

JOBLING PURSER CRACK REPAIR SYSTEM FOR HIGHWAYS

PROSCREED CRACK REPAIR SYSTEM

This Certificate is issued under the Highway Authorities' Product Approval Scheme (HAPAS) by the British Board of Agrément (BBA) in conjunction with the Highways Agency (HA) (acting on behalf of the overseeing organisations of the Department for Transport; the Scottish Executive; the Welsh Assembly Government; the Department for Regional Development, Northern Ireland), the County Surveyors' Society, the Local Government Technical Advisers' Group, and industry bodies. HAPAS Agrément Certificates are normally each subject to a review every five years.

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to the Proscreed Crack Repair System, a two-component fill and overband system used to seal and repair cracks up to 40 mm wide in non-porous bituminous road surfaces.

AGRÉMENT 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 five-yearly review.



KEY FACTORS ASSESSED

Performance — the system meets the requirements for a fill and overband crack sealing system in accordance with the *Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways* (see section 5).

Durability — the results of tests and assessments of the system's performance in use indicate that it can be used to repair cracks in both longitudinal and transverse directions of the carriageway with a minimum expected life of three years (see section 7).

The BBA has awarded this Agrément Certificate to the company named above for the system described herein. The 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: 29 March 2010

Simon Wroe
Head of Approvals — Materials

Greg Cooper
Chief Executive

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.

HAPAS Requirements

Requirements

The Highways Technical Advisory Committee (HiTAC) and HAPAS Specialist Group 2 (Crack Sealing Systems) have agreed with the BBA the aspects of performance to be used by them in assessing the compliance of crack-sealing systems for highways with the *Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways*. In the opinion of the BBA, the Proscreed Crack Repair System for Highways, when applied to a suitable non-porous bituminous highway in accordance with the provisions of this Certificate, will meet the relevant performance requirements.

Regulations

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: 2 Delivery and site handling (2.1).

Technical Specification

1 Description

1.1 The Proscreed Crack Repair System is a two-component screed applied crack repair system for highways. The system comprises a hot-applied, polymer-modified bitumen compound incorporating fillers, high PSV aggregates and fibres for infilling and sealing crack and joint recesses (Part A) and an overband component consisting of a thermoplastic resin and a high PSV calcined bauxite or granite aggregate to provide a skid-resistant wearing surface (Part B).

1.2 The system is designed to seal cracks and joints up to 40 mm wide.

1.3 The production process is controlled in accordance with a Quality Plan agreed by the BBA. Quality control checks are carried out on the incoming materials, during production and on the finished product.

2 Delivery and site handling

2.1 The components of the system are supplied in nominal 25 kg packs as follows:

Part A – multiple-layer silicone-lined paper sacks

Part B – low-melt polyethylene bags.

2.2 The products should be stored under cover in dry conditions away from contamination and sources of heat.

2.3 To avoid compaction, pallets must not be stacked more than two high.

2.4 Part A is not classified under *The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009* (CHIP4). Part B is classified as 'harmful by inhalation' under these Regulations and the packaging bears the appropriate hazard warning label. The manufacturer's material safety data sheets should be consulted for the safe use of these products.

2.5 Health and Safety Data Sheets and the *Control of Substances Hazardous to Health Regulations 2002* (COSHH) risk assessments for the works should be deposited with the purchaser and be maintained on site.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Proscreed Crack Repair System.

Design Considerations

3 Use

3.1 The Proscreed Crack Repair System is satisfactory for use as a fill and overband crack sealing system to repair cracks up to 40 mm wide in non-porous bituminous⁽¹⁾, highway surfaces with texture depths not exceeding 2 mm.

(1) For the purposes of this Certificate, non-porous bituminous highway surfaces are impermeable and include hot-rolled asphalt, mastic asphalt and thin surfacing systems.

3.2 The overbanding component (Part B) is applied at a width between 100 mm and 150 mm.

3.3 Cracks to be treated must be clean, dry and free from loose material or other contamination that may affect the adhesion of the system.

4 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 Method Statement.

5 Performance

The results of performance tests carried out on laboratory prepared samples and on site installed systems indicate that the system complies with the requirements of the Guidelines Document for a fill and overband system, see section 12, *Table for Laboratory performance tests on the binder (Part A)* and *Table for Laboratory performance tests on the system*.

6 Maintenance

Installations should be periodically inspected for damage, loss of texture and skid resistance as part of a planned maintenance programme and, if necessary, repaired as described in section 11.

7 Durability

7.1 The results of tests and assessments of the product's use in service indicate that the system can be used to seal and repair cracks in both longitudinal and transverse directions of the carriageway, with a minimum expected life of three years.

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

7.3 The most severe wear from trafficking (primarily by heavy goods vehicles) occurs within the wheel track zones, approximately between 0.5 m and 1.1 m, and between 2.55 m 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 resistance may be exceeded.

7.4 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 pavements carried by elevated structures, where surface temperatures can approach or even exceed 50°C. Should surface temperatures exceed this figure for periods in an exceptional summer, then the expected minimum life of the system in the wheel track zone may not be attained.

Installation

8 General

8.1 Installation of the Proscreen Crack Repair System must be conducted in accordance with the Certificate holder's method statement and this Certificate.

8.2 Traffic management should 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.

8.3 The ambient and road surface temperatures should be 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 between 1°C and 35°C. The system must not be used during periods of continuous or heavy rain.

