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**Agrément Certificate**

**23/6877**

Product Sheet 1 Issue 1

### TREMCO CPG UK ROOF WATERPROOFING SYSTEM

### ALPHAGUARD BLUESHIELD INVERTED WATERPROOFING SYSTEM

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to the AlphaGuard Blueshield Inverted Waterproofing System, a two-part spray-applied polyurethane, for use as an elastomeric waterproofing layer on pitched, flat and zero fall roofs, and in protected roof, blue roof specifications in combination with a stormwater attenuation system<sup>(2)</sup>, roof garden and green roof specifications on new or existing roofs.

(1) Hereinafter referred to as 'Certificate'.

(2) The stormwater attenuation system is outside the scope of this Certificate.

#### The assessment includes

##### Product factors:

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

##### Process factors:

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

##### Ongoing contractual Scheme elements†:

- regular assessment of production
- formal 3-yearly review



#### KEY FACTORS ASSESSED

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

The BBA has awarded this Certificate to the company named above for the 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

Date of issue: 6 June 2023

Hardy Giesler  
Chief Executive Officer

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

*The BBA is a UKAS accredited Inspection Body (No. 4345), Certification Body (No. 0113) and Testing Laboratory (No. 3537).*

*Readers MUST check that this is the latest issue of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.*

*The Certificate should be read in full as it may be misleading to read clauses in isolation.*

*Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.*

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## SUMMARY OF ASSESSMENT AND COMPLIANCE

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

### Compliance with Regulations

Having assessed the key factors, the opinion of the BBA is that the AlphaGuard Blueshield Inverted Waterproofing System, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations:



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

|                                 |              |  |
|---------------------------------|--------------|--|
| <b>Requirement:</b><br>Comment: | <b>B4(1)</b> | <b>External fire spread</b><br>The system is restricted by this Requirement in some circumstances. See section 2 of this Certificate.                              |
| <b>Requirement:</b><br>Comment: | <b>B4(2)</b> | <b>External fire spread</b><br>On a suitable substructure, the system may enable a roof to be unrestricted by this Requirement. See section 2 of this Certificate. |
| <b>Requirement:</b><br>Comment: | <b>C2(b)</b> | <b>Resistance to moisture</b><br>The system will enable a roof to satisfy this Requirement. See section 3 of this Certificate.                                     |
| <b>Regulation:</b><br>Comment:  | <b>7(1)</b>  | <b>Materials and workmanship</b><br>The system is acceptable. See sections 8 and 9 and the Annex part of this Certificate.   |



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

|   |                 |   |
|---|-----------------|---|
| <b>Regulation:</b><br>Comment:              | <b>8(1)(2)</b>  | <b>Fitness and durability of materials and workmanship</b><br>The use of the system can satisfy the requirements of this Regulation. See sections 8 and 9 and the Annex part of this Certificate.   |
| <b>Regulation:</b><br>Standard:<br>Comment: | <b>9</b><br>2.6 | <b>Building standards applicable to construction</b><br>Spread to neighbouring buildings<br>The system is restricted under clause 2.6.4 <sup>(1)(2)</sup> of this Standard in some circumstances. See section 2 of this Certificate.                      |
| Standard:<br>Comment:                       | 2.7             | Spread on external walls<br>Use of the system is restricted under clauses 2.7.1 <sup>(1)(2)</sup> and 2.7.2 <sup>(1)(2)</sup> of this Standard in some circumstances. See section 2 of this Certificate.  |
| Standard:<br>Comment:                       | 2.8             | Spread from neighbouring buildings<br>The system, when applied to a suitable substructure, may enable a roof to be unrestricted by clause 2.8.1 <sup>(1)(2)</sup> of this Standard. See section 2 of this Certificate.                                    |
| Standard:<br>Comment:                       | 3.10            | Precipitation<br>The use of the system 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 3 of this Certificate.                              |
| Standard:<br>Comment:                       | 7.1(a)          | Statement of sustainability<br>The system can contribute to satisfying 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><br>Comment:              | <b>12</b>       | <b>Building standards applicable to conversions</b><br>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 <sup>(1)(2)</sup> and Schedule 6 <sup>(1)(2)</sup> .        |

- (1) Technical Handbook (Domestic).  
(2) Technical Handbook (Non-Domestic).



