

## TARMAC SURFACE COURSE SYSTEMS FOR HIGHWAYS

### ULTIPAVE AND ULTIPAVE WARM SINGLE LAYER SURFACE COURSE SYSTEMS

This HAPAS Certificate Product Sheet<sup>(1)</sup> is issued by the British Board of Agrément (BBA), supported by National Highways (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. HAPAS Certificates are normally each subject to a review every three years.

(1) Hereinafter referred to as 'Certificate'.

This Certificate relates to the ULTIPAVE and ULTIPAVE Warm Single Layer Surface Course Systems, stone mastic asphalts for use in new and maintenance road construction on bituminous or concrete substrates.

#### 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

**Surface macrotexture** — the systems comply with Performance Level 3<sup>(1)</sup> and is satisfactory for use on roads with this requirement (see section 6).

**Mechanical resistance** — the systems are suitable for sites requiring high rut resistance<sup>(1)</sup> (see section 7).

**Water sensitivity** — the systems comply with category ITSRmin70 for the hot mix variant and ITSRmin80 for the warm mix variant (see section 8).

**Bond to substrate** — the systems have a satisfactory bond to concrete and asphalt substrates (see section 9).

**Durability** — the systems will provide a durable surface course (see section 11).

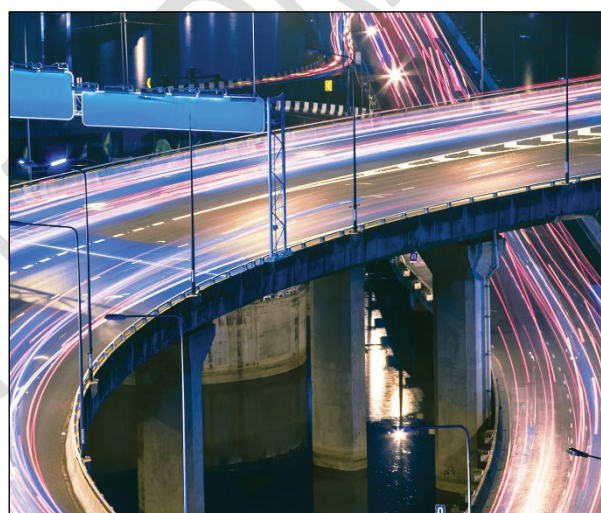
(1) As defined in the *Guideline Document for the Assessment and Certification of Thin Surfacing Systems for Highways*, Appendix B.

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 being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Eighth issue: 20 October 2022

Originally certificated on 20 November 2005  
Certificate amended on 4 November 2022 to correct the minimum rolling temperature in section 14.5.



Hardy Giesler  
Chief Executive Officer

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

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

## Requirements

In the opinion of the BBA, the ULTIPAVE and ULTIPAVE Warm Single Layer Surface Course Systems, if used in accordance with the provisions of this Certificate, will comply with the following requirements of the BBA HAPAS *Guideline Document for the Assessment and Certification of Thin Surfacing Systems for Highways*, when installed at thicknesses between 50 and 100 mm:

- Table B.1 *Wheel tracking Performance Level 3*
- Table B.2 *Surface macrotexture depth levels Performance Level 3*
- Table B.6 *Sensitivity to water.*

## 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.

See section: *3 Delivery and site handling* of this Certificate.

## Technical Specification

### 1 Description

1.1 The ULTIPAVE and ULTIPAVE Warm Single Layer Surface Course Systems are stone mastic asphalt surface courses, consisting of a paving grade bitumen to BS EN 12591 : 2009, cellulose fibres, limestone filler, and fine and coarse aggregates (nominal size 20 mm) to BS EN 13043 : 2002. ULTIPAVE is a hot mix asphalt and ULTIPAVE Warm is a warm mix asphalt.

1.2 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.

1.3 Ancillary items used with the systems include:

- 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 conforming to BS EN 13808 : 2013, for use on small areas not accessible by machine application.

### 2 Manufacture

2.1 ULTIPAVE is manufactured using conventional asphalt production methods. ULTIPAVE Warm is manufactured under the same conventional methods as ULTIPAVE, however it is produced at reduced temperatures, classified as WMA, by the use of chemical additives.

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 being operated by the manufacturer are being maintained.

2.3 The management system of Tarmac Trading Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by BSI (Certificate FM 503516).

### 3 Delivery and site handling

3.1 Bond and tack coats are delivered to site either in bulk by tanker or in 205 litre drums.

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

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the ULTIPAVE and ULTIPAVE Warm Single Layer Surface Course Systems.

## Design Considerations

### 4 Use

4.1 The ULTIPAVE and ULTIPAVE Warm Single Layer Surface Course Systems are satisfactory for use as a surface course on bituminous or concrete substrates, provided they are stable and have sufficient loadbearing strength to support the loads imposed during installation and service.

4.2 Guidance on evaluating the condition of an existing surface is provided in the *Design Manual for Roads and Bridges (DMRB)*<sup>(1)</sup>, CD 227 *Design for Pavement Maintenance*, Revision 0 (03/20).

4.3 Guidance on appropriate surfacing selection is provided in the DMRB, CD 236 *Surface Course Materials for Construction*, Revision 4.0.1 (07/21). Local Authorities may have different criteria which should be taken into consideration.