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

9 Preparation of the road surface

The crack or joint recess and surrounding area is thoroughly cleaned and dried using hot compressed air, removing all loose material, dust, grease and foreign matter.

10 Application

10.1 The two components are heated in separate mixers. Part A is heated to between 160°C to 180°C and Part B is heated to between 180°C to 210°C.

10.2 The clean, prepared crack or joint recess is then infilled with Part A using a suitable screed box and finished flush to the existing adjacent surface with a tolerance of ± 2 mm and allowed to set.

10.3 Part B is then applied over Part A, again using a suitably sized screed box so that it overlaps as far as practicable, evenly either side of the installed Part A to produce a band between 100 mm and 150 mm wide and a nominal of 3 mm proud of the adjacent surface.

10.4 The finished repair is allowed to cool before opening to traffic. This will typically take 15 to 30 minutes, depending on the ambient temperature.

10.5 In all cases, the installer should conduct a visual check for correct application, uniform surface texture and any other discernible faults at each stage of the installation and carry out any remedial work as necessary.

11 Repair

Damage to the system should be assessed and repaired by removing the damaged section and reapplying the system in accordance with sections 9 and 10.

Technical Investigations

12 Tests

Laboratory performance tests and tests on existing installations were carried out on the Proscreed Crack Repair System in accordance with the requirements of the Guidelines document for fill and overband crack sealing systems. The tests and requirements are given in Tables 1 to 3.

Table 1 Laboratory tests on the Proscreed Part A binder

Test	Requirement ⁽¹⁾	Method ⁽²⁾
Cone penetration (dmm)		BS 2000-50
control	≥35	
heat aged ⁽³⁾	≥60% of control value	
Resilience (%)		BS 2499-3, Method 12
control	Record value	
heat aged ⁽³⁾	≥60% of control value	
Flow resistance (mm)	≤2	BS 2499-3, Method 6

(1) Requirements for bituminous base binder for fill and overband crack-sealing systems as defined in the *Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways*.

(2) The test documents are detailed in the *Bibliography*. Numbers in the table refer to sections/parts of the various documents.

(3) Heat aged 28 days at 70°C.

Table 2 Laboratory performance tests on the system

Test	Requirement ⁽¹⁾	Method ⁽²⁾
Skid resistance value (SRV)		
control	≥60	Appendix A, Method 1
after wheel tracking at 50°C	≥50	Appendix A, Method 3 ⁽³⁾
Tensile bond (N·mm ⁻²)	0.5	TRL 176, Appendix J
control	≥60% of control value	
heat aged ⁽⁴⁾		
Texture depth ⁽⁵⁾	–	–
Thickness after wheel tracking	Record	Appendix A, Method 3 ⁽³⁾
Spread after wheel tracking	Record	Appendix A, Method 3 ⁽³⁾

(1) Requirements for bituminous base binder for fill and overband crack-sealing systems as defined in the *Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways*.

(2) The test documents are detailed in the *Bibliography*. Numbers in the table refer to sections/parts of the various documents.

(3) Test carried out on a concrete substrate formed with a 'V'-channel 30 mm wide by 23 mm deep.

(4) Heat aged 28 days at 70°C.

(5) Due to the difficulty in screeding the thermoplastic overband component to achieve a representative sample, the retention of texture after trafficking was assessed by the inspection and testing of existing installations which were over two years old, see Table 3.

Table 3 Retained texture depth and SRV measured on existing installations over two years old

Test	Result	Method ⁽¹⁾
Retained texture depth (mm)		Appendix B, Method 4 ⁽³⁾
Site A (motorway) ⁽²⁾	1.28	
Site B (urban) ⁽⁴⁾	0.84	
Retained skid resistance value (SRV)		TRRL Road Note 27
Site A (motorway) ⁽²⁾	85.4	
Site B (urban) ⁽⁴⁾	75.6	

(1) The test documents are detailed in the *Bibliography*. Numbers in the table refer to sections/parts of the various documents.

(2) System 26 months old when tested.

(3) Guidelines document Draft 2a dated 10 April 2000.

(4) System 40 months old when tested.

13 Investigations

13.1 An installation trial was carried out to assess the practicability of the installation in accordance with the agreed method statement.

13.2 Visits and tests were carried out on existing installations to assess the in-service performance of the system.

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

Bibliography

- BS 2000-50 : 1993 *Methods of test for petroleum and its products — Determination of cone penetration of lubricating grease*
- BS 2499-3 : 1993 *Hot-applied joint sealant systems for concrete pavements— Methods of test Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways* (Draft 4, May 2009)
- TRL Report 176 : 1997 *Laboratory tests on high-friction surfaces for highways*
- Road Research Laboratory Note 27 : 1960 *Instructions for Using the Portable Skid Resistance Tester*

Conditions of Certification

14 Conditions

14.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- 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.

14.2 Publications and documents referred to in this Certificate are those that the BBA deems to be relevant at the date of issue or re-issue of this Certificate and include any: Act of Parliament; Statutory Instrument; Directive; Regulation; British, European or International Standard; Code of Practice; manufacturers' instructions; or any other publication or document similar or related to the aforementioned.

14.3 This Certificate will remain valid for an unlimited period provided that the product/system and the manufacture and/or fabrication including all related and relevant 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.
- remain in accordance with the requirements of Highway Authorities' Product Approval Scheme.

14.4 In granting this Certificate, the BBA is not responsible for:

- 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
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

14.5 Any information relating to the manufacture, supply, installation, use and maintenance 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 and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date 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. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.

