

HAPAS

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HAPAS Certificate

12/H189

Product Sheet 1 Issue 4

TUFFGRIP SURFACE COURSE SYSTEMS FOR HIGHWAYS

TUFFGRIP 20 MM SURFACE COURSE SYSTEM

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 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 Tuffgrip 20 mm Surface Course System, an asphalt concrete surface course, for use in new and maintenance road construction on bituminous or concrete substrates.

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

Surface macrotexture — the system complies with Performance Level 3⁽¹⁾ and is satisfactory for use on roads with this requirement (see section 6).

Mechanical resistance — the system is suitable for sites requiring high rut resistance⁽¹⁾ (see section 7).

Water sensitivity — the system has a satisfactory retained stiffness after conditioning in water (see section 8).

Bond to substrate — the system can achieve greater than 400 kPa (see section 9).

Durability — the system will provide a durable surface course (see section 11).

(1) As defined in the *Guideline Document for the Assessment and Certification of Thin Surfacing Systems for Highways, Appendix B*.

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 Fourth issue: 8 November 2019

Originally certificated on 1 October 2012

Brian Moore
Director

Certificate amended on 27 November 2023 to update company details, remove asterisk () relating to manufacturer's Declaration of Performance and update UKCA marking.*

The BBA is a UKAS accredited Inspection Body (No.4345).

This certificate has been amended on 27 November 2023 as part of a transition of The BBA Agrément Certificate scheme delivered under the BBA's ISO/IEC 17020 accreditation. Sections marked with the symbol † are not issued under accreditation.

Readers MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

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Requirements

In the opinion of the BBA, the Tuffgrip 20 mm Surface Course System, if used in accordance with the provisions of this Certificate, will comply with the following requirements of the BBA HAPAS *Guideline Document for the Assessment and Certification of Thin Surfacing Systems for Highways*, when installed at thicknesses between 50 and 75 mm:

- Table B.1 Wheel tracking Performance Level 3
- Table B.2 Surface macrotexture depth levels Performance Level 3
- Table B.4 Two-year performance trial
- Table B.5 Torque bond strength
- Table B.6 Sensitivity to water.

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* of this Certificate.

Additional Information

UKCA marking

The Certificate holder has taken the responsibility of UKCA marking the system in accordance with BS EN 13108-1 : 2016.

Technical Specification

1 Description

1.1 The Tuffgrip 20 mm Surface Course System is an asphalt concrete surface course, consisting of a proprietary polymer-modified bitumen to BS EN 14023 : 2010 with filler, and fine and coarse (nominal size 20 mm) aggregates to BS EN 13043 : 2002.

1.2 The system is used in conjunction with a spray-applied, bitumen emulsion tack coat conforming to BS EN 13808 : 2013, or proprietary bond coat.

1.3 Ancillary items used with the system, but outside the scope of this Certificate, include proprietary cold-applied thixotropic bitumen emulsion or hot jointing bitumen, used for painting cut joints.

2 Manufacture

2.1 The system is manufactured using conventional asphalt production methods.

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 Hanson Quarry Products Europe Ltd t/a Heidelberg Materials has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by CPC (Certificate CP/00189).

3 Delivery and site handling

3.1 The asphalt concrete is delivered to site in bulk, in insulated vehicles.

3.2 Bond and tack coats may be delivered to site either in bulk, by tanker or in 205 litre drums.

3.3 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 Tuffgrip 20 mm Surface Course System.

Design Considerations

4 General

4.1 The Tuffgrip 20 mm Surface Course system is satisfactory for use as a surface course on bituminous or concrete substrates, provided that they are stable and have sufficient loadbearing strength to support the loads imposed during installation and service.

4.2 Guidance on evaluating the condition of an existing surface is provided in the *Design Manual for Roads and Bridges (DMRB)*⁽¹⁾, HD 30/08, 7.3.3.

4.3 Guidance on appropriate surfacing selection is provided in the *DMRB*⁽¹⁾, 7.5.1, CD236 Revision 3. Local Authorities may have different criteria, which should be taken into consideration.

(1) The DMRB is operated by the Overseeing Organisations: Highways England (HE), Transport Scotland, the Welsh Government and the Department for Infrastructure (Northern Ireland).

5 Practicability of installation

The system must be installed only by contractors approved by the Certificate holder, using conventional paving equipment (see the *Installation* part of this Certificate).

6 Surface macrotexture

The system can achieve a mean initial surface macrotexture greater than 1.3 mm, and retained surface macrotexture greater than 0.9 mm. This complies with Performance Level 3 of the Guideline Document, Table B.2, and is suitable for use on roads with this requirement.

7 Mechanical resistance

Resistance to permanent deformation complies with Performance Level 3 of the Guideline Document, Table B.1, and is suitable for sites requiring a high rut resistance.

8 Sensitivity to water

The retained stiffness for the system will not be significantly affected by the presence of water.

9 Bond to substrate

The torque bond strength of the system measured greater than 400 kPa and satisfies the minimum requirement of the Guideline Document, Table B.5.

