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**Agrément Certificate**

**20/5725**

Product Sheet 1

### BAILEY WATERPROOFING SYSTEMS

### BAILEY SURE-PLY PVC ROOFING MEMBRANES

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Bailey Sure-Ply PVC Roofing Membranes, a range of PVC waterproofing membranes for use on flat and pitched warm roofs with limited or pedestrian access, and with suitable protection.

(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 products, including joints, will resist the passage of moisture to the interior of the building (see section 6).

**Properties in relation to fire** — the products, when used in a suitable specification, can enable a roof to be unrestricted under the national Building Regulations (see section 7).

**Resistance to wind uplift** — the products will enable a roof to be unrestricted under the national Building Regulations (see section 8).

**Resistance to foot traffic** — the products will accept, without damage, the limited foot traffic and loads associated with installation and maintenance (see section 9).

**Durability** — under normal service conditions, the products will provide a durable waterproof covering with a service life in excess of 25 years (see section 11).



The BBA has awarded this Certificate to the company named above for the products described herein. These products have 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 First issue: 5 March 2020

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.

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## Regulations

In the opinion of the BBA, Bailey Sure-Ply PVC Roofing Membranes, 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>	<b>B4(2)</b>	<b>External fire spread</b>
Comment:		On a suitable substructure, the use of the products can enable a roof to be unrestricted under this Requirement. See section 7 of this Certificate.
<b>Requirement:</b>	<b>C2(b)</b>	<b>Resistance to moisture</b>
Comment:		The products, including joints, will enable a roof to satisfy this Requirement. See section 6.1 of this Certificate.
<b>Regulation:</b>	<b>7(1)</b>	<b>Materials and workmanship</b>
		The products are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.



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

<b>Regulation:</b>	<b>8(1)(2)</b>	<b>Durability, workmanship and fitness of materials</b>
Comment:		The use of the products satisfies the requirements of this Regulation. See sections 10.1 and 11 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b>	<b>9</b>	<b>Building standards applicable to construction</b>
Standard:	2.8	Spread from neighbouring buildings
Comment:		On suitable non-combustible substructures, the use of the products can be unrestricted by the requirements of clause 2.8.1 <sup>(1)(2)</sup> of this Standard. See section 7 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The use of the products, including joints, will enable a roof 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 6.1 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The products 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>	<b>12</b>	<b>Building standards applicable to conversions</b>
Comment:		Comments in relation to the products 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(a)(i)</b>	<b>Fitness of materials and workmanship</b>
Comment:	<b>(iii)(b)(i)</b>	The products are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.

<b>Regulation:</b>	<b>28(b)</b>	<b>Resistance to moisture and weather</b>
<b>Comment:</b>		The products, including joints, can enable a roof to satisfy the requirements of this Regulation. See section 6.1 of this Certificate.
<b>Regulation:</b>	<b>36(b)</b>	<b>External fire spread</b>
<b>Comment:</b>		On suitable non-combustible substructures, the use of the system can enable a roof to be 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 sections: 1 *Description* (1.2) and 3 *Delivery and site handling* (3.3) of this Certificate.

### Additional Information

#### NHBC Standards 2020

In the opinion of the BBA, Bailey Sure-Ply PVC Roofing Membranes, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 7.1 *Flat roofs and balconies*.

### Technical Specification

#### 1 Description

1.1 Bailey Sure-Ply PVC Roofing Membranes consists of:

- Bailey Sure-Ply MF PVC Roof Waterproofing Membrane — reinforced with polyester mesh.
- Bailey Sure-Ply FB A Fleece Backed PVC Roof Waterproofing Membrane — reinforced with polyester mesh.

