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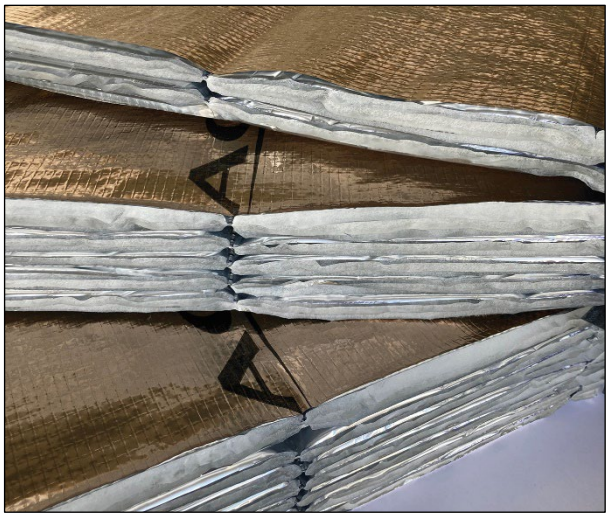
Agrément Certificate
22/6462
Product Sheet 1 Issue 1

EOLIS HC

EOLIS HC FOR PITCHED ROOFS

This Agrément Certificate Product Sheet(1) relates to EOLIS HC for Pitched Roofs, a multi-layer reflective foil, for use as an insulation and a reflective air and vapour control layer (AVCL) in pitched roofs with a pitch up to 70°, installed under the rafters as a single layer in new or existing domestic and non-domestic buildings.

(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 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 issue: 6 April 2023

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. 3537).

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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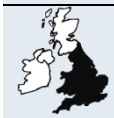
SUMMARY OF ASSESSMENT AND COMPLIANCE

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 EOLIS HC for 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:	**C2(c)**	**Resistance to moisture**
Comment:		The product can contribute to satisfying this Requirement. See section 3 of this Certificate.
Requirement:	**L1(a)(i)**	**Conservation of fuel and power**
Comment:		The product can contribute to satisfying this Requirement; however, compensating fabric measures will be required. See section 6 of this Certificate.
Requirement:	**7(1)**	**Materials and workmanship**
Comment:		The product is acceptable. See sections 8 and 9 of this Certificate.
Regulation:	**25B**	**Nearly zero-energy requirements for new buildings**
Regulation:	**26**	**CO_2 emission rates for new buildings**
Regulation:	**26A**	**Fabric energy efficiency rates for new dwellings (applicable to England only)**
Regulation:	**26A**	**Primary energy consumption rates for new buildings (applicable to Wales only)**
Regulation:	**26B**	**Fabric performance values for new dwellings (applicable to Wales only)**
Regulation:	**26C**	**Target primary energy rates for new buildings (applicable to England only)**
Regulation:	**26C**	**Minimum energy efficiency rating (applicable to Wales only)**
Comment:		The product can contribute to satisfying these Regulations; however, compensating fabric/services measures will be required. See section 6 of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)**	**Fitness and durability of materials and workmanship**
Comment:		The product is acceptable. See sections 8 and 9 of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	3.15	Condensation
Comment:		The product can contribute to satisfying this Standard, with reference to clauses $3.15.1^{(1)(2)}$, $3.15.3^{(1)(2)}$, $3.15.4^{(1)}$, $3.15.5^{(1)(2)}$ and $3.15.7^{(1)(2)}$. See section 3 of this Certificate.
Standard:	6.1(b)(c)(d)	Carbon dioxide emissions
Comment:		The product can contribute to satisfying this Standard, with reference to clauses $6.1.1^{(1)}$ and $6.1.2^{(2)}$; however, compensating fabric/services measures will be required. See section 6 of this Certificate.
Standard:	6.2	Building insulation envelope
Comment:		The product can contribute to satisfying this Standard, with reference to clauses $6.2.1^{(1)(2)}$, $6.2.3^{(1)}$, $6.2.4^{(2)}$, $6.2.6^{(1)}$, $6.2.7^{(1)(2)}$, $6.2.8^{(1)(2)}$, $6.2.9^{(1)(2)}$, $6.2.10^{(1)(2)}$, $6.2.11^{(1)(2)}$ and $6.2.12^{(1)}$; however, compensating fabric measures will be required. See section 6 of this Certificate.

Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The product can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction achieving a bronze level of sustainability as defined in this Standard. See section 6 of this Certificate.
Regulation:	**12**	**Building standards applicable to conversions**
Comment:		Comments in relation to the product 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)**	**Fitness of materials and workmanship**
Comment:	**(i)(iii)(b)(i)(ii)**	The product is acceptable. See sections 8 and 9 of this Certificate.
Regulation:	**29**	**Condensation**
Comment:		The product can contribute to satisfying this Regulation. See section 3 of this Certificate.
Regulation:	**39(a)(i)**	**Conservation measures**
Comment:		The product can contribute to satisfying this Regulation; however, compensating fabric measures will be required. See section 6 of this Certificate.
Regulation:	**40(2)**	**Target carbon dioxide emission rate**
Regulation:	**43(1)(2)**	**Renovation of thermal elements**
Regulation:	**43B**	**Nearly zero-energy requirements for new buildings**
Comment:		The product can contribute to satisfying these Regulations; however, compensating fabric/services measures will be required. See section 6 of this Certificate.

Fulfilment of Requirements

The BBA has judged EOLIS HC for Pitched Roofs to be satisfactory for use as a reflective thermal insulation and an AVCL in pitched roofs with a pitch up to 70°, installed under the rafters as a single layer in new and existing domestic and non-domestic buildings described in this Certificate. The product has been assessed as installed within a tiled or slated pitched roof in conjunction with additional insulation, internal lining board, roof tile underlay and tiling battens.

ASSESSMENT

Product description and intended use

The Certificate holder provided the following description for the product under assessment. EOLIS HC for Pitched Roofs is a multi-layer flexible product, with a self-adhesive overlap on the bottom edge, that is made up of a variable number of 'pockets' and a AVCL layer:

- reflective foils — polyolefin film, aluminium coated on one face
- polyester wadding
- four layers of reflective foil and three layers of polyester wadding make up a 'pocket', formed by ultrasonic welding
- copper-coloured reinforced polyethylene AVCL, aluminium coated on both faces and adhered to the 'pockets'.

The product has the nominal characteristics given in Table 1.

Table 1 Nominal characteristics(1)

Product	Width (mm)	Thickness (mm)	Roll length (m)	Area per roll (m^2)	Weight per roll (kg)
EOLIS HC 45	1500	45	11.3	17.0	7.3
EOLIS HC 65	1500	65	10.7	16.0	9.6
EOLIS HC 85	1500	85	10.7	16.0	12.3
EOLIS HC 105	1500	105	10.7	16.0	15.1
EOLIS HC 120	1500	120	8.0	12.0	13.3
EOLIS HC 135	1500	135	8.0	12.0	15.4

(1) - Nominal density 8.5 kg·m^3.

Ancillary Item

The Certificate holder recommends the following ancillary item for use with the product, but this item has not been assessed by the BBA and is outside the scope of this Certificate:

- ACTIS Foil Tape — used to seal overlaps, small rips or holes, and around penetrations.

Product assessment – key factors

The product was assessed for the following key factors, and the outcomes of the assessments are 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. The results are given in Table 2.

Table 2 Determination of tensile & elongation properties

Product assessed	Assessment method	Requirement	Result
Copper-coloured outer layer only	Tensile strength and elongation to BS EN 13859-1 : 2014	Declared minimum tensile force	
		Longitudinal 250 N per 50 mm	Pass
		Transverse 150 N per 50 mm	Pass
		Elongation	
		Longitudinal <25%	Pass
		Transverse <25%	Pass
	Resistance to tearing to BS EN 13859-1 : 2014	Declared minimum resistance to tearing force	
		Longitudinal 100 N	Pass
		Transverse 100 N	Pass
	Peel strength to BS EN ISO 11339 : 2010 Control	Minimum peel strength 20 N per 100 mm	Pass

1.1 On the basis of data assessed, the product has adequate mechanical resistance and stability properties.

2 Safety in case of fire

Data were assessed for the following characteristics.

