

## Miles Macadam Ltd

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**Agrément Certificate**

**88/1969**

Product Sheet 1 Issue 5

### MILES MACADAM GROUTED MACADAMS

### HARDICRETE HEAVY DUTY SURFACING

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Hardicrete Heavy Duty Surfacing, a grouted macadam surface course, for use as a heavy-duty industrial surfacing in locations such as warehouses, cargo handling areas, bus depots and airport hard standings and maintenance areas.

(1) Hereinafter referred to as 'Certificate'.

#### The assessment includes

##### Product factors:

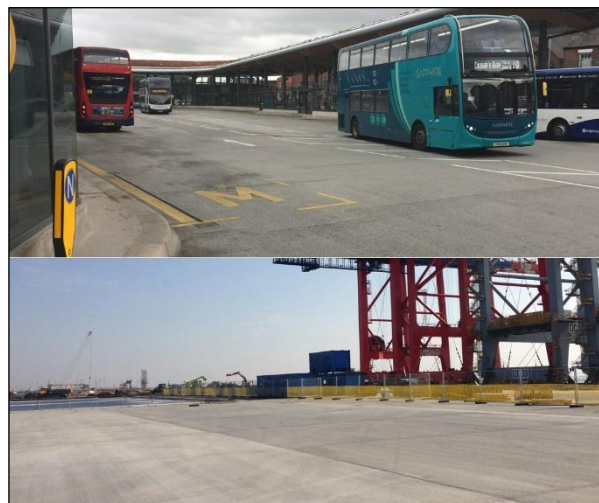
- compliance with Building Regulations
- compliance with additional regulatory or non-regulatory information where applicable
- evaluation against technical specifications
- assessment criteria and technical investigations
- uses and design considerations

##### Process factors:

- compliance with Scheme requirements
- installation, delivery, handling and storage
- production and quality controls
- maintenance and repair

##### Ongoing contractual Scheme elements†:

- regular assessment of production
- formal 3-yearly review



#### KEY FACTORS ASSESSED

- Section 1. Mechanical resistance and stability
- Section 2. Safety in case of fire
- Section 3. Hygiene, health and the environment
- Section 4. Safety and accessibility in use
- Section 5. Protection against noise
- Section 6. Energy economy and heat retention
- Section 7. Sustainable use of natural resources
- Section 8. Durability

The BBA has awarded this Certificate to the company named above for the product described herein. This product 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 Fifth issue: 4 February 2025

Originally certified on 8 January 1988

Hardy Giesler  
Chief Executive Officer

*This BBA Agrément Certificate is issued under the BBA's Inspection Body accreditation to ISO/IEC 17020. Sections marked with † are not issued under accreditation.*

*The BBA is a UKAS accredited Inspection Body (No. 4345), Certification Body (No. 0113) and Testing Laboratory (No. 0357).*

*Readers MUST check that this is the latest issue of this Agrément Certificate by either 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.*

#### British Board of Agrément

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## SUMMARY OF ASSESSMENT AND COMPLIANCE

This section provides a summary of the assessment conclusions; readers should refer to the later sections of this Certificate for information about the assessments carried out.

### Compliance with Regulations

Having assessed the key factors, the opinion of the BBA is that Hardicrete Heavy Duty Surfacing, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations:



#### The Building Regulations 2010 (England and Wales) (as amended)

<b>Requirement:</b>	<b>B5(2)</b>	<b>Access and facilities for the fire service</b>
<b>Requirement:</b>	<b>H6(2)</b>	<b>Solid waste storage</b>
<b>Requirement:</b>	<b>M1</b>	<b>Access and use</b>
<b>Requirement:</b>	<b>M2</b>	<b>Access to extensions to buildings other than dwellings</b>
<b>Comment:</b>		The product will contribute to satisfying these Requirements. See section 1 of this Certificate.
<b>Regulation:</b>	<b>7(1)</b>	<b>Materials and workmanship</b>
<b>Comment:</b>		The product is acceptable. See sections 8 and 9 of this Certificate.



