

GCP APPLIED TECHNOLOGIES BRIDGE DECK WATERPROOFING SYSTEM

ELIMINATOR (TWO COAT) BRIDGE DECK WATERPROOFING SYSTEM

This HAPAS Certificate Product Sheet⁽¹⁾ is issued by the British Board of Agrément (BBA), supported by Highways England (HE) (acting on behalf of the Overseeing Organisations of the Department for Transport; Transport Scotland; the Welsh Government and the Department for Infrastructure, Northern Ireland), the Association of Directors of Environment, Economy, Planning and Transport (ADEPT), the Local Government Technical Advisers Group and industry bodies. HAPAS Certificates are normally each subject to a review every three years.

(1) Hereinafter referred to as 'Certificate'.

This Certificate relates to the Eliminator (Two Coat) Bridge Deck Waterproofing System, for use on concrete decks of highway bridges.

CERTIFICATION INCLUDES:

- factors relating to compliance with HAPAS requirements
- factors relating to compliance with Regulations 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

Performance — the system satisfies the requirements of the *Guidelines Document for the Assessment and Certification of Waterproofing Systems for Use on Concrete Decks of Highway Bridges* (see section 5).

Durability — provided the installed system is not damaged during subsequent resurfacing, it will provide an effective waterproof layer to the concrete bridge deck (see section 8).



The BBA has awarded this Certificate to the company named above for the system described herein. This system 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 First issue: 26 October 2020



Hardy Giesler
Chief Executive Officer

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 MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

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

Requirements

In the opinion of the BBA, the Eliminator (Two Coat) Bridge Deck Waterproofing System, when assessed in accordance with the BBA HAPAS *Guidelines Document for the Assessment and Certification of Waterproofing Systems for Use on Concrete Decks of Highway Bridges*, and used in accordance with the provisions of this Certificate, will meet or contribute to meeting the requirements of the *Manual of Contract Documents for Highways Works* (MCHW)⁽¹⁾, Volumes 1 *Specification for Highways Works* (SHW), Series 2000.

(1) The MCHW is operated by the Overseeing Organisations: Highways England (HE), Transport Scotland, the Welsh Government and the Department for Infrastructure (Northern Ireland).

Regulations

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

The system was originally Certificated under HAPAS Certificate 11/H169 on 26 January 2011. Certificate 11/H169 has been replaced by this Certificate to incorporate a change to the Certificate holder's details.

Technical Specification

1 Description

The Eliminator (Two Coat) Bridge Deck Waterproofing System comprises:

- PA1 Primer — a single-component, solvent-based, solvent-based ESSELAC resin solution primer, for use at temperatures above 5°C
- PAR1 Primer — a single-component, solvent-free, reactive ESSELAC resin, for use at temperatures above -10°C
- Eliminator (Spray Grade) Waterproofing — a two-part, solvent-free ESSELAC resin, comprising Part A and Part B, pigmented yellow, white or grey
- Eliminator Patch Repair (HG) Waterproofing — a single-component, solvent-free ESSELAC resin, for repair work and use in inaccessible areas
- Tack Coat No 2 — a single-component, solvent-based ESSELAC resin solution, red-pigmented tack coat, for use with additional protective layer (APL) of sand asphalt
- Bond Coat SA1030 — a polymer-modified, bituminous-based hot melt adhesive, for use with hot-rolled asphalt (HRA) surfacing
- Bond Coat 3 — a single component, solvent-free, reactive ESSELAC resin, for use with hot-rolled asphalt (HRA) surfacing
- BPO Powder Catalyst — 50% benzoyl peroxide with a solid plasticiser, for use in PAR1 Primer, Eliminator (Spray Grade) Waterproofing Part B and Eliminator Patch Repair (HG) Waterproofing
- BPO Liquid Catalyst — 40% benzoyl peroxide, for use in Bond Coat 3
- SL Polar Additive — a single-component additive for use in Eliminator (Spray Grade) Waterproofing Part A and Part B, for sub-zero application
- SL Cold Cure Additive — a single-component additive for use in Eliminator (Spray Grade) Waterproofing Part A only, for sub-zero application.

2 Manufacture

2.1 The system components 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 being operated by the manufacturer are being maintained.