2.1 EOLIS HC for Pitched Roofs has a reaction to fire classification of Class F(1) in accordance with BS EN 13501-1 : 2018.

(1) Laboratoire de Trappes fire report number P222715 DEC/2, dated 8 July 2022. Copies can be obtained from the Certificate holder.

2.2 The product must not be carried over junctions between roofs and walls required to provide a minimum period of fire resistance. The continuity of fire resistance must be maintained, as described in the documents supporting the national Building Regulations.

2.3 When installed with other additional insulation materials, the fire properties of the additional insulation materials must be considered.

2.4 The product will melt and shrink away from heat but will burn in the presence of a naked flame.

3 Hygiene, health and the environment

Data were assessed for the following characteristics.

3.1 Water vapour permeability

3.1.1 The product was tested for water vapour permeability to establish a water vapour diffusion-equivalent air layer thickness (s_d). The results are given in Table 3.

Table 3 Water vapour diffusion-equivalent air layer thickness (s_d)

Product assessed	Assessment method	Conditioning	Requirement	Result (s_d)
Product without the copper-coloured AVCL	BS EN 1931 : 2000	None	Declared value	Initial = 1.7 m
Copper-coloured AVCL				Initial = >120 m

3.2 Water tightness

The copper-coloured AVCL layer was tested for determination of water tightness as per BS EN 13984 : 2013. The results are given in Table 4.

Table 4 Determination of watertightness

Product assessed	Assessment method	Result
Copper-coloured AVCL layer only	BS EN 1928 : 2000, Method A, with a pressure of 2 kPa	Pass

3.3 Condensation

3.3.1 The BBA has assessed the product data (see Table 8 for the values used in calculations) for the risk of interstitial condensation; the following factors must be implemented.

3.3.2 The product has a high, water-vapour resistance and can act as an air and vapour control layer. In all cases where high vapour resistance roof tile underlays are used, ventilation of the air space must be in accordance with the recommendations of BS 5250 : 2021. When installed in conjunction with other insulation materials, the water vapour resistance and installation instructions for the additional insulation should also be considered.

3.3.3 In situations where ventilation of the air space is reduced and the recommendations of BS 5250 : 2021 would not be able to be achieved, a condensation risk assessment must be undertaken. This assessment must be carried out by a trained competent person, using a dynamic hygrothermal simulation software package that complies with BS EN 15026 : 2007. Particular attention must be given to the following components:

- roof tile underlay — material type, thickness, s_d value
- timber rafters — condition, moisture content
- additional insulation — exact thickness installed, thermal conductivity, s_d value, timber ratio
- internal finish — material type, thickness, condition, surface finish
- project-specific climate location
- building orientation
- project-specific topography
- building use — internal moisture load, occupancy rate, ventilation rate

- solar radiation
- due consideration must be taken to minimise perforations by services (eg, light switches) and the joints at ceiling level must be well sealed.

3.4 Odour

The product was tested for the release of Volatile Organic Compounds (VOCs) into indoor air concentrations. The results are given in Table 5.

Table 5 Indoor air concentrations

Product assessed	Assessment method	Result ($\mu g \cdot m^3$)
EOLIS HC	BS ISO 16000-3 : 2011 BS ISO 16000-6 : 2011 BS EN ISO 16000-9 : 2006 BS EN ISO 16000-11 : 2006	Formaldehyde (28 days) = < 2.0 Total VOC (28 days) = 16

4 Safety and accessibility in use

Not applicable.

5 Protection against noise

Not applicable.

6 Energy economy and heat retention

Data were assessed for the following characteristics.

