

Electronic Copy

CI/SfB



Stirling Lloyd Polychem Ltd

Union Bank
King Street
Knutsford
Cheshire WA16 6EF
Tel: 01565 633111 Fax: 01565 633555
e-mail: info@stirlinglloyd.com
website: www.stirlinglloyd.com

12	Y
----	---

H A P A S
Roads and Bridges
Agrément Certificate
No 04/H090

Designated by Government
to issue
European Technical
Approvals

SAFETRACK HW HIGH-FRICTION SURFACING SYSTEM

This Certificate is issued under the Highway Authorities Product Approval Scheme (HAPAS) by the BBA in conjunction with the Highways Agency (acting on behalf of the overseeing organisations of the Department for Transport; the Scottish Executive Development Department; the Welsh Assembly Government; the Department for Regional Development, Northern Ireland), the CSS (formerly 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



- THIS CERTIFICATE RELATES TO THE SAFETRACK HW HIGH-FRICTION SURFACING SYSTEM, COMPRISING A METHYL METHACRYLATE BINDER, THIXOTROPE, HARDENER AND A GRADED (1 mm to 3 mm) CHINESE OR GUYANAN CALCINED BAUXITE AGGREGATE.

- The system is for use as a high-friction surfacing on highways with bituminous and concrete 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.

HAPAS Requirements

1 Requirements

1.1 The Highways Technical Advisory Committee (HiTAC) and HAPAS Specialist Group 1 (High-Friction Surfacing) have agreed with the British Board of Agrément the aspects of performance to be used by the BBA in assessing the compliance of high-friction surfacing systems with the Guidelines Document. In the opinion of the BBA, the Safetrack HW High-Friction Surfacing System, when applied to suitable bituminous and concrete surfaces, in accordance with the provisions of this Certificate, will meet the relevant requirements and is deemed to be of Type 1.

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

Readers are advised to check the validity of this Certificate by either referring to the BBA's website (www.bbacerts.co.uk) or contacting the BBA direct (Telephone Hotline 01923 665400).

Regulations

2 Construction (Design and Management) Regulations 1994 (as amended)

Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See sections: 5 *Delivery and site handling*, (5.1 and 5.2); 7 *Precautions during installation*.

Technical Specification

3 Description

3.1 The Safetrack HW High-Friction Surfacing System comprises a methyl methacrylate resin binder, thixotrope, hardener and a graded (1 mm to 3 mm) Chinese or Guyanan calcined bauxite aggregate.

3.2 The system is available in summer and winter grades. The winter grade is suitable for application when road surface temperature is at and above 0°C.

4 Manufacture and quality control

The binder is manufactured by a batch-blending process. A series of quality control checks is conducted on each batch. The packaged product is identified by a unique batch number which is recorded on a Certificate of Conformity prior to delivery to site.

5 Delivery and site handling

5.1 The product is delivered to site in 27 kg or 10.8 kg packs. Each pack also includes a pre-weighed sachet of thixotrope and hardener.

5.2 The components are classified under the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP3) and the packaging bears 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
Binder	17	Highly flammable and irritant
Hardener	n/a	Irritant and oxidising

(1) Closed cup.

5.3 When stored in accordance with the Certificate holder's instructions the unopened product has a shelf-life of at least six months.

Design Data

6 General

6.1 The Safetrack HW 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 : 1990.

6.2 The system is classified as Type 1, in accordance with the results of the performance tests as defined in Table 1 of the *Guidelines Document for the Assessment and Certification of High-Friction Surfaces for Highways* and detailed in Table 3.

6.3 Installation of the system should be carried out only when the road surface temperature is between 0°C and 40°C.

6.4 The in-service colour retention of the system has not been assessed and is outside the scope of this Certificate.

7 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.

8 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, cleaning the prepared area, masking the perimeter and reinstating to the original specification.

9 Durability

9.1 The results of the performance tests and the performance of the system in use indicate that the Safetrack HW 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).

