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Agrément Certificate  
**12/4962**  
Product Sheet 3

## SUREPLAN FPO MEMBRANES

### SUREPLAN FPO PROTECTED ROOF WATERPROOFING MEMBRANES

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Sureplan FPO Protected Roof Waterproofing Membranes, glass reinforced FPO roofing sheets for use as loose-laid waterproofing in warm ballasted roof, inverted roof and green roof (extensive) specifications.

(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 membranes will resist the passage of moisture into the building (see section 6).

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

**Resistance to wind uplift** — when sufficiently ballasted, the membranes will resist the effects of any likely wind suction acting on the roof (see section 8).

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

**Durability** — under normal service conditions the membranes will provide a durable roof waterproofing with a service life in excess of 20 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 their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Simon Wroe  
Head of Approvals — Materials

Greg Cooper  
Chief Executive

Date of First issue: 3 April 2013

*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, Sureplan FPO Protected Roof Waterproofing Membranes, if installed, used and maintained in accordance with this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



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

Requirement:	B4(2)	External fire spread
Comment:		When used in a suitable roof specification the use of the membranes will be unrestricted under this Requirements. See sections 7.1 to 7.3 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		The membranes, including joints, will enable a roof to meet this Requirement. See section 6.1 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The membranes are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.



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

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:		Use of the membranes satisfies the requirements of this Regulation. See sections 10, 11 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	2.8	Spread from neighbouring buildings
Comment:		When used in a suitable roof specification, the membranes are regarded as having low vulnerability under clause 2.8.1 <sup>(1)(2)</sup> of this Standard. See sections 7.1 to 7.3 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The membranes, 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 membranes can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	12	Building standards applicable to conversions
Comment:		All comments given for these membranes 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

Regulation:	23(a)(i)(iii)(b)(i)	Fitness of materials and workmanship
Comment:		The membranes are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The membranes, including joints, will enable a roof to satisfy the requirements of this Regulation. See section 6.1 of this Certificate.
Regulation:	36(b)	External fire spread
Comment:		When used in a suitable roof specification the use of the membranes will be unrestricted by the requirements of this Regulation. See sections 7.1 to 7.3 of this Certificate.

## Construction (Design and Management) Regulations 2007

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

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors 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 2013

NHBC accepts the use of Sureplan FPO Protected Waterproofing Membranes, provided they are installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 7.1 *Flat roofs and balconies*.

## CE marking

The Certificate holder has taken the responsibility of CE marking the products in accordance with harmonised European Standard EN 13956 : 2005. An asterisk (\*) appearing in this Certificate indicates that data shown is given in the manufacturer's Declaration of Performance.

# Technical Specification

## 1 Description

1.1 Sureplan FPO Protected Roof Waterproofing Membranes are glass reinforced, flexible polyolefin (FPO) roofing sheets, including:

- Sureplan FPO Reinforced Membrane
- Sureplan FPO Plus Reinforced Membrane, an enhanced fire performance grade
- Sureplan FPO Fleeceback Membrane, including a non-woven polyester fleece backing
- Sureplan FPO Plus Fleeceback Membrane, an enhanced fire performance grade, including non-woven polyester fleece backing.

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

Table 1 Nominal characteristics

Characteristic (units)	Nominal values	
	Reinforced	Fleeceback
Thickness of membrane excluding fleece* (mm)	1.5	1.5
Width* (m)	1.5	2.12
Length* (m)	15	15
Mass per unit area* (kg·m <sup>-2</sup> )		
Standard	1.72	2.02
Plus	1.99	2.29
Tensile strength* (N per 50 mm)		
longitudinal direction	≥ 1100	≥ 1100
transverse direction	≥ 1000	≥ 1000
Tear strength* (N)	≥ 125	≥ 125
Nail tear strength (N)	≥ 250	≥ 250
Low temperature foldability (°C)	≥ -40	≤ -40

1.3 Ancillary items necessary for installation of the membranes and included in this assessment are:

- Sureplan Detailing Membrane — an unreinforced flashing membrane for detailing
- Sureplan Coated Metal — FPO compound coated material sections for use at perimeter details and similar detailing
- Icopal Single-ply Fleeceback Adhesive — a polyurethane adhesive, for use in bonding the membrane to the substrate
- Sureplan internal corners and external corners — FPO prefabricated details.

