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Agrément Certificate
16/5295
Product Sheet 1

SIKA LIQUID PLASTICS LIQUID-APPLIED ROOF WATERPROOFING SYSTEMS

SIKALASTIC RAPID-721

This Agrément Certificate Product Sheet⁽¹⁾ relates to Sikalastic Rapid-721, a polymethyl methacrylate liquid-applied roof waterproofing system for use on flat, zero-pitched and pitched roofs with limited access.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information 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

Weathertightness — the system will resist the passage of moisture into a building (see section 6).

Properties in relation to fire — the system can enable a roof to be unrestricted under the Building Regulations (see section 7).

Adhesion — the system will resist the effects of any likely wind suction acting on the roof (see section 8).

Resistance to mechanical damage — the system will accept the limited foot traffic and loads associated with installation and maintenance (see section 9).

Durability — under normal service conditions the system will provide a durable roof waterproofing with a service life in excess of 25 years (see section 11).

The BBA has awarded this Agrément 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

A handwritten signature in black ink, appearing to read 'John Albon'.

A handwritten signature in black ink, appearing to read 'Claire Curtis-Thomas'.

Date of First issue: 18 February 2016

John Albon — Head of Approvals
Construction Products

Claire Curtis-Thomas
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

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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Regulations

In the opinion of the BBA, Sikalastic Rapid-721, 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 presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



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

Requirement: B4(2)	External fire spread
Comment:	On suitable substructures the use of the system will enable a roof to be unrestricted under this Requirement. See section 7 of this Certificate.
Requirement: C2(b)	Resistance to moisture
Comment:	Tests for water resistance on the system, including joints, indicate that it meets this Requirement. See section 6.1 of this Certificate.
Regulation: 7	Materials and workmanship
Comment:	The system is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)(2)	Durability, workmanship and fitness of materials
Comment:	The use of the system satisfies the requirements of this Regulation. See sections 10 and 11 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards applicable to construction
Standard: 2.8	Spread from neighbouring buildings
Comment:	The system, when applied to a suitable substructure, is regarded as having low vulnerability under clause 2.8.1 ⁽¹⁾⁽²⁾ of this Standard. See section 7 of this Certificate.
Standard: 3.10	Precipitation
Comment:	The system, including joints, will enable a roof to satisfy the requirements of this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.7 ⁽¹⁾⁽²⁾ . See section 6.1 of this Certificate.
Standard: 7.1(a)	Statement of sustainability
Comment:	The system can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation: 12	Building standards applicable to conversions
Comment:	All comments given for the system under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



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

Regulation: 23(a)(b)(i)	Fitness of materials and workmanship
Comment:	The system comprises acceptable materials and satisfies the requirements of this Regulation. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation: 28(b)	Resistance to moisture and weather
Comment:	The system will enable a roof to meet the requirements of this Regulation. See section 6.1 of this Certificate.
Regulation: 36(b)	External fire spread
Comment:	On a suitable flat substructure, the system can contribute to a roof being unrestricted under the requirements of this Regulation. On sloping roofs, boundary restrictions will apply. See section 7 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, Principal Designer/CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See sections: 3 *Delivery and site handling* (3.1 and 3.3) and 13 *Precautions* of this Certificate.

NHBC Standards 2016

NHBC accepts the use of Sikalastic Rapid-721, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards, Part 7 Roofs, Chapter 7.1 Flat roofs and balconies*.

Technical Specification

1 Description

1.1 Sikalastic Rapid-721 comprises the following components:

- Sikalastic Rapid-721 — a two-component polymethyl methacrylate waterproofing resin available in dark grey (RAL 7043)
- Sikalastic Rapid-721 Thixo — a thixotropic version of the standard resin, for use in detailing at upstands, corners, connections and other details, available in dark grey (RAL 7043)
- Sikalastic Rapid Fleece 110 — a 1.10 kg·m⁻² polyester fleece for use as a reinforcement
- Sikalastic Rapid Asphalt Primer — a non-pigmented primer based on a two-component fast-reactive polymethyl methacrylate resin, for the preparation of asphaltic and bituminous substrates
- Sikalastic Rapid Cementitious Primer — a non-pigmented primer based on a two-component fast-reactive and fast-curing polymethyl methacrylate resin, for the preparation of absorbent substrates such as concrete, screeds and timber.

