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## Agrément Certificate

17/5468

Product Sheet 1

### ALSAN LIQUID APPLIED CAR PARK DECK SYSTEMS

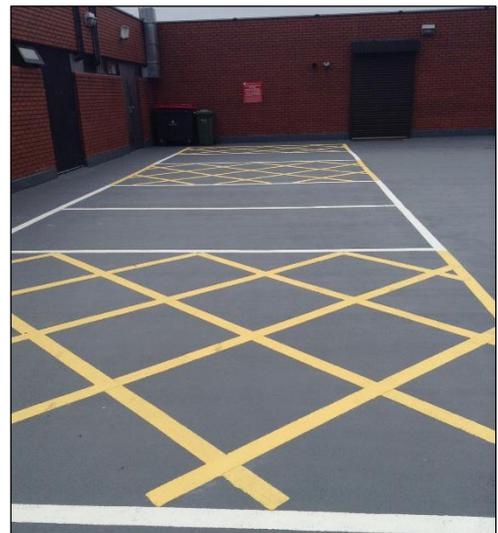
#### ALSAN 770/870 RS

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Alsan 770/870 RS, a range of liquid-applied polymethyl methacrylate systems for use as waterproofing and wearing surfaces on car park decks.

(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 systems will resist the passage of moisture into a structure (see section 6).

**Properties in relation to fire** — the systems can contribute to a structure being unrestricted under the national Building Regulations (see section 7).

**Adhesion** — the systems will resist the effects of any likely wind suction acting on the structure (see section 8).

**Resistance to mechanical damage** — the systems will accept the traffic loads, and the effects of thermal and other minor movement likely to occur in practice (see section 9).

**Durability** — under normal service conditions, the systems will have a service life of at least 10 years (see section 11).



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 First issue: 19 December 2017

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](http://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, Alsan 770/870 RS, 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)

<b>Requirement:</b> Comment:	<b>B4(2)</b>	<b>External fire spread</b> On suitable substructures the use of the systems can contribute to a structure being unrestricted under this Requirement. See section 7 of this Certificate.
<b>Requirement:</b> Comment:	<b>C2(b)</b>	<b>Resistance to moisture</b> The systems will enable a structure to satisfy this Requirement. See section 6 of this Certificate.
<b>Regulation:</b> Comment:	<b>7</b>	<b>Materials and workmanship</b> The systems comprise acceptable materials and satisfy the requirements of this Regulation. See section 11 and the <i>installation</i> part of this Certificate.



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

<b>Regulation:</b> Comment:	<b>8(1)(2)</b>	<b>Durability, workmanship and fitness of materials</b> The systems comprise acceptable materials and satisfy the requirements of this Regulation. See sections 10 and 11 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> Standard: Comment:	<b>9</b> 2.8	<b>Building standards applicable to construction</b> Spread from neighbouring buildings The systems, when applied to a suitable substructure, are regarded as having a low vulnerability and can contribute to a structure being unrestricted under this Standard with reference to clause 2.8.1 <sup>(1)(2)</sup> . See section 7 of this Certificate.
Standard: Comment:	3.10	<b>Precipitation</b> The systems will enable a structure to satisfy the requirements of this Standard, with reference to clauses 3.10.1 <sup>(1)(2)</sup> and 3.10.7 <sup>(1)(2)</sup> . See section 6 of this Certificate.
Standard: Comment:	7.1(a)(b)	Statement of sustainability The systems 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.
<b>Regulation:</b> Comment:	<b>12</b>	<b>Building standards applicable to conversions</b> All comments given for the systems 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> Comment:	<b>23(a)(b)(i)</b>	<b>Fitness of materials and workmanship</b> The systems comprise acceptable materials and satisfy the requirements of this Regulation. See section 11 and the <i>installation</i> part of this Certificate.
<b>Regulation:</b> Comment:	<b>28(b)</b>	<b>Resistance to moisture and weather</b> The systems will enable a structure to satisfy the requirements of this Regulation. See section 6 of this Certificate.

