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HAPAS Certificate

23/H6940

Product Sheet 1 Issue 1

NORTHSTONE MATERIALS THIN SURFACING SYSTEMS FOR HIGHWAYS

NORTHFLEX 14 mm AND WARM NORTHFLEX 14 mm THIN SURFACE COURSE SYSTEMS

This Product Sheet⁽¹⁾ is issued by the British Board of Agrément (BBA). The Highways Authorities Product Approval Scheme (HAPAS) is supported by National Highways (NH) (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.

(1) Hereinafter referred to as 'Certificate'.

This Certificate relates to NORTHFLEX 14 mm and Warm NORTHFLEX 14 mm Thin Surface Course Systems, stone mastic asphalts for use as a surface course on new and maintenance road construction, in accordance with the *Manual of Contract Documents for Highway Works (MCHW)*, Volumes 1 *Specification for Highway Works (SHW)*, Series 900, Clauses 908 and 942.



The BBA has awarded this Certificate to the company named above for the systems described herein. These systems have been assessed by the BBA as complying with the requirements of the BBA HAPAS Certification Scheme according to the assessments set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 18 December 2023

Certificate amended on 8 February 2024 to update section 4.4.14.

Hardy Giesler
Chief Executive Officer

This BBA HAPAS Certificate is issued under the BBA's accreditation to ISO/IEC 17065 (UKAS accredited Certification Body Number 0113).

Clauses marked † are additional information outside the scope of accreditation.

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

The Certificate should be read in full as it may be misleading to read clauses in isolation.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

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1 Product Description

1.1 The Certificate holder specifies the systems under assessment, NORTHFLEX 14 mm and Warm NORTHFLEX 14 mm Thin Surface Course Systems, as polymer-modified asphalts in accordance with BS EN 13108-1 : 2006, consisting of polymer-modified bitumen to BS EN 14023 : 2010, limestone filler, and fine and coarse aggregates to BS EN 13043 : 2002. The systems are for use as thin surface course systems in accordance with the requirements of the MCHW⁽¹⁾, Volume 1 SHW, Series 900, Clause 942, for a high-speed road and the requirements of Clause 908 for warm mix asphalt.

(1) The MCHW is operated by National Highways (NH) (acting on behalf of the Overseeing Organisations of the Department for Transport; Transport Scotland; the Welsh Government and the Department for Infrastructure, Northern Ireland)

1.2 The systems are available as hot mix and warm mix variants.

1.3 The systems are used in conjunction with a spray-applied, bitumen emulsion conforming to BS EN 13808 : 2013, or a proprietary polymer-modified bitumen emulsion bond coat.

1.4 The Certificate holder recommends the following ancillary items for use with the systems, but these materials have not been assessed by the BBA and are outside the scope of this Certificate:

- joint preparation — hot-applied 40/60 penetration bitumen to BS EN 12591 : 2009 or a cold-applied, thixotropic bitumen emulsion, for use on all cut joints
- tack coat — C40 B 4 (K1-40) bitumen emulsion tack coat conforming to BS EN 13808 : 2013, for use on small areas not accessible by machine application.

2 Requirements

Requirements for these systems are outlined in the BBA HAPAS Certification Scheme Document and have been established from the following specification documents.

- the MCHW, Volume 1, Series 900, Clauses 908 and 942
- the *Design Manual for Roads and Bridges* (DMRB⁽¹⁾)
 - CD 227 Design for Pavement Maintenance.
 - CD 236 Surface Course Materials for Construction.
- PD 6691 : 2022 *Guidance on the use of BS EN 13108, Bituminous mixtures — Material specifications*.

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

3 Summary of Product Assessment

The systems were assessed on the basis of the following characteristics in accordance with HAPAS requirements.