#### The Building (Scotland) Regulations 2004 (as amended)

<b>Regulation:</b>	<b>8(1)(2)</b>	<b>Fitness and durability of materials and workmanship</b>
<b>Comment:</b>		The product is acceptable. See sections 8 and 9 of this Certificate.
<b>Regulation:</b>	<b>9</b>	<b>Building standards – construction</b>
<b>Standard:</b>	<b>2.12</b>	<b>Fire and rescue service access</b>
<b>Comment:</b>		The product will contribute to satisfying this Standard, with reference to clauses 2.12.0 <sup>(1)(2)</sup> , 2.12.2 <sup>(1)(2)</sup> and 2.12.3 <sup>(1)(2)</sup> . See section 1 of this Certificate.
<b>Standard:</b>	<b>3.25</b>	<b>Solid waste storage</b>
<b>Comment:</b>		The product will contribute to satisfying this Standard, with reference to clauses 3.25.1 <sup>(1)</sup> and 3.25.3 <sup>(1)</sup> . See section 1 of this Certificate.
<b>Standard:</b>	<b>4.1</b>	<b>Access to Buildings</b>
<b>Comment:</b>		The product will contribute to satisfying this Standard, with reference to clause 4.1.4 <sup>(1)(2)</sup> . See section 1 of this Certificate.
<b>Regulation:</b>	<b>12</b>	<b>Building standards – conversion</b>
<b>Comment:</b>		All comments given for the product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 <sup>(1)(2)</sup> and Schedule 6 <sup>(1)(2)</sup> .

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).



#### The Building Regulations (Northern Ireland) 2012 (as amended)

<b>Regulation:</b>	<b>23(1)(a)(i)(ii)</b>	<b>Fitness of materials and workmanship</b>
<b>Comment:</b>	<b>(iii)(iv)(b)(i)</b>	The product is acceptable. See sections 8 and 9 of this Certificate.

<b>Regulation:</b>	<b>37</b>	<b>Facilities and access for the Fire and Rescue Service</b>
<b>Regulation:</b>	<b>62</b>	<b>Solid waste storage</b>
<b>Regulation:</b>	<b>91</b>	<b>Access and use</b>
<b>Regulation:</b>	<b>92</b>	<b>Access to extensions</b>
<b>Comment:</b>		The product will contribute to satisfying these Regulations. See section 1 of this Certificate.

## Fulfilment of Requirements

The BBA has judged Hardicrete Heavy Duty Surfacing to be satisfactory for use as described in this Certificate. The product has been assessed as a grouted macadam surface course, for use as a heavy-duty industrial surfacing in locations such as warehouses, cargo handling areas, bus depots and airport hard standings and maintenance areas.

## ASSESSMENT

### Product description and intended use

The Certificate holder provided the following description for the system under assessment. Hardicrete Heavy Duty Surfacing consists of:

- a 0/14 mm open-graded surface course support layer comprising a penetration-grade bitumen to BS EN 12591 : 2009, coarse and fine aggregates to BS EN 13043 : 2002 graded to give a controlled proportion of air voids to accommodate the polymer-modified cement grout
- a grout comprising Portland cement, polymer, fine mineral aggregate and water. Optional plasticising and anti-foaming agents may also be included.

#### Ancillary Items

A spray-applied, bitumen emulsion tack coat or bond coat conforming to BS EN 13808 : 2013 is essential to use with the product and has been assessed with the product.

#### Applications

Provided the existing surface is stable and able to accept the expected traffic loading without cracking or undue deflection, the product can be used:

- directly over new bitumen macadam, hot-rolled asphalt and lean or pavement-quality concrete in accordance with normal construction practice, for example CD 226 : 2020
- directly over existing sound, level concrete or asphalt
- with a regulating layer<sup>(1)</sup>, over an existing irregular concrete or asphalt base.