1.2 Other items or components which may be used with the system, but which are outside the scope of this Certificate, are:

- Sikalastic Rapid Levelling Mortar — for use in levelling rough substrates of less than 10 mm depth, levelling of gradients, and as additional protection in trafficked areas such as roof terraces, communal walkways and balconies
- Sikalastic Rapid Pigmented Sealer — a flexible, UV-stabilised, pigmented surface sealant, based on polymethyl methacrylate, available in pebble grey (RAL 7032) and dark grey (RAL 7043). Other RAL colours are available on request
- Paint Flakes — an acrylate-based topping available in black, grey and white, for use as a surface sealant coat and decorative medium
- Sikalastic Rapid Filler Compound — for use in filling small cracks and joints in the substrate
- Sikalastic Rapid Cleaner — for use in cleaning the substrate prior to the installation of the system
- Sikalastic Rapid Structured Coating RA — for use as a wearing layer for Sikalastic Rapid systems
- Sikalastic Rapid Clear Sealer — a colourless, clear and mechanically durable sealer for surfaces with topping.

2 Manufacture

2.1 The liquid components of the system are manufactured by batch-blending processes.

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 operated by the manufacturer are being maintained.

3 Delivery and site handling

3.1 The primer and waterproofing resin components of the system are delivered to site in 10 kg containers bearing the product's name, safety data, batch number and the BBA logo incorporating the number of this Certificate. The catalyst for the resin components is supplied in a 100 g plastic bag.

3.2 Resins must be stored in ventilated, dry locations, away from heat and oxidising agents and out of direct sunlight, and at a temperature between 0°C and 25°C. The resins will have a shelf-life of greater than six months if stored correctly and unopened, in accordance with the Certificate holder's instructions.

3.3 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 Sikalastic Rapid-721.

Design Considerations

4 General

4.1 Sikalastic Rapid-721 is satisfactory for use as a waterproofing system on pitched and flat roofs with limited access, on substrates of:

- concrete
- bituminous
- timber
- metal
- plastic.

4.2 The system is also satisfactory for use on zero-pitched roofs with limited access on concrete substrates. The adhesion to and compatibility with other substrates must be confirmed by test (see also section 12.3 of this Certificate).

4.3 Limited access roofs are defined for the purpose of this Certificate as those subjected only to pedestrian traffic for maintenance of the roof covering and cleaning of gutters, etc. Where traffic in excess of this is envisaged, additional protection to the membrane must be provided (see section 9).

4.4 Flat roofs are defined for the purpose of this Certificate as those having a minimum finished fall of 1:80. For design purposes, twice the minimum finished fall should be assumed, unless a detailed analysis of the roof is available, including overall and local deflection, direction of falls, etc. Pitched roofs are defined as those having a fall greater than 1:6. Zero-pitched roofs are defined for the purpose of this Certificate as those having a finished fall which can vary between 0° and 0.7°.

4.5 Decks to which the membranes are to be applied must comply with the relevant requirements of either BS 6229 : 2003 or BS 8217 : 2005 and, where appropriate, *NHBC Standards*, Chapter 7.1 *Flat roofs and balconies*.

4.6 Insulation materials to be used in conjunction with the membranes must be in accordance with the Certificate holder's instructions and be either:

- as described in the relevant clauses of BS 8217 : 2005, or
- the subject of a current BBA Certificate and used in accordance with, and within the scope of, that Certificate.

4.7 On zero-pitched roofs it is particularly important to identify the correct drainage points to ensure that the drainage provided is effective.

