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HAPAS Certificate

20/H303

Product Sheet 1

USL BRIDGE DECK WATERPROOFING SYSTEM

MATACRYL (ONE 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 Matacryl (One 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 BBA HAPAS *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: 14 December 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.

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Requirements

In the opinion of the BBA, the Matacryn (One 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 satisfy or contribute to satisfying the requirements of the *Manual of Contract Documents for Highways Works (MCHW)*⁽¹⁾, Volume 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.

Technical Specification

1 Description

The Matacryn (One Coat) Bridgedeck Waterproofing System comprises:

- Matacryn Primer CM — a single-component reactive resin, based on methyl methacrylate
- Matacryn Waterproofing — a two-part urethane modified resin, based on methyl methacrylate, comprising Part A and B pigmented grey
- Matacryn STC Tack Coat — a single-component reactive resin pigmented grey, based on methyl methacrylate, for use with hot-rolled asphalt (HRA) surfacing
- Matacryn Catalyst — a 50% dibenzoyl peroxide with a solid plasticiser, for use in Matacryn Primer CM, Matacryn Waterproofing and Matacryn STC Tack Coat
- Natural quartz (0.3 to 0.7 mm) — fire-dried natural quartz sand, for broadcast into the applied Matacryn Primer CM when still wet
- Natural quartz (2.0 to 3.5 mm) — fire-dried natural quartz sand, for broadcast into the applied Matacryn STC Tack Coat when still wet
- Matacryn Accelerator — a single-component, yellow-coloured resin solution, for use in Matacryn STC Tack Coat (where applicable), Matacryn Primer CM and Matacryn Waterproofing to accelerate curing at temperatures below 0°C
- Matacryn Adcol Thinner — a single-component colourless liquid, based on methyl methacrylate, for use in Matacryn Waterproofing to improve workability and flow. Also, used as a cleaner before overlapping with the system.

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 manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by Lloyd’s Register Quality Assurance Ltd (Certificate 10011770).

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 (kg)	Packaging	Shelf-life (months)
Matacril Primer CM	20, 180	Metal container	9
Matacril Primer Part A	20	Metal container	9
Matacril Primer Part B	20	Metal container	9
Matacril Waterproofing Part A	25, 125	Metal container	9
Matacril Waterproofing Part B	25, 125	Metal container	9
Matacril STC Tack Coat	20, 180	Metal container	9
Matacril Catalyst	25	Cardboard container	9
Natural quartz	25	Paper sacks	N/A
Matacril Accelerator	5	Metal container	9
Matacril Adcol Thinner	20, 180	Metal container	9

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 Matacril (One Coat) Bridge Deck Waterproofing System.

Design Considerations

4 Use

The Matacril (One Coat) Bridge Deck Waterproofing System is suitable for use on concrete highway bridge decks as part of new and maintenance applications with HRA surfacing. The deck surface should have a Class U4, in accordance with the MCHW, Volume 1, Clause 1708.4, formed or tamped surface finish and must be at least 28 days old with a maximum surface moisture content of 6%.

5 Performance

The system satisfies the requirements of the BBA HAPAS *Guidelines Document for the Assessment and Certification of Waterproofing Systems for Use on Concrete Decks of Highway Bridges* (2012) (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 that 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 Matacryl (One 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 monitoring 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 made good 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 -5°C and rising, with the bridge deck temperature above the dew-point for decks which are a minimum of 28 days old, or
- the minimum air and substrate temperature is at 4°C and rising, with the bridge deck temperature above the dew-point for decks which are a minimum of 7 days old.

11 Application

Primer

11.1 Matacryl Primer CM can be applied by roller or brush, at a coverage rate of 0.3 to $0.5 \text{ kg}\cdot\text{m}^{-2}$ dependent on the porosity of the concrete deck.

11.2 Immediately before use Matacryl Catalyst is added to the Matacryl Primer CM and mixed thoroughly. The quantity of Matacryl Catalyst can be varied according to the substrate temperature (see Table 2). At temperatures below 0°C , first 0.8% Matacryl Accelerator (by weight of the primer) is mixed before adding the Matacryl Catalyst.

Table 2 Dosage of Matacryl Catalyst — primer

By weight of primer (%)	Temperature ($^{\circ}\text{C}$)
1.1	30
1.5	20
4	10
5	0
6	<0

11.3 Natural quartz (particle size 0.3 to 0.7 mm) is broadcast into the still-wet primer at a coverage rate of 0.3 to $0.4 \text{ kg}\cdot\text{m}^{-2}$.

11.4 The primer can be over-sprayed with Matacrlyl Waterproofing provided the primed surface is fully cured and the surface is clean and dry.

Waterproofing membrane

11.5 Matacrlyl Waterproofing can be applied by spray, trowel, roller or brush at a coverage rate of 2.8 kg·m⁻² on a U4 surface. The coverage rate will increase with surface irregularity.

11.6 Matacrlyl Waterproofing is supplied as Part A and B. Immediately before use, for spray application the Matacrlyl Catalyst (percentage by weight calculated on total Part A and B components) is stirred into Part B and mixed thoroughly. Part B is pigmented grey.