(1) The regulating layer is outside the scope of this Certificate.

The product is able to sustain the abrasion and loading caused by industrial traffic (including steel-wheeled and tracked vehicles in consultation with the Certificate holder), heavy commercial vehicles, public service vehicles or aircraft in such locations as warehouses, cargo handling areas, bus depots and airfields (hard standings and maintenance areas).

## Product assessment – key factors

The system was assessed for the following key factors, and the outcome of the assessment is shown below. Conclusions relating to the Building Regulations apply to the whole of the UK unless otherwise stated.

### 1 Mechanical resistance and stability

Data were assessed for the following characteristics.

#### 1.1 Strength and stability

1.1.1 The result of a strength and stability test is given in Table 1.

*Table 1 Strength and stability*

Product assessed	Assessment method	Requirement	Result
Hardicrete Heavy Duty Surfacing	Wheel tracking to BS EN 12697-22 : 2020, Procedure B at 60°C	Value achieved to PD 6691 : 2022, Table D2	Class 2

1.1.2 On the basis of data assessed, the product is able to sustain the abrasion and loading likely to be encountered in service and is suitable for heavily stressed sites requiring very high rut resistance.

### 2 Safety in case of fire

Not applicable.

### 3 Hygiene, health and the environment

Not applicable.

### 4 Safety and accessibility in use

Not applicable.

### 5 Protection against noise

Not applicable.

### 6 Energy economy and heat retention

Not applicable.

### 7 Sustainable use of natural resources

Not applicable.

### 8 Durability

8.1 The potential mechanisms for degradation and the known performance characteristics of the materials in the product were assessed.

8.2 Specific test data were assessed as given in Table 2.

**Table 2 Durability**

Product assessed	Assessment method	Requirement	Outcome	
Hardicrete Heavy Duty Surfacing	Compressive strength to BS EN 1250-1 : 2019, BS EN 12390-1 : 2012, BS EN 12390-3 : 2019 and BS EN 12390-7 : 2019 at 28 days	Value achieved	15.8 N·mm <sup>2</sup>	
	Flexural strength to BS EN 12390-5 : 2019 at 28 days	Value achieved	11.1 N·mm <sup>2</sup>	
	Indirect Tensile Stiffness Modulus (ITSM) to BS EN 12697-26 : 2018	at 10°C	Value achieved	14,320 MPa
		20°C		8,657 MPa
		30°C		4,907 MPa
	Indirect Tensile Strength (ITS) to BS EN 12697-12 : 2018	Value achieved	90%	
	Resistance to fuel (ITS) to BS EN ISO 2812-1 : 2017	Ultra Diesel	Value achieved	Reduction of 16.7% in tensile strength after 72 hours
		aviation fuel (Jet A1)		Reduction of 27% in tensile strength after 72 hours

8.2.1 A visual inspection was made of existing sites, which confirmed satisfactory performance in service.

### 8.3 Service life

Under normal service conditions, the product will have a service life in excess of conventional asphalt surfacing, provided it is designed, installed and maintained in accordance with this Certificate and the Certificate holder’s instructions.

## PROCESS ASSESSMENT

Information provided by the Certificate holder was assessed for the following factors:

### 9 Design, installation, workmanship and maintenance

#### 9.1 Design

9.1.1 The design process was assessed by the BBA, and the following requirements apply in order to satisfy the performance specified in this Certificate.

9.1.2 The product does not require expansion joints and can accommodate the limited movement to be expected in a flexible pavement construction.

9.1.3 Where abnormal chemical spillage is expected, the advice of the Certificate holder must be sought, but such advice is outside the scope of this Certificate.

9.1.4 Where it is laid over an existing concrete surface, any joints must be retained in the product to avoid reflective cracking. Alternatively, where the joints are not retained, the product can be laid over an asphaltic reinforcement geosynthetic and regulating course. The Certificate holder must be consulted for details, but such advice is outside the scope of this Certificate.

