

## KESTREL CRACK SEALING SYSTEMS FOR HIGHWAYS

### KESTREL OVERBANDING SYSTEM

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 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 Kestrel Overbanding System, a hot-applied thermoplastic material, incorporating rubbers, fillers and aggregates, for use as an overband system to seal and repair cracks, fretted joints and reinstatement joints in non-porous bituminous and concrete highways 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 overband crack-sealing systems of the BBA HAPAS *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, fretted joints and reinstatement joints in both longitudinal and transverse directions of the carriageway and has a minimum life expectancy 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



Paul Valentine  
Technical Excellence Director



Claire Curtis-Thomas  
Chief Executive

Date of First issue: 5 July 2019

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. 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 Kestrel Overbanding System, when assessed in accordance with the BBA HAPAS *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 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 and 3.4) of this Certificate.

## Technical Specification

### 1 Description

1.1 The Kestrel Overbanding System comprises a thermoplastic binder incorporating rubber, fillers, grades aggregate and other additives.

1.2 The system is used in conjunction with Kestrel Primer when applied to very porous asphalt or concrete substrates.

### 2 Manufacture

2.1 The system is manufactured using 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.

2.3 The management system of Kestrel Thermoplastics Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by BSI (Certificate FS 634963).

### 3 Delivery and site handling

3.1 Kestrel Overband compound is supplied in 25 kg heat-melt bags. The bags are supplied to site shrink wrapped on 1 tonne pallets.

3.2 Bags are marked with the product name, date of manufacture and batch number.

3.3 Bags must be stored under cool and dry conditions and protected from contamination.

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 Kestrel Overbanding System.

## Design Considerations

### 4 Use

4.1 The Kestrel Overbanding System is satisfactory for use as an overbanding and sealing system for the repair of cracks, fretted joints and reinstatement joints up to 5 mm wide in non-porous bituminous<sup>(1)</sup> and concrete highway surfaces with texture depths not exceeding 2 mm.

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

4.2 The system is applied as a band up to 40 mm wide directly over the crack or joint.

### 5 Practicability of installation

The system is designed to be installed by a competent highways contractor experienced with this type of system, in accordance with this Certificate and the installation details available from the Certificate holder.

### 6 Performance

The results of laboratory performance tests carried out on the system complied with the requirements of the Guidelines Document for an overbanding system (see section 13, Table 1, of this Certificate). This includes the minimum initial and investigatory skid resistance values 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 life expectancy 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.

### 9 General

9.1 Installation of the Kestrel Overbanding System must be conducted in accordance with the Certificate holder's 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 above 1°C. The system must not be installed 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 purchaser prior to commencement of work on site.

### 10 Preparation of the road surface

10.1 The road surface must be clean and dry. This can be achieved by using hot compressed air.

10.2 On very porous substrates or concrete, Kestrel Primer can be used to enhance adhesion. The primer must be applied in accordance with the Certificate holder's instructions.

### 11 Application

11.1 The Kestrel Overbanding System is loaded into the pre-heater, the temperature of the material is raised to between 160 and 180°C, and mixed until fully homogenous.

11.2 The melted material is poured along the prepared crack using a screed box to produce a band centrally over the defect with a maximum width of 40 mm.

11.3 A visual inspection must be carried out by the installer to check for any discernible faults. These should be repaired before the site is open to traffic or as agreed with the purchaser (see section 12).

### 12 Repair

The system can be repaired by reheating the faulty area using hot compressed air, removing the defective material from the road surface and re-applying in accordance with section 11.

### 13 Tests

13.1 Characterisation tests, were carried out on the thermoplastic binder component including:

- softening point (ring and ball)
- density
- flow resistance
- ash content
- tensile strength and elongation (briquette).

13.2 Laboratory performance tests were carried out on the Kestrel Overbanding System in accordance with the requirements of the Guidelines Document, and the results found to be satisfactory. The tests and requirements are given in Table 1.

**Table 1 Laboratory performance tests on the system**

Test	Requirement <sup>(1)</sup>	Method <sup>(2)</sup>
Skid resistance value (SRV)		
initial	≥60	Appendix A, Method 1
retention	≥50	Appendix A, Method 3
Tensile bond (N·mm <sup>-2</sup> ) <sup>(4)</sup>		
control	≥0.5	TRL Report 176, Appendix J
heat aged <sup>(5)</sup>	≥60% of control value	
Wheel tracking		Appendix A, Method 2
spread after wheel tracking (mm) <sup>(3)</sup>	Record	
deformation after wheel tracking (mm) <sup>(3)</sup>	Record	

- (1) Requirements as defined in the Guidelines Document.  
 (2) Test methods are defined in the Guidelines Document.  
 (3) Conducted after the wheel tracking at 50°C.  
 (4) Conducted on both asphalt and concrete substrates.  
 (5) Heat aged for 28 days at 70 ±2°C.

## 14 Investigations

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

14.2 The results of skid resistance tests carried out on the material laid during the installation trial were reviewed and were satisfactory.

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

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

Manual of Contract Documents for Highway Works, Volume 1 *Specification for Highway Works*, Series 700, clause 711 *Overbanding and Inlaid Crack Sealing Systems*, February 2016

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*, February 2016

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

BBA HAPAS *Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways*, October 2010

### 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 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.

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.