<b>Regulation:</b>	<b>36(b)</b>	<b>External fire spread</b>
<b>Comment:</b>		On suitable substructures the systems can contribute to a structure being unrestricted under the requirements of this Regulation. See section 7 of this 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.

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

### Additional Information

#### CE marking

The Certificate holder has taken the responsibility of CE marking Alsan 770 waterproofing membrane component, in accordance with European Technical Approval ETA-12/510, issued under ETAG 005 : 2004, Parts 1 and 4. An asterisk (\*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

### Technical Specification

#### 1 Description

1.1 Alsan 770/870 RS comprise a waterproofing membrane and a range of wearing coats and top coats based on liquid-applied polymethyl methacrylate resins cured with a dibenzoyl peroxide powder.

1.2 The systems include the following components:

- Alsan 770 — a two-component, waterproofing membrane
- Alsan 770 TX — a thixotropic version of Alsan 770 for use in detailing at upstands, corners, connections and other details
- Alsan 870 RS — a three-component coating incorporating graded sand for use as a protection layer over Alsan 770/Alsan 770 TX in exposed applications or as a sole wearing layer on intermediate parking decks where waterproofing is not required. The product is also available in thixotropic grades TXS 10 and TXS 20 for use on gradients of up to 10% and 20% respectively
- Alsan 970F — a two-component, coloured wearing layer used for creating patterns and lettering. Anti-slip properties can be improved by the application of graded sand or fine aggregate. The product is available in a range of colours on request
- Alsan 971F — a two-component, coloured wearing layer with texture, for use on footpaths, drive-aisles and parking bays. The product is available in a range of colours on request
- Alsan 972F — a two-component, coloured wearing layer with high texture for use in heavy-duty applications such as ramps and heavily trafficked turning circles. The product is available in a range of colours on request
- Alsan Fleece P — non-woven polyester fleece reinforced with a glass scrim. The fleece has a nominal mass per unit area of 110 g·m<sup>-2</sup>
- Alsan 170 — a two-component PMMA based primer for use on concrete substrates prior to the application of Alsan 770 or Alsan 870 RS
- Alsan 172 — a two-component PMMA based primer for use on asphalt substrates prior to the application of Alsan 770 or Alsan 870 RS
- Alsan 176 — a two-component PMMA based primer for use as a scratch coat on very porous concrete substrates prior to the application of Alsan 770 or Alsan 870 RS
- Dry graded quartz sand (0.4 – 0.8 mm) for broadcasting into Alsan 870 RS prior to application of Alsan 970F
- Dry grades quartz aggregate (0.7 – 1.2 mm) for broadcasting into Alsan 970 F to improve slip resistance.

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

- repair mortars
- levelling mortars/screeds
- anti-dusting treatments
- specialist primers.

Details of suitable products/specifications may be obtained from the Certificate holder.

## 2 Manufacture

2.1 The liquid components of the systems 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.

2.3 The management systems of the manufacturer have been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by BSI (Certificate FM 593574).

## 3 Delivery and site handling

3.1 The liquid components of the systems are delivered to site in sealed containers labelled with the product name, safety data, batch number, CE mark and the BBA logo incorporating the number of this Certificate. The components are available in the pack weights given in Table 1. The benzoyl peroxide catalyst for the resin components is supplied in a 100 g plastic bags or 5 kg plastic boxes.

*Table 1 Pack weights*

<b>Component</b>	<b>Pack Weight (kg)</b>
Alsan 170	10
Alsan 172	10
Alsan 176	10
Alsan 770	10
Alsan 870 R <sup>(1)</sup>	10
Alsan 870 S <sup>(1)</sup>	23
Alsan 970 F	10
Alsan 971 F	15
Alsan 972 F	15
Alsan 070 benzoyl peroxide catalyst	0.1 and 5

(1) Alsan 870 RS is composed of Alsan 870 R resin component + Alsan S mineral filler supplied separately in bags.