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

|                    |   |   |
|--------------------|---|---|
| <b>Regulation:</b> | <b>23(1)(a)(i)</b>                        | <b>Fitness of materials and workmanship</b>   |
| <b>Comment:</b>    | <b>) (ii)(iii)(iv)</b><br><b>) (b)(i)</b> | The system is acceptable. See sections 8 and 9 and the Annex part of this Certificate.  |
| <b>Regulation:</b> | <b>28(b)</b>                              | <b>Resistance to moisture and weather</b>   |
| <b>Comment:</b>    |   | The system will enable a roof to satisfy the requirements of this Regulation. See section 3 of this Certificate.                              |
| <b>Regulation:</b> | <b>36(a)</b>                              | <b>External fire spread</b>   |
| <b>Comment:</b>    |   | The system is restricted by this Requirement in some circumstances. See section 2 of this Certificate.  |
| <b>Regulation:</b> | <b>36(b)</b>                              | <b>External fire spread</b>   |
| <b>Comment:</b>    |   | On a suitable substructure, the use of the system may enable a roof to be unrestricted by this Regulation. See section 2 of this Certificate. |

### Additional Information

#### NHBC Standards 2023

In the opinion of the BBA, the AlphaGuard Blueshield Inverted Waterproofing System, 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, terraces and balconies*.

In addition, in the opinion of the BBA, the system when installed and used in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards for Conversions and Renovations*, taking account other relevant guidance within the chapter and the suitability of the substrate to receive the system.

The NHBC Standards do not cover the refurbishment of existing roofs.

### Fulfilment of Requirements

The BBA has judged the AlphaGuard Blueshield Inverted Waterproofing System to be satisfactory for use as described in this Certificate. The system has been assessed as an elastomeric waterproofing layer on pitched, flat and zero fall roofs, and in protected roof, blue roof, roof garden and green roof specifications on new or existing roofs.

### ASSESSMENT

#### Product description and intended use

The Certificate holder provided the following description for the system under assessment. The AlphaGuard Blueshield Inverted Waterproofing System consists of:

- AlphaGuard Blueshield PMCS/01 Primer — a single-component, solvent-based primer containing di-phenylmethane di-isocyanate
- AlphaGuard Blueshield — a two-part, solvent-free, blue-pigmented polyurethane elastomer, comprising Part A, PmB PU 0308 (catalyst/blue pigment) and Part B, Desmodur PU 0309.

## Ancillary Items

The Certificate holder recommends the following ancillary items for use with the system, but these materials have not been assessed by the BBA and are outside the scope of this Certificate:

- polyester-reinforced, bitumen-modified protection board
- moisture-cured polysulphide sealant
- acrylic polymer-modified, curing repair mortar
- needle punched, non-woven geotextile protection membrane
- Pitchmastic PmB Binder – two-component polyurethane-based binder / primer
- butyl elastomer movement joint sealing strip
- expansion joint membrane
- epoxy adhesive
- up-stand insulation board
- extruded polystyrene (xps) and expanded polystyrene (eps) insulation boards
- rainwater storage / attenuation box
- blue roof filtration fleece
- restrictors
- pedestals — for paving and decking systems
- green roofers — extensive, biodiverse, and intensive green roof systems (inclusive of drainage and filter fleece)
- Veda movement joint systems
- VF void former
- overflow outlets

The system is intended for use as a waterproofing layer on new or existing pitched, flat and zero fall roofs in:

- inverted roof specifications using aggregate ballast on flat roofs with limited access
- protected roof specifications using pavers or other suitable protection on flat roofs with limited or pedestrian access
- green roof specifications on flat roofs with limited or pedestrian access, or pitched roofs with limited access
- roof garden specifications on flat roofs with limited or pedestrian access
- biodiverse specifications on flat roofs with limited or pedestrian access or pitched roofs with limited access
- blue roof specifications.

The system is suitable for use on concrete and metal substrates.

## Definitions for products and applications inspected

- limited access roof — a roof subjected only to pedestrian traffic for maintenance of the roof covering, cleaning of gutters, etc
- pedestrian access roof — a roof that is not subjected to vehicular traffic
- flat roof — a roof having a minimum finished fall of 1:80<sup>(1)</sup>
- zero fall roofs — a roof having a minimum finished fall between 0 and 1:80<sup>(1)</sup>
- pitched roof — a roof having a fall in excess of 1:6
- roof garden (intensive) — a roof with a substantial layer of growing medium with planting that can include shrubs and trees, and generally accessible to pedestrians
- green roof (extensive) — a roof with a shallow layer of growing medium planted with low-maintenance plants such as mosses, sedums, grasses and some wildflower species
- biodiverse roof — a roof planted with the aim of either recreating the habitat that was lost when the building was erected or enhancing it
- blue roofs — flat or zero fall roof which are designed to allow controlled attenuation of rain fall during heavy and storm events, as part of sustainable urban drainage systems (SUDS)<sup>(2)</sup>.