2.3 The management system of the Certificate holder has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by Alcumus ISOQAR (Certificate 15174-QMS-001).

3 Delivery and site handling

3.1 The system components are delivered to site as detailed in Table 1.

<i>Table 1 Weights and packaging</i>			
Component	Weight	Container	Shelf-life ⁽¹⁾ (months)
PA1 Primer	5, 20, 190, 950 kg	Metal containers	12
PAR1 Primer			
5 kg kit:			
primer	5 kg	Metal containers	12
BPO Powder Catalyst	100 g	Plastic bags	12
20 kg kit:			
primer	20 kg	Metal containers	12
BPO Powder Catalyst	400 g	Plastic bags	12
Eliminator (Spray Grade) Waterproofing			
48 kg kit:			
Part A	24 kg	Metal containers	12
Part B	23.04 kg	Metal containers	12
BPO Powder Catalyst	960 g	Plastic bags	12
400 kg kit:			
Part A	200 g	Metal containers	12
Part B	192 kg	Metal containers	12
BPO Powder Catalyst	8 kg	Plastic bags	12
Eliminator Patch Repair (HG) Waterproofing			
Kit:			
Resin	4.85 kg	Metal containers	12
BPO Powder Catalyst	150 or 250 g ⁽²⁾	Plastic bags	12
Tack Coat No 2	5, 20, 190 kg	Metal containers	12
Bond Coat SA1030	22.7 kg	Cardboard tubs	12
Bond Coat 3	20 kg	Metal containers	12
BPO Liquid Catalyst	25 kg	Plastic containers	12
SL Polar Additive	5, 200 kg	Metal containers	12
SL Cold Cure Additive	5 kg	Metal containers	12

(1) Information provided by the Certificate Holder.

(2) For summer use 150g and for winter use 250g.

3.2 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 the Eliminator (Two Coat) Bridge Deck Waterproofing System.

4 Use

The Eliminator (Two Coat) Bridge Deck Waterproofing System is satisfactory for use on concrete highway bridge decks as part of new and maintenance applications with APL or HRA surfacing. The deck surface should have a Class U4 [in accordance with the MCHW, Volume 1 (SHW), Clause 1708.4] formed or tamped surface finish and be at least 28 days old (or minimum 7 days where agreed in consultation with the client) with a maximum surface moisture content of 6%, and must be visually dry for application to proceed.

5 Performance

The system satisfies the requirements of the Guidelines Document (see section 14).

6 Practicability of installation

The system must only be applied by installers who have been trained and approved by the Certificate holder (see section 9.2)

7 Maintenance

The system is not subject to any routine maintenance requirements, but any damage must be repaired before being overlaid (see section 12).

8 Durability

8.1 The system will provide an effective waterproof layer to the concrete bridge deck, provided that care is taken to ensure the system is not damaged during subsequent resurfacing work.

8.2 The durability of the system is dependent on the surfacing and will vary according to a number of factors, including traffic load, location and environmental conditions.

Installation

9 General

9.1 Installation of the Eliminator (Two Coat) Bridge Deck Waterproofing System must only be carried out by contractors authorised and trained by the Certificate holder.

9.2 The Certificate holder is responsible for training and periodically auditing its authorised contractors to ensure that the system is installed in accordance with the BBA Agreed Method Statement and this Certificate.

10 Preparation

10.1 Imperfections in the concrete deck must be reinstated by the purchaser with a material agreed in consultation with the authorised contractor.

10.2 The concrete deck must be clean, dry and free from ice, frost, laitance, loose aggregate, oil, grease, moss, algae growth, dust and other debris and, where the adhesion to the concrete would be impaired, free from curing liquids, compounds and membranes.

10.3 The air temperature, substrate temperature and relative humidity must be recorded, and the installation of the system only carried out on concrete bridge decks when either:

- the minimum air and substrate temperature is at -10°C and rising, with the bridge deck temperature above the dewpoint, for decks which are a minimum of 28 days old when using PAR1 Primer, or
- the minimum air and substrate temperature is at 4°C and rising, with the bridge deck temperature above the dewpoint, for decks which are a minimum of 7 days old when using PA1 Primer or PAR1 Primer.

