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Agrément Certificate

**04/H100**

Product Sheet 1

## TEXSURF THIN SURFACING SYSTEM FOR HIGHWAYS

### TEXSURF 14 mm THIN 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 Texsurf 14 mm Thin Surfacing System.

#### 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

**Texture depth** — complies with requirements for a Level 3 system in accordance with Appendix B<sup>(1)</sup> (see section 5).

**Wheel tracking** — complies with requirements for a Level 3 system in accordance with Appendix B<sup>(1)</sup> (see section 6).

**Sensitivity to water** — test data has been recorded and is considered to be satisfactory as defined in Table 2<sup>(1)</sup> (see section 7).

**Bond to substrate** — test data has been recorded and is considered to be satisfactory as defined in Table 2<sup>(1)</sup> (see section 8).

**Noise** (optional test) — test data for the high-speed road influence indicates that the system will tend to reduce noise levels as defined in Table 3<sup>(1)</sup> (see section 9).

**Durability** — the system has been used in the United Kingdom since 2000 and available evidence indicates that it will provide a durable surface course suitable for use on highways (see section 11).

(1) Of the Guidelines Document for the Assessment and Certification of Thin Surfacing Systems for Highways.



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: 3 August 2009

Simon Wroe

Greg Cooper

Originally certificated on 16 November 2004

Head of Approvals — Materials

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](http://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.*

# HAPAS Requirements

## Requirements

The Highways Technical Advisory Committee (HiTAC) and HAPAS Specialist Group 3 (Thin Surfacing) have agreed with the BBA the aspects of performance to be used by them in assessing the compliance of Thin Surfacing Systems with the *Guidelines Document for the Assessment and Certification of Thin Surfacing Systems for Highways*. In the opinion of the BBA, the Texsurf 14 mm Thin Surfacing System, when manufactured and laid in accordance with the provisions of this Certificate, can achieve the Performance Levels given in section 5, *Texture depth* and section 6, *Wheel tracking*.

## 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 section: 2 *Manufacture, quality control, delivery and site handling* (2.2 and 2.3).

## General

The Certificate holder operates an Approved Installer Scheme for the Texsurf Thin Surfacing System under which installers are trained, approved, registered and regularly reviewed by the Certificate holder to demonstrate that they are competent to carry out installation of the system in accordance with this Certificate. Details of Approved Installers are available from the Certificate holder.

The Certificate holder's records relating to the ongoing maintenance of their Approved Installer Scheme will be audited by the BBA as part of its regular programme of surveillance.

## Technical Specification

### 1 Description

1.1 The Texsurf 14 mm Thin Surfacing System comprises a mixture consisting of either a polymer-modified binder (Olexobit 100, Polyflex 65 or Polysurf) or 40/60 grade bitumen with cellulose fibres, limestone filler, and graded fine and coarse aggregates (gritstones).

1.2 The system is used in conjunction with K1-60, Neoflex or Interflex bond coat.

1.3 The system is laid at nominal thicknesses between 25 mm and 40 mm, covering Classification Type C as defined in Table 1 of the *Guidelines Document for the Assessment and Certification of Thin Surfacing Systems for Highways*.

### 2 Manufacture, quality control, delivery and site handling

2.1 The system is manufactured, controlled and delivered in accordance with a BBA agreed Quality Plan which includes requirements for:

- binder
- aggregate selection and approval
- plant suitability
- method of production and process control
- inspection and testing of finished product
- delivery vehicles.

2.2 The bond coat may be delivered to site either in bulk by tanker or in 200 kg drums.

2.3 The system is not classified under *The Chemicals (Hazard Information and Packaging for Supply) Regulations 2002* (CHIP3). Standard material safety data sheets for hot asphalts apply.

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Texsurf 14 mm Thin Surfacing System.

## 3 General

- 3.1 The Texsurf 14 mm Thin Surfacing System is satisfactory for use as a thin surfacing system on highways.
- 3.2 The system can be applied to a bituminous or concrete substrate provided the underlying layers of pavements are stable and have sufficient load-spreading capabilities to support the imposed loading during installation and service.
- 3.3 The system is suitable for application to highway surfaces at a minimum temperature of 5°C, measured on a rising thermometer, provided the substrate is free from standing water or ice and that the minimum specified rolling temperature can be maintained in accordance with the Certificate holder's installation procedures.

## 4 Practicability of installation

The system is installed only by contractors approved by the Certificate holder using conventional paving equipment.