(1) NHBC Standards 2023 require a minimum fall of 1:60 for green roofs and roof gardens

(2) The stormwater attenuation system is outside the scope of this Certificate.

## **Product assessment – key factors**

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

## 1 Mechanical resistance and stability

Not applicable.

## 2 Safety in case of fire

Data were assessed for the following characteristics.

### 2.1 External fire spread

2.1.1 When tested to CEN/TS 1187 : 2012, Test 4, and classified to EN 13501-5 : 2016, the constructions given in Tables 1 and 2 of this Certificate achieved B<sub>ROOF</sub>(t4) for slopes below 10°.

*Table 1 Tested unprotected systems*

| Substrate                                       | Primer   | Base coat   | Top coat   |
|---|--|---|--|
| Fibre cement board<br>8 mm thick <sup>(1)</sup> | Polyurethane 125 g·m <sup>-2</sup><br>(roller applied) | AlphaGuard Blueshield<br>2.7 kg·m <sup>-2</sup> (spray applied) | Sanded key primer and quartz<br>aggregate (1-3 mm)<br>125 g·m <sup>-2</sup> (roll applied) |
| Fibre cement board<br>8 mm thick <sup>(1)</sup> | Polyurethane 125 g·m <sup>-2</sup><br>(roller applied) | AlphaGuard Blueshield<br>2.7 kg·m <sup>-2</sup> (spray applied) | -  |
| Fibre cement board<br>8 mm thick <sup>(1)</sup> | Polyurethane 125 g·m <sup>-2</sup><br>(roller applied) | AlphaGuard Blueshield<br>2.7 kg·m <sup>-2</sup> (spray applied) | Bindercoat Black + Quartz<br>1 kg·m <sup>-2</sup> (roll applied)                           |

*Table 2 Tested protected systems*

| System Type                            | Substrate                              | Waterproofing layer   | Insulation                        | System details   |
|--|--|---|-----------------------------------|--|
| Ballasted<br>systems <sup>(2)(3)</sup> | Magnesium oxide<br>board (12 mm thick) | AlphaGuard Blueshield<br>2.8 kg·m <sup>-2</sup> (spray applied) | 100 mm of extruded<br>polystyrene | WFRL membrane <sup>(6)</sup> and<br>80 mm layer of stones<br>20 – 40 mm in diameter  |
|  | Magnesium oxide<br>board (12 mm thick) | AlphaGuard Blueshield<br>2.8 kg·m <sup>-2</sup> (spray applied) | 500 mm of extruded<br>polystyrene |  |
| Green roof<br>systems <sup>(4)</sup>   | Magnesium oxide<br>board (12 mm thick) | AlphaGuard Blueshield<br>2.8 kg·m <sup>-2</sup> (spray applied) | 120 mm of extruded<br>polystyrene | WFRL membrane <sup>(6)</sup> ,<br>drainage tray, drainage matt,<br>sedum substrate (50 mm<br>thick), sedum matt (15 mm -<br>25 mm thick) |
|  | Magnesium oxide<br>board (12 mm thick) | AlphaGuard Blueshield<br>2.8 kg·m <sup>-2</sup> (spray applied) | 480 mm of extruded<br>polystyrene |  |
| Paver<br>systems <sup>(5)</sup>        | Magnesium oxide<br>board (12 mm thick) | AlphaGuard Blueshield<br>2.8 kg·m <sup>-2</sup> (spray applied) | 100 mm of extruded<br>polystyrene | WFRL membrane <sup>(6)</sup> , paving<br>support and 50 mm thick<br>pavers   |
|  | Magnesium oxide<br>board (12 mm thick) | AlphaGuard Blueshield<br>2.8 kg·m <sup>-2</sup> (spray applied) | 450 mm of extruded<br>polystyrene |  |

- (1) Fire test/Classification reports, reference 20267C and D, conducted by Warrington Fire, Gent. Reports available from the Certificate holder.
- (2) Fire test/Classification reports, reference P123886, conducted by BRE Global. Reports available from the Certificate holder.
- (3) Fire test/Classification reports, reference P123888, conducted by BRE Global. Reports available from the Certificate holder.
- (4) Fire test/Classification reports, reference P124769, conducted by BRE Global. Reports available from the Certificate holder.
- (5) Fire test/Classification reports, reference P125487, conducted by BRE Global. Reports available from the Certificate holder.
- (6) WFRL – Water Flow Reducing Layer made from non-woven polypropylene.

2.1.2 On the basis of data assessed, the constructions listed in Tables 1 and 2 will be unrestricted by the documents supporting the national Building Regulations with respect to proximity to a boundary.

