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Agrément Certificate

07/4432

Product Sheet 2 Issue 6

PRO CLIMA SOLITEX VAPOUR PERMEABLE ROOFING UNDERLAYS

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

This Agrément Certificate Product Sheet⁽¹⁾ relates to Solitex Plus and Solitex Plus Connect, roof tile underlays for use in cold ventilated and warm non-ventilated pitched roofs of up to 70° pitch.

(1) Hereinafter referred to as 'Certificate'.

The assessment includes

Product factors:

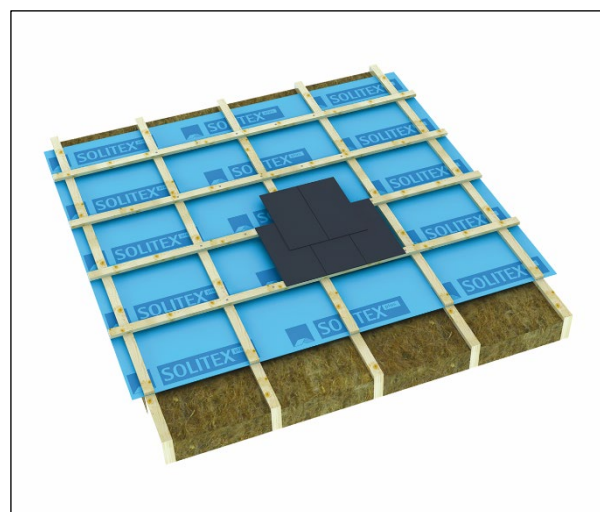
- compliance with Building Regulations
- compliance with additional regulatory or non-regulatory information where applicable
- evaluation against technical specifications
- assessment criteria and technical investigations
- uses and design considerations

Process factors:

- compliance with Scheme requirements
- installation, delivery, handling and storage
- production and quality controls
- maintenance and repair

Ongoing contractual Scheme elements†:

- regular assessment of production
- formal 3-yearly review



KEY FACTORS ASSESSED

- Section 1. Mechanical resistance and stability
- Section 2. Safety in case of fire
- Section 3. Hygiene, health and the environment
- Section 4. Safety and accessibility in use
- Section 5. Protection against noise
- Section 6. Energy economy and heat retention
- Section 7. Sustainable use of natural resources
- Section 8. Durability

The BBA has awarded this Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Sixth issue: 2 May 2024

Originally certified on 4 May 2007

Hardy Giesler
Chief Executive Officer

This BBA Agrément Certificate is issued under the BBA's Inspection Body accreditation to ISO/IEC 17020. Sections marked with † are not issued under accreditation.

The BBA is a UKAS accredited Inspection Body (No. 4345), Certification Body (No. 0113) and Testing Laboratory (No. 0357).

Readers MUST check that this is the latest issue of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

The Certificate should be read in full as it may be misleading to read clauses in isolation.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

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SUMMARY OF ASSESSMENT AND COMPLIANCE

This section provides a summary of the assessment conclusions; readers should refer to the later sections of this Certificate for information about the assessments carried out.

Compliance with Regulations

Having assessed the key factors, the opinion of the BBA is that Solitex Plus and Solitex Plus Connect for use in cold ventilated and warm non-ventilated pitched roofs, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations:



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

| | | |
|---------------------|--------------|---|
| Requirement: | B3(4) | Internal fire spread |
| Comment: | | The products can contribute to satisfying this Requirement. See section 2 of this Certificate. |
| Requirement: | C2(b) | Resistance to moisture |
| Comment: | | The products will contribute to satisfying this Requirement. See section 3 of this Certificate. |
| Requirement: | C2(c) | Resistance to moisture |
| Comment: | | The products can contribute to satisfying this Requirement. See section 3 of this Certificate. |
| Regulation: | 7(1) | Materials and workmanship |
| Comment: | | The products are acceptable. See sections 8 and 9 of this Certificate. |