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

### 5 Practicability of installation

The systems are installed using conventional paving equipment only by contractors approved by the Certificate holder (see the *Installation* part of this Certificate).

### 6 Surface macrotexture

The systems can achieve a mean initial surface macrotexture greater than 1.3 mm and retained surface macrotexture greater than 0.9 mm. This complies with Performance Level 3 of Table B.2 of the Guideline Document and is suitable for roads with this requirement.

### 7 Mechanical resistance

The systems has a rut rate and depth that is classified as Class 2 in accordance with PD 6691 : 2022, Annex D, Table D.2, and is suitable for very heavily stressed sites requiring very high rut resistance.

### 8 Water sensitivity

The systems comply with category ITSRmin70 for the hot mix variant and ITSRmin80 for the warm mix variant.

## 9 Bond to substrate

The torque bond strength for the systems is measured greater than 200 kPa on concrete and 300 kPa on an asphalt substrate.

## 10 Maintenance

The systems are not subject to any routine maintenance requirements. However, any damage must be repaired as quickly as possible (see section 16).

## 11 Durability

When installed in accordance with this Certificate, the systems will provide a durable surface course for new and maintenance road construction.

## Installation

### 12 General

12.1 The ULTIPAVE and ULTIPAVE Warm Single Layer Surface Course Systems are installed in accordance with the Certificate holder's installation procedures.

12.2 The systems can be applied to bituminous or concrete substrates at a nominal layer thickness of between 50 and 100 mm. The minimum thickness at any point must not fall below 45 mm.

12.3 Provided the substrate is free from standing water or ice and the minimum rolling temperature can be achieved, the systems can be installed at a minimum air temperature of -1°C measured on a rising thermometer.

### 13 Substrate preparation

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

13.2 Bitumen emulsion tack coat or bond coat is spray-applied to achieve a minimum 0.3 kg·m<sup>-2</sup> residual bitumen on concrete and 0.15 to 0.35 kg·m<sup>-2</sup> on asphalt substrates.

13.3 For small areas and detailing, bitumen emulsion tack coat must be applied uniformly, using appropriate hand-held equipment.

13.4 The emulsion must be allowed to break prior to the application of the systems.

### 14 Laying and compaction procedures

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

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

14.3 Rolling and compaction must commence as soon as possible above the minimum rolling temperature.

14.4 For ULTIPAVE, the minimum rolling temperature must not fall below 130°C. This must be identified by the Certificate holder prior to the commencement of installation.

14.5 For ULTIPAVE Warm the minimum rolling temperature must not fall below 100°C. This must be identified by the Certificate holder prior to the commencement of installation.

## 15 Joints

15.1 All joints must be prepared in accordance with BS 594987 : 2015, Sections 6.8.1 and 6.8.2. Any joints must be saw cut to a full depth vertical face, cleaned, and painted with a thick uniform coating of a joint preparation as identified in section 1.3.

15.2 Cold longitudinal joints must be either:

- cut to a full-depth vertical face and painted prior to matching, or
- formed into a chamfer during the laying process and subsequently painted prior to matching. Chamfers must be at an angle of 70 to 80° rather than a vertical right angle.

15.3 Hot longitudinal joints may be hot matched, provided that the temperature of the earlier laid mat is at least 120°C for ULTIPAVE and at least 90°C for ULTIPAVE Warm.

## 16 Repair

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-statement. Materials must be selected in agreement with the Certificate holder and the purchaser.

## Technical Investigations

### 17 Tests

An assessment was made of data supplied as part of installation trials and of test data to BS EN 13108-5 : 2006, and in accordance with the *Guideline Document for the Assessment and Certification of Thin Surfacing Systems for Highways* in relation to:

- texture depth
- wheel tracking (resistance to permanent deformation)
- torque bond
- visual condition of system installation and performance trial (SIPT)
- water sensitivity.

### 18 Investigations

18.1 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.

18.2 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.

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

18.4 Data gathered from an installation trial showed that, when laid at a nominal thickness of 60 mm on a road of Stress Level 1<sup>(1)</sup> and estimated Traffic Level<sup>(2)</sup> of 6688 cv/l/d, the system will meet the Performance Level 3<sup>(3)</sup> requirement for initial and retained surface macrotexture. The initial texture measured was 1.8 mm and retained texture was 1.2 mm.

(1) Site Stress Levels are defined in the Guideline Document, Appendix C.

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

(3) Performance Levels are defined in the Guideline Document, Appendix B.

18.5 The BBA carried out additional visits to existing sites to confirm satisfactory visual performance of the system.

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

BS EN 13108-5 : 2006 *Bituminous mixtures — Material specifications — Stone Mastic Asphalt*

BS EN 13808 : 2013 *Bitumen and bituminous binders — Framework for specifying cationic bituminous emulsions*

BS EN ISO 9001 : 2015 *Quality management systems — Requirements*

*Guideline Document for the Assessment and Certification of Thin Surfacing Systems for Highways*, May 2013

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 4.0.1 (07/21)

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

### 19 Conditions

#### 19.1 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.

19.2 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.

19.3 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.

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

19.5 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.

19.6 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.