11 Application

Primer

11.1 PA1 Primer or PAR1 Primer should be applied by spray, roller or brush, at a coverage rate of 0.15 to 0.25 kg·m⁻² for PA1 Primer and 0.2 to 0.3 kg·m⁻² for PAR1 Primer, dependent on the porosity of the concrete deck.

11.2 The primer used will depend upon site conditions, and the application must be carried out in accordance with the BBA Agreed Method Statement.

11.3 The primer can be over-sprayed with Eliminator (Spray Grade) Waterproofing membrane provided the primer is fully cured and the surface is clean and dry.

Waterproofing membrane

11.4 Eliminator (Spray Grade) Waterproofing membrane is applied by spray at a coverage rate of 1.6 kg·m⁻² per coat on a U4 surface. The coverage rate will increase with surface irregularity.

11.5 For application down to 5°C, immediately before use the pre-weighed sachet of BPO powder catalyst is added to Part B and mixed thoroughly, and Part A is stirred thoroughly. For applications below 5°C, on the day prior to application the pre-weighed sachets of BPO powder catalyst are added to Part B and mixed thoroughly, and Part A is stirred thoroughly.

11.6 A separate mixer must be used for Part A and Part B to prevent contamination, and the two components must not be mixed together in the same container.

11.7 For application between 0 and -10°C, Part A and Part B are modified by the addition of SL Polar Additive and SL Cold Cure Additive in accordance with GCP Applied Technologies (UK) Ltd's QA358 *Eliminator Arctic Additives for sub-zero application*. SL Polar Additive is added at 0.125% by volume to both Part A and Part B. SL Cold Cure Additive is added to Part A only at 0.42% by volume when the temperature is between 0 and -5°C, and 0.65% at temperatures between -5 and -10°C, and mixed thoroughly.

11.8 Part A and Part B must be spray-applied using suitable airless spray equipment that meters the two components on a 1:1 volume ratio and mixes the materials together in-line. Part B is pigmented yellow, white or grey.

11.9 Eliminator (Spray Grade) Waterproofing membrane is spray-applied in two coats, the first coat pigmented yellow and the second coat white or grey. Each coat must be applied to give a minimum wet film thickness of 1.2 mm, to ensure a minimum dry film thickness of 1.0 mm overall, and a total minimum dry film thickness of 2.0 mm overall, including peaks, arrises and irregularities in the concrete deck.

11.10 The second coat is applied directly onto the first coat once it has cured. This will vary with temperature but is typically 40 minutes at 23°C.

Lapping

11.11 Where a new waterproofing membrane is to be joined to an existing Eliminator (Spray Grade) Waterproofing membrane, and at day joints, the new application should be lapped onto the existing by a minimum of 50 mm.

11.12 Where the existing membrane is clean, no additional preparation is necessary.

11.13 Where the existing membrane is dirty or contaminated, the surface should be cleaned using a suitable solvent, eg acetone.

Sealing into parapet chase

11.14 Eliminator (Spray Grade) Waterproofing membrane must be terminated into a primed chase when provided.

Tack coat/bond coat

11.15 The appropriate tack coat/bond coat must be applied to the fully cured waterproofing membrane only in areas due to receive the APL or HRA surfacing.

11.16 When APL surfacing is to be applied directly onto the system, Tack Coat No 2 is applied by spray, roller or brush at a coverage rate of 0.1 to 0.3 kg·m⁻², one hour after initial membrane application.

11.17 When HRA surfacing is to be applied directly onto the system, either Bond Coat 3 or Bond Coat SA1030 must be used.

11.18 Bond Coat 3 consists of an orange-coloured reactive liquid resin and a BPO liquid catalyst. Immediately before use, the correct dosage of the BPO liquid catalyst must be added to the liquid resin and mixed thoroughly.

11.19 The dosage of the BPO liquid catalyst is adjusted according to the temperature. Reference must be made to GCP Applied Technologies (UK) Ltd's QA542 *Application Guidelines Bond Coat 3, Appendix 2 Cure Ladder* for information on the correct quantity of BPO liquid catalyst to be added.

11.20 Bond Coat 3 can be applied by airless spray or by a 4.0 mm notched squeegee at a coverage rate of 0.6 kg·m⁻² onto the cured waterproofing membrane to give a wet film thickness of 0.5 mm.

