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Agrément Certificate
17/5390
Product Sheet 1

ALUMASC LIQUID APPLIED WATERPROOFING AND SURFACING SYSTEMS

EUROROF CALTECH UV SYSTEMS

This Agrément Certificate Product Sheet⁽¹⁾ relates to Eurorof Caltech UV Systems, consisting of a moisture-triggered aliphatic polyurethane, for use as a glassfibre-reinforced waterproofing on flat roofs with limited access, and as a waterproofing with localised reinforcement on pre-coated metal roofing sheets and fibre cement roof sheets.

(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 — the systems will resist the passage of moisture into the building (see section 6).

Properties in relation to fire — the systems will enable a roof to be unrestricted under Building Regulations (see section 7).

Adhesion — the adhesion of the systems is sufficient to resist the effects of any likely wind suction and the effects of thermal or other minor movement likely to occur in practice (see section 8).

Resistance to foot traffic — the systems will accept, without damage, the limited foot traffic and loads associated with installation and maintenance (see section 9).

Durability — under normal service conditions the systems will provide a durable waterproof covering with a service life of at least 25 years for the reinforced system and at least 10 years for the system with localised reinforcement on pre-coated metal roofing sheets and fibre cement roof sheets (see section 11).



The BBA has awarded this Certificate to the company named above for the systems described herein. These systems 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

John Albon — Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

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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

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, Eurorof Caltech UV Systems, 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 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: B4(2)	External fire spread
Comment:	On suitable substructures the use of the systems can enable a roof to be unrestricted under this Requirement. See sections 7.1 and 7.2 of this Certificate.
Requirement: C2(b)	Resistance to moisture
Comment:	The systems can meet this Requirement. See section 6.1 of this Certificate.
Regulation: 7	Materials and workmanship
Comment:	The systems 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)	Durability, workmanship and fitness of materials
Comment:	Use of the systems satisfies the requirements of this Regulation. See sections 10 and 11 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards applicable to construction
Standard: 2.8	Spread from neighbouring buildings
Comment:	The systems, when applied to a non-combustible substrate, can be regarded as having low vulnerability under clause 2.8.1 ⁽¹⁾⁽²⁾ of this Standard. See sections 7.1 and 7.2 of this Certificate.
Standard: 3.10	Precipitation
Comment:	The use of the systems will enable a roof to satisfy the requirements of this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.7 ⁽¹⁾⁽²⁾ . See section 6.1 of this Certificate.
Standard: 7.1(a)	Statement of sustainability
Comment:	The systems 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 the systems 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(a)(b)(i)	Fitness of materials and workmanship
Comment:	The systems are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation: 28(b)	Resistance to moisture and weather
Comment:	The use of the systems can enable a roof to satisfy the requirements of this Regulation. See section 6.1 of this Certificate.
Regulation: 36(b)	External fire spread
Comment:	On suitable substructures the use of the systems can enable a roof to be unrestricted under the requirements of this Regulation. See sections 7.1 and 7.2 of this 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.

See section: 3 *Delivery and site handling* (3.1 and 3.3) of this Certificate.

Additional Information

NHBC Standards 2017

NHBC accepts the use of the fully-reinforced Eurorof Caltech UV system (25 year system), provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 7.1 *Flat roofs and balconies*.

Technical Specification

1 Description

1.1 Eurorof Caltech UV Systems consist of the following components:

- Caltech UV — a one-part, moisture-triggered, liquid-applied aliphatic polyurethane roof waterproofing, applied as a base coat and a top coat
- Caltech G-mat — a non-woven glassfibre reinforcing mat
- Caltech Bonding Primer — a two-part primer for the preparation of porous substrates
- Caltech Metal Primer — a two-part primer for the preparation for metal substrates, including Plastisol-coated, and for spot priming of areas of corroded metal after preparation
- Caltech Reinforcement Tape — a nylon mesh for use at fibre-cement/metal substrate joints
- Caltech Butyl Strip — a 50 mm wide self-adhesive patch for use over bolt and fixing heads.