3.2 The resin components should be stored in ventilated, dry locations, away from heat and oxidising agents and out of direct sunlight, within a storage temperature range of 0°C to 30°C. The resins have a shelf-life of at least twelve months if stored correctly and unopened in accordance with the Certificate holder's instructions. Users should refer to the appropriate product data sheet for specific details.

3.3 Alsan Fleece P is supplied in rolls of 50 m length. The fleece is available in widths of 10.5, 15, 20, 26, 35, 52, 70 and 105 cm.

3.4 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, 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 Alsan 770/870 RS.

### Design Considerations

#### 4 Use

4.1 Alsan 770/870 RS is satisfactory for use as combined waterproofing and/or wearing surfaces on concrete car park decks and walkways with a concrete or mastic asphalt surfacing.

4.2 Decks must be designed by a suitably experienced and competent individual in accordance with BS EN 1992-1-1 : 2004 and its UK National Annex.

4.3 The systems have satisfactory resistance to solutions of de-icing salts and is unaffected by contact with an alkaline or asphalt substrates. Exposure of the membranes to petrol, diesel, hydraulic fluids and battery acid may result in varying degrees of softening and/or degradation and spillages must be removed as soon as possible and the membrane inspected for damage and waterproofing integrity.

#### 5 Practicability of installation

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

#### 6 Weathertightness



The systems will resist the passage of moisture to the inside of the structure and can accommodate any movement due to cracking permitted by BS EN 1992-1-1 : 2004 and its UK National Annex, without leakage and so enable a structure to satisfy the requirements of the national Building Regulations.

#### 7 Properties in relation to fire



7.1 A system comprising Alsan 170 (1 mm thick), Alsan 770 (two layers reinforced with Alsan Fleece P) (total 3 mm thick), Alsan 870 RS (4 mm thick) broadcast with 1 to 2 mm quartz sand and Alsan 970 F (1 mm thick) applied to 12 mm thick calcium silicate board, when tested in accordance with CEN/TS 1187: 2012, Test 4, in the flat orientation, was designated B<sub>ROOF</sub>(t4) and can enable a roof deck to be unrestricted under the national Building Regulations.

7.2 The designation of other specifications should be confirmed by:

**England and Wales** — Test or assessment in accordance with Approved Document B, (volumes 1 and 2), Appendix A, clause A1

**Scotland** — Test to conform to Mandatory Standard 2.8, clause 2.8.1

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

## 8 Adhesion

The adhesion of the systems to a concrete substrate is sufficient to resist the effects of any wind suction, elevated temperature, thermal shock or structural movement likely to occur in practice.

## 9 Resistance to mechanical damage

9.1 The systems can accept, without damage, the foot and vehicular traffic likely to occur in practice. Where continuous heavy point loading is envisaged, additional protection should be considered. The Certificate holder should be consulted for advice.

9.2 Where the systems have to bridge construction or movement joints, the Certificate holder must be consulted for approved detail specifications and the use of proprietary joint solutions.

## 10 Maintenance



10.1 Installed systems should be the subject of planned maintenance programmes to ensure that drainage outlets are kept clear and accumulated debris (eg loose grit) is removed, and to check for contamination and damage to the systems. Additional guidance on the maintenance of car park structures generally can be found in the publication *Recommendations for the inspection, maintenance and management of car park structures*, published by the Institute of Civil Engineers.

10.2 The integrity of the coloured wearcoat must be regularly checked and, in areas where it has been damaged or worn, it must be reapplied in accordance with the Certificate holder's instructions.

10.3 Cleaning of the systems may be carried out using warm water below 50°C and a mild detergent. Strong alkali, acid or bleach must not be used. The Certificate holder must be consulted for suitable cleaning products and equipment.

10.4 Where de-icing is required, the Certificate holder must be consulted for approved products.

10.5 Damaged sections of the systems should be repaired generally in accordance with section 14.

## 11 Durability



11.1 the systems will retain suitable physical properties and, when the subject of a suitable maintenance and repair programme, will have a serviceable life of at least 10 years.

