HAPAS
Roads and Bridges

Adbruf Ltd
Gibbs Marsh Trading Estate
Stalbridge
Dorset DT10 2RX
Tel: 01963 362640 Fax: 01963 363762
e-mail: sales@adbruf.com
website: www.adbruf.com

BBA APPROVAL INSPECTION TESTING CERTIFICATION
TECHNICAL APPROVALS FOR CONSTRUCTION

Agrément Certificate
02/H066
Product Sheet 1

COLDGRIP TYPE 1 HIGH-FRICTION SURFACING 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 Coldgrip Type 1 High-Friction Surfacing System for use on 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 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* (see Table 2).

Durability — when used in an appropriate location as defined in the *Guidelines Document for the Assessment and Certification of High-Friction Surfaces for Highways*, the system should have a service life of between 5 and 10 years (see section 8).

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

Date of First issue: 2 March 2009
Originally certificated on 27 February 2002

Simon Wroe
Head of Approvals — Materials

Greg Cooper
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 of this Agrément Certificate by either referring to the BBA's website (www.bbacerts.co.uk) or contacting the BBA direct.

British Board of Agrément
Bucknalls Lane
Garston, Watford
Herts WD25 9BA
tel: 01923 665300
fax: 01923 665301
e-mail: mail@bba.star.co.uk
website: www.bbacerts.co.uk

HAPAS Requirements

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, the Coldgrip Type 1 High-Friction Surfacing System 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: The Highways Agency (HA), Transport Scotland, The Welsh Assembly Government and The Department for Regional Development (Northern Ireland).

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 sections: 3 *Delivery and site handling* (3.1 and 3.2), 6 *Precautions during installation.*

General

This Certificate relates to the Coldgrip Type 1 High-Friction Surfacing System 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 The Coldgrip Type 1 High-Friction Surfacing System comprises a two-component polyurethane binder and a graded (1 mm to 3 mm) Chinese or Guyanan calcined bauxite aggregate.

1.2 Installation of the system shall only be carried out at a road surface temperature of 0°C to 35°C.

2 Manufacture and quality

The binder components are manufactured by a batch blending process. A series of quality control checks is conducted on each batch. The combinations tested are identified by batch numbers which are recorded on a Certificate of Conformity prior to delivery to site.

3 Delivery and site handling

3.1 The product is delivered to site in 17.5 kg packs, 5 kg packs or in other pack sizes containing the correct proportions of the two components. The product can also be supplied as individual components in bulk containers for use with suitable mechanical metering and mixing equipment.

3.2 A catalyst is also available for use at temperatures below 15°C. The catalyst is supplied in 24 ml and 83 ml quantities for use in 5 kg and 17.5 kg packs respectively.

3.3 The components are classified under *The Chemicals (Hazard Information and Packaging for Supply) Regulations 2002* (CHIP3) and all containers bear the appropriate hazard warning label(s). Flashpoints and hazard classifications are given in Table 1.

Table 1 Flashpoint and hazard classification

Component	Flashpoint (°C)[1]	Classification
Base	>200	Not hazardous
Hardener	>200	Harmful by inhalation
Catalyst C	>150	Toxic Dangerous for the environment

3.4 When stored in accordance with the Certificate holder's instructions the unopened components have 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 the Coldgrip Type 1 High-Friction Surfacing System.

Design Considerations

4 General

4.1 The Coldgrip Type 1 High-Friction Surfacing System 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 Table 2 of this Certificate.

Table 2 Area[1] of application by type classification

Site category (as defined in HD 28/04)	Site definition	Maximum traffic levels (number of commercial vehicles per lane per day)		
		Type 1	2	3
Q	Approaches to and across major junctions and approaches to roundabouts	3500	1000	250
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	750	175
S2	Bend radius <500 m — single carriageway			
K	Approaches to pedestrian crossing and other high-risk situations	2500	500	100

(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.

4.3 Installation of the system must only be carried out at road surface temperatures of between 0°C and 35°C.

4.4 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. Operatives must be trained and approved by the Certificate holder.

6 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.

7 Maintenance and repair

Should the system be damaged or become debonded from the substrate, it may be repaired by cutting the damaged area back to firmly bonded material, squaring off the area to be reinstated, cleaning the prepared area, masking the perimeter and reinstating to the original specification.

8 Durability

8.1 The results of the performance tests and the performance of the system in use indicate that the Coldgrip Type 1 High-Friction Surfacing 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 Table 2).