1.2 The Caltech UV liquid component has the following characteristics:

density at +20°C	1.30 kg·ℓ ⁻¹
solids content by volume	68.3%
solids content by weight	76.5%
colours	Medium Grey (RAL 7042) and Dark Grey (RAL 7015).

1.3 A proprietary carrier membrane is used over substrates with joints, such as insulation boards or plywood decking, and beneath the waterproofing system. Contact the Certificate holder's Technical Services for further advice.

2 Manufacture

2.1 The liquid components of the systems are manufactured by a batch-blending process.

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.

3 Delivery and site handling

3.1 The Eurorof Caltech UV liquid component is delivered to site in 15 litre tins bearing the product's name, batch number and the BBA logo incorporating the number of this Certificate.

3.2 The liquid component should be stored in a dry, shaded area, above freezing point and away from ignition sources. Storage temperatures of between 10°C and 25°C will give the product a shelf-life of 9 months; at higher temperatures the shelf-life will reduce progressively. Once opened, tins should be used within two or three days.

3.3 The Certificate holder has taken the responsibility of classifying and labelling the system components under the *CLP Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Eurorof Caltech UV Systems.

Design Considerations

4 General

4.1 Eurorof Caltech UV Systems are satisfactory for use in the following specifications:

- as a fully reinforced system on flat roofs with limited access on:
 - concrete (primed and unprimed)
 - asphalt
 - bituminous roofing membranes, including mineral surfaced
 - galvanized steel
 - non-mineralised bitumen roofing membranes on plywood

- liquid-applied bituminous roof coating
 - aluminium paint
 - polyisocyanurate (PIR) foam insulation boards in conjunction with a specified carrier membrane
 - existing polyurethane roofs
- as a locally-reinforced system on existing fibre cement (including asbestos) and Plastisol-coated metal roofs.

4.2 The systems must not be applied directly to, nor come into contact with, polystyrene insulation products.

4.3 Limited access roofs are defined for the purposes of this Certificate as those subjected only to pedestrian traffic for maintenance of the roof covering, cleaning of gutters, etc. For the 25 year system, where traffic in excess of this is envisaged special precautions, such as additional protection to the membrane, must be taken.

4.4 Flat roofs are defined for the purpose of this Certificate as those having a minimum finished fall of 1:80. Pitched roofs are defined as those having falls in excess of 1:6.

4.5 When designing flat roofs, twice the minimum finished fall should be assumed unless a detailed analysis of the roof is available, including overall and local deflection, direction of falls, etc.

4.6 Decks to which the systems are to be applied must comply with the relevant requirements of BS 6229 : 2003, BS 8217 : 2005 and, where appropriate, *NHBC Standards 2017*, Chapter 7.1.

5 Practicability of installation

Installation of the systems must be carried out only by specialist roofing contractors trained and approved by the Certificate holder.

6 Weathertightness



6.1 The systems will adequately resist the passage of moisture to the inside of the building and so meet or comply with the relevant requirements of the national Building Regulations.

6.2 The systems are impervious to water and, when used as described, will give a weathertight roofing capable of accepting minor movement without damage.

6.3 To achieve a weathertight coating it is essential that the application rate is as quoted in the Certificate holder's literature for the relevant system.

7 Properties in relation to fire



7.1 When tested to DD CEN/TS 1187 : 2012, and classified in accordance with BS EN 13501-5 : 2005:

- a system comprising a 9 mm calcium silicate board, Caltech Bonding Primer at an application rate of $0.125 \text{ l}\cdot\text{m}^{-2}$, a base coat of Caltech UV at an application rate of $0.5 \text{ l}\cdot\text{m}^{-2}$, and a top coat of Caltech UV at an application rate of $0.5 \text{ l}\cdot\text{m}^{-2}$ achieved a $B_{\text{ROOF}}(t4)$
- a system comprising a primed 12 mm plywood substrate, a vapour control layer, an 80 mm thick, glass-faced, polyurethane insulation board bonded with a polyurethane adhesive and primed on the upper face, a self-adhesive carrier membrane, a base coat of Caltech UV at an application rate of $1.0 \text{ l}\cdot\text{m}^{-2}$, a layer of Caltech G-mat, and a top coat of Caltech UV at an application rate of $1.0 \text{ l}\cdot\text{m}^{-2}$ achieved a $B_{\text{ROOF}}(t4)$
- a system comprising a 9 mm calcium silicate board, a base coat of Caltech UV at an application rate of $1.0 \text{ l}\cdot\text{m}^{-2}$, a layer of Caltech G-mat and a top coat of Caltech UV at an application rate of $1.0 \text{ l}\cdot\text{m}^{-2}$ achieved a $B_{\text{ROOF}}(t4)$.

