

ROADTECHS' HIGH-FRICTION SURFACING SYSTEM

TECHGRIP RTT1

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 Techgrip RTT1, a high-friction surfacing system for use on 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 complies with the requirements for a Type 1 system in accordance with the *Guidelines Document for the Assessment and Certification of High-Friction Surfaces for Highways*.

Durability — the system, when used in an appropriate location as defined in the *Guidelines Document for the Assessment and Certification of High-Friction Surfaces for Highways*, should have a service life of between 5 and 10 years (see section 7).



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: 8 March 2016

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Chief Executive

Originally certificated on 29 June 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

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 1 (High-Friction Surfacing) have agreed with the BBA the aspects of performance to be used by them in assessing the compliance of high-friction surfacing systems with the Guidelines Document. In the opinion of the BBA, Techgrip RTT1 when applied to suitable bituminous surfaces, in accordance with the provisions of this Certificate, will meet the relevant requirements and is deemed to be of Type 1.

Additional requirements of the overseeing organisations are given in the *Manual of Contract Documents for Highway Works (MCHW)⁽¹⁾, Volumes 1 and 2, Series 900.*

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

Regulations

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, Principal Designer/CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See sections: 3 *Delivery and site handling* (3.1 and 3.2) and 9 *Precautions during installation* of this Certificate.

General

This Certificate relates to Techgrip RTT1, for use as a high-friction surfacing on highways with bituminous surfaces and is classified as Type 1 in accordance with the *Guidelines Document for the Assessment and Certification of High-Friction Surfaces for Highways.*

The system is installed only by BBA Approved Installers.

Technical Specification

1 Description

1.1 Techgrip RTT1 comprises a polymer-modified thermoplastic hydrocarbon binder incorporating a graded nominal 1 mm to 3 mm Chinese calcined bauxite aggregate.

1.2 The system is suitable for application when road surface temperatures are between 0°C and 35°C.

2 Manufacture

2.1 The binder components are manufactured by batch-blending processes.

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 Roadtech Europe Ltd has been assessed and registered as meeting the requirements of ISO 9001 : 2008 by BSI (Certificate FS 553436).

3 Delivery and site handling

3.1 The material is delivered to site in granular form in 25 kg polythene melt bags.

3.2 Pre-weighed pigment sachets are also available where a coloured system is required.

3.3 The components are classified under *The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP4)/Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) 2009.* Suitable personal protective clothing must be appropriate to stop skin contact with hot material (eg gloves and eye protection).

3.4 When stored in accordance with the Certificate holder's instructions the unopened material has a shelf-life of at least 12 months.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Techgrip RTT1.

Design Considerations

4 General

4.1 Techgrip RTT1 is satisfactory for use as a high-friction surfacing on highways with surface texture depths of between 0.5 mm and 2 mm, measured using the sand patch test as defined in BS 598-105 : 2000.

4.2 The system is classified as Type 1, in accordance with the requirements defined in Table 1 of the *Guidelines Document for the Assessment and Certification of High-Friction Surfaces for Highways* and detailed in section 7 of this Certificate.

4.3 The system is suitable for use on bituminous surfaces only. The suitability of the system for use on highways with concrete surfaces and the colour retention of the system have not been assessed and are outside the scope of this Certificate.

5 Practicability of installation

The system must be installed by a BBA Approved Installer⁽¹⁾. Operatives must be trained and approved by the Certificate holder.

(1) See also the *Guidelines Document for the Assessment and Surveillance Scheme for Installers of High-Friction Surfaces for Highways*.

6 Maintenance

The system is not subject to any routine maintenance requirements but any damage must be repaired (see section 13).

7 Durability

7.1 The results of the performance tests and the performance of the system in use indicate that Techgrip RTT1 when used in an appropriate location as defined in the *Guidelines Document for the Assessment and Certification of High-Friction Surfaces for Highways*, should have a service life of between 5 and 10 years (see Table 1).

Table 1 Area⁽¹⁾ of application by type classification

Site category (as defined in HD 28/04)	Site definition	Maximum traffic levels ⁽²⁾ (Type 1)
Q	Approaches to and across major junctions and approaches to roundabouts	3500
G1	Gradient from 5% to 10%, longer than 50 m	
S1	Bend radius <500 m – dual carriageway	
R	Roundabout	
G2	Gradient >10%, longer than 50 m	2500
S2	Bend radius <500 m – single carriageway	
K	Approaches to pedestrian crossing and other high-risk situations	2500

(1) Suitable areas for use of systems classified in accordance with Table 1 of the *Guidelines Document* to give an expected service life of 5 to 10 years.

(2) Commercial vehicles per lane per day.

7.2 If the system is used in other locations or at different traffic levels then the expected life will be increased or decreased in relation to the severity of the site.

Installation

8 General

8.1 The ambient and road surface temperatures should be recorded. Installation should not be carried out if the road surface temperature is outside the range of 0°C to 35°C.

