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Agrément Certificate
17/5392
Product Sheet 2

EUROROOF CALTECH LIQUID APPLIED WATERPROOFING AND SURFACING SYSTEMS

CALTECH QC BALCONY AND WALKWAY WATERPROOFING AND SURFACING

This Agrément Certificate Product Sheet⁽¹⁾ relates to Caltech QC Balcony and Walkway Waterproofing and Surfacing, a range of liquid-applied systems for use as waterproofing and surfacing for walkways, balconies and terraces.

(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 a structure (see section 6).

Properties in relation to fire — the systems can contribute to a structure being unrestricted under the Building Regulations (see section 7).

Adhesion — the systems will resist the effects of any likely wind suction acting on the structure (see section 8).

Resistance to mechanical damage — the systems will accept the traffic loads and effects of thermal and other minor movement likely to occur in practice (see section 9).

Durability — under normal service conditions the systems will have a service life of at least 15 years (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

Date of First issue: 2 March 2017

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, Caltech QC Balcony and Walkway Waterproofing and Surfacing, 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:		Use of the systems can contribute to a structure being unrestricted under this Requirement. See section 7 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		The systems will enable a structure to meet this Requirement. See section 6 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The systems comprise acceptable materials and satisfy the requirements of this Regulation. 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:		The systems comprise acceptable materials and satisfy 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 suitable substructure, are regarded as having a low vulnerability under clause 2.8.1 ⁽¹⁾⁽²⁾ of this Standard. See section 7 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The systems will enable a structure 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 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 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 comprise acceptable materials and satisfy the requirements of this Regulation. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The systems will enable a structure to satisfy the requirements of this Regulation. See section 6 of this Certificate.
Regulation:	36(b)	External fire spread
Comment:		On suitable substructures the use of the systems can contribute to a structure being unrestricted under the requirements of this Regulation. See sections 7 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* of this Certificate.

Additional Information

NHBC Standards 2017

NHBC accepts the use of Caltech QC Balcony and Walkway Waterproofing and Surfacing, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards, Part 7 Roofs, Chapter 7.1 Flat roofs and balconies*.

CE marking

The Certificate holder has taken the responsibility of CE marking the waterproofing system in accordance with ETA 04/0019 and ETAG 005. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Caltech QC Balcony and Walkway Waterproofing and Surfacing systems are reinforced waterproofing and surfacing systems comprising a waterproofing membrane, wearing course and finish based on liquid-applied polymethylmethacrylate resins.

1.2 The systems comprise the following components:

- Caltech QC Balcony Plus — Caltech QC Primer B or Caltech QC Primer C, Caltech QC RF1 10 Reinforcement, Caltech QC Balcony, Caltech QC BalcoFloor, and a wearing finish. The system is available with a light duty, moderate duty and heavy duty surfacing
- Caltech QC Balcony — Caltech QC Primer B or Caltech QC Primer C, Caltech QC RF1 10 Reinforcement, Caltech QC Balcony and optional Caltech QC Balcony, wearing layer and Caltech QC Finish. The system is for use in buried/protected locations.

1.3 Details of individual components used with the systems are:

- Caltech QC Balcony — a liquid-applied, two-component polymethylmethacrylate based waterproofing membrane
- Caltech QC RF1 10 Reinforcement — a polyester reinforcement fleece with a nominal mass per unit area of $110 \text{ g}\cdot\text{m}^{-2}$
- Caltech QC BalcoFloor — a liquid-applied, three-component polymethylmethacrylate based coating for use in the wearing layer build-ups
- Graded aggregates for incorporating into Caltech QC BalcoFloor to produce a wearing layer, including dried quartz (0.7 mm — 1.2 mm) and corundum (1.0 mm to 2.0 mm)
- Caltech QC Primer B — primer for use on asphalt and other bituminous substrates
- Caltech QC Primer C — primer for use on porous substrates such as concrete and cementitious screeds
- Caltech QC Finish — a two-component polymethylmethacrylate based decorative finish available in a range of colours
- Caltech QC Detail — for use at details and for repairs, and the subject of Product Sheet 3 of this Certificate.