6.1 Thermal performance

6.1.1 The product's thermal resistance and emissivity were assessed, and the results are given in Table 6.

Table 6 Thermal performance

Product assessed	Assessment method	Requirement	Result
EOLIS HC core	Thermal resistance to BS EN 12667 : 2001	Value, rounded down to the nearest 0.05 $m^2 \cdot K \cdot W^{-1}$	45 mm = 1.45 $m^2 \cdot K \cdot W^{-1}$ 65 mm = 2.10 $m^2 \cdot K \cdot W^{-1}$ 85 mm(1) = 2.75 $m^2 \cdot K \cdot W^{-1}$ 105 mm = 3.35 $m^2 \cdot K \cdot W^{-1}$ 120 mm(1) = 3.85 $m^2 \cdot K \cdot W^{-1}$ 135 mm = 4.35 $m^2 \cdot K \cdot W^{-1}$
Copper-coloured AVCL	Emissivity to BS EN 16012 : 2012 Control	Declared value	0.05

(1) Extrapolated values.
Note: 0.00 $m^2 \cdot K \cdot W^{-1}$ Thermal resistance value of product when compressed between rafters and battens as untested.

6.2 Thermal transmittance

6.2.1 Calculations of the thermal transmittance (U value) of specific roof constructions must be carried out in accordance with BS EN ISO 6946 : 2017 and BRE Report BR 443 : 2019, using the core thermal resistance values and the emissivity from Table 6 of this Certificate.

6.2.2 The product can contribute towards a construction satisfying the national Building Regulations in respect of energy economy and heat retention. The U value of a completed pitched roof will depend on the thickness of the product, the roof structure, additional insulation and its internal finish. Typical thermal transmittance (U values) for example constructions are given in Table 7.

Table 7 Example U values — pitched roof (1)

Target U value	Insulation thickness(2)

($W \cdot m^{-2} \cdot K^{-1}$)	(mm)
	Between and under rafters, with additional insulation installed under the EOLIS HC product(3)
0.09	–
0.11	EOLIS HC 65 and 140 mm additional insulation
0.12	EOLIS HC 65 and 125 mm additional insulation
0.13	EOLIS HC 65 mm and 110 mm additional insulation
0.15	EOLIS HC 65 and 90 mm additional insulation
0.16	EOLIS HC 65 mm and 80 mm additional insulation
0.18	EOLIS HC 65 and 70 mm additional insulation
0.20	EOLIS HC 65 and 60 mm additional insulation

(1) Pitched roof construction — concrete tiles on 25 mm timber tile battens on low-resistance (LR) breather membrane on 47 by 150 mm timber rafters (12.8%; $\lambda = 0.13\ W \cdot m^{-1} \cdot K^{-1}$), EOLIS HC, 30% between the pitched roof rafters and 70% below between the 50 mm deep timber battens (12.8%; $\lambda = 0.13\ W \cdot m^{-1} \cdot K^{-1}$) with a variable low-e air cavity, additional insulation ($\lambda = 0.022\ W \cdot m^{-1} \cdot K^{-1}$) below the battens and 12.5 mm plasterboard ($\lambda = 0.25\ W \cdot m^{-1} \cdot K^{-1}$).
(2) Nearest available thickness.
(3) Additional foil-faced insulation with a thermal conductivity of $\lambda_D = 0.022\ W \cdot m^{-1} \cdot K^{-1}$.

6.2.3 The product has a nominal heat capacity value of 1600 $J \cdot kg^{-1} \cdot K^{-1}$.

7 Sustainable use of natural resources

Not applicable.

8 Durability

8.1 The potential mechanisms for degradation and the known performance characteristics of the materials in the product were assessed. Specific test data were assessed, as shown in Table 8.

