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HAPAS Certificate

09/H149

Product Sheet 1

JOINTMASTER CRACK SEALING SYSTEM FOR HIGHWAYS

JOINTMASTER IMP (GRADE H) INLAID CRACK SEALING SYSTEM FOR HIGHWAYS

This HAPAS Certificate Product Sheet⁽¹⁾ 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 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 Certificates are normally each subject to a review every three years.
(1) Hereinafter referred to as 'Certificate'.

This Certificate relates to the Jointmaster IMP (Grade H) Inlaid Crack Sealing System for Highways, a high modulus system used to seal and repair static cracks in non-porous bituminous and concrete highways.

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 Grade H (high modulus) inlaid crack-sealing systems of the *Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways* (see section 6).

Durability — the results of tests and an assessment 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 five 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

Date of Second issue: 26 June 2017

Originally certificated on 26 October 2009

Simon Wroe
Head of Approvals – Engineering

Claire Curtis-Thomas
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.*

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Requirements

In the opinion of the BBA, the Jointmaster IMP (Grade H) Inlaid Crack Sealing 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 the requirements.

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, 3.3, 3.4 and 3.6) of this Certificate.

Technical Specification

1 Description

1.1 The Jointmaster IMP (Grade H) Inlaid Crack Sealing System for Highways comprises graded aggregates coated with a polymer-modified bituminous compound, broadcast with a 2 to 3 mm high PSV (60+) aggregate to meet skid resistance requirements. Approved aggregates include granite, basalt and calcined bauxite.

1.2 The system should be used in conjunction with Jointmaster Primer when applied to very porous or dusty concrete surfaces.

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 Manufacture

2.1 The system is 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 being operated by the manufacturer are being maintained.

3 Delivery and site handling

3.1 The Jointmaster IMP compound is supplied in nominal 25 kg silicone-coated paper bags.

3.2 Each bag is stamped with the Certificate holder's name, product name, batch number and manufacture date.

3.3 The aggregates are delivered to site in 25 kg bags.

3.4 Jointmaster Primer is supplied in 5 litre cans.

3.5 The system components must be stored in cool dry conditions and protected from contamination.

3.6 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 Jointmaster IMP (Grade H) Inlaid Crack Sealing System for Highways.

Design Considerations

4 Use

4.1 The Jointmaster IMP (Grade H) Inlaid Crack Sealing System for Highways is satisfactory for use as an inlaid crack-sealing system for repairing cracks, typically in excess of 20 mm wide, or multiple adjacent cracks in non-porous, bituminous⁽¹⁾ highway surfaces with texture depths not exceeding 2 mm, or 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.

4.2 In dynamic cracks, the IMP compound may be used as an infill material to support the application of the Jointmaster JMB Flexible Inlaid Crack Sealing System for Highways, subject of Certificate 07/H126.

4.3 The system can be laid at a nominal depth between 20 and 100 mm, in lifts between 20 and 40 mm.

5 Practicability of installation

Installation of the system must be conducted by approved specialist contractors with experience of this type of system.

6 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 Table 1). This includes the minimum initial and investigatory skid resistance values of 60 and 50 respectively.

7 Maintenance

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

8 Durability

8.1 The results of tests and an assessment of the system'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 five 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, not subject to further movement and remain bonded to the road-base, the five-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 obtained.

Installation

9 General

9.1 Installation of the Jointmaster IMP (Grade H) Inlaid Crack Sealing System for Highways must be conducted in accordance with the Certificate holder's Method Statement and this Certificate.

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 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.

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 existing surface is mechanically planed-out centrally over the length of the cracks to a depth of between 20 and 100 mm. The width of the recess should be formed to extend at least 25 mm into the sound surface.

10.2 The excavated areas are mechanically swept, or for small areas hand swept, to remove all soil from the site.

10.3 The recess is cleaned and dried using hot compressed air.

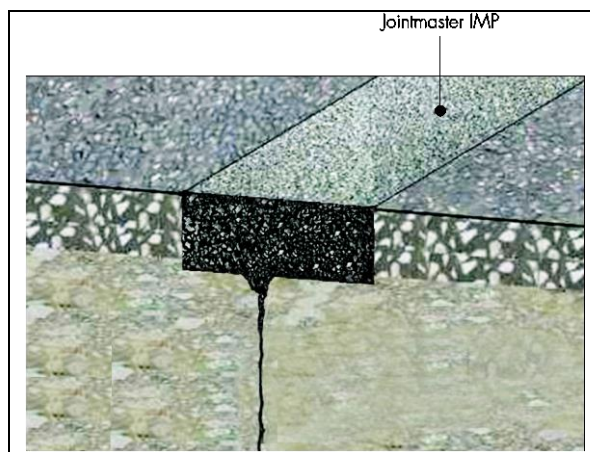
10.4 Porous and/or dusty concrete surfaces should be primed with Jointmaster Primer to enhance adhesion. The primer should be applied and allowed to dry in accordance with the Certificate holder's recommendations.

