web UV Roof Tile Underlays to Web Dynamics Ltd as fit for their intended use provided they are installed, used and maintained as set out in this Agrément Certificate.

On behalf of the British Board of Agrément

Head of Approvals
— Materials

Chief Executive

Date of First issue: 24 October 2003

Date of Second issue: 17 July 2008

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

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Regulations

In the opinion of the BBA, Web UV Roof Tile Underlays for use 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 of the following Building Regulations:



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

Requirement:	C2(b)	Resistance to moisture
Comment:		The products will contribute to a roof meeting this Requirement. See section 5.1 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		The products will contribute to a roof meeting this Requirement with respect to interstitial condensation. See sections 6.1 to 6.6 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The products are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:		The products can contribute to a construction satisfying this Regulation. See sections 10 and 11, and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards – construction
Standard:	3.10	Precipitation
Comment:		The products will contribute to a roof satisfying clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.7 ⁽¹⁾⁽²⁾ of this Standard. See section 5.1 of this Certificate.
Standard:	3.15	Condensation
Comment:		The products can enable a roof to satisfy this Standard with respect to interstitial condensation. See sections 6.1 to 6.6 of this Certificate.
Regulation:	12	Building standards – conversions
Comment:		All comments given for these products 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).



The Building Regulations (Northern Ireland) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The products are acceptable. See section 10 and the <i>Installation</i> part of this Certificate.
Regulation:	B3(2)	Suitability of certain materials
Comment:		The products do not normally require maintenance. See section 11 of this Certificate.
Regulation:	C4(b)	Resistance to ground moisture and weather
Comment:		The products will contribute to a roof satisfying this Regulation. See section 5.1 of this Certificate.
Regulation:	C5	Condensation
Comment:		The products can enable a roof to satisfy this Regulation. See sections 6.1 to 6.6 of this Certificate.

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: 1 *Description* (1.2).

Non-regulatory Information

NHBC Standards 2007

NHBC accepts the use of Web UV Roof Tile Underlays for use in cold non-ventilated pitched roof systems when installed and used in accordance with this Certificate, as meeting Technical Requirement R3 in relation to *NHBC Standards, Chapter 7.2 Pitched roofs*.

Zurich Building Guarantee Technical Manual 2007

In the opinion of the BBA, Web UV Roof Tile Underlays for use in cold non-ventilated pitched roof systems, when installed and used in accordance with this Certificate, satisfy the requirements of the *Zurich Building Guarantee Technical Manual, Section 4 Superstructure, Sub-section Pitched roofs*.

General

This Certificate relates to Web UV Roof Tile Underlays for use in cold non-ventilated pitched roof systems.

The products will also prevent the ingress of wind-blown rain or snow.

Technical Specification

1 Description

1.1 Web UV Roof Tile Underlays are manufactured by thermally bonding two layers of spunbond polypropylene 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.

1.2 The products' nominal characteristics are given in Table 1.

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Roll length (m) ⁽¹⁾	50	50	50
Roll width (m) ⁽¹⁾	1 and 1.5	1 and 1.5	1 and 1.5
Colour ⁽²⁾			
top surface	black	black	black
bottom surface	white	black	black

(1) Other sizes available to order.

(2) Other colours available to order.

1.3 Quality control checks on the finished products include:

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

2 Delivery and site handling

2.1 The membrane is delivered to site in rolls wrapped in polyethylene. Labels bearing the company name, product name, product code, dimensions and the BBA identification mark incorporating the number of this Certificate are attached to each roll.

2.2 The rolls should be stored on their sides, on a level, clean surface, under cover and protected from sunlight.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Web UV Roof Tile Underlays for use in cold non-ventilated pitched roof systems.

Design Considerations

3 General

3.1 Web UV Roof Tile Underlays are satisfactory for use in dwellings with cold non-ventilated tiled or slated roofs of any conventional plan and size. Features⁽¹⁾ successfully assessed include:

- duo pitched
- gable ends
- room-in-roof⁽²⁾
- mono-pitched
- verges
- dormers
- hipped
- abutments
- timber sarking⁽³⁾⁽⁴⁾
- mansard
- valleys.

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

(2) Where 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 relevant guidance given in Certificate No 03/4053, Product Sheet 1.

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

(4) Sheet sarking materials should not be used.

3.2 The products 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.

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

3.4 In non-ventilated roof systems, the risk of condensation is equivalent to, or less than, that for conventionally-ventilated cold roof systems (see section 6).