11.2 On decks subject to UV exposure some colour change may occur; this will be slight and uniform. The Certificate holder must be consulted for details on specific colours.

## Installation

## 12 General

12.1 The systems should be installed in accordance with the Certificate holder's instructions and this Certificate.

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

12.3 The systems must not be applied if the relative humidity is >90%.

12.4 Catalyst addition levels will depend on the substrate temperature. The appropriate product data sheet must be consulted and followed for acceptable ambient air and substrate temperatures for installation.

12.5 Substrate priming is carried out in accordance with the Certificate holder's instructions using a lambswool roller.

12.6 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.

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

12.8 Expansion or construction joints are additionally reinforced prior the application of the main waterproofing layer in accordance with the Certificate holder's instructions.

### 13 Procedure

13.1 Once the substrate has been primed and joint treatments have cured, Alsan 770 is mixed and applied in accordance with the Certificate holder's instructions at a minimum application rate of 1.7 kg·m<sup>-2</sup>.

13.2 Alsan Fleece P is applied into the wet resin and embedded using lambswool rollers, ensuring any trapped air pockets are removed.

13.3 A further layer of Alsan 770 is then applied at a minimum application rate of 1.3 kg·m<sup>-2</sup>, ensuring that the fleece is saturated.

13.4 Alsan 870 RS is then mixed and applied over the cured Alsan 770 at a minimum application rate of 4.0 kg·m<sup>-2</sup> using a trowel with triangular teeth.

13.5 If Alsan 970 F is to be applied as the wearing layer, dry graded quartz sand (0.4 to 0.8 mm) can be applied to excess into the surface of the Alsan 870 RS whilst it is still wet.

13.6 When sufficiently cured, the appropriate wearing layer Alsan 970 F, Alsan 971 F or Alsan 972 F is then applied in accordance with the Certificate holder's instructions ensuring that, where applicable, excess sand is removed from the surface of the cured Alsan 870 RS by any suitable mechanical means, eg vacuum. The minimum application rates are given in Table 2.

*Table 2 Minimum application rates — wearing layers*

Product	Application rate (kg·m <sup>-2</sup> )
Alsan 970 F	0.5
Alsan 971 F	1.5
Alsan 972 F	3.5

13.7 If required, for improved slip resistance dry graded quartz aggregate (0.7 to 1.2 mm) can be applied into the wet Alsan 970 F. When cured, the loose sand is removed by vacuuming and an additional coat of Alsan 970 F is applied to encapsulate the sand.

### 14 Repair

14.1 Minor damage to the systems can be repaired by cutting out the damaged system and cleaning back to unweathered material and reapplying as described in section 13.

14.2 For the repair of major damage the Certificate holder must be consulted for advice.

## Technical Investigations

### 15 Tests

15.1 Existing test data relating to Alsan 770 was assessed to determine:

- tensile strength and elongation
- water vapour diffusion resistance coefficient  $\mu$

- 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
- resistance to UV ageing
- resistance to water exposure
- effect of application temperatures
- effect of day joints
- external fire performance
- reaction to fire.

15.2 Tests were carried out on Alsan 770/870 RS to determine:

- infrared spectroscopy
- thermogravimetric analysis
- colour stability
- resistance to mechanical damage by chisel impact
- resistance to fatigue
- resistance to abrasion (A-Court)
- slip resistance
- tensile bond strength.

## 16 Investigations

16.1 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.

16.2 Test data on roof fire exposure was assessed.

## Bibliography

BS EN 1992-1-1 : 2004 + A1 : 2014 *Eurocode 2 — Design of concrete structures — General rules and rules for buildings*  
 NA + A2 : 14 to BS EN 1992-1-1 : 2004 + A1 : 2014 UK National Annex to *Eurocode 2 — Design of concrete structures — General rules and rules for buildings*

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

CEN/TS 1187 : 2012 *Test methods for external fire exposure to roofs*

ETAG 005 : 2004 *Guideline for European Technical Approval of Liquid Applied Roof Waterproofing Kits*

### 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.