1.4 The systems are the subject of ETA 04/0019, issued by Deutsches Institut für Bautechnik (DIBt). In accordance with ETAG 005, Part 1 and Part 4, the levels of use categories(*) are:

- working life W3 (25 years)
- climatic zones M (moderate) and S (Severe)
- imposed loads P1 to P4 [for most compressible (PUR insulation) and least compressible (steel/concrete)]
- roof slope S1 to S4 (<5% to >30%)
- lowest surface temperature in use TL4 (-30°C)
- highest surface temperature in use TH4 (90°C).

1.5 Other items which may be used with the systems, but which are outside the scope of this Certificate, are:

- primers for use on damp concrete surfaces
- primers and pre-treatments for open textured and porous cementitious substrates
- anti-corrosion and etch primers for metals
- compounds for small and large scale filling, levelling and repair
- fibre reinforced detailing resin for complex, less critical and difficult-to-access details.

Details of suitable products/specifications may be obtained from the Certificate holder.

2 Manufacture

2.1 The systems components are manufactured by batch processes

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

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated

- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by DEKRA (Certificates 90207207/1 and 80408283/2).

3 Delivery and site handling

3.1 The components of the systems are delivered to site in packs consisting of liquid base resin and powder catalyst components. The packs bear a label that includes the component's name, health and safety information, and batch number. The components are available in the pack sizes detailed in Table 1.

Table 1 Pack sizes

Component	Pack sizes
Caltech QC Balcony	20 kg, 999 kg
Caltech QC Detail	5 kg, 10 kg, 15 kg
Caltech QC BalcoFloor	10 kg, 910 kg
Caltech QC BalcoFloor Filler	23 kg
Caltech QC Finish	10 kg, 980 kg
Caltech QC Catalyst	100 g, 1 kg (bags), 25 kg (box)
Caltech QC Primer C	10 kg, 910 kg
Caltech QC Primer B	10 kg, 910 kg
Caltech QC Cleaner	9 litre, 27 litre
Caltech QC RF110 Reinforcement	50 m (length) x 15, 20, 26.25, 35, 52.5, 70 or 105 cm (widths) rolls

3.2 The systems components must be stored in a cool, dry location and protected from freezing temperatures and direct sunlight. When stored in accordance with the manufacturer's instructions they will have a shelf-life of at least six months. Rolls of Caltech QC RF110 Reinforcement must be stored flat in a dry, clean environment and protected from moisture. Caltech QC Catalyst must be stored at a temperature below 30°C in closed containers, away from sources of ignition and protected from direct sunlight. Contamination and heat can cause the catalyst to decompose rapidly and create a hazard.

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 Caltech QC Balcony and Walkway Waterproofing and Surfacing.

Design Considerations

4 General

Caltech QC Balcony and Walkway Waterproofing and Surfacing, when applied to a concrete or asphalt surface of a concrete deck designed in accordance with the UK National Annex to BS EN 1992-1-1 : 2004 in conjunction with BS EN 1992-1-1 : 2004, are satisfactory for use as a combined waterproof/wearing surface for walkways, balconies and terraces.

5 Practicability of installation

The systems should only be installed by installers who have been trained and approved by the Certificate holder.

6 Weathertightness



The systems will resist the passage of moisture to the inside of the structure and can accommodate any movement due to cracking permitted by the UK National Annex to BS EN 1992-1-1 : 2004, in conjunction with BS EN 1992-1-1 : 2004, without leakage and so enable a structure to satisfy the requirements of the national Building Regulations:

England and Wales — Approved document C, Requirement C2(b) Section 6

Scotland — Regulation 9, Mandatory Standard 3.10

Northern Ireland — Regulation 28(b).