3.5 The products have a high coefficient of friction, when dry, giving a slip-resistant surface for increased safety during the installation of the covering. Care should be taken, in wet conditions, during installation work, due to a reduction in slip resistance.

3.6 When used in direct contact with treated timber the advice of the Certificate holder should be sought on compatibility.

4 Practicability of installation

Installation can be carried out easily by slaters/tilers experienced with this type of installation.

5 Weathertightness



5.1 Tests indicate that the products 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.

5.2 The products resist 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 (see section 16, Table for *Physical properties — general*).

6 Risk of condensation



6.1 For design purposes, the products' water vapour resistance may be taken as not more than 0.25 MNsg^{-1} , and for roofs designed in accordance with BS 5534 : 2003 or BS 5250 : 2002, Section 8.4, they may be regarded as a Type LR membrane.

6.2 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 minimise the risk of condensation.

6.3 The risk of condensation is highest in new-build construction during the first heating period, where there is high moisture loading due to wet trades, such as in-situ cast concrete slabs or plaster. The risk of condensation diminishes as the building naturally dries out. See *BBA Information Bulletin No 1 — Roof Tile Underlays in Cold Roofs during the Drying-out Period*.

6.4 All penetrations into and out of the roof space must be properly sealed in accordance with the Certificate holder's instructions. In addition, such features as vent stacks and boiler flues, passing through the roof space, must be sealed.

6.5 It is essential to minimise water vapour transfer into the loft space from the dwelling below. Appropriate measures include:

- ventilating the dwelling below in accordance with national Building Regulations and Standards for the dispersal and rapid dilution of water vapour, particularly from rooms that may experience high humidity (such as kitchens, utility rooms and bathrooms)
- covering all water tanks in the loft space and lagging pipework
- sealing penetrations in the ceiling and making loft hatches convection-tight by using a compressible draught seal
- ensuring that there is continuity of jointing with walls (and behind wall linings) at ceiling perimeters
- ensuring that masonry wall cavities do not interconnect with roof cavities.

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

7 Wind loading

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

7.2 The products, when fully supported or draped over counter battens, have adequate resistance to wind uplift forces.

7.3 For a cold ventilated system, wind loading on the underlay should be calculated in accordance with BS 5534 : 2003, Section 5.5.2.7. For acceptable wind loads with specific batten spacings for the draped product, using a 25 mm deep tiling batten, see section 16 (Table for *Physical properties — general*).

8 Strength

The products will resist the loads associated with installation of the roof (see section 16, Table for *Physical properties — directional*).

9 Properties in relation to fire

9.1 The products will melt and shrink away from heat, but will burn in the presence of a naked flame.

9.2 When the products are used unsupported, there is a risk that fire can spread if they are accidentally ignited during maintenance works, eg by a roofer's or plumber's torch. As with all types of underlay, care should be taken during building and maintenance to avoid the material becoming ignited.

9.3 When the products are used in a fully supported situation, the reaction to fire will be determined by the support.

10 Maintenance



As the products are confined to a roof space, there are no maintenance requirements. However, it must be ensured that damage occurring before enclosure is repaired (see section 15).

11 Durability



The products 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 12.5). Advice regarding exposure can be obtained from the Certificate holder.

Installation

12 General

12.1 Web UV Roof Tile Underlays must be installed and fixed in accordance with the Certificate holder's instructions, provisions of 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.

12.2 The products are installed with the printed side uppermost and lapped to shed water out and down the slope.

12.3 Overlaps must be provided with the minimum dimensions given in Table 2. Vertical laps should be staggered a minimum of 300 mm and detailed to occur along the rafter lines. All horizontal laps can be taped and sealed using a double-sided tape, if required.

Table 2 Minimum overlaps

Roof pitch (°)	Horizontal lap (mm)		Vertical laps (mm)
	Not fully supported	Fully supported	
12.5 to 14	225	150	300
15 to 34	150	100	300
35+	100	75	300

12.4 Minimum overlaps at hips should be 150 mm, and in valleys 300 mm.

12.5 Where possible, eaves guards should be used to protect the products from sunlight and to direct water into the gutter.

13 Procedure

Draped and loose laps

13.1 The products should be installed as an unsupported system, and fixed in the traditional method for roof tile underlays, ie laid parallel to the eaves, draped between the rafters, with the light grey printed side uppermost.

