

JOBLING PURSER CRACK REPAIR SYSTEM FOR HIGHWAYS

PROSCREED CRACK REPAIR SYSTEM

This HAPAS Certificate Product Sheet⁽¹⁾ is issued by the British Board of Agrément (BBA), supported by the Highways Agency (HA) (acting on behalf of the Overseeing Organisations of the Department for Transport; Transport Scotland; the Welsh Assembly Government and the Department for Regional Development, Northern Ireland), the Association of Directors of Environment, Economy, Planning and Transport (ADEPT), the Local Government Technical Advisers' Group and industry bodies. HAPAS Certificate Product Sheets are normally each subject to a review every five years.
(1) Hereinafter referred to as 'Certificate'.

This Certificate relates to 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.

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 6).

Durability — the system can be used to repair cracks in both longitudinal and transverse directions of the carriageway, and has a minimum expected 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

Simon Wroe
Head of Approvals — Materials

Greg Cooper
Chief Executive

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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

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.

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, when applied to a suitable non-porous bituminous surface 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 sections: 3 *Delivery and site handling* (3.1, 3.4 and 3.5) of this Certificate.

Technical Specification

1 Description

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).

2 Manufacture

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

2.3 The management systems of the manufacturers have been independently assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008.

3 Delivery and site handling

3.1 The components of the system are supplied in nominal 25 kg packs on pallets, as follows:

Part A – multiple-layer silicone-lined paper sacks

Part B – low-melt polyethylene bags.

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

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

3.4 Part A is not classified under *The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009* (CHIP4)/*Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) 2009*. 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 components.

3.5 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

4 Use

4.1 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.

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

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

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 Method Statement.

6 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 11, Tables 1 and 2).

7 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 10.

8 Durability

8.1 The results of tests and assessments of 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.

8.2 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.

8.3 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.

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 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

9 General

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

9.2 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.

9.3 Installation of the Proscreed Crack Repair System must be carried out in accordance with the Certificate holder's method statement and this Certificate.

9.4 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 installed during periods of prolonged or heavy rain.

10 Procedure

Preparation of the road surface

10.1 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.

Application

10.2 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.

10.3 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.

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

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

10.6 In all cases, the installer must 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.

Repair

10.7 In the event of damage occurring, the system should be assessed and repaired by removing the damaged section and reapplying the system in accordance with sections 10.1 and 10.6.

Technical Investigations

11 Tests

Laboratory performance tests and tests on existing installations were carried out on the Proscreened 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 Proscreened Part A binder

Test	Requirement ⁽¹⁾	Method ⁽²⁾
Cone penetration (mm)		BS 2000-50
control	≥ 35	
heat aged ⁽³⁾	$\geq 60\%$ of control value	
Resilience (%)		BS 2499-3, Method 12
control	Record value	
heat aged ⁽³⁾	$\geq 60\%$ 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	$\geq 60\%$ 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 was 26 months old when tested.

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

(4) System was 40 months old when tested.

12 Investigations

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

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

12.3 The manufacturing process was evaluated, 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*

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

HAPAS Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways (Draft 2a April 2000 and Draft 4, May 2009)

TRL Report 176 : 1997 *Laboratory Tests on High-friction Surfaces for Highways*

TRRL Road Note 27 : 1960 *Instructions for Using the Portable Skid Resistance Tester*

13 Conditions

13.1 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.

13.2 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.

13.3 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.

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

13.5 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.

13.6 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.