

COLAS COLD-APPLIED ULTRA-THIN SURFACING SYSTEMS FOR HIGHWAYS

RALUMAC RMT COLD-APPLIED ULTRA-THIN SURFACING SYSTEM

This HAPAS Certificate Product Sheet⁽¹⁾ is issued by the British Board of Agrément (BBA), supported by Highways England (HE) (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 Ralumac RMT Cold-Applied Ultra-Thin Surfacing System, for use as a surface course on new and maintenance road construction.

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 system is designed to comply with the initial and retained texture depth requirements for a cold-applied ultra-thin surfacing system in accordance with the MCHW, Volume 1 SHW, Clause 942, incorporating Interim Advice Note 154/12, Clause 921, Tables 9/3SR and NG 9/32, and is satisfactory for use on roads with this requirement (see section 6).

Bond to substrate — the system can achieve greater than 400 kPa and is satisfactory for use on roads with this requirement (see section 7).

Durability — the system can be designed to provide a durable surface course that will meet the MCHW, Volume 1 SHW, Clause 942 requirements for texture depth and bond strength (see section 9).

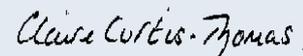


The BBA has awarded this Certificate to the company named above for the system described herein. This system has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément



Paul Valentine
Technical Excellence Director



Claire Curtis-Thomas
Chief Executive

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Originally certificated on 1 May 2012

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
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.
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Requirements

In the opinion of the BBA, the Ralumac RMT Cold-Applied Ultra-Thin Surfacing System, when assessed in accordance with the BBA HAPAS *Guideline Document for the Assessment and Certification of Thin Surfacing System for Highways* and used in accordance with the provisions of this Certificate, will meet or contribute to meeting requirements of the *Manual of Contract Documents for Highways Works (MCHW)*⁽¹⁾, Volume 1 *Specification for Highways Works (SHW)*, Series 900, Clause 942, incorporating Interim Advice Note 154/12.

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

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* (3.2) of this Certificate.

Additional Information

CE marking

The Certificate holder has taken the responsibility of CE marking the system in accordance with harmonised European Standards BS EN 12273 : 2008. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

The Ralumac RMT Cold-Applied Ultra-Thin Surfacing System comprises:

- Ralumac 6 mm Base Coat — consisting of a proprietary polymer-modified bitumen emulsion with water, graded coarse and fine aggregates, filler and break control additive
- Ralumac 10 mm Top Coat — consisting of a proprietary polymer-modified bitumen emulsion with water, graded coarse and fine aggregates, filler, fibres and break control additive.

2 Manufacture

2.1 The system is manufactured on site and applied using a purpose built mixer/spreader unit.

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 Colas Limited has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by BSI (Certificate Q06036).

3 Delivery and site handling

3.1 All materials are delivered and stored in appropriate bulk transport at a location close to the site.

3.2 The Certificate holder has taken the responsibility of classifying and labelling the system components under *the CLP Regulation (EC) No 1272/2008 on the Classification, 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 Ralumac RMT Cold-Applied Ultra-Thin Surfacing System.

Design Considerations

4 Use

4.1 The Ralumac RMT Cold-Applied Ultra-Thin Surfacing System can be designed to meet or contribute to meeting the relevant installed requirements of the MCHW, Volume 1 SHW, Series 900, Clause 942, incorporating Interim Advice Note 154/12.

4.2 The system is 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 Guidance on evaluating the condition of an existing surface is provided in *Design Manual for Roads and Bridges (DMRB)*⁽¹⁾, HD 30/08, 7.3.3.

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

5 Practicability of installation

The system is installed only by Colas Limited's trained operatives under competent Colas supervision using specialised paving equipment (see the *Installation* part of this Certificate).

6 Surface macrotexture

The system can be designed to comply with the initial* and retained texture depth requirements for cold-applied ultra-thin surfacing systems in accordance with the MCHW, Volume 1 SHW, Clause 942, incorporating Interim Advice Note 154/12, Clause 921, Tables 9/3SR and NG 9/32, and is satisfactory for use on roads with this requirement.

7 Bond to substrate

The torque bond strength was measured at 581 kPa at 197 days. The failure was within the Ralumac RMT Cold-Applied Ultra-Thin Surfacing System.

8 Maintenance

The system is not subject to any routine maintenance requirements. However, any damage must be repaired as quickly as possible (see section 13).

9 Durability

When installed in accordance with this Certificate, the system will provide a durable surface course for new and maintenance road construction in accordance with the MCHW, Volume 1 SHW, Series 900, Clause 942, incorporating Interim Advice Note 154/12.

10 General

10.1 Application of the system, within the context of this Certificate, is carried out by installers recommended or recognised by the Certificate holder. Such an installer is a company which:

- employs operatives who have been trained and approved by the Certificate holder to install the system
- has undertaken to comply with the Certificate holder's application procedure
- is subject to supervision by the Certificate holder, including site inspections.

10.2 As part of the assessment and ongoing surveillance of the quality of installation of the system, the BBA has:

- agreed the quality control procedures and testing to be undertaken
- monitored the process and verified that it is in accordance with the documented procedures
- 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 quality control operated is being maintained.