Taut

13.2 When laid horizontally, the products must be pulled taut and stapled or nailed to hold securely in position. Counter battens (minimum thickness 25 mm) are then fixed to the rafter.

Timber plank sarking

13.3 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.

14 Finishing

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

14.2 To achieve a convection-tight loft space, it is important that the following details are maintained (see also section 6.5).

- 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 eaves must be constructed to minimise air penetration into the loft space
- the insulation must be pushed into the eaves and against the underlay to avoid gaps, taking care to avoid pushing the underlay against the tiling battens and blocking the drainage path.

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

15 Repair

Damage to the product can be repaired easily prior to the installation of slates or tiles by replacing the damaged areas, by patching and sealing correctly. Care should be taken to ensure that the watertightness of the roof is maintained.

16 Tests

16.1 Samples of Web UV Roof Tile Underlays were obtained from the Certificate holder for testing. The results of the tests carried out by, or on behalf of, the BBA are summarised in Tables 3 and 4.

Table 3 *Physical properties — directional*⁽¹⁾

Test (units)	Mean result		Method ⁽²⁾
	Long ⁽³⁾	Trans ⁽⁴⁾	
Tensile strength (N per 50 mm)			BS 2782-3.320A (500 mm min ⁻¹)
unaged	13.9	8.6	
heat aged ⁽⁵⁾	12.8	7.3	
wet strength ⁽⁶⁾	14.4	8.9	
water soak ⁽⁷⁾	13.1	7.5	
UV aged ⁽⁸⁾	8.0	5.2	
Elongation at break (%)			BS 2782-3.320A (500 mm min ⁻¹)
unaged	52	63	
heat aged ⁽⁵⁾	43	49	
wet strength ⁽⁶⁾	51	65	
water soak ⁽⁷⁾	50	59	
UV aged ⁽⁸⁾	37	31	
Tear resistance – nail (N)			MOAT 27 : 5.4.1
unaged	193	151	
heat aged ⁽⁵⁾	191	144	
water soak ⁽⁷⁾	193	143	

(1) Tests carried out on Web UV 25.

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

(3) Longitudinal direction.

(4) Transverse direction.

(5) Heat aged for 56 days at 70°C.

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

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

(8) 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 4 *Physical properties — general*

Test (units)	Mean result			Method ⁽¹⁾
	Web UV 10	Web UV 15	Web UV 25	
Water vapour transmission at 25°C/75% RH (gm ⁻² day ⁻¹)	983	1079	975	BS 3177
Vapour resistance (MNsg ⁻¹)	0.21	0.19	0.21	BS 3177
Hydrostatic pressure (mm)				BS EN 20811
minimum	2270	6160	7160	
mean	4520	6700	8780	
Burst strength (kNm)	507	507	708	BS 3137
Slip resistance (coefficient of friction)				T1/10 ⁽²⁾
dry	86	–	–	
wet	35	–	–	
Resistance to wind loads (kPa) ⁽³⁾				BBA T1/03 ⁽⁴⁾
batten spacing 350 mm	0.5 ⁽⁵⁾	1.0 ⁽⁵⁾	1.0 ⁽⁵⁾	
batten spacing 300 mm	0.5 ⁽⁵⁾	1.5 ⁽⁵⁾	1.5 ⁽⁵⁾	
batten spacing 250 mm	1.5 ⁽⁵⁾	2.0 ⁽⁵⁾	2.0 ⁽⁵⁾	
batten spacing 200 mm	2.5 ⁽⁵⁾	2.5 ⁽⁵⁾	2.5 ⁽⁵⁾	

(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) Test carried out using 25 mm thick battens and a 600 mm rafter spacing.

(4) BBA Test Method T1/03 now converted to MOAT 69, test 4.2.1.

(5) Maximum pressure achieved.

16.2 The directional properties of Web UV 10 and Web UV 15 were assessed on the basis of results from a similar lower specification Web product.

16.3 An examination was also made of test data on the following properties:

- thickness
- width
- mass per unit area.

17 Investigations

17.1 Using computer modelling, cold non-ventilated roofs (as described in section 3.1) were analysed for risk of condensation.

17.2 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.

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

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*

18 Conditions

18.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English law.

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

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

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

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

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

18.5 Any information relating to the manufacture, supply, installation, use and maintenance of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used and maintained. It does 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; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any 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 manufacture, supply, installation, use and maintenance of this product/system.