1.2 The membranes are supplied in rolls and are manufactured to the nominal characteristics given in Table 1.

<i>Table 1 Nominal characteristics</i>	
Characteristic (unit)	Value
Standard CE marked against	EN 13956
Thickness (mm)	1.2, 1.5
Length (m)	15
Width (m)	2.1
Mass per unit area (kg·m <sup>-2</sup> )	1.8
Roll weight (kg)	55
Tensile strength	
longitudinal	1000 N·50mm <sup>-2</sup>
transverse	1100 N·50mm <sup>-2</sup>
Elongation at break (%)	
longitudinal	18
transverse	20
Nail tear (N)	
longitudinal	200
transverse	220
Dimensional stability (%)	≤0.3
Impact resistance (mm)	≥2000
Static indentation (kg)	≥20
Low temperature flexibility (°C)	-25

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

- Bailey Sure-Ply PVC Non-Reinforced Detailing Membrane — a PVC membrane without reinforcement for detailing
- Bailey Sure-Ply PVC Pre-Moulded Internal and External Corners
- Bailey Sure-Ply PVC Outlets — a range of outlets, scuppers, vents and pipe collars compatible with Sure-Ply PVC membranes
- Bailey Sure-Ply Metal — a zinc coated sheet, 0.6 mm thick with a layer of flexible PVC 0.6 mm thick for anchoring and finishing elements of water stop roofing system
- Bailey Sure-Ply PVC Walkway Membrane — a PVC embossed membrane for use on access walkways ≥2.3 mm thick
- Bailey Sure-Therm Foil Faced Insulation Board — suitable for mechanically fixed systems
- Bailey Sure-Therm Glass-Tissue Faced Insulation Board — suitable for adhered systems
- Bailey Poly-Vap — low density polyethylene (LDPE) film for use as a vapour control layer (vcl) for use with the mechanically fixed system
- Bailey Alpha-Bar – a range of reinforced bitumen vapour control membranes containing an aluminium core available for torch-on and Self-Adhesive applications
- Bailey Sure-Bond PU Adhesive for Insulation
- Bailey Sure-Bond PU Adhesive for Membranes.

## 2 Manufacture

2.1 The membranes are manufactured by extruding the PVC compound into sheets and laminating two sheets together with a polyester reinforcement.

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 membranes are delivered to site in rolls with either paper wrappers or tape bands bearing the products name and production code. The rolls are packed on pallets and shrink-wrapped in UV-protective (white) polythene.

3.2 Rolls must be stored upright on a clean, level surface, away from excessive heat and under cover.

3.3 The Certificate holder has taken the responsibility of classifying and labelling the products 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 Bailey Sure-Ply PVC Roofing Membranes.

### Design Considerations

## 4 Use

4.1 Bailey Sure-Ply PVC Roofing Membranes are satisfactory for use in:

- partially or fully adhered waterproofing specifications on flat and pitched roofs with limited access
- loose-laid and ballasted waterproofing on flat roofs with limited access
- protected roof specifications, eg covered by pavers or other suitable protection on flat roofs with limited access
- pedestrian access roofs with additional protection on flat roofs with limited access.

4.2 Structural decks to which the products are to be applied must comply with the relevant requirements of BS 6229 : 2018, BS 8217 : 2005 and, where appropriate, *NHBC Standards 2020*, Chapter 7.1.

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, cleaning of gutters, etc. Where traffic in excess of this is envisaged, such as pedestrian access roofs, additional protection must be provided (see sections 9 and 12.6 of this Certificate and the relevant clauses of the Certificate holder's installation instructions).

4.4 Pedestrian access roofs are defined for the purpose of this Certificate as those not subjected to vehicular traffic.

4.5 Flat roofs are defined for the purpose of this Certificate as those having a minimum finished fall of 1:80. Pitched roofs are defined for the purpose of this Certificate as those having falls greater than 1:6. When designing flat roofs, twice the minimum finished fall should be assumed, unless a detailed analysis of the roof is available including, for example, overall and local deflection and direction of falls.

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

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

4.7 Contact with bituminous, coal tar and oil-based products must be avoided as the membranes are not compatible with lower grades of bitumen. If contact with such products is likely, a separating layer must be interposed before installing the waterproofing sheet. Where doubt arises, the advice of the Certificate holder must be sought.