3.1 Physical properties

Table 1 Physical properties

System assessed	Assessment method	Requirement	Outcome
NORTHFLEX 14 mm and Warm NORTHFLEX 14 mm	Visual inspection (SiPT)	Good or Excellent at opening to traffic Good or Excellent 12 months after opening to traffic Good or Excellent 24 months after opening to traffic	Pass
	Bond to substrate to MCHW, Volume 1, Series 900, clause 951	≥ 400 kPa	Pass
	Resistance to permanent deformation (WTS_{AIR}) to BS EN 12697-22 : 2003	PD 6691 : 2022, Table B.4	Pass
	Sensitivity to water ($ITSR_{MIN}$) to BS EN 12697-12 : 2018 (Method A)	The MCHW, Volume 1, Series 900, Clauses 908, Table 9/1B and 942.9 ≥ 70 ≥ 80 (warm mix)	Pass
	Road Surface Influence (RSI_H) to ISO 11819-1 : 2001, Sections 7 and 8	The MCHW, Volume 1, Series 900, Clause 942.34, Table 9/17	Level 3
	Initial surface macrotexture depth - upper (D) aggregate size of 14mm to BS EN 13036-1 : 2010	The MCHW, Volume 1, Series 900, Clause 942, Table 9/12 1.3 – 1.8 mm	Pass
	Surface macrotexture depth - trafficked - upper (D) aggregate size of 14 mm to BS EN 13036-1 : 2010	The MCHW, Volume 1, Series 900, Clause 942, Table 9/14 > 0.9 mm	Pass

The assessment showed that the systems comply with HAPAS requirements for these characteristics.

3.2 Durability

When installed in accordance with this Certificate, the systems will provide a durable surface course for new and maintenance road construction, in accordance with the MCHW, Volume 1, SHW, Series 900, Clauses 942.19 and 942.20, and Table 9/12, for high-speed roads.

4 Summary of Process Assessment

Manufacturing process and quality control	Complies with HAPAS requirements
Delivery and site handling	Complies with HAPAS requirements
Installation	Complies with HAPAS requirements

4.1 Manufacture

4.1.1 The BBA has undertaken the following tasks for the assessment of product manufacture and has established that the manufacture complies with BBA HAPAS Certification Scheme requirements:

- the BBA has recorded and evaluated the manufacturer's documentation on the methods adopted for quality control procedures and product testing against HAPAS requirements
- the BBA has assessed the quality control operated over batches of incoming materials and formulations against HAPAS Requirements
- the BBA has evaluated the process for management of non-conforming work
- the BBA has audited the production process and verified that it is in accordance with the documented process
- the BBA has checked that equipment has been properly tested and calibrated.

4.1.2 The BBA has undertaken to review 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.

† 4.1.3 The management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by BSI (Certificate FM 796415).

4.2 Delivery and site handling

† 4.2.1 The Certificate holder stated that the systems are delivered to site in bulk in insulated vehicles. Bond and tack coats may be delivered to site either in bulk by tanker or in 205-litre drums.

4.3 Design

4.3.1 NORTHFLEX 14 mm and Warm NORTHFLEX 14 mm Thin Surface Course Systems can be designed to satisfy or contribute to satisfying the relevant requirements of the MCHW, Volume 1 SHW, Series 900, Clause 942, for a high-speed road and the requirements of the Clause 908 for warm mix asphalt.

4.3.2 The systems are satisfactory for use on bituminous or concrete substrates, provided they are stable and have sufficient loadbearing strength to support the loads imposed during installation and service.

4.3.3 Guidance on evaluating the condition of an existing surface is provided in the DMRB, CD 227 *Design for Pavement Maintenance*.

4.3.4 Guidance on appropriate surfacing selection is provided in the DMRB, CD 236 *Surface Course Materials for Construction*.

4.4 Installation

4.4.1 The Certificate holder's instructions for installation of the systems were confirmed as meeting the BBA HAPAS Certification Scheme requirements.

4.4.2 To achieve the performance described in this Certificate, the systems must be installed in accordance with the Certificate holder's installation procedures, BS 594987 : 2015 and this Certificate.

4.4.3 To achieve the performance described in this Certificate, the systems must be applied to bituminous or concrete substrates at a nominal layer thickness of between 35 and 50 mm in depth on roads installed in accordance with the MCHW, Volume 1, SHW, Series 900, Clause 942, Table 9/11.

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

4.4.5 A polymer-modified bitumen emulsion bond coat is spray-applied to achieve a minimum $0.3 \text{ kg}\cdot\text{m}^{-2}$ residual bitumen on concrete and 0.15 to $0.35 \text{ kg}\cdot\text{m}^{-2}$ on bitumen substrates.