## 5 Texture depth

5.1 The system, when manufactured and laid in accordance with the provisions of this Certificate, can be designed to achieve the Performance Levels for texture depths given in Table 1.

Test parameter	Performance Level achieved <sup>(1)</sup>	Requirement
Texture depth	3	
untrafficked (mm)		≥1.3
after two years of trafficking (mm)		≥1.0

(1) Performance Levels are defined in Appendix B of the Guidelines Document.

5.2 An installation showed that, when laid at a nominal thickness of 30 mm on a road of Stress Level 1<sup>(1)</sup> and estimated Traffic Level of 433 cv/l/d<sup>(2)</sup>, the system will meet Performance Level 3<sup>(3)</sup> requirement for initial and retained texture.

(1) Site Stress Levels are defined in Appendix C of the Guidelines Document.

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

(3) Performance Levels are defined in Appendix B of the Guidelines Document.

5.3 The results of the trial when assessed in accordance with Appendix C of the Guidelines document, indicate that the system is suitable for use to achieve Performance Level 3 for texture on sites with Traffic Level of  $C_{max}$ :

Site Stress Level 1	3000 cv/l/d	Site Stress Level 2	1500 cv/l/d
Site Stress Level 3	1000 cv/l/d	Site Stress Level 4	700 cv/l/d

## 6 Wheel tracking

The system, when manufactured and laid in accordance with the provisions of this Certificate, can be designed to achieve the Performance Levels for wheel tracking given in Table 2.

Test parameter	Performance Level achieved <sup>(1)</sup>	Requirement
Wheel tracking	3	
rate (mean/max individual) (mm h <sup>-1</sup> )		≤5.0/≤7.5
rut depth (mean/max individual) (mm)		≤7.0/≤10.5

(1) Performance Levels are defined in Appendix B of the Guidelines Document.

## 7 Sensitivity to water

The retained stiffness for the system using the approved binders and aggregate has been recorded in accordance with the Guidelines Document. The mean results fall within the range of 107% to 127% (see Tables 3 and 7 in the *Technical Investigations* part of this Certificate).

## 8 Bond to substrate

The torque bond strength for the system using the approved bond coats has been recorded in accordance with the Guidelines Document. The mean result was 734 kPa (see Table 3 in the *Technical Investigations* part of this Certificate).

## 9 Noise

The road surface influence for the system has been recorded on an installation in accordance with the Guidelines Document. The mean result was -3.8 dB(A) (see Table 8 in the *Technical Investigations* part of this Certificate).

## 10 Maintenance

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

## 11 Durability

The system has been used in the United Kingdom since 2000 and available evidence indicates that it will provide a durable surface course suitable for use on all classes of road.

# Installation

## 12 General

The Texsurf 14 mm Thin Surfacing system is installed by contractors approved by the Certificate holder in accordance with their installation procedures which include requirements for:

- site approval procedure
- limitations in respect of weather
- equipment
- installation procedures
- maintenance and repairs
- storage, handling and delivery
- substrate preparation
- on-site quality control records
- joints.

## 13 Repair

### Major repairs

13.1 The damaged area is removed by planing, to provide a length of at least 1.5 m for resurfacing. The planed area is resurfaced using material to the same specification in accordance with the Certificate holder's installation procedures.

### Minor repairs

13.2 Minor repairs can be carried out by cutting out the damaged section and replacing it with a material of suitable specification agreed between the Certificate holder and the purchaser.

13.3 Where possible, a diamond patch reinstatement should be used that extends a minimum of 0.25 m beyond the damaged section.

13.4 Joints must be saw cut, cleaned and painted with a thick uniform coating of hot bitumen.

# Technical Investigations

## 14 Tests

### Mandatory laboratory and road tests

14.1 A series of tests was carried out on a mixture based on gritstone aggregate, 40/60 grade bitumen and K1-60 bond coat laid on the Hillhall Road, near Lisburn, Northern Ireland. The results of the tests are given in Tables 3 and 4.

Table 3 Mandatory laboratory tests carried out on the coarse aggregate, cores taken from the Hillhall Road installation trial of Texsurf 14 mm or on laboratory-prepared samples of the same mixture recipe

Test	Mean result	Performance Level	Method
Coarse aggregate properties			
PSV	65	n/a	BS 812-114
AAV	5.4	n/a	BS 812-113
Wheel tracking at 60°C <sup>(1)</sup>			Guidelines Document, Appendix A.1
rate (mm h <sup>-1</sup> )	0.8	3	
rut depth (mm)	1.8		
Sensitivity to water			Guidelines Document, Appendix A.2
retained stiffness (ITSM <sub>c3</sub> ) <sup>(2)</sup> (%)	107	n/a	
Torque bond strength at 20±2°C			Guidelines Document, Appendix A.3
on 98 mm diameter cores (kPa)	734 <sup>(3)</sup>	n/a	

(1) Mean core thickness = 34 mm.