## 5 Practicability of installation

The products must only be installed by contractors who have been trained and approved by the Certificate holder or their appointed agent.

## 6 Weathertightness



6.1 The membranes, including joints, when completely sealed and consolidated, will adequately resist the passage of moisture to the inside of the building and so satisfy the requirements of the national Building Regulations.

6.2 The membranes are impervious to water and will give a weathertight roofing capable of accepting minor structural movements without damage.

## 7 Properties in relation to fire



7.1 The following systems achieved a classification of B<sub>ROOF</sub>(t4) in accordance with BS EN 13501-5 : 2005:

- an 18 mm plywood substrate, LDPE vcl, a foil faced 40 mm polyisocyanurate foam insulation board, 1.2 mm Bailey Sure-Ply MF PVC Roof Waterproofing Membrane mechanically fixed
- an 18 mm plywood substrate, LDPE vcl, a foil faced 40 mm polyisocyanurate foam insulation board, 2.0 mm Bailey Sure-Ply MF PVC Roof Waterproofing Membrane mechanically fixed.

7.2 The membranes, when used in protected or loose-laid and ballasted roof specifications, including an inorganic covering listed in the Annex of Commission Decision 2000/553/EC, can be considered to be unrestricted under the national Requirements.

7.3 The designation of other specifications (eg on combustible substrates) should be confirmed by:

**England and Wales** — test or assessment in accordance with Approved Document B, Appendix A, clause 1

**Scotland** — tests to confirm compliance with 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 Resistance to wind uplift

8.1 The adhesion of the bonded membranes is sufficient to resist the effects of wind suction, elevated temperature and thermal shock conditions likely to occur in practice.

8.2 For mechanically fastened insulation installations, the requirement for the number of fixings should be assessed in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex. The minimum fixing patterns are given in section 13.8 of this Certificate.

8.3 The ballast requirements for loose-laid roof systems must be calculated in accordance with the relevant parts of BS EN 1991-1-4 : 2005 and its UK National Annex. When using gravel ballast, the products must always be loaded with a minimum depth of 50 mm aggregate. In areas of high wind exposure, the Certificate holder's advice should be sought. Alternatively, concrete slabs on suitable supports can be used.

8.4 The ballast on inverted/protected roofs must not be of a type that will be removed or become delocalised owing to wind scour experienced on the roof.

## 9 Resistance to foot traffic

9.1 The membranes can accept the limited foot traffic and light concentrated loads associated with installation and maintenance. Reasonable care should be taken to avoid puncture by sharp objects or concentrated loads.

9.2 Where regular traffic is envisaged, such as for maintenance of lift equipment, a walkway must be provided (for example, using concrete slabs supported on bearing pads or manufacturer's walkway sheets). The advice of the Certificate holder should be sought on the most appropriate method to be used with the amount of traffic involved.

## 10 Maintenance



10.1 The roof system must be the subject of biannual inspections and maintenance in accordance with BS 6229 : 2018, Chapter 7.

10.2 Where damage has occurred it should be repaired in accordance with section 14 and the Certificate holder's instructions.

## 11 Durability



Under normal service conditions, the products will have a service life in excess of 25 years.

## Installation

### 12 General

12.1 Installation of the membranes must be carried in accordance with the relevant clauses of the Certificate holders instructions, BS 8000-0 : 2014, BS 8000-4 : 1989, and this Certificate.

12.2 Substrates to which the products are to be applied must be sound, dry and clean, and free from sharp projections such as nail heads and concrete nibs.

12.3 Installation must not be carried out during inclement weather (eg rain, fog or snow). When the temperature is below 5°C, suitable precautions against surface condensation must be taken.

12.4 All detailing must be formed in accordance with the Certificate holder's instructions.

12.5 Bulk materials must not be stored on one area of the roof prior to installation, to ensure that localised overloading does not occur.