10 Maintenance

The system is not subject to any routine maintenance requirements. However, any damage must be repaired (see section 16).

11 Durability

When installed in accordance with this Certificate, the system will provide a durable surface course for new and maintenance road construction.

Installation

12 General

12.1 The Tuffgrip 20 mm Surface Course System is installed in accordance with the Certificate holder's installation procedures.

12.2 The system is for application to bituminous or concrete substrates at a nominal layer thickness of between 50 and 75 mm. The minimum thickness at any point must not fall below 45 mm.

12.3 Provided that the substrate is free from standing water or ice and that the minimum rolling temperature can be achieved, the system can be installed at a minimum ambient temperature of -1°C measured on a rising thermometer.

13 Substrate preparation

13.1 The substrate must be prepared in accordance with BS 594987 : 2015, Section 5.

13.2 Application of the polymer-modified bitumen emulsion bond coat must ensure a minimum residual binder content of $0.35 \text{ kg}\cdot\text{m}^{-2}$.

13.3 For small areas and detailing, a polymer-modified bitumen emulsion bond coat must be applied uniformly, using appropriate hand-held equipment.

13.4 The emulsion must be allowed to break (change from brown to black) prior to application of the system.

14 Laying and compaction procedures

14.1 Machine and hand installation must follow the requirements of BS 594987 : 2015, Sections 6.3, 6.4 and 6.7.

14.2 Compaction must follow the requirements of BS 594987 : 2015, Sections 9.2 and 9.3.

14.3 Rolling and compaction must be undertaken immediately after the material has emerged from the paving machine, and above the minimum rolling temperature of 95°C .

15 Joints

15.1 All joints must be prepared in accordance with BS 594987 : 2015, Sections 6.8.1 and 6.8.2. Any joints must be cut to a full depth vertical face, cleaned, and painted with a thick uniform coating of a joint preparation as identified in section 1.3.

15.2 Cold longitudinal joints must be either:

- cut to a full-depth vertical face and painted prior to matching, or
- formed into a chamfer⁽¹⁾ during the laying process and subsequently painted prior to matching.

(1) Chamfers must be at an angle of 70 - 80°, rather than a vertical right angle.

16 Repair

Any damaged areas must be cut back to sound material by planing or other suitable means and replaced with a material appropriate to the location, traffic levels and area of reinstatement. Materials must be selected in agreement with the Certificate holder and the purchaser.

Technical Investigations

17 Tests

An assessment was made of data supplied as part of installation trials and of test data to BS EN 13108-1 : 2016, and in accordance with the Guideline Document, in relation to:

- texture depth
- wheel tracking (resistance to permanent deformation)
- torque bond strength
- visual condition of system installation and performance trial (SIPT)
- water sensitivity.

18 Investigations

18.1 An installation trial was carried out to assess the practicability of the installation and on-site quality control procedures. A visual inspection of the site concluded that it was free from significant abnormalities. Results from the installation confirmed that it complied with the contractual requirements.

18.2 A user/specifier survey relating to existing sites at least two years old was carried out to confirm the system's performance in use.

18.3 The manufacturing process was evaluated by inspection of a typical coating plant, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

18.4 Data gathered from a monitored installation trial showed that, when laid at a nominal thickness of 48 mm on a road of Stress Level 1⁽¹⁾ and estimated Traffic Level⁽²⁾ of 5000 cv/l/d, the system will satisfy the Performance Level 3⁽³⁾ requirement for initial and retained surface macrotexture. The initial texture measured was 3.7 mm and the retained texture was 2.8 mm.

(1) Site Stress Levels are defined in the Guideline Document, Appendix C.

(2) Traffic Levels (cv/l/d) are defined as commercial vehicles/lane/day.

(3) Performance Levels are defined in the Guideline Document, Appendix B.

Bibliography

BS 594987 : 2015 + A1 : 2017 *Asphalt for roads and other paved areas — Specification for transport, laying, compaction and product-type testing protocols*

BS EN 13043 : 2002 *Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas*

BS EN 13108-1 : 2016 *Bituminous mixtures — Material specifications — Asphalt Concrete*

BS EN 13808 : 2013 *Bitumen and bituminous binders — Framework for specifying cationic bituminous emulsions*

BS EN 14023 : 2010 *Bitumen and bituminous binders — Specification framework for polymer modified bitumens*

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

Guideline Document for the Assessment and Certification of Thin Surfacing Systems for Highways, June 2013

HD 30/08 *Design Manual for Roads and Bridges, Volume 7 Pavement Design and Maintenance, Section 3 Pavement Maintenance Assessment, Part 3, Maintenance Assessment Procedure*

CD236 *Design Manual for Roads and Bridges: Volume 7 Pavement Design and Maintenance, Section 5 Surfacing and Surfacing Materials, Part 1 Surface course materials for construction revision 3*

19 Conditions

19.1 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.

19.2 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.

19.3 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.

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

19.5 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 UKCA marking.

19.6 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.