2.1.3 A roof incorporating the system will be similarly unrestricted in the following circumstances:

- protected or inverted roof specifications, including an inorganic covering listed in the Annex of Commission Decision 2000/553/EC
- a roof garden covered with a drainage layer of gravel 100 mm thick and a soil layer 300 mm thick
- irrigated roof gardens and green roofs.

2.1.4 The classification and permissible areas of use for other specifications must be confirmed by reference to the requirements of the documents supporting the national Building Regulations.

2.1.5 If allowed to dry, plants used may allow the spread of flame across the roof. This must be taken into consideration when selecting suitable plants for the roof. Appropriate planting, irrigation and/or protection must be applied to ensure the overall fire-rating of the roof is not compromised.

## 2.2 Reaction to fire

2.2.1 The Certificate holder has not declared a reaction to fire classification for the AlphaGuard Blueshield Inverted Waterproofing System.

2.2.2 On the basis of data assessed, the system will be restricted in use under the documents supporting the national Building Regulations.

2.2.3 In England, the system, when used in pitches greater than 70°, excluding upstands, should not be used less than 1 m from a boundary, or on residential buildings more than 11 m in height or on other buildings more than 18 m in height. Restrictions apply on assembly and recreation buildings. These constructions should also be included in calculations of unprotected area.

2.2.4 In Wales, the system, when used in roof pitches greater than 70°, excluding upstands, should not be used less than 1 m from a boundary, or on other buildings more than 18 m in height or, in some cases, on assembly and recreation buildings. These constructions should also be included in calculations of unprotected area.

2.2.5 In Scotland and Northern Ireland, for systems incorporating the system in pitches greater than 70°, excluding upstands, that do not achieve the minimum Class E reaction to fire classification to BS EN 13501-1: 2018, designers should seek guidance on the proposed use of the system from the relevant Building Control Body.

## 3 Hygiene, health and the environment

Data were assessed for the following characteristics.

### 3.1 Weathertightness

3.1.1 Results of weathertightness tests are given in Table 3.

*Table 3 Weathertightness results*

| Product assessed                      | Assessment method   | Requirement                  | Result (Mean)        |
|---------------------------------------|---|------------------------------|----------------------|
| 2.1 mm AlphaGuard Blueshield membrane | Watertightness by exposure to 7 bar for 72 hours to DIN 1048-5: 1978  | No evidence of water leakage | Pass                 |
| AlphaGuard Blueshield membrane        | Watertightness by exposure to 6 kPa for 24 hours to BS EN 1928 : 2000 | No evidence of water leakage | Pass                 |
| 2.1 mm AlphaGuard Blueshield membrane | Water vapour transmission properties to DIN 52615: 1987               | Value achieved               | S <sub>d</sub> – 1 m |

3.1.2 On the basis of data assessed, the product will adequately resist the passage of moisture to the inside of a building and so satisfy the requirements of the national Building Regulations.

3.1.3 The product was assessed for use as part of protected roof constructions (see the product description and intended use section of this Certificate) and therefore the resistances of delamination tests are not required. See section 9.1 of this Certificate.

### 3.2 Resistance to mechanical damage

3.2.1 Results of resistance to mechanical damage tests are given in Table 4.

**Table 4 Mechanical damage results**

| Product assessed                                   | Assessment method  | Requirement  | Result         |
|--|--|--|----------------|
| AlphaGuard Blueshield membrane (thickness 2.09 mm) | Tensile strength to BS EN ISO 527-3 : 1996                                   | Value achieved   | 9.98 MPa /     |
| AlphaGuard Blueshield membrane (thickness 2.09 mm) | Elongation to BS EN ISO 527-3 : 1996   | Value achieved   | 364.9 %        |
| AlphaGuard Blueshield membrane                     | Dynamic indentation to EOTA TR 006 (on steel) tested at 23°C tested at -10°C | Value achieved   | I <sub>4</sub> |
|  |  |  | I <sub>4</sub> |
| AlphaGuard Blueshield membrane                     | Static indentation to EOTA TR 007 (on steel) tested at 20°C tested at 60°C   | Value achieved   | L <sub>4</sub> |
|  |  |  | L <sub>4</sub> |
| AlphaGuard Blueshield membrane                     | Fatigue to EOTA TR 008 (1000 cycles at -10°C)                                | No evidence of leakage after 24 hours exposure to 100 mm head of water. No debonding, or if any, not exceeding 75 mm in total or 50 mm on one side of the gap. | Pass           |

3.2.2 On the basis of data assessed, when covered with aggregate, the product can accept, without damage, the foot traffic and light concentrated loads associated with installation and maintenance and the effects of minor movement likely to occur in practice while remaining weathertight.