The Building (Scotland) Regulations 2004 (as amended)

| | | |
|--------------------|-------------|--|
| Regulation: | 8(1) | Fitness and durability of materials and workmanship |
| Comment: | | The products can contribute to a construction satisfying this Regulation. See sections 8 and 9 of this Certificate. |
| Regulation: | 9 | Building standards - construction |
| Standard: | 2.4 | Cavities |
| Comment: | | The products can contribute to satisfying this Standard with respect to clause 2.4.2 ⁽¹⁾⁽²⁾ . See section 2 of this Certificate. |
| Standard: | 3.10 | Precipitation |
| Comment: | | The products will contribute satisfying the Standard, with respect to clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.7 ⁽¹⁾⁽²⁾ . See section 3 of this Certificate. |
| Standard: | 3.15 | Condensation |
| Comment: | | The products can contribute to limiting the risk of interstitial condensation, with reference to clauses 3.15.1 ⁽¹⁾⁽²⁾ , 3.15.3 ⁽¹⁾⁽²⁾ and 3.15.7 ⁽¹⁾⁽²⁾ of this Standard. See section 3 of this Certificate. |
| Standard: | 7.1(a) | Statement of sustainability |
| Comment: | | The products can contribute to satisfying 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 conversion |
| Comment: | | All comments given for the products under Regulation 9, Standards 1 to 6, 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) 2012 (as amended)

| | | |
|--------------------|--------------------|--|
| Regulation: | 23(1)(a)(i) | Fitness of materials and workmanship |
| Comment: | (iii)(b)(i) | The products are acceptable. See sections 8 and 9 of this Certificate. |
| Regulation: | 28(b) | Resistance to moisture and weather |
| Comment: | | The products will contribute to satisfying this Regulation. See section 3 of this Certificate. |
| Regulation: | 29 | Condensation |
| Comment: | | The products can contribute to satisfying this Regulation. See section 3 of this Certificate. |
| Regulation: | 35(4) | Internal fire spread - structure |
| Comment: | | The products can contribute to satisfying this Regulation. See section 2 of this Certificate. |

Additional Information

NHBC Standards 2024

In the opinion of the BBA, Solitex Plus and Solitex Plus Connect for use in cold ventilated and warm non-ventilated pitched roofs, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 7.2 *Pitched roofs*.

Fulfilment of Requirements

The BBA has judged Solitex Plus and Solitex Plus Connect for use in cold ventilated and warm non-ventilated pitched roofs to be satisfactory for use as described in this Certificate. The products have been assessed as roof tile underlays for use in pitched roofs of up to 70° pitch.

ASSESSMENT

Product description and intended use

The Certificate holder provided the following description for the product under assessment. Solitex Plus and Solitex Plus Connect for use in cold ventilated and warm non-ventilated pitched roofs are four-layer polypropylene/thermoplastic ether ester elastomer (PE/TEEE) composites.

Solitex Plus Connect is available with an integrated tape.

The products have the nominal characteristics given in Table 1.

Table 1 Nominal characteristics of Solitex Plus and Solitex Plus Connect

| Characteristic (unit) | Value |
|---|-----------|
| Thickness (mm) | 0.55 |
| Mass per unit area (g·m ⁻²) | 170 |
| Roll length (m) | 50 |
| Roll width (m) | 1.5 |
| Colour | |
| upper face | Blue |
| lower face | Dark grey |

Ancillary Items

The Certificate holder recommends Tescon Vana tape, an adhesive single-sided tape, for taping overlaps, but this material has not been assessed by the BBA and is outside the scope of this Certificate.

Applications

The products have been assessed for use as fully supported (and secured with counter battens and tiling battens) or unsupported underlays (installed by draping over rafters and securing with tiling battens), in tiled and slated cold ventilated and warm non-ventilated pitched roof systems, constructed in accordance with the relevant clauses of BS 5534 : 2014.

The products must be used over suitable timber-based sarking (Type 3 particleboards, Type 3 OSB or Type 2 plywood), either with continuous insulation or insulation placed between the rafters (warm roofs).

Definitions for products and applications inspected

Pitched roofs are defined for the purpose of this Certificate as those having a fall in excess of 1:6 and a maximum pitch of 70°.

Product assessment – key factors

The products were assessed for the following key factors, and the outcome of the assessment is shown below. Conclusions relating to the Building Regulations apply to the whole of the UK unless otherwise stated.

1 Mechanical resistance and stability

Data were assessed for the following characteristics.

1.1 Resistance to wind uplift

1.1.1 Results of resistance to wind uplift tests to BS 5534 : 2014 Annex A, and consequent Wind Zones of applicability are given in Tables 2 and 3 of this Certificate.

Table 2 Declared wind uplift resistance (Pa)

| Product | ≤250 mm batten gauge with battened laps ⁽¹⁾⁽²⁾ | ≤345 mm batten gauge with battened laps ⁽²⁾ | ≤345 mm batten gauge with taped laps ⁽²⁾⁽³⁾ | ≤345 mm batten gauge with integrated taped laps ⁽²⁾ |
|----------------------|---|--|--|--|
| Solitex Plus | 2571 | 1164 | 2626 | — |
| Solitex Plus Connect | — | — | — | 3204 |

(1) Underlays with a wind uplift resistance at a 250 mm batten gauge that satisfy the minimum design wind pressure of 820 Pa for Zone 1 are deemed to satisfy the requirements for use at 100 mm batten gauge in all Wind Zones.