(2) Retained indirect stiffness modulus at 20±0.5°C after three water conditioning cycles carried out on laboratory-prepared samples.

(3) Mainly interface shear between the system and substrate.

n/a = Not applicable

**Table 4 Mandatory checks and tests carried out on the Hillhall Road installation**

Test	Mean result	Requirement	Method
Texture depth initial (mm)	2.9	≥1.3	BS 598-105
after two years of trafficking (mm)	1.5	≥1.0	
Visual observations	Good uniform surface with no significant faults or abnormalities noted		

### Monitored performance trial

14.2 The installation on the Hillhall Road was the subject of a performance trial. It was monitored over a two-year period and subject to a visual assessment after two years. The results are given in Table 5.

**Table 5 Results of panel inspection on the Hillhall Road, near Lisburn, Northern Ireland**

Section assessed	Panel mark <sup>(1)</sup>	Assessed level
Westbound towards Lisburn	E (no discernable fault)	6

(1) The inspection procedure is defined in Appendix A.10 of the Guidelines Document.

### Additional tests

14.3 A series of tests was carried out to confirm the performance of the system in relation to wheel tracking. The results of the tests are given in Table 6.

**Table 6 Test on Texsurf 14 mm**

Test	Mean result		Method
	Binder <sup>(1)</sup>	Binder <sup>(2)</sup>	
Wheel tracking at 60°C rate (mm h <sup>-1</sup> )	0.7	0.35	Guidelines Document, Appendix A.1
rut depth (mm)	2.2	1.1	

(1) Using Polyflex 65 binder with a mean thickness of 50 mm.

(2) Using Polysurf binder with a mean thickness of 49 mm.

14.4 Supporting test data for wheel tracking using Olexobit 100 binder indicate satisfactory performance.

14.5 A series of tests was carried out to confirm the performance of the system in relation to sensitivity to water. The results of the tests are given in Table 7.

**Table 7 Test on Texsurf 14 mm**

Test	Mean result	Method
Sensitivity to water retained stiffness (ITSM <sub>c3</sub> ) <sup>(1)</sup> (%)	120 <sup>(2)</sup> and 27 <sup>(3)</sup>	Guidelines Document, Appendix A.2

(1) Retained indirect stiffness modules at 20 ± 0.5°C after three water conditioning cycles carried out on laboratory-prepared samples.

(2) Using Polyflex 65 binder and gritstone aggregate.

(3) Using Polysurf binder and gritstone aggregate.

14.6 Supporting test data for using Olexobit 100 binder and gritstone aggregate indicate satisfactory performance.

### Optional tests

14.7 A test was carried out to confirm the performance of the system in relation to noise. The results of the test are given in Table 8.

**Table 8 Test on the A1 between Culcavy road and Dromore road using Texsurf 14 mm**

Test <sup>(1)</sup>	Mean result <sup>(2)</sup>	Method
Noise RSI <sub>H</sub> [dB(A)]	-3.8 <sup>(3)</sup>	Statistical pass-by method Guidelines Document, Appendix A.8

(1) Age of site when tested (14 months).

(2) Mixture using 40/60 grade bitumen and gritstone aggregate.

(3) Mean result of two measurements -3.8 and -3.7.

14.8 Noise levels will be affected by site specific conditions including location and the condition of existing road and therefore the RSI<sub>H</sub> values determined for the A1 between Culcavy road and Dromore road may not be reproduced on other installations.

## 15 Investigations

15.1 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.

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

15.3 The manufacturing process was examined by inspection of a typical coating plant, including the methods adopted for quality control, and details were confirmed of the quality and composition of materials used. The inspection confirmed that the plant operated in accordance with the requirements of the Quality Plan and Quality System agreed with the BBA.

## 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*

BS 812-113 : 1990 *Testing aggregates — Method for determination of aggregate abrasion (AAV)*

BS 812-114 : 1989 *Testing aggregates — Method for determination of the polished-stone value Guidelines Document for the Assessment and Certification of Thin Surfacing Systems for Highways, July 2004*

## 16 Conditions

16.1 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.

16.2 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.

16.3 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.

16.4 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.

16.5 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.