8.2 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

9 General

9.1 Installation of the Coldgrip Type 1 High-Friction Surfacing System is carried out only by BBA Approved Installers with trained operatives under competent supervision.

9.2 The BBA operates an Approved Installer Scheme(1) for high friction systems under which the installers are approved, registered and regularly reviewed(2) by the BBA to demonstrate that they are competent to carry out installations of the system in accordance with this Certificate. Details of Approved Installers are available on the BBA website and they are responsible for each installation of the system that they undertake.

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

(2) The Certificate holder's and Installer's records relating to the Approval Scheme will be audited annually by the BBA as part of its programme of surveillance.

9.3 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.

10 Preparation

10.1 Any imperfections 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 installer should ensure that the road surface is 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 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.

10.4 If the ambient temperature is between 0°C and 15°C, then the catalyst can be used.

11 Application

11.1 The Coldgrip base component is mixed for at least two minutes using a high-torque drill fitted with a mixing blade. Whilst still mixing, the Coldgrip hardener is slowly added and mixed for at least a further two minutes.

11.2 When the catalyst is required it should be added to the part A component and mixed for at least two minutes prior to the addition of the part B component.

11.3 The mixed binder is spread onto the prepared surface with a serrated squeegee at a minimum coverage rate, which will vary according to the texture and porosity of the surface but shall not be less than 1 kgm^{-2}.

11.4 After the binder is applied, an excess of calcined bauxite aggregate is broadcast over the binder.

11.5 After the binder is sufficiently cured, the excess aggregate is removed by vacuum sweeper or other suitable means.

11.6 Rolling of the aggregate is not permitted.

12 After-care

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

13 Tests

Samples of the Coldgrip Type 1 High-Friction Surfacing System were prepared by the Certificate holder for testing. The tests carried out by, or on behalf of, the BBA are summarised in Tables 3 and 4. The results of the tests comply with the requirements for a Type 1 system.

Table 3 Laboratory performance tests and requirements

Test	Parameter measured	Type 1 requirement	Method in TRL Report 176[1]
Scuffing at 45°C			
initial	Texture depth (mm)	≥1.4	Appendix G
after 500 wheel-passes	Texture depth (mm) Erosion index	≥1.2 ≤3	Appendix G
After heat ageing for 112 days at 70±3°C and 500 wheel-passes	Texture depth (mm) Erosion index	≥1.2 ≤5	Appendix G
Wear			
initial	Texture depth (mm) SRV	≥1.4 ≥65	Appendix H
after 100 000 wheel-passes	Texture depth (mm) Erosion index SRV	≥1.1 ≤3 ≥70	Appendix H
Tensile adhesion	Stress at −10±2°C (Nmm^{-2})	≥1.0	Appendix J
	Stress at 20±2°C (Nmm^{-2})	≥0.5	Appendix J

(1) Including any agreed amendments detailed in Appendix D of the *Guidelines Document for the Assessment and Certification of High-Friction Surfaces for Highways*.

Table 4 Additional tests

Test	Parameter	Result	Method in TRL Report 176[1]
Resistance to freeze/thaw	Texture depth/Erosion index	satisfactory	Appendix L
Resistance to diesel	Texture depth/Erosion index	satisfactory	Appendix M
Thermal movement	Thermal expansion coefficient	satisfactory	Appendix N
Installation temperature test at 0°C	Texture depth/Erosion index	satisfactory	Appendix P

(1) Including any agreed amendments detailed in Appendix D of the *Guidelines Document for the Assessment and Certification of High-Friction Surfaces for Highways*.

14 Investigations

14.1 An installation trial was carried out to assess the practicability of the installation and quality control/assurance procedures.

14.2 A user/specifier survey relating to existing sites, at least two years old, was carried out to assess the system's performance and durability.

14.3 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*

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

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

Manual of Contract Documents for Highway Works, Volume 1 *Specification for Highway Works*, August 1998 (as amended)
Manual of Contract Documents for Highway Works, Volume 2 *Notes for Guidance on the Specification for Highway Works*, August 1998 (as amended)

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

15 Conditions

15.1 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.

15.2 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.

15.3 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 Highways Authorities' Product Approval Scheme.

15.4 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.

15.5 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.

British Board of Agrément
Bucknalls Lane
Garston, Watford
Herts WD25 9BA

tel: 01923 665300
fax: 01923 665301
e-mail: mail@bba.star.co.uk
website: www.bbacerts.co.uk