11.7 For spray application the quantity of Matacrlyl Catalyst in Part B can be varied according to the ambient temperature (see Table 3). At temperatures below 0°C, first 1.6% Matacrlyl Accelerator (by weight of Part A) is mixed into Part A. 5% Matacrlyl Adcol Thinner is added to each of Part A and B, before adding Matacrlyl Catalyst to Part B. Part A and B are metered and mixed in an airless spray unit at a ratio of 1:1 by volume during application.

11.8 For trowel or brush application for small areas or localised repairs, Parts A and B of Matacrlyl Waterproofing are mixed together at a ratio of 1:1 by volume or weight. The quantity of Matacrlyl Catalyst can be varied according to the ambient temperature by weight of the mixed resin (see Table 3). At temperatures below 0°C, Matacrlyl Accelerator is added at a rate of 0.5% to 3.0% by weight of actual Matacrlyl products prior to the addition of the Matacrlyl Catalyst. To improve workability of the mixed resin, 5% Matacrlyl Adcol Thinner should be added.

Application		Temperature
Spray by weight of Parts A and B (%)	Trowel/brush/roller by weight of mixed resin (%)	(°C)
1.1	1.1	30
1.5	1.5	20
4	4	10
5	5	0
6	6	<0

11.9 Matacrlyl Waterproofing, pigmented light grey, is applied in one coat, at a minimum wet film thickness of 2.2 mm to ensure a minimum dry film thickness of 2.0 mm overall, including peaks, arrises and irregularities in the concrete deck.

Lapping

11.10 Where new waterproofing membrane is to be joined to existing Matacrlyl Waterproofing and at day joints, the new application must be lapped onto the existing by a minimum of 50 mm.

11.11 Where the existing membrane is clean and less than 24 hours old, no additional preparation is necessary.

11.12 Where the existing membrane is contaminated or over 24 hours old, Matacrlyl Adcol Thinner must be applied to give a minimum margin of 20 mm greater than the lap and allowed to dry.

Sealing into parapet chase

11.13 Matacrlyl Waterproofing should be terminated into a primed chase when provided.

Tack coat

11.14 Matacrlyl STC Tack Coat for use with HRA surfacing must be applied to the fully cured waterproofing membrane in all areas by roller or brush at a coverage rate of 0.5 to 0.6 kg·m⁻².

11.15 Immediately before use Matacrlyl Catalyst is added to Matacrlyl STC Tack Coat and mixed thoroughly. The quantity of Matacrlyl Catalyst can be varied according to the ambient temperature. At temperatures below 0 degrees, first 0.8% Matacrlyl Accelerator (by weight of the tack coat) is mixed before adding the Matacrlyl Catalyst (see Table 4).

Table 4 Dosage of Matacryn Catalyst — Tack Coat

By weight of tack coat (%)	Temperature (°C)
1.1	30
1.5	20
4	10
5	0
6	-5

11.16 Natural quartz (particle size 2.0 to 3.5 mm) is then broadcast into the still wet tack coat at a coverage rate of 1.0 to 1.1 kg·m⁻² only on the areas to receive the HRA surfacing.

11.17 Matacryn STC Tack Coat must be fully cured prior to the application of the HRA surfacing. Curing time of the tack coat will depend upon site conditions, but is typically 60 minutes at 20°C.

11.18 The HRA surfacing must be applied without undue delay and preferably no more than 7 days after the tack coat application. Should this period be exceeded or the tack coated areas become contaminated or damaged, the Certificate holder should be contacted for advice.

12 Repair

12.1 After application of the waterproofing membrane, any identified pin/blow holes must be over-coated with Matacryn Waterproofing at an additional minimum wet film thickness of 2.2 mm.

Blisters and damage

12.2 Any blisters or damage must be made good by cutting back to sound material. The periphery is then prepared as for lapping and a repair coat of Matacryn Waterproofing applied as described in section 11.9, 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 rolling temperature of the HRA surfacing must not fall below the minimum temperature of 100°C required for Matacryn STC Tack Coat.

Technical Investigations

14 Tests

14.1 Laboratory performance tests were carried out on the system by the BBA in accordance with the requirements of the Guidelines Document and the results were assessed as satisfactory.

14.2 Resistance to water penetration tests were carried out on the waterproofing membrane.

14.3 Tests carried out 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 heat ageing
- resistance to chisel impact
- resistance to aggregate indentation at 40, 80 and 125°C
- resistance to 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

- tensile bond strength of HRA surfacing to waterproofing surfacing system interface
- tensile adhesion on tamped and timber formed surface finish of concrete substrate
- tensile adhesion of system installation at -5°C on concrete substrate.

15 Investigations

15.1 An installation site trial was carried out to assess the practicability of the installation and quality/assurance procedures.

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

BBA HAPAS *Guidelines Document for the Assessment and Certification of Waterproofing Systems for Use on Concrete Decks of Highway Bridges (2012)*

Manual of Contract Documents for Highways Works (MCHW), Volume 1 *Specification for Highways Works (SHW)*, Series 2000.

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

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.