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Agrément Certificate  
**10/H160**  
Product Sheet 3

**SAFETRACK CRACK SEALING SYSTEMS FOR HIGHWAYS**

**ULTRAJOINT (GRADE H) INLAID CRACK 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 Ultrajoint (Grade H) Inlaid Crack Sealing System, a bitumen-free, liquid, cold applied, fast-curing reactive resin inlaid repair system used to seal and repair cracks in non-porous bituminous and concrete highways.

**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 Grade H (high modulus) inlaid crack-sealing system of the *Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways* (see section 5).

**Durability** — the system can be used to repair cracks in both longitudinal and transverse directions of the carriageway with a minimum expected life of five 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

Simon Wroe  
Head of Approvals — Materials

Greg Cooper  
Chief Executive

Date of First issue: 13 July 2010

*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.*

# 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 Safetrack Inlaid (Grade H) Crack Sealing System, when applied to a suitable non-porous bituminous or concrete 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 to 2.6) of this Certificate.

## General

The Ultrajoint<sup>(1)</sup> (Grade H) Inlaid Crack Sealing System is installed on behalf of Stirling Lloyd Polychem Ltd in the UK by: LMS Highways Ltd, Unit 8, Signal Buildings, Brunel Road, Newton Abbot TQ12 4FD. Tel: 01626 331771, Fax: 0871 6616727, e-mail: enquiries@lmshighways.co.uk, website: www.lmshighways.co.uk

(1) Ultrajoint is the registered trademark of LMS Highways Ltd.

## Technical Specification

### 1 Description

1.1 Ultrajoint is a bitumen free, liquid, cold applied, fast-curing reactive resin crack sealing system based upon methyl methacrylate technology. This is a thermosetting material which has greater resistance to the softening and spreading effects typical of thermoplastic materials.

1.2 The Ultrajoint (Grade H) Inlaid Crack Sealing System comprises graded aggregates and additional fillers incorporated in a methyl methacrylate resin binder and catalyst, broadcast with a 3 mm high PSV (50+) aggregate to meet skid resistance requirements. Approved aggregates are granite, basalt and calcined bauxite.

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 Ultrajoint can be supplied as a ready mixed slurry system or resin and filler components in various packaging options from 1 kg to 1000 kg.

2.2 Each container is marked with the manufacturer's name, product description and the appropriate hazard and risk labels.

2.3 The components must be stored in tightly sealed containers in a cool, dry, well-ventilated place and kept away from heat, sparks and naked flame. It should also be protected from direct sunlight and the storage temperature must not exceed 25°C.

2.4 If stored correctly in unopened containers in accordance with the Certificate holder's instructions, the components can be stored for up to 12 months.

2.5 The system components are classified under The Chemicals (Hazard Information and Packaging for supply) Regulations 2009 (CHIP4) and bear the appropriate hazard warning label. The flashpoints and classification of the components are given in Table 1.

Table 1 Flashpoint and Hazard Classification of components

Product	Flashpoint (°C)	Classification
Slurry	26	Flammable/Irritant
Resin	21	Highly flammable/Irritant
Catalyst	N/A	Oxidising/Irritant

2.6 Health and Safety Data Sheets should be deposited with the purchaser and maintained on site.

# Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Ultrajoint (Grade H) Inlaid Crack Sealing System.

## Design Considerations

### 3 Use

3.1 Ultrajoint (Grade H) Inlaid Crack Sealing System is satisfactory for use as an inlaid crack sealing system for repair of static and dynamic cracks, typically in excess of 20 mm wide or multiple adjacent cracks, in non-porous bituminous<sup>(1)</sup>, highway surfaces with texture depths not exceeding 2 mm or on concrete highway surfaces.

(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 system can be laid at a minimum of 4 mm depth (with no maximum). The width of the recess must be formed to extend at least 25 mm into the sound surface. The system must be applied in accordance with LMS Highways Ltd method statement and this Certificate.

### 4 Practicability of installation

The system should only be installed by installers who have been trained and approved by the Certificate holder.