9.1.5 The product’s chemical resistance is similar to concrete.

9.1.6 The product is particularly suitable for vehicle (including aircraft) maintenance areas, where there is the possibility of spillage of fuel, oil and hydraulic fluids.

## 9.2 Installation

9.2.1 Installation instructions provided by the Certificate holder were assessed and judged to be appropriate and adequate.

9.2.2 Installation must be carried out in accordance with this Certificate and the Certificate holder's instructions.

9.2.3 Hardicrete Heavy Duty Surfacing receiving course must be laid directly onto existing clean, sound, firm and acceptably level concrete or asphalt surfaces to ensure that the minimum specified thickness of the receiving course is achieved.

9.2.4 The design for construction should be in accordance with accepted techniques, for example: those stipulated in CD 226 : 2020.

9.2.5 Where the existing base is irregular, an intermediate regulating layer of asphalt will be required.

9.2.6 The grout is mixed on site using a mixer unit at the rear of the mobile grout production/laying unit. Care must be taken to prevent settlement of the fine aggregates.

9.2.7 The areas to which the grouted macadam is to be applied must be clearly defined by the purchaser prior to commencement of work on-site.

9.2.8 An initial site survey to assess the suitability of the surface must be carried out. Where applicable this site survey must be carried out in accordance with BS 594987 : 2015.

9.2.9 The receiving course is applied and compacted by traditional surfacing techniques, in accordance with BS 594987 : 2015, and allowed to cool to below 40°C before grouting. Laying of the product must not be carried out when the air temperature reaches 0°C on a falling thermometer, except in ambient, dry conditions. Laying must cease if the air temperature reaches -3°C, if there is standing water, ice or snow present or during periods of heavy rain.

9.2.10 The receiving course must not be opened to traffic before the grout is applied and subsequently cured. Along with the curing times given in section 9.2.18, the ambient conditions must be considered when deciding on the time to commence trafficking. Any areas accidentally damaged or contaminated must be removed and replaced.

9.2.11 Painting of vertical faces between and along receiving course laying joints is to be avoided. Doing so will inhibit the penetration of the grout.

9.2.12 Grout is applied to the surface of the support coat from the mixing and transport receptacle. The grout can be laid as soon as the receiving course has cooled to below 40°C.

9.2.13 Grout movement through the matrix is either by natural percolation or additional vibration using a vibrating plate or vibrating roller.

9.2.14 Spread rates for the grout are controlled by monitoring the coverage versus the tonnage of grout being used.

9.2.15 Depending on the contract requirement the finish can be either brushed by hand or machine (tractor brush).

9.2.16 If grouting of the whole area cannot be completed within a working day, the area to be treated must be divided into suitably smaller areas and the edges masked.

9.2.17 A 0/2 mm granite can be applied to the surface of the system at a nominal spread rate of 0.5 kg·m<sup>-2</sup>.

9.2.18 The curing time of the grout varies with atmospheric conditions, but the following minimum periods before use by different types of traffic must be observed:

- pedestrians 12 hours
- cars 1 day
- lorries, standing loads, possibility of oil spillage 7 days.

9.2.19 Where exceptional loads (eg point loading from trailer jockey wheels or stands) or chemical spillage are expected, longer curing periods may be necessary. The Certificate holder's advice must be sought in these situations, but such advice is outside the scope of this Certificate.

### 9.3 Workmanship

Practicability of installation was assessed by the BBA, on the basis of the Certificate holder's information and a site visit to witness an installation in progress. To achieve the performance described in this Certificate, installation of the cementitious grout must be carried out by the Certificate holder.

### 9.4 Maintenance and repair

9.4.1 Ongoing satisfactory performance of the product in use requires that it is suitably maintained. The guidance provided by the Certificate holder was assessed by the BBA and found to be appropriate and adequate.