(2) Mean of test results.

(3) Using Tescon Vana tape, outside of the scope of this Certificate.

Table 3 Zones of applicability of Solitex Plus and Solitex Plus Connect with battened laps, taped laps and integrated laps, according to BS 5534 : 2014, clause A.8

| Product | ≤250 mm batten gauge with battened lap | ≤345 mm batten gauge with battened lap | ≤345 mm batten gauge with taped laps ⁽³⁾ | ≤345 mm batten gauge with integrated taped laps |
|----------------------|--|--|---|---|
| Solitex Plus | Zones 1 to 5 | Zones 1 to 3 | Zones 1 to 5 | — |
| Solitex Plus Connect | — | — | — | Zones 1 to 5 |

Unsupported

1.1.2 On the basis of data assessed, the products are satisfactory for use in unsupported systems, in the geographical Wind Zones given in Table 3, where a well-sealed ceiling, as defined in BS 9250 : 2007, Clause 3.7, is present and the roof has a ridge height ≤ 15 m, a pitch between 12.5 and 75°, and a site altitude ≤ 100 m, and where topography is not significant. For all other cases, the required uplift resistance must be determined using BS 5534 : 2014 and the Certificate holder's declared wind uplift resistances given in Table 4 of this Certificate.

Supported

1.1.3 The products, when fully supported, have adequate resistance to wind uplift forces.

1.1.4 The products may be used at any batten gauge in all Wind Zones when laid over nominally airtight timber based sarking (Type 3 particleboard, Type 3 OSB or Type 2 plywood), and insulation for warm-roof design. They may also be used in applications where slates are nailed directly onto sarking boards.

1.1.5 Timber sarking, such as square-edged butt jointed planks, is not considered to be airtight and the underlay is treated as unsupported.

1.2 Resistance to mechanical damage

1.2.1 Results of resistance to mechanical damage tests are given in Table 4.

Table 4 Results of mechanical damage tests

| Product assessed | Assessment method | Requirement | Result |
|------------------|--|----------------|------------------------|
| Solitex Plus | Resistance to tear to BS EN 12310-1 : 2000 with modifications as per BS EN 13859-1 : 2014, Annex B | ≥ 50 N | |
| | Longitudinal direction | | Pass |
| | Transverse direction | | Pass |
| Solitex Plus | Mullen burst strength to BS 3137 : 1972 | Value achieved | |
| | Face 1 Uppermost ⁽¹⁾ | | 864 kN·m ⁻² |
| | Face 2 Uppermost ⁽²⁾ | | 910 kN·m ⁻² |

(1) Face 1 being the marked blue side.

(2) Face 2 being the reverse black/white side.

1.2.2 On the basis of data assessed, the products have adequate strength to resist the loads associated with the installation of the roof.

2 Safety in case of fire

Data were assessed for the following characteristics.

2.1 Reaction to fire

2.1.1 The result of a reaction to fire test is given in Table 5.

Table 5 Results of reaction to fire test

| Product assessed | Assessment method | Requirement | Result |
|------------------|---|----------------|---------------------------|
| Solitex Plus | Reaction to fire in accordance with DIN EN ISO 11925-2 : 2009 and classified to DIN EN 13501-1 : 2007 ⁽¹⁾ , tested unsupported | Value achieved | Class E-d2 ⁽²⁾ |

(1) Report reference KB 3.1/10-027-7, issued by MFPA Leipzig GmbH, available from the Certificate holder upon request.

(2) The classification applies only over a substrate achieving either an A1 or A2-s1, d0 classification to BS EN 13501-1 : 2018.

2.1.2 Designers must refer to the relevant national Building Regulations and guidance for detailed conditions of use, particularly in respect of requirements for substrate fire performance, cavity barriers, service penetrations and combustibility limitations for other materials and components used in the overall construction.

2.1.3 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 must be taken during building and maintenance to avoid ignition.

2.1.4 When the products are used with timber sarking, such as square-edged butt jointed planks, the reaction to fire will be primarily determined by the sarking.

3 Hygiene, health and the environment

Data were assessed for the following characteristics.