### 5 Performance

The results of laboratory performance tests carried out on the binder and on the system complied with the requirements of the Guidelines Document for a Grade H Inlaid system (see section 12, Table for *Laboratory performance tests on the system*). This includes the minimum initial and investigatory skid resistance values of 60 and 50 respectively.

### 6 Maintenance

After installation, maintenance of the system is not required (see section 11 for repair).

### 7 Durability

7.1 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 five 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, and these remain bonded to the road-base, the five 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 and deformation resistance is likely to 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 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 periods (such as in an exceptionally hot summer), then the expected minimum life of the product in the wheel track zone may not be attained.

## Installation

### 8 General

8.1 Installation of the Ultrajoint (Grade H) Inlaid Crack Sealing System must be conducted in accordance with the Installer's Application guideline 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 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 0°C. The system must not be used during periods of continuous or heavy rain (see section 9.3).

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

9.1 The existing surface is mechanically planed-out centrally over the length of the cracks to the required depth. The width of the recess must be formed to extend at least 25 mm into the sound surface.

9.2 The excavated areas are mechanically swept or for small areas hand swept to remove all spoil from the site.

9.3 The area must be dry before application which can be achieved with suitable drying equipment with low heat but high air flow being preferred.

## 10 Application

### Slurry version

10.1 A draw box or similar is required to apply the product. Application is carried out to suit the width of the recess.

10.2 The slurry material must be thoroughly stirred prior to use or splitting.

10.3 The catalyst is then added and mixed thoroughly and the material used immediately.

10.4 The mixed material is then poured immediately into the draw box and pulled over the surface to fill the crack and produce an even band of material.

10.5 Before Ultrajoint starts to gel, it must be completely blinded with dry aggregate.

10.6 Once cured, the area is swept clean of any loose aggregate before the site is re-opened to traffic.

10.7 In all cases, the installer should conduct a visual check for uniform surface texture and any other discernable faults and carry out any remedial work as necessary.

### Resin and filler version

10.8 A draw box or similar is required to apply the product. Application is carried out to suit the width of the recess.

10.9 The catalyst is mixed into the resin prior to mixing in the fillers.

10.5 The mixed material is then poured immediately into the draw box and pulled over the surface to fill the crack and produce an even band of material.

10.6 Before Ultrajoint starts to gel, it must be completely blinded with dry aggregate.

10.7 Once cured, the area is swept clean of any loose aggregate before the site is re-opened to traffic.

10.8 In all cases, the installer should conduct a visual check for uniform surface texture and any other discernable faults and carry out any remedial work as necessary.

## 11 Repair

Damage to the system can be repaired by removing the defective area and re-applying the system in accordance with the Certificate holder's instructions and as described within sections 9 and 10.

# Technical Investigations

## 12 Tests

12.1 Laboratory performance tests were carried out on the Ultrajoint (Grade H) Inlaid Crack Sealing System in accordance with the requirements of the Guidelines Document for Grade H crack sealing systems for highways. The results were satisfactory.

Table 2 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 <sup>(3)</sup>	≥50	Appendix A, Method 3
Rut resistance		Appendix A, Method 4
rate (mm·h <sup>-1</sup> )	≥5	
depth (mm)	≥7	
Tensile bond (N·mm <sup>-2</sup> ) <sup>(4)</sup>		TRL Report 176, Appendix J
control	≥0.5	
heat aged <sup>(5)</sup>	≥60% of control value	
Texture depth (mm)		Appendix A, Method 5
initial	≥1.5	
retention <sup>(3)</sup>	≥0.75	

(1) Requirements for Type H, inlaid 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 *Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways*.

(3) Conducted after the wheel tracking.

(4) Conducted on both asphalt and concrete substrates.

(5) Heat aged 28 days at 70 ±2°C.

### 13 Investigations

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

13.2 A user/specifier survey and visits to existing sites were carried out to assess the system's performance and durability.

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.

13.4 Tests including infra-red analysis, tensile strength and elongation of the resinous methyl methacrylate binder was carried out to characterise the material.

## Bibliography

BS EN ISO 527-1 : 1996 *Methods of testing plastics — Mechanical properties — Determination of tensile properties — General principles*

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

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

## 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.