Table 8 Durability

Product assessed	Assessment method	Conditioning	Requirement	Result
EOLIS HC	Dimensional stability to BS EN 1604 : 2013	70°C and 90% RH for 48 hours	Length and width <1% change	65 mm = Pass
			Thickness <15% change	105 mm = Pass
Copper-coloured outer layer only	Peel strength to BS EN ISO 11339 : 2010	70°C and 90% RH for 28 days	Minimum peel strength: 20 N per 100 mm	Pass
EOLIS HC without the copper-coloured AVCL	Determination of water vapour transmission to BS EN 1931 : 2000	70°C for 12 weeks	Declared value control >120m	Aged = 1.5 m
EOLIS HC extrapolated values(1) without the copper-coloured AVCL			Declared value control >120m	45 mm aged(1) = 3.0 m 65 mm aged(1) = 4.5 m 85 mm aged(1) = 6.0 m 105 mm aged(1) = 7.5 m 120 mm aged(1) = 9.0 m 135 mm aged(1) = 10.5m
Copper-coloured AVCL			Aged <±50% change from control	Aged = 65 m
Copper-coloured AVCL	Emissivity to BS EN 16012 : 2012	70°C and 90% RH for 28 days	Declared value	0.05

(1) Extrapolated values.

8.2 Service life

Under normal service conditions, the product will have a life equivalent to that of the structure in which it is incorporated, provided it is designed, installed and maintained in accordance with this Certificate and the Certificate holder's instructions.

PROCESS ASSESSMENT

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

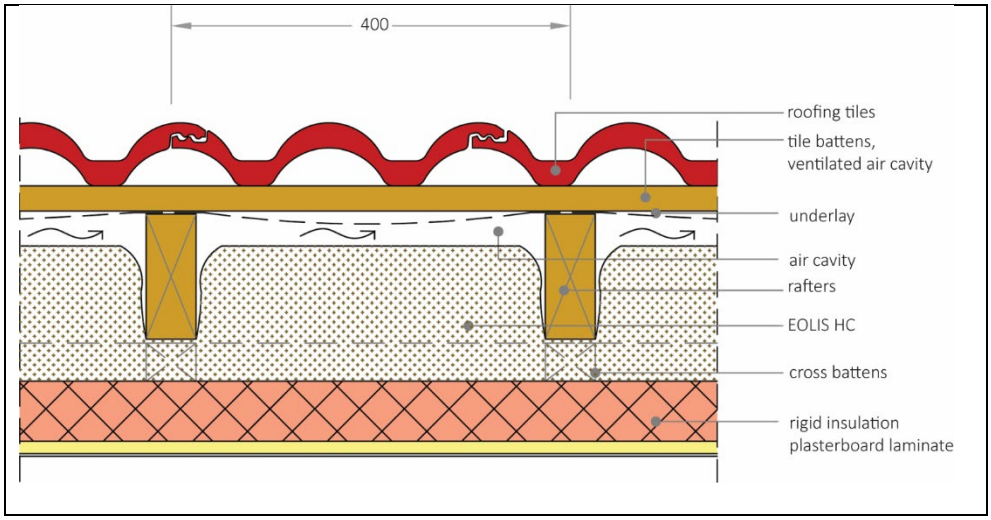
9 Design, installation, workmanship and maintenance

9.1 Design

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

9.1.1 Constructions must be designed and constructed in accordance with the relevant clauses of BS 5250 : 2021, BS 5534 : 2014, BS 8212 : 1995 and BS EN 1995-1-1 : 2004 and its UK National Annex. A typical build-up is shown in Figure 1.

Figure 1 Warm pitched roof



9.1.2 Construction elements must be designed and constructed to incorporate the normal precautions against moisture ingress before application of the product.

9.1.3 The product is for use in constructions where the ceiling follows the pitch of the roof and encloses a habitable space.

9.1.4 Roofs incorporating the product will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2021 and BRE Report BR 262 : 2002.

9.1.5 In England and Wales, roofs incorporating the product will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 0.35 $W \cdot m^{-2} \cdot K^{-1}$ at any point.

9.1.6 In Scotland, roofs incorporating the product will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 1.2 $W \cdot m^{-2} \cdot K^{-1}$ at any point. Guidance may be obtained from BS 5250 : 2021 and BRE Report BR 262 : 2002.