8.2 The Certificate holder is responsible for training and monitoring the BBA Approved Installers to ensure the system is installed in accordance with the BBA agreed Method Statement and this Certificate.

9 Precautions during installation

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 by the approved installer.

10 Preparation

10.1 All faults in the road surface not acceptable to the installer should be reinstated with a material approved by the purchaser in consultation with the installer.

10.2 The road surface must be clean, dry, and free from ice, frost, loose aggregate, oil, grease, road salt and other loose matter likely to impair adhesion of the system to the road surfacing.

10.3 Surface contamination may be removed using any suitable method agreed between the installer and purchaser including grit blasting, high-pressure water jetting, scabbling and hot compressed air. Oil contamination may be removed by washing with a suitable detergent followed by flushing with clean water and dried.

10.4 Existing road markings, iron works and studs must be masked.

10.5 The material is melted and mixed in a suitable boiler, fitted with an agitator. The material is loaded into the boiler and its temperature raised to the application temperature range of between 190°C and 220°C, and mixed until fully homogeneous. The temperature of the mixed material is checked using a long-handled, digital temperature probe accurate to $\pm 2^\circ\text{C}$.

10.6 If the material is to be coloured, the pigment is added to the boiler and mixed until the material is fully homogeneous.

10.7 The molten material can be maintained at the maximum application temperature of 220°C for up to four hours with constant agitation, without serious degradation or discoloration.

10.8 The maximum safe heating temperature is 230°C and the material should not be heated above this as it will lead to degradation of the binder.

11 Application

11.1 The mixed material is discharged from the boiler into buckets and transferred to a screed box.

11.2 The material is applied to the prepared surface using the screed box with a suitably-designed trailing edge to give an applied finish of between 3 mm and 5 mm by combing transversely across the road surface. The aggregate should be evenly distributed to provide a well-textured finish, free from lumps and similar surface blemishes.

11.3 In areas where longitudinal screeding is appropriate this is only permitted when agreed with the client or client's agent/representative.

11.4 On a surface with an average texture depth of 1.5 mm the coverage rate should be between 9 kg·m⁻² and 12.5 kg·m⁻². This coverage rate may need to be increased on a more highly-textured surface.

12 After-care

12.1 All masking is removed and the system allowed to set. During the setting period no disturbance or trafficking of the system is allowed.

12.2 The installer should conduct a visual check on the installation for uniform surface texture, surface blemishes and any discernible faults. Any remedial work should be conducted as necessary.

13 Repair

In the event of damage occurring during the installation or in-service the system must be repaired by:

- marking out the damaged area and squaring with a straight edge
- cutting out the damaged area and preparing the underlying road surface in accordance with sections 10.1 to 10.4 of this Certificate
- masking around the cut area ensuring a 25 mm overlap onto sound material
- applying the system in accordance with section 11 of this Certificate.

14 Tests

Tests were conducted on Techgrip RTT1 and the results assessed to determine:

- scuffing
- texture depth
- erosion index
- effect of heat ageing
- wear
- skid resistance value
- tensile adhesion
- resistance to freeze/thaw
- resistance to diesel
- thermal movement
- low temperature installation test at (0°C).

15 Investigations

15.1 An installation/performance trial was carried out to assess the practicability of the installation and quality control/assurance procedures. The installation was monitored over a two-year period in-service to assess the system's durability. Tests carried out on the installation and on cores taken from the installation at the end of the two year trial period were satisfactory and complied with the requirements for a Type 1 system as defined in Table 4 of the *Guidelines Document for the Assessment and Certification of High-Friction Surfaces for Highways*.

15.2 A visual inspection of the trial installation was conducted by a BBA HAPAS Inspection Panel to visually assess the performance of the system. The installation had been in service for 42 months when inspected by the panel who concluded that the system had performed satisfactorily during the period and was awarded a Performance Level 3 as defined in Table 2 of Appendix F of the *Guidelines Document for the Assessment and Certification of High-Friction Surfaces for Highways*.

15.3 The manufacturing process was examined, including the methods adopted for quality control, and details were obtained of the quality and composition of materials used.

Bibliography

BS 598-105 : 2000 *Sampling and examination of bituminous mixtures for roads and other paved areas — Methods of test for the determination of texture depth*

HD 28/04 *Design Manual for Roads and Bridges : Volume 7, Pavement Design and Maintenance : Section 3, Pavement Maintenance Assessment : Part 1, Skid Resistance*

ISO 9001 : 2008 *Quality management systems – Requirements*

Control of Substances Hazardous to Health Regulations 2002 (COSHH)

Guidelines Document for the Assessment and Certification of High-Friction Surfaces for Highways

Manual of Contract Documents for Highway Works, Volume 1 Specification for Highway Works, Series 900 Road pavements — bituminous bound materials

The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP4)/Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) 2009

16 Conditions

16.1 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.

16.2 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.

16.3 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.

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

16.5 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.

16.6 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.