4.4.6 For small areas and detailing, bitumen emulsion tack coat can be applied leaving a uniform coating, using appropriate hand-held equipment.

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

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

4.4.9 Compaction must follow the requirements of BS 594987 : 2015, Sections 9.2 and 9.3 and the Certificate holder's installation method statement.

4.4.10 Rolling and compaction must commence as soon as possible above the minimum rolling temperature for the hot and warm mix variant.

4.4.11 For the hot mix variant, the minimum rolling temperature must not fall below 130°C.

4.4.12 For the warm mix variant, the minimum rolling temperature must not fall below 115°C.

4.4.13 The substrate must be free from standing water or ice and the minimum rolling temperature must be observed. The systems must not be installed below the minimum ambient temperature of -1°C measured on a rising thermometer.

4.4.14 To achieve the performance described in this Certificate, installation of the systems must be carried out by operatives approved by the Certificate Holder.

4.5 Maintenance

4.5.1 The Certificate holder advises the systems are not subject to any routine maintenance requirements. However, any damage must be repaired.

4.5.2 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 and area of re-instatement. Materials must be selected in agreement with the Certificate holder and the purchaser.

5 Fulfilment of Requirements

5.1 The conclusion of this BBA assessment is that NORTHFLEX 14 mm and Warm NORTHFLEX 14 mm Thin Surface Course Systems, when used in accordance with the provisions of this Certificate comply with the BBA HAPAS Certification Scheme requirements.

5.2 In order for the systems to continue to meet Scheme requirements, they must be installed, used and maintained as per the manufacturer's instructions and as detailed in the Certificate.

6 Validity of Certificate

Continuing validity of this Certificate is dependent on the following factors:

- continuing compliance with product or process requirements, as described in the HAPAS Scheme document, and the specification documents referred to therein
- ongoing BBA surveillance of factory production control, to verify that the specifications and quality control being operated by the manufacturer are being maintained
- formal triennial Review of the Certificate, and if required, Reissue for required technical or non-technical updates
- compliance with ongoing Certificate obligations by the Certificate holder and manufacturer(s).

† 7 Additional 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.

CLP Regulations

The Certificate holder has taken the responsibility of classifying and labelling the system components under the *GB CLP Regulations* and the *CLP Regulations (EC) No 1272/2008 - Classification and Labelling and Packaging of Substances and Mixtures*. Users must refer to the relevant Safety Data Sheet(s).

UKCA Marking

The Certificate holder has taken the responsibility of UKCA marking the systems in accordance with Designated Standard EN 13108-1 : 2006.

CE Marking

The Certificate holder has taken the responsibility of CE marking the systems in accordance with harmonised European Standard EN 13108-1 : 2006.

8 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 12591 : 2009 *Bitumen and bituminous binders — Specifications for paving grade bitumens*

BS EN 12697-12 : 2003 *Bituminous mixtures — Test methods for hot mix asphalt — Determination of the water sensitivity of bituminous specimens*

BS EN 12697-22 : 2003 *Bituminous mixtures — Test methods for hot mix asphalt — Wheel tracking*

BS EN 13036-1 : 2010 *Road and airfield surface characteristics — Test methods — Measurement of pavement surface macrotexture depth using a volumetric patch technique*

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

BS EN 13108-1 : 2006 *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*

CD 227 *Design Manual for Roads and Bridges : Design for Pavement Maintenance, Revision 0, (03/20)*

CD 236 *Design Manual for Roads and Bridges : Surface course materials for construction, Revision 4.1.0, (12/22)*

ISO 11819-1 : 2001 *Acoustics — Measurement of the influence of road surfaces on traffic noise — Statistical pass-by method*

Manual of Contract Documents for Highway Works, Volume 1 Specification for Highway Works, Series 900 Road pavements — bituminous bound materials (07/21).

PD 6691 : 2022 *Guidance on the use of BS EN 13108, Bituminous mixtures — Material specifications*

9 Conditions of Certification

9.1 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.

9.2 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.

9.3 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.

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

9.5 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 and CE marking.

9.6 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.

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