5 Practicability of installation

The system should only be installed by installers who have been trained and approved by the Certificate holder.

6 Weathertightness



6.1 The system will adequately resist the passage of moisture into the building and enable a roof to comply with the requirements of the national Building Regulations.

6.2 The system is impervious to water and will achieve a weathertight roof capable of accepting minor structural movement.

7 Properties in relation to fire



7.1 In the opinion of the BBA, a system comprising a 12 mm thick gypsum glassrock roof board, primed with Sikalastic Rapid Cementitious Primer and coated with Sikalastic Rapid-721 reinforced with Sikalastic Rapid Fleece 110, can be classified as B_{ROOF}(t4) in accordance with BS EN 13501-5 : 2005.

7.2 The designation of other specifications should be confirmed by:

England and Wales — test or assessment in accordance with Approved Document B, Appendix A, clause A1

Scotland — test to conform to Mandatory Standard 2.8, clause 2.8.1⁽¹⁾⁽²⁾

(1) Technical Handbook (Domestic)

(2) Technical Handbook (Non-Domestic)

Northern Ireland — test or assessment by a UKAS-accredited laboratory, or an independent consultant with appropriate experience.

8 Adhesion

Results of tests indicate that the adhesion of the system to concrete, bitumen felts, timber, plastic and metal is sufficient to resist the effects of any wind suction, elevated temperatures, thermal shock or minor movement likely to occur in practice.

9 Resistance to mechanical damage

9.1 The system can accept, without damage, the limited foot traffic and light concentrated loads associated with installation and maintenance. However, reasonable care should be taken to avoid puncture by sharp objects or concentrated loads. Where traffic in excess of this is envisaged, such as for maintenance of lift equipment, additional protection to the membrane in accordance with the Certificate holder's instructions must be provided.

9.2 Results of testing for dynamic and static indentation are given in Table 1.

Test	Result	Method
Dynamic indentation		EOTA TR 006
concrete		
unaged	I ₃	
UV aged ⁽¹⁾	I ₄	
heat aged ⁽²⁾	I ₄	
low temperature cure ⁽³⁾	I ₃	
high temperature cure ⁽⁴⁾	I ₃	
insulation		
unaged	I ₄	
Static indentation		EOTA TR 007
concrete		
unaged	I ₃	
water exposure ⁽⁵⁾	I ₃	
insulation		
unaged	I ₃	

(1) UV aged using UVA lamps at an exposure of 1000 MJ·m⁻² at 50°C to EOTA TR 010.

(2) Heat aged 200 days at 80°C to EOTA TR 011.

(3) -5°C.

(4) 35°C.

(5) Water exposure 60 days at 60° to EOTA TR 012.

9.3 In areas of heavy pedestrian traffic an additional coat of Sikalastic Rapid Levelling Mortar is applied with a finish coat of Sikalastic Rapid Pigmented Sealer, in accordance with the Certificate holder's instructions.

10 Maintenance



10.1 The system must be the subject of annual inspections and maintenance to ensure continued performance.

10.2 Any damage should be repaired in accordance with section 15 and the Certificate holder's instructions.

11 Durability



Sikalastic Rapid-721 will achieve a service life of at least 25 years.

Installation

12 General

12.1 Substrates to which the system is to be applied must be sound, dry, clean and free from sharp projections such as nail heads and concrete nibs. Rough substrates must be made good using the appropriate levelling compound in accordance with the Certificate holder's instructions.

12.2 Where necessary, substrate priming must be carried out using a sheepskin roller in accordance with the Certificate holder's instructions.

12.3 Adhesion checks may be carried out to ensure that the system is compatible with the existing surfaces. The Certificate holder must be consulted for details of suitable test methods and requirements before use.

12.4 Installation should not be carried out during inclement weather (eg rain, fog or snow). When the temperature is below 5°C suitable precautions against surface condensation on the substrate must be taken. The substrate and ambient air temperature for the application of Sikalastic Rapid-721 standard formulation and Sikalastic Rapid-721 Thixo is between -5°C and +35°C.