7.2 The designation of other specifications, eg when used on combustible substrates, should be confirmed by:

England and Wales — test or assessment in accordance with Approved Document B, Appendix A, clause 1

Scotland — test to conform to Mandatory Standard 2.8, clause 2.8.1⁽¹⁾⁽²⁾

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

Northern Ireland — test or assessment by a UKAS-accredited laboratory, or an independent consultant with appropriate experience.

7.3 A roof incorporating the fully-reinforced system has been tested to DD CEN/TS 1187 : 2012, Test 1.

7.4 Both systems, when tested for reaction to fire to EN ISO 11925-2 : 2010 and classified to EN 13501-1 : 2007, achieved Euroclass E.

8 Adhesion

The adhesion of the systems to the substrates indicated in section 4.1 of this Certificate is sufficient to resist the effects of any wind suction, elevated temperatures, thermal shock or minor movement likely to occur in practice.

9 Resistance to foot traffic

9.1 The systems can accept, without damage, the limited foot traffic and light concentrated loads associated with installation and maintenance. However, reasonable care should be taken to avoid puncture by sharp objects or concentrated loads.

9.2 When used on fibre cement substrates, additional precautions must be taken to spread loads when carrying out maintenance work.

10 Maintenance



10.1 The systems must be the subject of annual inspections and maintenance to ensure continued performance in line with good practice.

10.2 Where damage has occurred, it should be repaired in accordance with section 1.5 and the Certificate holder's instructions.

11 Durability



The Eurorof Caltech UV locally-reinforced system will achieve an initial life expectancy of at least 10 years and the Caltech UV fully-reinforced system should achieve an initial life expectancy of at least 25 years.

Installation

12 General

12.1 Installation of Eurorof Caltech UV Systems must be carried out only by specialist roofing contractors trained and approved by the Certificate holder.

12.2 The systems must be at a temperature of, or greater than, 10°C for airless spray applications. All products must be applied when the air and substrate temperatures are greater than 5°C. Special precautions may be necessary when temperatures exceed 35°C, as shown in the Certificate holder's Technical Data sheets.

12.3 Detailing (eg upstands) is carried out in accordance with the Certificate holder's instructions.

13 Site and surface preparation

13.1 Substrates on which the systems are to be applied must be properly prepared in accordance with the Certificate holder's instructions.

13.2 Adhesion to substrates will depend on the condition and cleanness of the substrate. Substrates must be visibly dry, sound and free from loose materials or contamination (eg moss or algae).

13.3 The surface must be prepared to remove loose or flaking materials, but the substrate must be visibly dry before application of the system.

13.4 Damaged areas of the substrate (eg blistered bitumen) must be removed, replaced or repaired. Substrate defects (eg shallow-bottomed cracks and indentations) must be filled. The Certificate holder can advise on suitable filling materials.

13.5 Deck surfaces must be free from sharp projections, such as protruding fixing bolts (see section 1.3.6 for exceptions) and concrete nibs.

13.6 When installing over bolt and fixing heads for the locally-reinforced system, a patch of Caltech Butyl Strip is applied over the head in accordance with the Certificate holder's instructions.

13.7 Gutters and outlets must be checked to ensure that they are, and remain, clear of all debris.

13.8 All points of potential weakness such as splits, cracks, joints and crazed surfaces must be additionally reinforced in accordance with the Certificate holder's instructions prior to application of the main system.