Table 2 Area⁽¹⁾ of application by type classification

Site category (as defined in HD 28/94)	Site definition	Maximum traffic levels (number of commercial vehicles per lane per day)		
		Type 1	Type 2	Type 3
F	Approaches to and across major junctions (all limbs)	3500	1000	250
G1	Gradient — from 5% to 10%, longer than 50 m	2500	750	175
H1	Bend — not subject to 40 mph or lower speed limit, radius from 100 m to 250 m			
L	Roundabout	2500	500	100
G2	Gradient — >10%, longer than 50 m			
H2	Bend — not subject to 40 mph or lower speed limit, radius < 100 m			
J/K	Approach to hazard, such as roundabout, traffic signals, pedestrian crossing, railway level crossing			

(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.

9.2 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

10 General

10.1 Installation of the Safetrack HW High-Friction Surfacing System is carried out only by BBA Approved Installers⁽¹⁾ with trained operatives under competent supervision.

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

10.2 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.

11 Preparation

11.1 All 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.

11.2 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.

11.3 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 40°C.

12 Application

12.1 The Safetrack HW resin binder is mixed using a high-torque drill fitted with a mixing blade until fully homogenised. Add the pre-weighed quantity of thixotrope and mix thoroughly for at least 30 seconds. Whilst still mixing, the pre-weighed quantity of hardener is slowly added, until thoroughly dispersed.

12.2 The mixed binder is spread onto the prepared surface with a serrated squeegee at a minimum coverage rate 1.8 kgm⁻² on an unfilled substrate. Coverage rate will vary according to the texture depth and porosity of the surface.

12.3 After the binder is applied, calcined bauxite aggregate is broadcast to excess over the binder.

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

12.5 Rolling of the aggregate is not permitted.

13 Aftercare

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.

The following is a summary of the technical investigations carried out on the Safetrack HW High-Friction Surfacing System.

14 Tests

Laboratory performance tests were carried out on the system (see Tables 3 and 4).

15 Investigations

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

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

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.

Table 4 Additional tests

Test	Parameter	Method in TRL Report 176 ⁽¹⁾	Result
Resistance to freeze/thaw	Texture depth Erosion index	Appendix L	satisfactory
Resistance to diesel	Texture depth Erosion index	Appendix M	satisfactory
Thermal movement	Thermal expansion coefficient	Appendix N	satisfactory
Installation temperature test at 0°C	Texture depth Erosion index	Appendix P	satisfactory
Installation temperature test at 40°C	Texture depth Erosion index	Appendix P	satisfactory
Concrete substrate test	Texture depth Erosion index Tensile adhesion at 20 ± 2°C	Appendix P	satisfactory

(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 3 Laboratory performance tests

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

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

Bibliography

BS 598-105 : 1990 *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 28/94 *Design Manual for Roads and Bridges : Volume 7, Pavement Design and Maintenance : 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*

Conditions of Certification

16 Conditions

16.1 This Certificate:

- (a) relates only to the product that is described, installed, used and maintained as set out in this Certificate;
- (b) is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Certificate;
- (c) is valid only within the UK;
- (d) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- (e) is copyright of the BBA;
- (f) is subject to English law.

16.2 References in this Certificate to any Act of Parliament, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers'

instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

16.3 This Certificate will remain valid for an unlimited period provided that the product and the manufacture and/or fabrication including all related and relevant processes thereof:

- (a) are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA;
- (b) continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine;
- (c) are reviewed by the BBA as and when it considers appropriate; and
- (d) remain in accordance with the requirements of the Highway Authorities Product Approval Scheme.

16.4 In granting this Certificate, the BBA is not responsible for:

- (a) the presence or absence of any patent or similar rights subsisting in the product or any other product;
- (b) the right of the Certificate holder to market, supply, install or maintain the product; and
- (c) the nature or standard of individual installations of the product or any maintenance thereto, including methods and workmanship.

16.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do 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 or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future 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 installation and use of this product.



In the opinion of the British Board of Agrément, the Safetrack HW High-Friction Surfacing System is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 04/H090 is accordingly awarded to Stirling Lloyd Polychem Ltd.

On behalf of the British Board of Agrément

A handwritten signature in black ink, appearing to read 'P. Q. Newson'.

Date of issue: 9th March 2004

Chief Executive