7 Properties in relation to fire



7.1 A composite build-up comprising:

- Caltech QC Balcony and Walkway Waterproofing and Surfacing (pebble grey) applied at a rate of $3.1 \text{ kg}\cdot\text{m}^{-2}$ including Caltech QC RF110 Reinforcement
- a 0.6 mm thick bitumen carrier membrane
- 120 mm thick PIR Insulation board bonded to a vapour control membrane with a two-component PUR adhesive
- 19 mm thick plywood primed with a synthetic rubber resin, when tested in accordance with DD CEN/TS 1187 (Test 4), was classified in accordance with EN 13501-5 : 2005 as European Class B_{ROOF(t4)}, and when tested in the flat position in accordance with BS 476-3 : 2004 achieved an EXT.F.AA rating. The system can contribute to a roof being unrestricted under the national Building Regulations.

7.2 The designation of other specifications should be confirmed by:

England and Wales — test or assessment in accordance with Approved Document B (Volumes 1 and 2), Appendix A, clause A1

Scotland — test to conform to Mandatory Standard 2.8, clause 2.8.1

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

8 Adhesion

The adhesion of the systems to concrete and asphalt substrates is sufficient to resist the effects of any wind suction, elevated temperature, thermal shock or structural movement likely to occur in practice. Acceptable adhesion to other substrates must be confirmed by test.

9 Resistance to mechanical damage

9.1 The systems can accept, without damage, the foot traffic likely to occur in practice. Where continuous heavy point loading is envisaged additional protection should be considered. The Certificate holder must be consulted for advice.

9.2 Where the system has to bridge construction or movement joints the Certificate holder must be consulted for approved detail specifications.

10 Maintenance



10.1 Installations of the systems must be subject to a planned maintenance programme to ensure that accumulated debris is cleared and drainage outlets are kept clear, and to check for contamination and damage to the system, eg loss of protective finish and/or colour fade.

10.2 Washing of the systems may be carried out using water and a mild detergent. Strong alkalis, acids or bleach must not be used. The Certificate holder must be consulted for advice on suitable cleaning products.

10.3 Damaged areas must be repaired as soon as possible in accordance with sections 12.19 to 12.21, to avoid further damage.

11 Durability



11.1 Accelerated weathering tests and evidence from existing installations confirm that satisfactory retention of physical properties is achieved. All available evidence indicates that under normal conditions the systems will have service life in excess of 15 years.

11.2 Some colour change to the finish coat may be expected when exposed to UV radiation. The degree of colour change likely to occur will depend on the colour. The Certificate holder should be consulted for more information.

Installation

12 General

12.1 Installation of Caltech QC Balcony and Walkway Waterproofing and Surfacing must be in accordance with the Certificate holder's instructions and this Certificate.

12.2 Concrete structures must be designed and built in accordance with the UK National Annex to BS EN 1992-1-1 : 2004 in conjunction with BS EN 1992-1-1 : 2004.

12.3 New concrete should be well compacted and finished to a dense, smooth finish without excess laitance, and allowed to cure for a minimum period of 28 days.

12.4 Concrete surfaces must have a minimum compressive strength of $25 \text{ N}\cdot\text{mm}^{-2}$ and be mechanically prepared, eg using enclosed shot blasting, to be free from laitance and other contamination. All residues must be removed by vacuuming.

12.5 Installation must not be carried out during inclement weather, eg rain, fog or snow, and the ambient air and substrate temperature must be between 0°C and 35°C and at least 3°C above the dew point.

12.6 Substrates to which the system is to be applied must be sound, clean, frost free, dry and free from sharp projections. The Certificate holder's advice must be sought with regard to the suitability of the substrate to receive the system, suitable cleaning procedures and the use of a proprietary surface cleaner/fungicidal wash where required.

12.7 Previously coated areas must be checked for integrity and adequate adhesion to the substrate. Defects such as cracks, blisters and indentations must be repaired prior to application of the system in accordance with the Certificate holder's instructions. The Certificate holder must be consulted for suitable repair products.

12.8 Concrete and asphalt surfaces must be primed with Caltech QC Primer C and Caltech QC Primer B respectively.

12.9 Adhesion checks must be carried out to ensure that the system is compatible with the existing surfaces. The Certificate holder must be consulted for details of suitable test methods and requirements.