3.1 Weathertightness

3.1.1 Results of weathertightness tests are given in Table 6.

Table 6 Weathertightness

| Product assessed | Assessment method | Requirement | Result |
|------------------|---|-------------|--------|
| Solitex Plus | Resistance to water penetration to BS EN 1928 : 2000 with modifications to BS EN 13859-1 : 2014, Annex A | No leakage | Pass |

3.1.2 Existing data on resistance to hydrostatic pressure and streaming water test (supported) on a representative related product was assessed and considered to be satisfactory.

3.1.3 On the basis of data assessed, the products can be used supported without affecting their water resistance.

3.1.4 The products are Class W1 in accordance with BS EN 13859-1 : 2014 and 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 : 2014.

3.1.5 The products resist penetration of liquid water and consequently may be used as temporary weatherproofing prior to the installation of slates or tiles. The period of such use must, however, be kept to a minimum as given in BBA Information Bulletin No. 2 *Permeable Roof Tile Underlay – Guide to Good Site Practice*.

3.2 Condensation

3.2.1 Results of vapour resistance tests are given in Table 7.

Table 7 Vapour resistance

| Product assessed | Assessment method | Requirement | Result |
|------------------|---|--|--|
| Solitex Plus | Water vapour permeability to BS 3177 : 1959 at 25°C/75% RH | Value achieved | 653 g·m ⁻² ·24h ⁻¹ |
| | Water vapour transmission properties to BS EN ISO 12572 : 2001 | Declared Value S _d =0.04 m (+/- 0.01) ⁽¹⁾ | Pass |

(1) Water vapour resistance, in MN·s·g⁻¹, may be taken as 5 x s_d value.

3.2.2 A condensation risk analysis was carried out based on the results given in Table 7 and satisfactory conclusions were drawn.

3.2.3 For roofs designed in accordance with BS 5534 : 2014 and BS 5250 : 2021, the products may be regarded as Type LR underlays.

4 Safety and accessibility in use

Data were assessed for the following characteristics.

4.1 Slip resistance

4.1.1 Existing data from slip resistance tests carried out on a representative related product were assessed and considered to be satisfactory.

4.1.2 On the basis of data assessed, the products have a high coefficient of friction when dry, giving a slip resistant surface for increased safety during the installation of the covering.

5 Protection against noise

Not applicable.

6 Energy economy and heat retention

Not applicable.

7 Sustainable use of natural resources

The products comprise polypropylene, which can be recycled.

8 Durability

8.1 The potential mechanisms for degradation and the known performance characteristics of the materials in the products were assessed.

8.2 Specific test data were assessed as given in Table 8.

Table 8 Results of durability tests

| Product assessed | Assessment method | Requirement | Result |
|---|---|----------------------------|--------|
| Solitex Plus | Dimensional stability to BS EN 1107-2 : 2001 | ≤ 2% | |
| | Longitudinal direction | | Pass |
| | Transverse direction | | Pass |
| | Tensile strength to BS EN 12311-2 : 2000 with modifications as per BS EN 13859-1 : 2014, Annex A | Declared values | |
| | Control | | |
| | Longitudinal direction | 495 N·(50mm) ⁻¹ | Pass |
| | Transverse direction | 310 N·(50mm) ⁻¹ | Pass |
| | Elongation to BS EN 12311-2 : 2000 with modifications as per BS EN 13859-1 : 2014, Annex A | Declared values | |
| | Control | | |
| | Longitudinal direction | 25% | Pass |
| Transverse direction | 20% | Pass | |
| Low temperature flexibility to DIN EN 1109 : 1999-10 at -40°C | Declared value | -40°C | |

8.3 Existing data on tensile strength and elongation, following 336h UVA at 50°C followed by 90 days heat ageing at 70°C, wet strength tested wet after 24 hours at 23°C immersion, and resistance to water penetration following 336h UVA at 50°C followed by 90 days heat ageing at 70°C, on a representative related product were assessed and considered to be satisfactory.

8.4 Service life

8.4.1 Under normal service conditions, the products will have a service life comparable with that of traditional roof tile underlays, provided they are not exposed to sunlight for long periods, and they are designed, installed and maintained in accordance with this Certificate and the Certificate holder's instructions.

8.4.2 The exposure of the products prior to completion of the roof must be kept to a minimum. Advice must be sought from the Certificate holder, but such advice is outside the scope of this Certificate.

PROCESS ASSESSMENT

Information provided by the Certificate holder was assessed for the following factors:

9 Design, installation, workmanship and maintenance

9.1 Design

9.1.1 The design process was assessed by the BBA, and the following requirements apply in order to satisfy the performance assessed in this Certificate.