3.2.3 Whilst the product can withstand distributed loads, it can be damaged by sharp concentrated loads and these must be avoided.

### 3.3 Resistance to root penetration

3.3.1 Results of root penetration tests are given in Table 5.

**Table 5 Root penetration results**

| Product assessed                                  | Assessment method                   | Requirement                         | Result |
|---|-------------------------------------|-------------------------------------|--------|
| AlphaGuard Blueshield Membrane (thickness 2.5 mm) | Root Penetration to DIN 4062 : 1978 | Roots do not penetrate the membrane | Pass   |

3.3.2 The product will resist penetration by plant roots and rhizomes and can be used as a waterproofing system in green roof and roof garden specifications.

## 4 Safety and accessibility in use

Not applicable.

## 5 Protection against noise

Not applicable.

## 6 Energy economy and heat retention

Not applicable.

## 7 Sustainable use of natural resources

Not applicable.

## 8 Durability

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

8.2 Specific test data were assessed, as given in Table 6.

| Product assessed               | Assessment method  | Requirement   | Result         |
|--------------------------------|--|---|----------------|
| AlphaGuard Blueshield membrane | Tensile strength to BS EN ISO 527-3 : 1996<br>Heat aged at 80°C for 100 days                       | No significant loss of properties following ageing  | Pass           |
| AlphaGuard Blueshield membrane | Elongation to BS EN ISO 527-3 : 1996<br>Heat aged at 80°C for 100 days                             | No significant loss of properties following ageing  | Pass           |
| AlphaGuard Blueshield membrane | Dynamic indentation to EOTA TR 006 (on steel)<br>Heat aged at 80°C for 100 days tested at -10°C    | Value achieved  | I <sub>4</sub> |
| AlphaGuard Blueshield membrane | Static indentation to EOTA TR 007 (on steel)<br>Water exposure at 60°C for 180 days tested at 60°C | Value achieved  | L <sub>4</sub> |
| AlphaGuard Blueshield membrane | Fatigue to EOTA TR 008 (on concrete)<br>Heat aged at 80°C for 100 days (50 cycles)                 | No evidence of leakage after 24 hours exposure to 100 mm head of water. No debonding, or if any not exceeding 75 mm in total or 50 mm on one side of the gap. | Pass           |

### 8.3 Service life

8.3.1 Under normal service conditions, the system will have a service life of at least 25 years provided it is designed, installed and maintained in accordance with this Certificate and the Certificate holder's instructions.

8.3.2 Where the system is used in a fully protected specification and is subjected to normal service conditions, it will provide an effective barrier to the transmission of liquid water and water vapour for the design life of the roof in which it is incorporated, provided it is designed, installed and maintained in accordance with this Certificate and the Certificate holder's instructions.

## PROCESS ASSESSMENT

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

## 9 Design, installation, workmanship and maintenance

### 9.1 Design

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



9.1.2 Decks to which the product is to be applied must comply with the relevant requirements of BS 6229 : 2018 Section 8.4, BS 8217 : 2005 Sections 5.1.2 and 6.7 and, where appropriate, NHBC Standards 2023, Chapter 7.1. Attention is drawn to the requirements of these Standards to ensure that reinforced concrete roof slabs are finished to an acceptable standard, allow free drainage of water and are allowed to dry prior to the installation of the waterproofing. When these conditions are not met, appropriate remedial treatment is essential.

9.1.3 For design purposes of flat roofs, twice the minimum finished fall must be assumed, unless a detailed analysis of the roof is available, including overall and local deflection, and direction of falls.

9.1.4 Imposed loads, dead loading and wind load specifications must be calculated by a suitably experienced and competent individual in accordance with BS EN 1991-1-1 : 2002, BS EN 1991-1-3 : 2003 and BS EN 1991-1-4 : 2005, and their UK National Annexes.

9.1.5 The ballast requirements for the insulation in inverted roof specification components should be calculated by a suitably experienced and competent individual in accordance with the relevant parts of BS EN 1991-1-4 : 2005 and its UK National Annex. The insulation should always be ballasted with a minimum depth of 50 mm of aggregate or paving. In areas of high-wind exposure, the Certificate holder's advice should be sought.

9.1.6 The soil used in roof gardens must not be of the type that will be removed, or become localised, owing to wind scour experienced on the roof.

9.1.7 It must be recognised that the type of plants used in roof gardens could significantly affect the expected wind loads experienced in service.