12.6 If the roof is likely to be subjected to uncontrolled pedestrian access, the substructure must satisfy the requirements of BS 8217 : 2005, and to prevent damage to the roof covering one of the appropriate surface finishes referred to in clause 6.12 of the Standard must be used.

12.7 At falls in excess of 1:11, the provision for mechanical fixings as required by BS 8217 : 2005 should be observed.

### 13 Procedure

#### Fully bonded

13.1 The membrane is unrolled onto the substrate and folded back, half the length of the roll, exposing the underside.

13.2 Bailey Sure-Bond adhesive is applied to the insulation substrate at a rate of 0.25 kg·m<sup>-2</sup> and the membrane rolled into the adhesive. The other half of the roll is then adhered in the same way. And the laps hot air welded.

13.3 A range of metal trims are available for completing edge details. These are fixed in accordance with the Certificate holder's instructions.

#### Loose-laid

13.4 Side laps must be a minimum of 100 mm and end laps must be a minimum of 150 mm. The laps must be formed by hot air welding the lower surface and pressing the membrane down.

13.5 With loose-laid systems, the membranes must be ballasted to combat the effects of wind uplift. This can be achieved by:

- laying a 0.2 mm thick polyethylene protective sheet or non-woven polyester sheet covered by at least 50 mm of well-rounded gravel (gravel size 15/30 mm)
- laying a 0.2 mm thick polyethylene or non-woven polyester sheet (minimum mass  $300 \text{ g}\cdot\text{m}^{-2}$ ) covered by a 20 mm thick layer of sand overlaid with a layer of concrete paving slabs<sup>(1)</sup>.

(1) If paving on plastic pads, the sand is not required.

### **Mechanically fastened**

13.6 The membrane should be unrolled onto the substrate without undulations, with required minimum side and end laps achieved

13.7 The membrane is fixed to the deck through insulation boards in the joint overlaps prior to welding seams in accordance with the Certificate holder's instructions.

13.8 The membranes should be fixed at the perimeters and details by mechanically fastening using termination bars.

### **Hot-air welding**

13.9 Joints are made using a hand-operated machine with the temperature set in accordance with the Certificate holder's instructions.

13.10 The lap area must be dry and clean. If the membrane in the weld area has become contaminated, it must be cleaned in accordance with the Certificate holder's instructions.

13.11 The welded width of the joint must be a minimum of 30 mm. On completion of the weld, the seam should be tested with a suitable metal probe, and any weakness repaired immediately.

13.12 Flashings should be formed in accordance with the Certificate holder's instructions.

13.13 The seam is tested with a metal probe to highlight poorly welded areas. Any such areas should be made good using hot-air welding.

## **14 Repair**

In the event of accidental damage, repairs can be carried out by cleaning the area around the damage and applying a patch as described in the Certificate holder's instructions.

## **Technical Investigations**

## **15 Tests**

An assessment was made of test data for the waterproofing membranes in relation to:

- thickness
- mass per unit area
- plasticiser content
- watertightness
- tensile strength and elongation
- tear resistance (nail)
- static loading
- dynamic indentation
- dimensional stability
- low temperature foldability
- wind uplift
- shear strength of joints



- peel of joints
- heat ageing
- UV ageing.

## 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 Data on the fire performance of the products were evaluated.

### Bibliography

BS 6229 : 2018 *Flat roofs with continuously supported coverings — Code of practice*

BS 8000-0 : 2014 *Workmanship on construction sites — Introduction and general principles*

BS 8000-4 : 1989 *Workmanship on building sites — Code of practice for waterproofing*

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*

BS EN 1991-1-4 : 2005 + A1 : 2010 *Eurocode 1 — Actions on structures — General actions — Wind actions*

NA to BS EN 1991-1-4 : 2005 + A1 : 2010 *UK National Annex to Eurocode 1 — Actions on structures — General actions — Wind actions*

EN 13956 : 2012 *Flexible sheets for waterproofing — Plastic and rubber sheets for roof waterproofing — Definitions and characteristics*

### 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 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.

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.