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Agrément Certificate

**07/4432**

Product Sheet 2

### PRO CLIMA SOLITEX VAPOUR PERMEABLE ROOFING UNDERLAYS

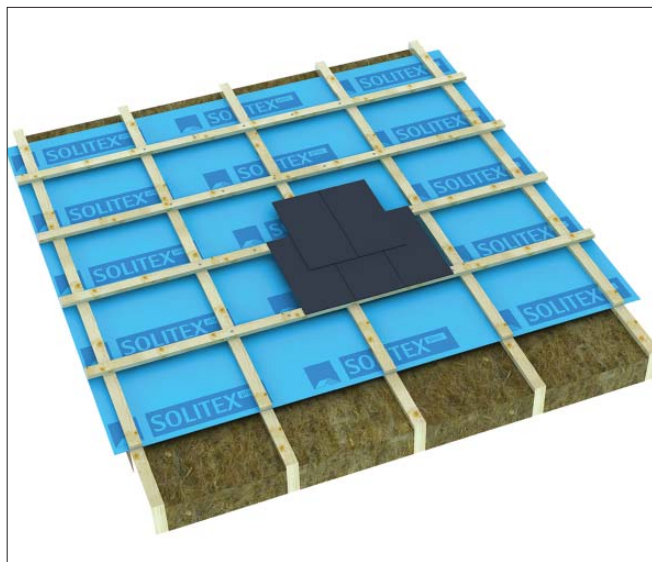
#### SOLITEX PLUS FOR USE IN WARM NON-VENTILATED AND COLD VENTILATED ROOFS

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Solitex Plus for Use in Warm Non-ventilated and Cold Ventilated Roofs, a flexible four-layer polypropylene sheet material for use as roof tile underlay.

(1) Hereinafter referred to as 'Certificate'.

#### 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 product will resist the passage of water and wind-blown snow and dust into the interior of the building (see section 6).

**Risk of condensation** — the product is a low water vapour resistance (Type LR) underlay and can be used as part of warm non-ventilated and cold ventilated pitched roof systems (see section 7).

**Wind loading** — when installed on appropriately spaced battens, the product's physical properties are deemed adequate to resist the wind loads imposed on the underlay. The product will reduce the wind uplift forces acting on the roof covering (see section 8).

**Strength** — the product has adequate strength to resist the loads associated with the installation of the roof (see section 9).

**Durability** — under normal conditions found in a roof space, the product will have a service life comparable to a traditional roof tile underlay (see section 12).

The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Third issue: 6 March 2014

Originally certificated on 4 May 2007

Simon Wroe  
Head of Approvals — Materials

Claire Curtis-Thomas  
Chief Executive

*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](http://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, Solitex Plus for Use in Warm Non-ventilated and Cold Ventilated Roofs, if installed, used and maintained in accordance with this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



## The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	C2(b)	Resistance to moisture
Comment:		The product will contribute to a roof meeting this Requirement. See section 6.1 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The product is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.



## The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The product can contribute to a construction satisfying this Regulation. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	3.10	Precipitation
Comment:		The product will contribute to a roof satisfying clauses 3.10.1 <sup>(1)(2)</sup> and 3.10.8 <sup>(1)(2)</sup> of this Standard. See section 6.1 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The product can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	12	Building standards applicable to conversions
Comment:		All comments given for this product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 <sup>(1)(2)</sup> and Schedule 6 <sup>(1)(2)</sup> . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



## The Building Regulations (Northern Ireland) 2012

Regulation:	23(a)(i)(iii)(b)(i)	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The product will contribute to a roof satisfying this Regulation. See section 6.1 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 of this Certificate.*

# Additional Information

## NHBC Standards 2014

NHBC accepts the use of Solitex Plus for Use in Warm Non-ventilated and Cold Ventilated Roofs, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 7.2 *Pitched roofs*.

## CE marking

The Certificate holder has taken the responsibility of CE marking the products in accordance with harmonised European Standard BS EN 13859-1 : 2010. An asterisk (\*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

## 1 Description

Solitex Plus for Use in Warm Non-ventilated and Cold Ventilated Roofs is a four-layer polypropylene/ thermoplastic ether ester elastomer (PE/TEEE) composite with the nominal characteristics given in Table 1.

*Table 1 Nominal characteristics*

Characteristic (unit)	Value
Thickness (mm)	0.55 ±10
Mass per unit area* (g·m <sup>-2</sup> )	170 ±5
Roll length* (m)	50 +0.5
Roll width* (m)	1.5 +0.005 m
Colour	
upper	blue
lower	dark grey
Tensile strength* (N per 50 mm)	
longitudinal	495 ±40
transverse	350 ±40
Elongation* (%)	
longitudinal	15 ±15
transverse	15 ±15
Tear resistance* (N)	
longitudinal	300 ±30
transverse	270 ±30
Watertightness*	
unaged	W1
aged <sup>(1)</sup>	W1
Water vapour transmission* (S <sub>d</sub> )(m)	<0.04
Water vapour resistance (MN·s·g <sup>-1</sup> )	0.2 ±0.05

(1) Aged in accordance with BS EN 13859-1 : 2010, Annex C.

## 2 Manufacture

2.1 The product is manufactured by extrusion coating and lamination. The thermoplastic ether ester elastomer (TEEE) is melted and extruded into a thin hot film and coated onto the spunbond polypropylene (PP). The second layer and reinforcement are then laminated to the coating and consolidated to form a vapour permeable membrane.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by TÜV NORD (Certificate 410019980046).

## 3 Delivery and site handling

3.1 Rolls are delivered to site in packages carrying a label bearing the Certificate holder's name and details, the grade identification and the BBA logo including the number of this Certificate.