9.1.8 The drainage system for inverted roof, zero fall roofs, blue roofs, green roofs, roof gardens or biodiverse roofs must be correctly designed, and the following points must be addressed:

- provision made for access for maintenance purposes
- for zero fall roofs, it is particularly important to identify the correct drainage points, to ensure that drainage is sufficient and effective
- dead loads for green roof and roof gardens can increase if the drains become partially or completely blocked causing waterlogging of the drainage layer
- for inverted roof specifications, the approach given in BBA Information Bulletin No 4 *Inverted roofs – Drainage and U value corrections* must be followed.

9.1.9 Insulation materials used in conjunction with the product must be in accordance with the manufacturer's instructions and be either:

- as described in the relevant clauses of BS 6229 : 2018, or
- the subject of a current BBA Certificate and used in accordance with, and within the scope of, that Certificate.

9.1.10 Where pedestrian access is required, inverted roof specifications incorporating pavers or other suitable protection must be used.

## 9.2 Installation

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

9.2.2 Installation of the product must be in accordance with the relevant clauses of BS 8000-0 : 2014 and BS 8000-4 : 1989, the Certificate holder's instructions and this Certificate. A summary of instructions and guidance are provided in Annex A.

9.2.3 The substrate should be clean and laitance free, in order to obtain the minimum adhesion of  $0.7N \cdot mm^{-2}$  required. Preparation to achieve this can be by shotblasting, hydro-blasting, grinding and other methods approved by the Certificate holder.

9.2.4 Installation should not be carried out during inclement weather (eg rain, fog or snow). When the temperature is below  $0^{\circ}C$ , suitable precautions against surface condensation must be taken. During the installation of the product, the substrate temperature must be 3 degrees above the dew-point for concrete and 5 degrees above the dew-point for steel.

9.2.5 Concrete surfaces should have a smooth finish, free from cavities, loosely adhering material and sharp protrusions. Surfaces must be dry and free from oil, grease, curing compounds, moss, algae growth, bituminous products, dust, frost, laitance and other contaminants likely to affect the adhesion of the product. Adhesion to substrates will depend on the condition and cleanliness of the substrate.

9.2.6 New concrete must be well compacted and finished, preferably by power float, power trowelling, steel float and easy float finish to achieve a U4 concrete finish. Concrete toppings and screeds must be properly formulated, applied and compacted. They must be bonded to the substrate and have a floated finish with minimum laitance.

9.2.7 Substrates on which the product is to be applied must be properly prepared in accordance with the Certificate holder's instructions.

9.2.8 AlphaGuard Blueshield PMCS/01 Primer is applied by airless spray, roller or brush at a minimum coverage rate of  $65 \text{ g}\cdot\text{m}^{-2}$ .

9.2.9 The primer is over-sprayed with AlphaGuard Blueshield membrane within 24 hours of application, provided the primed surface is clean and dry.

9.2.10 If more than 24 hours elapse or the primed surface becomes wet due to rain or condensation, the primer must be abraded and the area re-primed.

9.2.11 AlphaGuard Blueshield components Parts A and B are stored in temperature-controlled tanks, maintained at between 50 and 80°C, within the spray equipment plant during application.

9.2.12 The spray equipment is computer controlled and maintains a Part A : Part B mix ratio of 100 : 96 ± 5% by weight.

9.2.13 AlphaGuard Blueshield membrane (pigmented blue) is spray-applied in one coat, two coats or multiple coats at a coverage rate of  $2.7 \text{ kg}\cdot\text{m}^{-2}$  to give a minimum total thickness of 2 mm including peaks, arises and irregularities in the concrete deck.

9.2.14 When applying the product in two coats, a minimum thickness of 1 mm is applied for the first coat and allowed to dry. Within four hours, the second coat is applied to achieve a total minimum thickness of 2 mm. When applying the product in multiple coats, each coat is applied within four hours of the previous coat to achieve a total minimum thickness of 2 mm. If the four-hour interval is exceeded, an additional coat of AlphaGuard Blueshield PMCS/01 Primer is required before the next coat is applied.

9.2.15 Where a new waterproofing membrane is joined to an existing AlphaGuard Blueshield membrane, and at day joints, the new application must be lapped onto the existing membrane by a minimum of 100 mm.

9.2.16 Where the existing membrane is clean and less than four hours old, no additional preparation is necessary. If it is dirty or contaminated, the membrane surface must be cleaned using a suitable solvent, eg acetone.

9.2.17 Where the existing membrane is over four hours old, AlphaGuard Blueshield PMCS/01 Primer must be applied to give a minimum margin of 20 mm greater than the lap and allowed to dry.

