

## FILL AND OVERBAND CRACK SEALING SYSTEMS FOR HIGHWAYS

### ULTRA-BAND FILL AND OVERBAND CRACK REPAIR SYSTEM FOR HIGHWAYS

This HAPAS Certificate Product Sheet<sup>(1)</sup> 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 Assembly 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 Ultra-Band Fill and Overband Crack Repair System for Highways, polymer-resin coated graded aggregates used to seal and repair cracks up to 40 mm wide in non-porous bituminous and concrete road surfaces.

#### 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 meets the relevant requirements for fill and overbanding crack sealing systems of the *Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways* (see section 6).

**Durability** — the system's performance in use indicates that it can be used to repair cracks and fretted joints in both longitudinal and transverse directions of the carriageway and has a minimum service life of three years (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.

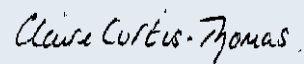
On behalf of the British Board of Agrément

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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](http://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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## Requirements

In the opinion of the BBA, the Ultra-Band Fill and Overband Crack Repair System for Highways, when assessed in accordance with the *Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways*, 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 Highway Works (MCHW)*<sup>(1)</sup>, Volume 1 *Specification for Highway Works*, Series 700, clause 711, and Volume 2 *Notes for Guidance on the Specification for Highway Works*, Series NG700, clause NG711.

(1) The MCHW is operated by the Overseeing Organisations: Highways England (HE), Transport Scotland, the Welsh Assembly 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* (3.1, 3.2 and 3.4) of this Certificate.

## Technical Specification

### **1 Description**

1.1 The Ultra-Band Fill and Overband Crack Repair System for Highways comprises graded aggregates, coated with a polymer-modified resin.

1.2 The system is used in conjunction with Creteprime CP Primer when applied to very porous or dusty concrete surfaces.

### **2 Manufacture**

2.1 The system materials are manufactured by a typical 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 Ultra-Band is supplied with a Certificate of Conformity for each batch in nominal 20 kg low-melt bags, labelled with the name of the product, batch date and batch number.

3.2 Creteprime CP Primer is supplied in 5 or 25 litre tins.

3.3 The system components should be stored in cool, dry conditions protected from inclement weather.

3.4 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 Ultra-Band Fill and Overband Crack Repair System for Highways.

## Design Considerations

### 4 Use

4.1 The Ultra-Band Fill and Overband Crack Repair System for Highways is satisfactory for use as a crack sealing system for the repair of cracks, reinstatement joints and fretted joints typically from 5 to 40 mm wide in non-porous bituminous, highway surfaces with texture depths not exceeding 2 mm, or on concrete highway surfaces. The Certificate holder must be consulted regarding the suitability of the existing road surfacing to receive the system.

4.2 The system is laid in two stages: application of the Ultra-Band material is carried out until flush with the adjacent surfacing; once cooled the Ultra-Band material is then applied as a 40 to 200 mm wide strip directly over the filled crack or joint.

### 5 Practicability of installation

The system must only be installed by contractors trained and approved by the Certificate holder in accordance with the Certificate holder's Installation Manual.

### 6 Performance

The results of laboratory and in-service performance tests carried out on the binder and on the system complied with the requirements of the *Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways* for a crack fill and overbanding system (see section 13, Table 1). This included measuring the initial and investigatory skid resistance values which met the requirements of 60 and 50 respectively.

### 7 Maintenance

Installations must be periodically inspected as part of a planned maintenance programme and, if necessary, repaired as described in section 12.

### 8 Durability

8.1 The system can be used to seal and repair cracks in both longitudinal and transverse directions of the carriageway, and has a minimum expected life of three years.

8.2 Where cracks have penetrated substantially through the pavement depth owing to structural failure, resulting in significant movement under traffic, an expectation of life cannot be predicted. Where pavements are structurally sound with cracking confined to the surfacing layer or layers, and these remain bonded to the road-base, the three year minimum life should be achieved.

8.3 The most severe wear from trafficking (primarily by heavy goods vehicles) occurs within the wheel track zones, approximately between 0.5 and 1.1 m and between 2.55 and 3.15 m from the centre of the nearside lane markings for each traffic lane. In the wheel track zones, the expected minimum life is unlikely to be exceeded. Conversely, for cracks outside the wheel track zones, provided the pavement surface is otherwise sound, the expected minimum life in terms of skid and deformation resistance is likely to be exceeded.

8.4 The most onerous conditions occur typically during the summer months on heavily trafficked, exposed carriageways with significant gradients in cuttings and on the surface of the pavements carried by elevated structures. In these situations, surface temperatures can approach or even exceed 50°C. Should surface temperatures exceed this

figure for prolonged periods (such as in an exceptionally hot summer), the expected minimum life of the system in the wheel track zone may not be attained.