9.1.7 The risk of interstitial condensation is greatest when the building is drying out after construction. Guidance on preventing condensation from this and other sources is given in BRE Digest 369 : 1992 and BRE Report BR 262 : 2002.

9.1.8 Care must be taken in the overall design and construction of junctions with other elements and openings to minimise thermal bridges and air infiltration. Detailed guidance can be found in the documents supporting the national Building Regulations.

9.1.9 The guidance given in the documents supporting the national Building Regulations must be followed when the product is installed near certain flue pipes and/or heat-producing appliances.

9.1.10 De-rating of electric cables must be considered in areas where the product restricts the flow of air. The use of suitable conduit or trunking is recommended.

9.1.11 Where recessed lighting is used, provision must be made to prevent direct contact with the product or the fitting overheating. The Certificate holder may be contacted for specific instructions, but such advice is outside the scope of this Certificate.

9.1.12 Plasterboard used in conjunction with the product must comply with BS EN 520 : 2004 and be installed in accordance with BS 8212 : 1995.

9.1.13 Penetration of the product by services must be kept to a minimum.

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 of the product must be in accordance with the Certificate holder's instructions and this Certificate. A summary of instructions and guidance is provided in Annex A of this Certificate.

9.2.3 Existing constructions must be in a good state of repair, with no evidence of rain penetration or damp. Defects must be made good prior to installation.

9.2.4 Any mould or fungal growth found to be present must be treated.

9.2.5 The product must be installed in a continuous layer to guarantee contiguous insulation and airtightness, and to reduce any water vapour diffusion through the structure.

9.2.6 At each joint, horizontal and or vertical, the product must be overlapped by a minimum of 50 mm and sealed with foil tape. The product has a self-adhesive overlap on the bottom edge to aid installation.

9.2.7 Packaging must be removed before installation and the product installed with the reinforced (grid pattern) copper-coloured film facing the inside (warm side) of the building.

9.3 Workmanship

9.3.1 Practicability of installation was assessed, based on the Certificate holder's information. To achieve the performance described in this Certificate, installation of the product must be carried out by a competent general builder or a contractor experienced with this type of product.

9.4 Maintenance and repair

9.4.1 Once installed, provided the roof tiles/slates are maintained in a weathertight condition, and the plasterboard remains undamaged, maintenance is not required.

10 Manufacture

10.1 The production processes for the product 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 the production location was undertaken, and it was confirmed that the production process was in accordance with the documented process, and that equipment had been properly tested and calibrated.

†10.1.6 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 product is delivered to site as a roll, wrapped in polythene film, incorporating a label with the Certificate holder's trade name, product description and characteristics, and the BBA logo incorporating the number of this Certificate.

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

11.2.1 The product must be stored in clean, dry conditions, preferably under cover and out of direct sunlight. Care must be taken to store the product away from solvents. Where possible, packs should be stored inside.

11.2.2 The product must not come into contact with naked flames or other ignition sources.

11.2.3 On site, to ensure maximum performance of the product when installed, precautions must be taken to protect it from mud and dirt.

ANNEX A – SUPPLEMENTARY INFORMATION †

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.

CLP Regulations

The Certificate holder has taken the responsibility of classifying and labelling the product under the *GB CLP Regulation* and the *CLP Regulation (EC) No 1272/2008 - classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheets.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard EN 13984 : 2013.

Additional information on installation

A.1 The product should be installed in a continuous layer to guarantee contiguous insulation and airtightness, and to reduce any water vapour diffusion through the structure.

A.2 The product can be cut with scissors or a sharp knife.

A.3 Where necessary, noggins should be used as support to the joints to ensure a secure fixing point.

A.4 The product is installed across the face of the rafters, fixing in a continuous layer.

A.5 The product is stapled to the rafters every 250 mm using minimum 14 mm galvanized staples.