9.2.18 Detailing (eg upstands) must be carried out in accordance with the Certificate holder's instructions.

9.2.19 Within four hours of membrane application, identified pin holes, blow holes and blisters are over-sprayed with AlphaGuard Blueshield membrane to a minimum thickness of 2 mm.

9.2.20 After four hours of membrane application, the area over and around any pin hole, blow hole or blister is cleaned using a suitable solvent, ensuring a minimum 150 mm lap. The repair area is abraded and AlphaGuard Blueshield PMCS/01 Primer is applied by brush or spray.

9.2.21 A minimum of 30 minutes must be allowed for the primer to dry before the AlphaGuard Blueshield membrane is applied to a minimum thickness of 2 mm, ensuring a minimum peripheral lap of 100 mm around the repair.

9.2.22 Site control checks are made by the Certificate holder's trained operatives in accordance with their instructions.

9.2.23 The product must be covered with a suitable protection (see Annex A).

9.2.24 The NHBC requires that the product, once installed, is inspected in accordance with *NHBC Standards 2023*, Chapter 7, Clause 7.1.11, and undergoes an appropriate integrity test, where required. Any damage to the product assessed in this Certificate must be repaired in accordance with section 9.4 of this Certificate and reinspected, in order to maintain product performance.

### 9.3 Workmanship

Practicability of installation was assessed by the BBA on the basis of Certificate holder's information. To achieve the performance described in this Certificate, the product must only be installed by contractors who have been trained and approved by the Certificate holder.

### 9.4 Maintenance and repair

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

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

9.4.2.1 The product must be the subject of six-monthly inspections and maintenance in accordance with the recommendations of BS 6229 : 2018, Chapter 7, and the Certificate holder's own maintenance requirements, where relevant, to ensure continued satisfactory performance.

9.4.2.2 Green roofs and roof gardens must be the subject of regular inspections, particularly in autumn after leaf fall and in spring, to ensure unwanted vegetation and other debris are cleared from the roof and drainage outlets (see section 9.1).

9.4.2.3 Should minor damage occur, it must be rectified by cleaning back to unweathered material and an appropriate remedial product applied in accordance with the Certificate holder's instructions to the damaged area.

## **10 Manufacture**

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

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

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

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

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

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

†10.1.6 The BBA has undertaken to review the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

## **11 Delivery and site handling**

11.1 The Certificate holder stated that the product is delivered to site in packaging bearing Certificate holder's name, logo, product name, batch number, health and safety data and the BBA logo incorporating the number of this Certificate.

11.2 The packaging of the product is given in Table 7.

Table 7 Weights and packaging

| Component                            | Weight (kg)   | Container                | Shelf-life (months) |
|--------------------------------------|---------------|--------------------------|---------------------|
| AlphaGuard Blueshield PMCS/01 Primer | 20, 25        | Metal/plastic drums      | 6                   |
| AlphaGuard Blueshield (Part A)       | 60, 200, 1000 | Metal drums/plastic IBCs | 6                   |
| AlphaGuard Blueshield (Part B)       | 60, 200, 1000 | Metal drums/plastic IBCs | 6                   |

## ANNEX A – SUPPLEMENTARY INFORMATION †

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

### Construction (Design and Management) Regulations 2015

### Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

### CLP Regulations

The Certificate holder has taken the responsibility of classifying and labelling the product under the *GB CLP Regulation* and the *CLP Regulation (EC) No 1272/2008 – classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

### Management Systems Certification for production

The management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by Lloyd's Register Quality Assurance Ltd (Certificate LRQ10005056).

### Additional information on installation

#### Design

A.1 Guidance on the design of blue roofs is available in NFRC *Technical Guidance Note for the construction and design of Blue Roofs. Roofs and podiums with controlled temporary water attenuation*.

#### General

A.2 Installation should also be in accordance with the relevant clauses of Liquid Roofing and Waterproofing Association (LRWA) Note 7 - *Specifier Guidance for Flat Roof Falls*.

A.3 Advice on suitable planting specifications can be obtained from the Certificate holder, but such advice is outside the scope of this Certificate.

A.4 Cracks and other defects in the substrate should be repaired using an approved repair material. The advice of the Certificate holder should be sought for approved products, but such advice and products are outside the scope of this Certificate.

#### Protective finishes

A.5 The top of the ballast/protective layer must be a minimum of 150 mm from the top of parapets, details and services.

#### Gravel

A.6 To prevent flotation, wind uplift and UV degradation, inverted insulation boards up to 50 mm thick must be loaded with at least a 50 mm deep covering of river-washed, rounded stones of nominal size 20 to 40 mm, round washed broken stone of similar size, or similar stone approved by the Certificate holder.