11 Application

Static Cracks

11.1 The Jointmaster IMP compound is melted down in heated boilers that are agitated by a rotating shaft with paddles at a rate of greater than 6 rpm to a laying temperature of between 180°C and 200°C.

Figure 1 Static crack application



11.2 The molten compound is transferred into the prepared recess, by screed box, to finish flush with the adjacent surface in lifts between 20 and 40 mm.

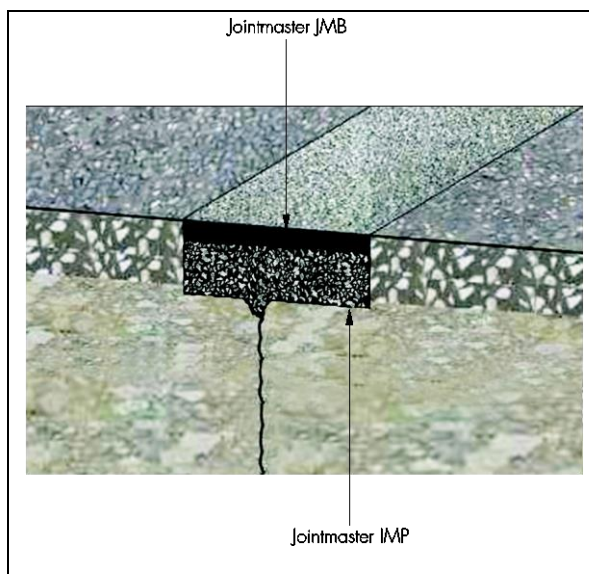
11.3 Whilst the IMP compound is still in a molten state (typically greater than 75°C), a covering of 3 mm aggregate is applied to the surface. If the aggregate is not dry, it should be heated >50°C to dry before application.

11.4 Once the repair has cooled (30 to 120 minutes) the work area is mechanically swept to remove any excess aggregate.

Dynamic Cracks

11.5 Where further movement of the cracks to be sealed is expected, the molten compound is transferred into the prepared recess by screed box, to finish within 10 and 20 mm of the adjacent surface in lifts between 20 and 40 mm.

Figure 2 Dynamic crack application



11.6 Jointmaster JMB, a flexible (Grade F) crack sealing system, is poured into the recess over Jointmaster IMP compound using a screed box to finish flush with the adjacent surface, ensuring that the temperature of the Jointmaster IMP compound is above 25°C. If the temperature of the Jointmaster IMP compound falls below 25°C it can be warmed up using a hot-air lance, taking care not to overheat the compound.

11.7 Whilst the JMB compound is still in a molten state (typically greater than 75°C), a covering of 3 mm aggregate is applied to the surface. If the aggregate is not dry, it should be heated >50°C to dry before application.

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

12 Repair

Damage to the system can be repaired by mechanically planing out the defective area and re-applying the system to the original specification.

Technical Investigations

13 Tests

13.1 Laboratory performance tests were carried out on the Jointmaster IMP (Grade H) Inlaid Crack Sealing System for Highways in accordance with the requirements of the Guidelines Document for Grade H inlaid crack sealing systems. The results were satisfactory.

13.2 Characterisation tests were carried out on the binder, including cone penetration, resilience (control and heat aged) and flow resistance.

13.3 The tests and requirements are given in Table 1.

Table 1 Laboratory performance tests on the system

Test	Requirement⁽¹⁾	Method⁽²⁾
Skid Resistance Value (SRV) initial after rut resistance test	≥60 ≥50	Appendix B, Method 1 Appendix B, Method 3
Rut resistance rate (mm·h ⁻¹) rut depth(mm)	<5 <7	Appendix B, Method 4
Tensile bond (N·mm ⁻²) ⁽³⁾ control heat aged ⁽⁴⁾	≥0.5 ≥60% of control value	TRL Report 176, Appendix J
Texture depth (mm) initial after rut resistance test	≥1.5 ≥0.75	Appendix B, Method 4
Yield strain (%)	>2.5	Appendix B, Method 7

(1) Requirements as defined in the Guidelines Document.

(2) Test methods are defined in the Guidelines Document.

(3) Conducted on both asphalt and concrete substrates.

(4) Heat aged 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 the agreed method statement.

14.2 Existing information and test data on Jointmaster IMP relating to the issue of Certificate 06/H123 was reviewed in the context of this Certificate.

14.3 Existing information and test data on Jointmaster JMB relating to the issue of Certificate 07/H126 was reviewed in the context of this Certificate.

14.4 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

Department for Transport Traffic Signs Manual

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

Manual of Contract Documents for Highway Works (MCHW), Volume 1 *Specification for Highway Works*, Series 700, clause 711

Manual of Contract Documents for Highway Works (MCHW), Volume 2 *Notes for Guidance on the Specification for Highway Works*, Series NG700, clause NG711

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.