13.9 Priming, if required, is with the appropriate primer in accordance with the Certificate holder's recommended coverage rates.

14 Application

14.1 Application can be by brush, roller or spray. Brush application is normally used only for small roof areas and for embedding the Caltech G-mat reinforcing mat into the waterproofing.

14.2 Prior to application, checks must be made to ensure that the substrate is dry (ie free from rainwater, surface condensation and frost) and that the prevailing weather and site conditions are correct. The following normal limitations apply:

- application must not take place when the relative humidity is in excess of 95%, or in fog. The temperature/humidity must be such that there is no risk of surface condensation occurring before or during application
- the primer, where used, must be cured

- the wind speed must be such that it does not interfere with the application or cause overspray. No attempt to spray should be made if the wind speed exceeds $6.7 \text{ m}\cdot\text{s}^{-1}$ (15 mph), unless precautions such as the use of wind barriers are taken.

14.3 Only areas that can be sprayed to the full thickness before weather changes occur should be attempted.

14.4 The systems are applied at the coverage rate for a smooth texture substrate given in Table 1. The advice of the Certificate holder on coverage rates for intermediate, rough, porous and undulating substrates must be sought. When using the Caltech G-mat reinforcing mat, this is embedded in the first coat while the membrane is still wet. Once the first coat is partially cured the second coat is applied.

Layer (unit)	Full reinforcement system	Localised reinforcement system
Base coat ($\ell\cdot\text{m}^{-2}$)	1.0	0.5
Reinforcement	Caltech G-Mat	none
Top coat ($\ell\cdot\text{m}^{-2}$)	1.0	0.5
Finished thickness (mm)	1.5	0.7

14.5 Random tests are carried out on the finished coating surface by cutting out small areas to measure finished cured thickness. Test areas must be repaired after the sample is taken.

15 Repairs

The repair of minor damage to the systems can be achieved effectively by cleaning back to the unweathered material and recoating the damaged area with the membrane at the application rates stated in section 14.4.

Technical Investigations

16 Tests

16.1 Tests were conducted on the Eurorof Caltech UV fully-reinforced system and the results assessed to determine:

- water vapour transmission
- watertightness
- delamination strength on
 - concrete
 - bitumen roofing membrane
- dynamic indentation
- static indentation
- resistance to fatigue movement
- low service temperature properties
- high service temperature properties
- resistance to heat ageing
- resistance to UV ageing
- resistance to water ageing
- variation in application temperature.

16.2 Tests were conducted on the Eurorof Caltech UV locally-reinforced system and the results assessed to determine:

- water vapour transmission
- watertightness delamination strength on PVC Plastisol coated steel
- dynamic indentation
- static indentation
- resistance to fatigue movement
- low service temperature properties
- resistance to heat ageing
- resistance to UV ageing
- resistance to water ageing.

16.3 Tests for a system using a product of similar formulation was used to assess the bond strength of Caltech UV on the following substrates:

- asphalt
- galvanized steel
- non-mineralised bitumen roofing membrane

- liquid-applied bituminous roof coating
- glass reinforced polyester
- aluminium paint
- polyisocyanurate foam insulation board using a carried membrane
- liquid-applied polyurethane waterproofing.

16.4 Identification tests were carried on the components of the systems.

17 Investigations

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

17.2 Data on external fire performance and reaction to fire were evaluated.

Bibliography

BS 6229 : 2003 *Flat roofs with continuously supported coverings — Code of practice*

BS 8217 : 2005 *Reinforced bitumen membranes for roofing — Code of practice*

BS EN 13501-5 : 2005 + A1 : 2009 *Fire classification of construction products and building elements — Classification using data from external fire exposure to roofs tests*

DD CEN/TS 1187 : 2012 *Test methods for external fire exposure to roofs*

EN 13501-1 : 2007 + A1 : 2009 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

EN ISO 11925-2 : 2010 *Reaction to fire tests — Ignitability of products subjected to direct impingement of flame — Single-flame source test*

18 Conditions

18.1 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.

18.2 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.

18.3 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.

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

18.5 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.

18.6 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.