9.1.2 Project design wind speeds for the roof in which the products are installed must be determined, and wind uplift forces calculated, by a suitably experienced and competent individual, in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex.

9.1.3 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.

9.1.4 When used in direct contact with treated timber, the advice of the Certificate holder must be sought on compatibility, but such advice is outside the scope of this Certificate.

9.2 Installation

9.2.1 Installation instructions provided by the Certificate holder were assessed and judged to be appropriate and adequate.

9.2.2 Installation must be carried out in accordance with this Certificate and the Certificate holder's instructions and the relevant recommendations of BS 5534 : 2014, BS 8000-0 : 2014 and BS 8000-6 : 2023. Installation can be carried out under all conditions normal to roofing work. A summary of instructions and guidance are provided in Annex A of this Certificate.

9.2.3 The NHBC requires that the products, once installed, must be inspected in accordance with *NHBC Standards 2024, Chapter 7.2 Pitched roofs*, and undergo an appropriate integrity test, where required. Any damage to the products assessed in this Certificate must be repaired in accordance with section 9.4 of this Certificate and reinspected, in order to maintain product performance.

9.2.4 The products must be installed with the printed side uppermost and lapped to shed water out and down the slope.

9.2.5 Overlaps must be provided with the minimum dimensions given in Table 9.

Table 9 Minimum overlaps

| Roof pitch (°) | Horizontal lap – untaped, and integrated taped (double) (mm) | | Vertical laps (mm) |
|----------------|--|-----------------|--------------------|
| | Not fully supported | Fully supported | |
| 12.5 < 15 | 225 | 150 | 100 |
| ≥ 15 | 150 | 100 | 100 |

9.2.6 It is recommended that vertical joints in the products are avoided. Where required, vertical laps must be completed carefully. The edges of both strips of the products must be glued together, curled up, and fixed with galvanized clout nails directly to the rafters. The Certificate holder can advise on suitable materials for this purpose, but such advice and products are outside the scope of this Certificate.

Procedure

Unsupported

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

Fully supported

9.2.8 The products must be used over suitable timber based sarking (Type 3 particleboards, Type 3 OSB or Type 2 plywood), either with continuous insulation or insulation placed between the rafters (warm roofs).

9.2.9 The products are secured to the support with counter battens at least 12 mm thick to create drainage and vapour dispersal space⁽¹⁾ between the products and the tiles. When using timber sarking, the traditional Scottish practice is employed, with the tiles or slates fixed directly into the boards.

(1) This space must be ventilated in accordance with BS 5250 : 2021 when using tight-fitting roof coverings.

9.2.10 The counter battens are fixed with galvanized clout nails at a maximum of 300 mm centres coinciding with the rafters. Tiling battens are secured to the counter battens and rafters with appropriate fixings.

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

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

9.3 Workmanship

Practicability of installation was assessed by the BBA, on the basis of the Certificate holder’s information and BS 5534 : 2014. To achieve the performance described in this Certificate, the products must be installed by a competent general builder, or a contractor, experienced with these types of products.

9.4 Maintenance and repair

9.4.1 As the products are confined in a roof structure and have suitable durability, maintenance is not required. However, any damage occurring before enclosure must be repaired.

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

10 Manufacture

10.1 The production processes for the products have been assessed, and provide assurance that the quality controls are satisfactory according to the following factors:

10.1.1 The manufacturer has provided documented information on the materials, processes, testing and control factors.

10.1.2 The quality control operated over batches of incoming materials has been assessed and deemed appropriate and adequate.

10.1.3 The quality control procedures and product testing to be undertaken have been assessed and deemed appropriate and adequate.

10.1.4 The process for management of non-conformities has been assessed and deemed appropriate and adequate.

10.1.5 An audit of each production location was undertaken, and it was confirmed that the production process was in accordance with the documented process, and that equipment has been properly tested and calibrated.

† 10.2 The BBA has undertaken to review 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.

11 Delivery and site handling

11.1 The Certificate holder stated that the products are delivered to site in packaging bearing the Certificate holder's name, the grade identification and the BBA logo incorporating the number of this Certificate.

11.2 Delivery and site handling must be performed in accordance with the Certificate holder's instructions and this Certificate, including:

11.2.1 Rolls must be stored flat on a clean, level surface, under cover and protected from sunlight.

Supporting information in this Annex is relevant to the product but has not formed part of the material assessed for the Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

CE marking

The Certificate holder has taken the responsibility of CE marking the product, in accordance with harmonised European Standard EN 13859-1 : 2014.