11.21 Bond Coat SA1030 is preheated to between 175 and 200°C, and applied by squeegee at a coverage rate of 1.25 to 1.75 kg·m⁻² onto the cured waterproofing membrane.

11.22 The applied tack coat or bond coat must be dry/cured and contaminant free prior to the application of the APL or HRA surfacing. Drying/cure times of the tack coat/bond coats will depend upon site conditions; typical drying/cure times are given in Table 2.

Table 2 Tack coat and bond coat drying/cure times

Component	Drying/cure time
Tack Coat No 2	60 minutes at 23°C
Bond Coat 3	within 60 minutes
Bond Coat SA1030	30 minutes (allowed to cool)

11.23 The APL or HRA surfacing should be applied without undue delay and preferably no more than seven days after the tack coat/bond coat application. Should this period be exceeded or the tack-coated/bond-coated areas become contaminated or damaged, the Certificate holder should be contacted for advice.

12 Repair

Pin/blow holes

12.1 After application of each coat, any identified pin/blow holes must be over-coated with Eliminator (Spray Grade) Waterproofing or Patch Repair (HG) Waterproofing membrane at an additional minimum wet film thickness of 1.2 mm per coat.

Blisters and damage

12.2 Any blisters or damage must be made good by cutting back to sound material, preparing the periphery if necessary as for lapping and applying a repair coat of Eliminator (Spray Grade) Waterproofing or Patch Repair (HG) Waterproofing membrane as in sections 11.9 and 11.10, ensuring a minimum peripheral lap of 50 mm around the repair.

12.3 Where the damage is through to the concrete deck, the exposed concrete must first be cleaned and then re-primed.

13 Surfacing

The Certificate holder requires that the rolling temperature of the surfacing must not fall below the minimum reactivation temperature of 85°C required for Tack Coat No 2, or 90°C for Bond Coat SA1030 and Bond Coat 3.

14 Tests

14.1 Laboratory performance tests were carried out on the system by the BBA in accordance the requirements of the Guidelines Document and the results found to be satisfactory. The tests (which were also part of an assessment resulting in the previous Certificate 99/R112) carried out on the system satisfied the Guidelines Document requirements.

14.2 Tests carried out on the waterproofing membrane included resistance to water penetration.

14.3 Tests carried on the waterproofing membrane/system bonded to concrete included:

- tensile adhesion at -10, 23 and 40°C
- resistance to chloride ion penetration
- resistance to freeze/thaw
- resistance to heat ageing
- resistance to chisel impact at -10, 23 and 40°C
- resistance to aggregate indentation at 40, 80 and 125°C
- thermal shock, heat ageing and crack cycling
- tensile adhesion to 7-day-old concrete substrate
- tensile adhesion of overlaps after 6 months
- shear adhesion of HRA surfacing to waterproofing system interface at -10, 23 and 40°C
- tensile bond strength of HRA surfacing to waterproofing surfacing system interface
- shear adhesion of sand asphalt surfacing to waterproofing system interface at -10, 23 and 40°C
- tensile bond strength of sand asphalt surfacing to waterproofing surfacing system interface
- tensile adhesion on tamped and timber-formed surface finish of concrete substrate
- tensile adhesion of system installation at 0°C on concrete substrate.

14.4 An independent test report for bond strength of the Elinator bridge deck waterproofing membrane to concrete when applied at low temperature (-10°C) was evaluated.

15 Investigations

15.1 Existing data from the previous Certificate 99/R112 were evaluated, including an assessment of the practicability of the installation and quality control/assurance procedures at an installation site trial.

15.2 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.

Bibliography

BS EN ISO 9001 : 2015 *Quality management systems — Requirements*

Guidelines Document for the Assessment and Certification of Waterproofing Systems for Use on Concrete Decks of Highway Bridges, August 2012

Manual of Contract Documents for Highways Works, Volume 1 *Specification for Highways Works*, Series 2000
Waterproofing for concrete structures

CD 358, *Waterproofing and surfacing of concrete bridge decks*

16 Conditions

16.1 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.

16.2 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.

16.3 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.

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

16.5 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.

16.6 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.