12.5 Detailing (eg at upstands) should be carried out in accordance with the Certificate holder's instructions.

12.6 Expansion or construction joints must be additionally reinforced prior the application of the main waterproofing layer, in accordance with the Certificate holder's instructions.

12.7 All equipment should be cleaned after use with Sikalastic Rapid Cleaner.

13 Precautions

13.1 Vapours from the system may cause sensitisation and irritation to the respiratory system, eyes and skin. The system should be used only in areas with sufficient ventilation to prevent the build-up of vapours. Contact with the skin, eyes and clothing must be avoided. The Certificate holder's instructions and the relevant safety regulations for working procedures must be adhered to at all times.

13.2 The system must not be allowed to enter the waste drainage system. Precautions must also be taken (eg closing of doors and windows) to prevent vapours entering the building.

14 Application

14.1 Once the substrate has been primed and joint treatments have cured, Sikalastic Rapid-721 resin is applied at a minimum application rate of $1.5 \text{ kg}\cdot\text{m}^{-2}$.

14.2 Sikalastic Rapid Fleece 110 is applied into the wet resin and embedded using sheepskin rollers, ensuring that any trapped air pockets are removed.

14.3 A further layer of Sikalastic Rapid-721 resin is applied to the substrate at a minimum application rate of $1 \text{ kg}\cdot\text{m}^{-2}$, ensuring that the fleece is saturated. Recommended application rates for various situations are:

smooth substrates	$2.5 \text{ kg}\cdot\text{m}^{-2}$
fine-grained substrates	$3.0 \text{ kg}\cdot\text{m}^{-2}$
rough substrates	$3.5 \text{ kg}\cdot\text{m}^{-2}$
below Sikalastic Rapid Pigmented Sealer/Levelling Mortar	$2.5 \text{ kg}\cdot\text{m}^{-2}$

15 Repair

Minor damage can be repaired by cleaning back to the unweathered material and recoating the damaged area with the membrane at the appropriate application rate stated in section 14.

Technical Investigations

16 Tests

Tests were conducted on samples of Sikalastic Rapid-721 and the results assessed to determine:

- tensile strength and elongation
- water vapour diffusion resistance coefficient (μ)
- watertightness
- tensile bond strength on concrete, steel, bitumen sheet, timber and plastic
- dynamic indentation
- static indentation
- resistance to fatigue cycling
- resistance to low temperatures
- resistance to high temperatures
- heat ageing at 80°C for 200 days
- resistance to UV ageing at $1000 \text{ MJ}\cdot\text{m}^{-2}$
- resistance to water exposure at 60°C for 60 days
- the effect of application temperatures
- the effect of day joints
- external fire performance to ENV 1187 : 2002, test 1
- reaction to fire
- water exposure (180 days at 60°C).

17 Investigations

17.1 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.

17.2 Data on fire performance were assessed.

Bibliography

- BS 6229 : 2003 *Flat roofs with continuously supported coverings — Code of practice*
- BS 8217 : 2005 *Reinforced bitumen membranes for roofing — Code of practice*
- BS EN 13501-5 : 2005 + A1 : 2009 *Fire classification of construction products and building elements — Classification using data from external fire exposure to roofs tests*
- DD ENV 1187:2002 *Test methods for external fire exposure to roofs*
- EOTA TR 006 *Determination of the resistance to dynamic indentation*
- EOTA TR 007 *Determination of the resistance to static indentation*
- EOTA TR 010 *Exposure procedure for artificial weathering*
- EOTA TR 011 *Exposure procedure for accelerated ageing by heat*
- EOTA TR 012 *Exposure procedure for accelerated ageing by hot water*

Conditions of Certification

18 Conditions

18.1 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.

18.2 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.

18.3 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.

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

18.5 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.

18.6 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.