12.10 Detailing, such as at upstands, must be carried out using Caltech QC Detail in accordance with the Certificate holder's instructions. Where use of Caltech QC Detail is not practicable owing to the complexity of a detail, eg at active joints, the Certificate holder must be consulted for an alternative solution.

12.11 All equipment must be cleaned with Caltech QC Cleaner.

Procedure

Waterproofing layer

12.12 The Caltech QC Balcony base component is thoroughly mixed using a slow speed agitator fitted with a suitable mixing paddle. The required quantity of catalyst is added, and stirring is continued until the mixture is lump-free, and in any event for at least two minutes. The amount of catalyst required will depend on the ambient temperature, and the manufacturer's technical data sheet/product label must be consulted for the required amount.

12.13 A layer of the mixed Caltech QC Balcony is applied with a lambswool roller to the clean, prepared and, if required, primed substrate at a minimum application rate of 2.0 kg·m⁻².

12.14 Caltech QC RF110 Reinforcement is rolled and embedded into the wet coating, avoiding creasing and trapped air. Adjacent lengths of the reinforcement must overlap by a minimum of 50 mm (100 mm if left over 12 hours), ensuring that there is sufficient coating to fully encapsulate it. Additional coating is applied if required.

12.15 A second coat of mixed Caltech QC Balcony is applied, wet on wet, by roller at a minimum application rate of 1.0 kg·m⁻².

Wearing/finish Layer

12.16 A number of options are available for the build-up of the wearing/finish layer, depending on the specified system and the end use. The Certificate holder must be consulted for specifications relating to the options under the various systems.

12.17 At each stage the system should be checked to ensure that the system has been applied to the minimum consumption. If a localised area has been applied below the minimum consumption, the affected area should be removed and reinstated to specification.

12.18 If work is interrupted for periods in excess of 12 hours, the cured membrane must be reactivated by wiping with Caltech QC Cleaner. Overcoating must proceed within 60 minutes, otherwise the process must be repeated.

Repair

12.19 Areas of damaged system must be cut back to sound, well-adhering material and cleaned with Caltech QC Cleaner.

12.20 After the cleaner has evaporated, the system is installed as described in sections 12.12 to 12.18, ensuring that there is at least a 100 mm overlap over the existing sound material.

12.21 A check for adequate adhesion must be carried out once the repaired system is cured.

Technical Investigations

13 Tests

13.1 Tests were carried out by the BBA to determine:

- resistance to cracking
- resistance to fatigue
- resistance to abrasion
- slip resistance
- resistance to penetration by chloride ions.

13.2 Tests were conducted by independent laboratories on samples of Caltech QC Balcony and Walkway Waterproofing and Surfacing to determine:

- water vapour permeability/water vapour diffusion resistance coefficient (μ)
- tensile strength and elongation
- watertightness
- tensile bond strength
- resistance to fatigue
- crack bridging capability
- resistance to dynamic indentation
- resistance to static indentation
- resistance to low temperatures
- resistance to high temperatures
- effect of heat ageing
- effect of exposure to surface water
- effect of exposure to UV-A radiation.

14 Investigations

14.1 Independent reports relating to roof fire exposure tests to BS 476-3 : 2004 and DD CEN/TS 1187: 2012 (test 4) were assessed.

14.2 Existing installations were visited to provide additional evidence of the systems' in-service durability.

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

14.4 Existing BBA test data relating to components of the systems were assessed in the context of this Certificate.

Bibliography

BS 476-3 : 2004 *Fire tests on building materials and structures — Classification and method of test for external fire exposure to roofs*

BS EN 1992-1-1 : 2004 *Eurocode 2 — Design of concrete structures — General rules and rules for buildings*
NA to BS EN 1992-1-1 : 2004 UK National Annex to Eurocode 2 — *Design of concrete structures — General rules and rules for buildings*

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

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

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

ETAG 005 : 2000, Rev 2004 *Guideline for European Technical Approval of Liquid Applied Roof Waterproofing Kits*

15 Conditions

15.1 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.

15.2 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.

15.3 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.

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

15.5 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.

15.6 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.