A.7 It is essential that the depth and size of gravel are such that the product is completely covered and protected.

A.8 The proportion of fines in the aggregate must be kept to a minimum to prevent the risk of gullies being blocked and to discourage organic growth.

A.9 The dead load imposed by 50 mm of gravel is approximately  $80 \text{ kg}\cdot\text{m}^{-2}$ . The deck must be capable of withstanding this as well as any additional loads, static or imposed.

A.10 The gravel loading specification is used on roofs in sheltered regions or low- to medium-rise buildings up to ten storeys. When laid in moderate exposure zones, or on buildings of up to fifteen storeys, this gravel specification is permitted but the perimeter should be loaded with paving. For severe exposure zones or tall buildings, specialist advice should be sought, but such advice is outside the scope of this Certificate. BRE Digest 311 should be used when a calculation is required for a specific building project.

#### Paving slabs

A.11 Depending on access to the roof and wind effects, one of the following arrangements should be used:

- standard pressed concrete paving slabs to BS EN 1339 : 2003 on appropriate spacers, (see section 16.8), or
- standard pressed concrete paving slabs or paving bricks on 20 mm depth of either gravel graded 4 to 8 mm, or sand or small gravel, on a slip sheet of non-woven, synthetic fibre fleece or fine polyethylene mesh, aperture 2 mm or less, or similar material approved by the Certificate holder.

A.12 The paving should have a minimum thickness of 50 mm. Ballast requirements should be calculated in accordance with the relevant parts of BS EN 1991-1-4 : 2005 and its UK National Annex.

A.13 The deck must also safely carry the additional static load of approximately  $25 \text{ kg}\cdot\text{m}^{-2}$  for 50 mm thick slabs. When laid in conjunction with an intermediate layer of sand to a depth of 20 mm, a further static load of approximately  $40 \text{ kg}\cdot\text{m}^{-2}$  must be taken into account.

A.14 The method of laying and bedding will depend upon the form of the roof, and the Certificate holder's advice should be sought, but such advice is outside the scope of this Certificate.

#### Green roofs, roof gardens and biodiverse roofs

A.15 Recommendations for the design of green roof and roof garden specifications are available within the latest edition of the GRO *Green Roof code – Green Roof Code of Best Practice for the UK*.

A.16 Green roofs, roof gardens and biodiverse roofs should be of a suitable design. In cases of doubt the Certificate holder's advice should be sought, but such advice is outside the scope of this Certificate.

## Bibliography

BRE Digest 311 *Wind scour of gravel ballast on roofs*

BS 6229 : 2018 *Flat roofs with continuously supported flexible waterproof 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 1339 : 2003 *Concrete paving flags — Requirements and test methods*

BS EN 1991-1-1 : 2002 *Eurocode 1 : Actions on structures — General actions— Densities, self-weight, imposed loads for buildings*

NA to BS EN 1991-1-1 : 2002 UK National Annex to Eurocode 1 : *Actions on structures — General actions— Densities, self-weight, imposed loads for buildings*

BS EN 1991-1-3 : 2003 + A1 : 2015 *Eurocode 1 : Actions on structures — General actions — Snow loads*

NA to BS EN 1991-1-3 : 2003 + A1 : 2015 UK National Annex to Eurocode 1 : *Actions on structures — General actions — Snow loads*

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*

BS EN 13501-5 : 2016 *Fire classification of construction products and building elements — Classification using data from external fire exposure to roof tests*

BS EN ISO 527-3 : 2018 *Plastics — Determination of tensile properties - Part 3: Test conditions for films and sheets.*

BS EN 1928 : 2000 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing. Determination of watertightness*

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

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

DIN 1048-5 : 1991 *Testing concrete – Testing of hardened concrete – Determination of the depth of penetration of water under pressure*

DIN 4062 : 1978 *Cold processable plastic jointing materials for sewer drains — Jointing materials for prefabricated parts of concrete, requirements, testing and processing*

DIN 52615 : 1987 *Testing of thermal insulating materials – Determination of water vapour (moisture) permeability of construction and insulating materials.*

EOTA TR 006 *Determination of the resistance to dynamic indentation*

EOTA TR 007 *Determination of the resistance to static indentation*

EOTA TR 008 *Determination of the resistance to fatigue movement*

## Conditions of Certificate

### Conditions

1 This Certificate:

- relates only to the product that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- 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.

2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

3 This Certificate will be displayed on the BBA website, and the Certificate Holder is entitled to use the Certificate and Certificate logo, provided that the product and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

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

5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

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

6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product which is contained or referred to in this Certificate is the minimum required to be met when the product is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.

**British Board of Agrément**

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