9.4.2 The following requirements apply in order to satisfy the performance assessed in this Certificate:

9.4.2.1 Where conditions are very severe (eg areas where steel-wheeled or tracked vehicles regularly turn or reverse), localised damage may take place. This must be repaired promptly by patching, under the guidance of the Certificate holder.

9.4.2.2 In the event that the surfacing is damaged during installation or service, it must be repaired by removing the damaged area and re-applying the surfacing in accordance with the procedure detailed in section 9.2.

## **10 Manufacture**

10.1 The production processes for the product have been assessed, and provide assurance that the quality controls are satisfactory according to the following factors:

10.1.1 The manufacturer has provided documented information on the materials, processes, testing and control factors.

10.1.2 The quality control operated over batches of incoming materials has been assessed and deemed appropriate and adequate.

10.1.3 The quality control procedures and product testing to be undertaken have been assessed and deemed appropriate and adequate.

10.1.4 The process for management of non-conformities has been assessed and deemed appropriate and adequate.

10.1.5 An audit of each production location was undertaken, and it was confirmed that the production process was in accordance with the documented process, and that equipment has been properly tested and calibrated.

† 10.2 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.

## **11 Delivery and site handling**

11.1 The Certificate holder stated that the receiving course is delivered to site in insulated and sheeted vehicles in accordance with BS 594987 : 2015.

11.2 The cementitious powder for the grout is delivered in 750 kg pre-mixed bulk bags.

Supporting information in this Annex is relevant to the product but has not formed part of the material assessed for the Certificate.

### 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 product under the *GB CLP Regulation* and *CLP Regulation (EC) No 1272/2008 - classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

### Management Systems Certification for production

The management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 and BS EN ISO 14001 : 2015 by BM TRADA (Certificates 12988 and 3500 respectively).

## Bibliography

BS 594987 : 2015 + A1 : 2017 *Asphalt for roads and other paved areas — Specification for transport, laying, compaction and type testing protocols*

BS EN 12697-22 : 2020 + A1 : 2023 *Bituminous mixtures — Test methods — Wheel tracking*

BS EN 12504-1 : 2019 *Testing concrete in structures — Cored specimens — Taking, examining and testing in compression*

BS EN 12390-1 : 2012 *Testing hardened concrete — Shape, dimensions and other requirements for specimens and moulds*

BS EN 12390-3 : 2019 *Testing hardened concrete — Compressive strength of test specimens*

BS EN 12390-7 : 2019 *Testing hardened concrete — Density of hardened concrete*

BS EN 12390-5 : 2019 *Testing hardened concrete — Flexural strength of test specimens*

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

BS EN 12697-26 : 2018 + A1 : 2022 *Bituminous mixtures — Test methods — Stiffness*

BS EN 12697-12 : 2018 *Bituminous mixtures — Test methods — Determination of the water sensitivity of bituminous specimens*

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

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

BS EN ISO 2812-1 : 2017 *Paints and varnishes — Determination of resistance to liquids — Immersion in liquids other than water*

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

BS EN ISO 14001 : 2015 *Environmental management systems — Requirements with guidance for use*

DMRB, Pavement CD 226 : 2020 *Design for new pavement construction (formerly HD 26/06). Version 0.1.0 (11/21)*

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

## Conditions of Certificate

### Conditions

1 This Certificate:

- relates only to the product 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
- 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
- and any matter arising out of or in connection with it or its subject matter (including non-contractual disputes or claims) is governed by and construed in accordance with the law of England and Wales.
- the courts of England and Wales shall have exclusive jurisdiction to settle any matter arising out of or in connection with this Certificate or its subject matter (including non-contractual disputes or claims).

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.

3 This Certificate will be displayed on the BBA website, and the Certificate Holder is entitled to use the Certificate and Certificate logo, provided that the product 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.

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

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 or any other product
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product
- actual installations of the product, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to UKCA marking and CE marking.

6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product which is contained or referred to in this Certificate is the minimum required to be met when the product 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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