A.6 All perimeter edges, including around windows and doors, should be stapled every 50 mm and secured with foil tape and timber battens.

A.7 Horizontal or vertical timber battens (25 mm minimum) are fixed to prepare for the installation of the additional insulation by nailing or screwing through the batten and product into the rafter. The additional insulation is then installed over the top of the timber battens.

A.8 The additional insulation is not intended to provide an internal finish and should be lined with a suitable building board.

A.9 Where joints between plasterboard sheets are unsupported, timber noggins must be installed.

A.10 Where damage has occurred, a patch of the product larger than the damaged area is fixed, ensuring all edges of the patch are completely sealed with foil tape. Alternatively, for small puncture damage of less than 25mm, Actis Foil Tape may be used.

A.11 Where the product is being installed in a pitched roof with a Low Resistance (LR) membrane, sufficient space must be provided to allow for product thickness and any ventilation requirements that might be required. An allowance for the drape of the LR membrane (nominally 10 mm) is required.

A.12 Where the product is being installed in a pitched roof with a High Resistance (HR) membrane, ventilation of the air space must be in accordance with the recommendations of BS 5250 : 2021. In situations where ventilation of the air space is reduced and the recommendations of BS 5250 : 2021 would not be able to be achieved, a condensation risk assessment must be undertaken. This assessment must be carried out by a trained competent person, using a dynamic hygrothermal simulation software package that complies with BS EN 15026 : 2007. See section 3.3.3.

Bibliography

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 8212 : 1995 *Code of practice for dry lining and partitioning using gypsum plasterboard*

BS EN 520 : 2004 + A1 : 2009 *Gypsum plasterboards — Definitions, requirements and test methods*

BS EN 1604 : 2013 *Thermal insulating products for building applications — Determination of dimensional stability under specified temperature and humidity conditions*

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

BS EN 1931 : 2000 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of water vapour transmission properties*

BS EN 1995-1-1 : 2004 *Eurocode 5: Design of timber structures — General — Common rules and rules for buildings*
NA to BS EN 1995-1-1 : 2004 *UK National Annex to Eurocode 5: Design of timber structures — General — Common rules and rules for buildings*

BS EN 12667 : 2001 *Thermal performance of building materials and products — Determination of thermal resistance by means of guarded hot plate and heat flow meter methods — Products of high and medium thermal resistance*

BS EN 13859-1 : 2014 *Flexible sheets for waterproofing — Definitions and characteristics of underlays*

BS EN 13501-1 : 2018 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

BS EN 15026 : 2007 *Hygrothermal performance of building components and building elements — Assessment of moisture transfer by numerical simulation*

BS EN 16012 : 2012 *Thermal insulation for buildings – Reflective insulation products – Determination of the declared thermal performance*

BS EN ISO 6946 : 2017 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*

BS EN ISO 11339 : 2022 *Adhesives — T-Peel test for flexible-to-flexible bonded assemblies*

BS ISO 16000-3 : 2011 *Indoor air — Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air — Active sampling method*
BS ISO 16000-6 : 2011 *Indoor air – Part 6: Determination of organic compounds (VVOC, VOC, SVOC) in indoor and test chamber air by active sampling on sorbent tubes, thermal desorption and gas chromatography using MS or MS FID*
BS EN ISO 16000-9 : 2006 *Indoor air — Part 9: Determination of the emission of volatile organic compounds from building products and furnishing — Emission test chamber method*
BS EN ISO 16000-11 : 2006 *Indoor Air — Part 11: Determination of the emission of volatile organic compounds from building products and furnishing — Sampling, storage of samples and preparation of test specimens*

EN 13984 : 2013 *Flexible sheets for waterproofing — Plastic and rubber vapour control layers — Definitions and characteristics*

BRE Digest 369 : 1992 *Interstitial condensation and fabric degradation*

BRE Report BR 262 : 2002 *Thermal insulation: avoiding risks*

BRE Report BR 443 : 2019 *Conventions for U-value calculations*

Conditions of Certificate

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
- must 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.

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