3.2 The rolls should be stored flat or on end on a clean, level surface under cover.

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Solitex Plus for Use in Warm Non-ventilated and Cold Ventilated Roofs.

## Design Considerations

## 4 Use

Solitex Plus for Use in Warm Non-ventilated and Cold Ventilated Roofs is satisfactory for use as a fully supported or unsupported roof tile underlay in tiled and slated pitched roof systems constructed in accordance with the relevant clauses of BS 5534 : 2003.

## 5 Practicability of installation

Installation is designed to be carried out by slaters/tilers experienced with this type of product.

## 6 Weathertightness



6.1 The product is Class W1\* in accordance with BS EN 13859-1 : 2010 and will resist the passage of water, wind-blown rain 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 a temporary waterproofing prior to the installation of the slates or tiles. The period of such use should, however, be kept to a minimum. Further information is given in BBA Information Bulletin 2 *Permeable Roof Tile Underlay — Guide to Good Site Practice*.

## 7 Risk of condensation

7.1 For design purposes, the product's water vapour resistance may be taken as not more than  $0.25 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}$  and for roofs designed in accordance with BS 5534 : 2003 or BS 5250 : 2011, Annex H, it may be regarded as a Type LR membrane.

7.2 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.

7.3 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. Further information is given in BBA Information Bulletin No 1 *Roof Tile Underlays in Cold Roofs during the Drying-out Period*.

### Horizontal ceiling and insulation (cold roof)

7.4 Roofs designed and constructed in accordance with BS 5250 : 2011 will adequately limit the risk of interstitial condensation.

### Inclined ceiling and insulation (warm roof)

7.5 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. Ventilation may be required if specified by the tile manufacturer.

### Partially inclined ceiling and insulation (warm roof and cold roof)

7.6 Where an insulated ceiling spans only part of the roofline, resulting cold roof spaces should be ventilated in accordance with BS 5250 : 2011, Annex H.

## 8 Wind loading

8.1 Project design wind speeds are determined and wind uplift forces calculated in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex.

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

8.3 For a cold ventilated system, wind loading on the underlay is calculated in accordance with BS 5534 : 2003, section 5.5.2.7. Acceptable wind loads with specific batten spacings for the draped product, using a 25 mm deep tiling batten, are given in Table 2.

Table 2 Resistance to wind loads

Batten spacing (mm)	Maximum pressure (kPa)
350	1.5
330	2.0
300	2.5

## 9 Strength

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

## 10 Properties in relation to fire

10.1 The product is Class E\* in accordance with BS EN 13501-1 : 2007.

10.2 The product will have similar properties in relation to fire to those of traditional polyethylene roof tile underlays.

10.3 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 underlay, care should be taken during building and maintenance to avoid ignition.

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

## 11 Maintenance

As the product is confined within a roof system and has suitable durability (see section 12), maintenance is not required. However, any damage occurring before enclosure must be repaired (see section 15).

## 12 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 a traditional roof tile underlay, provided it is not exposed to sunlight for long periods (see section 13.4). Advice regarding exposure can be obtained from the Certificate holder.

## Installation

### 13 General

13.1 Solitex Plus is installed 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.

13.2 The product is installed with the coloured or printed side uppermost and lapped to shed water out and down the slope.

13.3 Overlaps must be provided with the minimum dimensions given in Table 3.

*Table 3 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

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

### 14 Procedure

#### Fully supported

14.1 The product may be used over sarking boards of softwood, C4 grade chipboard, water-resistant grade plywood or water-resistant grade OSB, and with either continuous insulation or insulation placed between the rafters.

14.2 The product is secured to the support with counter battens at least 12 mm thick to create an air space between the product and the tiles for drainage and vapour dispersal. Counter battens are fixed with corrosion-resistant staples or galvanized clout nails as appropriate. Tiling battens are secured to the counter battens and rafters with appropriate fixings.

14.3 Care must be taken to minimise the risk of interstitial condensation as described in section 7.5, particularly for timber sarking which may be below the dew-point for extended periods during winter months.

#### Unsupported

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

### 15 Repair

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

### 16 Finishing

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

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

## 17 Tests

17.1 An assessment was made on data to BS EN 13859-1 : 2010 in relation to:

- dimensions\*
- mass per unit area\*
- tensile strength and elongation\*
- resistance to tear\*
- dimensional stability\*
- resistance to water penetration\*
- resistance to artificial ageing\*
- water vapour transmission\*.

17.2 Tests were carried out to determine:

- slip resistance
- resistance to streaming water
- Mullen burst strength
- resistance to wind loads
- In order to assess:
  - safety during installation
  - performance under typical service conditions
  - robustness during installation
  - properties when installed.

## 18 Investigations

18.1 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and compositions of materials used.

18.2 The condensation risk in warm roof constructions incorporating the products, specifically those containing sarking boards, was assessed.

## Bibliography

BS 5250 : 2011 *Code of practice for control of condensation in buildings*

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*

BS EN 1991-1-4 : 2005 *Eurocode 1: Actions on structures — General actions — Wind actions*

NA to BS EN 1991-1-4 : 2005 *UK National Annex to Eurocode 1: Actions on structures — General actions — Wind actions*

BS EN 13501-1 : 2007 *Fire classification of construction products and building elements — Classification using data from reaction to fire tests*

BS EN 13859-1 : 2010 *Flexible sheets for waterproofing — Definitions and characteristics of underlays — Underlays for discontinuous roofing*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

## 19 Conditions

19.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- 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.

19.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

19.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and 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.

19.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

19.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- 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
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

19.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal 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, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue 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.