## Installation

### 9 General

9.1 Installation of the Ultra-Band Fill and Overband Crack Repair System for Highways must be conducted in accordance with the Certificate holder's Material Safety Data Sheet, Installation Method Statement and this Certificate.

9.2 Traffic management must be in accordance with the latest issue of the *Department for Transport Traffic Signs Manual*, Chapter 8, or as agreed between the purchaser and installer.

9.3 The ambient and road surface temperatures are recorded at the start and, if the weather is variable, during the installation process. Installation must only be carried out if the road surface temperature is  $\geq 5^{\circ}\text{C}$ . The system must not be used during periods of continuous or heavy rain.

9.4 The areas to which the system is to be applied must be clearly defined by the client prior to commencement of work on site.

### 10 Preparation of the road surface

10.1 The recess and existing adjacent surface must be prepared by use of a stiff brush to remove all dirt, standing water and loose material.

10.2 Alternatively, the recess and existing adjacent surface must be cleaned and dried using gas and hot compressed air.

10.3 Porous and/or dusty concrete surfaces should be primed with Creteprime CP Primer to enhance adhesion. The primer should be applied and allowed to dry in accordance with the manufacturer's recommendations.

### 11 Application

11.1 The recess and surrounding area must be clean, dry and free from all loose aggregate, moribund sealants, road salt and any other loose material. Cleaning with a gas and air lance is essential.

11.2 The system is applied in two stages, Ultra-Band material is melted down in agitated dedicated heated boilers to a laying temperature of between  $180^{\circ}\text{C}$  and  $210^{\circ}\text{C}$  and the material kept at this temperature for a period of 20 minutes before using.

11.3 Ultra-Band is then poured into the prepared recess by bucket and suitable width screed box, to finish flush with the adjacent surface and allowed to set.

11.4 The second application of Ultra-Band may be carried out at any time after the first application. The second application is applied at a temperature of between  $180^{\circ}\text{C}$  and  $210^{\circ}\text{C}$ . The second application is applied evenly over the previous application by screed box between a 50 to 200 mm wide strip as necessary.

11.5 After application of the system the installer should conduct a visual check for uniform surface texture and any other discernible faults, and carry out any remedial work as necessary.

11.6 As soon as the application has cooled (approximately 10 to 25 minutes dependent on ambient temperature) the work area may be re-opened to traffic.

### 12 Repair

Damage to the system can be repaired by scabbling the defective area flush to the existing surface and re-applying the overbanding to the original specification.

### 13 Tests

13.1 A series of tests was carried out on the binder to establish:

- cone penetration (control and heat aged)
- resilience (control and heat aged)
- flow resistance.

13.2 Laboratory performance tests were carried out on the Ultra-Band Fill and Overband Crack Repair System for Highways in accordance with the requirements for fill and overbanding crack sealing systems in accordance with the *Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways*. The results were assessed to be satisfactory for the properties tested.

*Table 1 Laboratory performance tests on the system*

Test	Requirement <sup>(1)</sup>	Method <sup>(2)</sup>
Skid resistance value (SRV) initial after wheel tracking	≥60 ≥50	Appendix A, Method 1
Texture depth (mm) initial after wheel tracking	≥1.5 ≥0.75	Appendix A, Method 5
Wheel tracking at 50°C (mm) spread thickness before and after	Record value Record value	Appendix A, Method 3
Tensile bond (N·mm <sup>-2</sup> ) <sup>(3)</sup> control heat aged <sup>(4)</sup>	≥0.5 ≥60% of control value	TRL Report 176, Appendix J
Flow rate(s)	Record value	Zahn cup, Appendix A, Method 6
Elongation load at 30% extension (N)	≤1000	Appendix A, Method 7

- (1) Requirements for fill and overbanding crack sealing systems as defined in the *Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways*.
- (2) Test methods are defined in the current *Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways*.
- (3) Conducted on both asphalt and concrete substrates.
- (4) Heat aged for 28 days at 70°C.

### 14 Investigations

14.1 Data upon which BBA Certificate 10/H150 was based were assessed, in the context of fill and overbanding systems.

14.2 A user/specifier survey and visits to existing sites were carried out to assess the system’s performance in use and durability.

14.3 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

*Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways*

TRL Report 176 : 1997 *Laboratory tests on high-friction surfaces for highways*

Manual of Contract Documents for Highway Works, Volume 1 *Specification for Highway Works*, Series 700, clause 711 *Overbanding and Inlaid Crack Sealing Systems*

Manual of Contract Documents for Highway Works, Volume 2 *Notes for Guidance on the Specification for Highway Works*, Series NG700, clause NG711 *Overbanding and Inlaid Crack Sealing Systems*

### 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 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.