Additional information on installation

General

A.1 Where possible, eaves guards should be used to protect the products from sunlight and to direct water into the gutter.

Condensation

A.2 The risk of condensation is highest in new-build construction during the first heating period, where there is high moisture loading owing to wet trades, such as in-situ cast concrete slabs or plaster. The risk of condensation diminishes as the building dries out. See BBA Information Bulletin No. 1 *Roof Tile Underlays in Cold Roofs during the Drying-out Period*.

Horizontal ceiling and insulation (cold roof)

A.3 Roofs designed and constructed in accordance with BS 5250 : 2021 will adequately limit the risk of interstitial condensation. Alternatively, ridge or high level ventilation⁽¹⁾ equivalent to a continuous opening of 5 mm may be used. If this approach is adopted, users must take additional care to limit opportunities for vapour migration and accumulation in the loft spaces, see section 3.2.1 of this Certificate.

(1) The provision of high-level ventilation, when using a Type LR underlay in cold pitched roofs, is a requirement under *NHBC Standards 2024*, Chapter 7.2.

Inclined ceiling and insulation (warm roof)

A.4 For roofs with an insulated inclined ceiling, ventilation above or below the underlay will not be required provided that the passage of moisture by diffusion and by convection is controlled, eg by a vapour control layer or a continuous envelope of insulation with a high vapour resistance and with sealed joints. Ventilation may be required if specified by the tile manufacturer or where the roof covering is airtight, as described in BS 5250 : 2021.

Partially inclined ceiling and insulation (warm and cold roof)

A.5 Where an insulated ceiling spans only part of the roof line, resulting cold roof spaces must be in accordance BS 5250 : 2021, Section 4, Subsection 12.

Bibliography

- BS 3137 : 1972 *Methods for determining the bursting strength of paper and board*
- BS 3177 : 1959 *Method for Determining the Permeability to Water Vapor of Flexible Sheet Materials Used for Packaging*
- BS 5250 : 2021 *Management of moisture in buildings — Code of practice*
- BS 5534 : 2014 + A2 : 2018 *Slating and tiling for pitched roofs and vertical cladding — Code of practice*
- BS 8000-0 : 2014 *Workmanship on construction sites — Introduction and general principles*
- BS 8000-6 : 2023 *Workmanship on construction sites — Code of practice for slating and tiling of roofs and walls*
- BS 9250 : 2007 *Code of practice for design of the airtightness of ceilings in pitched roofs*
- BS EN 1107-2 : 2001 *Flexible sheets for waterproofing — Determination of dimensional stability — Plastic and rubber sheets for roof waterproofing*
- BS EN 1928 : 2000 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of watertightness*
- BS EN 1991-1-4 : 2005 + A1 : 2010 *Eurocode 1: Actions on structures — General actions — Wind actions*
NA to BS EN 1991-1-4 : 2005 + A1 : 2010 *UK National Annex to Eurocode 1: Actions on structures — General actions — Wind actions*
- BS EN 12310-1 : 2000 *Flexible sheets for waterproofing — Determination of resistance to tearing (nail shank) — Bitumen sheets for roof waterproofing*
- BS EN 12311-2 : 2000 *Flexible sheets for waterproofing — Determination of tensile properties Part 2: Plastic and rubber sheets for roof waterproofing*
- BS EN 13501-1 : 2018 *Fire classification of construction products and building elements — Classification using data from reaction to fire tests*
- BS EN 13859-1 : 2014 *Flexible sheets for waterproofing — Definitions and characteristics of underlays — Underlays for discontinuous roofing*
- BS EN ISO 12572 : 2001 *Hygrothermal performance of building materials and products — Determination of water vapour transmission properties*
- DIN EN 1109 : 1999-10 *Flexible sheets for waterproofing — Bitumen sheets for roof waterproofing — Determination of flexibility at low temperature*
- DIN EN 13501-1 : 2007 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*
- DIN EN ISO 11925-2 : 2009 *Reaction to fire tests — Ignitability of products subjected to direct impingement of flame — Single-flame source test*

Conditions

1 This Certificate:

- relates only to the product 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.

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.

3 This Certificate will be displayed on the BBA website, and the Certificate Holder is entitled to use the Certificate and Certificate logo, provided that the product 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.

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

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

6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product which is contained or referred to in this Certificate is the minimum required to be met when the product 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.