10.3 The system is installed in accordance with the Certificate holder's installation procedures and the Installation Method Statement agreed by the BBA, which includes requirements for:

- site conditions and preparation
- acceptable weather conditions and road surface temperatures
- paving equipment and installation
- compaction
- repair
- after-care.

10.4 The system can be applied to bituminous or concrete substrates at a nominal layer thickness of 7 mm for the base coat and 11 mm for the top coat.

10.5 Provided the substrate is free from standing water or ice, the system can be installed at a minimum road surface and air temperature of 5°C measured on a rising thermometer.

10.6 The system must not be installed when freezing of the finished system is expected within 24 hours.

11 Substrate preparation

11.1 Substrate preparation in accordance with the Certificate holder's installation procedures and the Installation Method Statement agreed by the BBA, should include:

- masking of ironwork with a self-adhesive strip
- sweeping of the site prior to the application of the system.

11.2 Pre-damping of the road surface may be undertaken in warm, dry weather.

12 Application

12.1 The mixing of Ralumac 6 mm Base Coat and Ralumac 10 mm Top Coat constituent materials is carried out on the purpose built mixer/spreader unit.

12.2 The mixer/spreader unit has a control system that permits the automatic addition of the constituent materials and continuous flow mixing of the product.

12.3 Ralumac 6 mm Base Coat mix is discharged into the spreader box. The mixture is agitated and spread uniformly by means of thin-shafted paddles or spiral augers fixed to the spreader box.

12.4 Ralumac 6 mm Base Coat is applied directly onto the substrate prior to the application of Ralumac 10 mm Top Coat. The thickness of Ralumac 6 mm Base Coat will vary according to the shape of the substrate but should be applied at a nominal thickness of 7 mm, and then opened to traffic to aid compaction for a minimum of one hour before the application of Ralumac 10 mm Top Coat.

12.5 Ralumac 10 mm Top Coat mix is discharged into the spreader box. The mixer is agitated and spread uniformly by means of thin-shafted paddles or spiral augers fixed to the spreader box.

12.6 Ralumac 10 mm Top Coat is then applied to the trafficked Ralumac 6 mm Base Coat at a nominal thickness of 11 mm, and then rolled to aid compaction before being opened to traffic.

13 Repair

13.1 In the event of any damage occurring during the installation of each layer of Ralumac, or during the service life of the system, the damaged area must be removed and replaced.

13.2 At the time of the installation, small areas of damaged material may be rectified by hand, re-working and adding new material as necessary. Larger areas may require to be removed by mobile plant such as a front-end loading bucket fitted with an appropriate leading edge.

13.3 During the service life of the system, damaged areas may be removed by milling and replaced in accordance with section 12.

14 Aftercare

14.1 The masking (see section 11.1) should be removed after application of each layer of Ralumac and the surface checked visually for uniform texture, blemishes and any discernible faults. Remedial work should be carried out as necessary.

14.2 Following completion of the application of the system the installer should monitor the site as it is likely to require sweeping during the first week.

Technical Investigations

15 Tests

An assessment was made of data supplied as part of installation trials and of test data completed in accordance with the BBA HAPAS Guideline Document and BS EN 12273 : 2008, in relation to:

- texture depth
- torque bond
- visual condition of system installation and performance trial (SIPT).

16 Investigations

16.1 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.

16.2 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.

16.3 The manufacturing process was evaluated, 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 and Installation Method Statement agreed with the BBA.

16.4 The system is installed at depths less than 20 mm, therefore the resistance to permanent deformation was not measured. The Guideline Document states that this is only required on gap-graded thin surfacing systems installed at depths ≥ 20 mm.

16.5 The retained stiffness (ITSM_{c3}) test is not suitable for cold-applied ultra-thin surfacing systems. An evaluation of the history of use and a review of existing sites indicate that the system has a satisfactory resistance to the effect of water exposure.

16.6 Data gathered from a monitored installation trial show that when laid at a nominal thickness of 18 mm, with an initial texture depth of 2.2 mm on a road of Stress Level 1⁽¹⁾ and estimated Traffic Level⁽²⁾ of 345 cv/l/d, the system will meet Clause 942, Interim Advice Note 154/12, Clause 921, Tables 9/3SR and NG 9/ 32 requirements for initial and retained surface macrotexture (see Table 1).

(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.

16.7 Additional texture data relating to surface macrotexture depth was supplied, indicating that texture depths less than 2.0 mm can be achieved.

Bibliography

BS EN 12273 : 2008 *Slurry surfacing — Requirement*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

Design Manual for Roads and Bridges Vol. 7 *Pavement Design and Maintenance, Section 3 Pavement Maintenance Assessment Part 3 HD 30/08 Maintenance Assessment Procedure*

Guideline Document for the Assessment and Certification of Thin Surfacing Systems for Highways, May 2008

HD 30/08 Design Manual for Roads and Bridges, Volume 7 *Pavement Design and Maintenance, Section 3 Pavement Maintenance Assessment, Part 3, Maintenance Assessment Procedure*

IAN 154/12 *Revision of SHW Clause 903, Clause 921 and Clause 942*

Manual of Contract Documents for Highway Works, Volume 1 Specification for Highway Works, Series 900 Road Pavements — Bituminous Bound Materials

17 Conditions

17.1 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 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.

17.2 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.

17.3 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.

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

17.5 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.

17.6 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.