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

- Icopal Protection Fleece — a non-woven polyester fleece for use as a separation/protection layer
- Icopal TPO Contact Adhesive — a contact adhesive for use in detailing of the membrane
- rainwater outlets — FPO finishing elements to detail at water drainage points in the roof field
- pipe flashings — FPO prefabricated details for roof penetrations
- lightning conductor pads.

## 2 Manufacture

2.1 The membrane is manufactured by a two pass extrusion coating process of the glassfibre reinforcement. For the fleece-backed membranes, a non-woven polyester fleece is laminated to the underside of the membrane.

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 wrapped in polythene on pallets with labels bearing the manufacturer's name and address, product identification, dimensions, batch number and the BBA identification mark incorporating the number of this Certificate.

3.2 Rolls should be stored on their side, on a clean, level surface, and kept under cover.

3.3 Icopal Single-ply Fleeceback Adhesive and Icopal TPO Contact Adhesive are classified under *The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP4)/Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) 2009*. The classifications are given in Table 2. These products bear the appropriate hazard warning.

Table 2 Flashpoint and hazard classification

Materials	Flashpoint (°C)	Classification
Icopal Single-ply Fleeceback Adhesive	N/A	Harmful
Icopal TPO Contact Adhesive	-18 <sup>(1)</sup>	Harmful, Highly flammable, Dangerous for the environment

(1) This component must be stored in accordance with *The Dangerous Substances and Explosive Atmospheres Regulations 2002*.

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Sureplan FPO Protected Roof Waterproofing Membranes.

### Design Considerations

#### 4 General

4.1 Sureplan FPO Protected Roof Waterproofing Membranes are satisfactory for use as a loose-laid waterproofing system for:

- warm ballasted roofs on flat roofs with limited access
- inverted roofs on flat roofs with limited access
- green roofs (extensive) on flat and pitched roofs with limited access.

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

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

4.4 Decks to which the products are to be applied must comply with the relevant requirements of BS 6229 : 2003, BS 8217 : 2005 and, where appropriate, *NHBC Standards 2013*, Chapter 7.1.

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

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

4.6 Recommendations for the design of green roof specifications are available within *The GRO Green Roof Code, Green Roof Code of Best Practice for the UK 2011*, issued by The Green Roof Organisation (GRO).

4.7 Structural decks to which the protected systems are to be applied must be suitable to transmit the dead and imposed loads experienced in service.

4.8 Imposed loads, dead loading and wind loads specifications are calculated in accordance with BS EN 1991-1-1 : 2002, BS EN 1991-1-3 : 2003, BS EN 1991-1-4 : 2005 and their respective UK National Annexes.

4.9 The drainage system for green roofs must be correctly designed, and provision made for access for maintenance purposes. Dead loads for green roofs and roof gardens can increase if the drains become partially or completely blocked causing waterlogging of the drainage layer.

4.10 In inverted roof specifications, the ballast requirements should be calculated in accordance with the relevant parts of BS EN 1991-1-4 : 2005 and the UK National Annex. Additional guidance for inverted roof specifications is given in BBA Information Bulletin No 4 *Inverted roofs – Drainage and U value corrections*.

## 5 Practicability of installation

Installation of the membranes must be carried out only by installers trained and approved by the Certificate holder.

## 6 Weathertightness



6.1 The membranes, including joints, when completely sealed and consolidated will adequately resist the passage of moisture into the building and enable a roof to comply with the requirements of the national Building Regulations:

**England and Wales** — Approved Document C, Requirement C2(b), Section 6

**Scotland** — Mandatory Standard 3.10, clauses 3.10.1 and 3.10.7

**Northern Ireland** — Regulation 28(b).

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

## 7 Properties in relation to fire



7.1 The membranes, when used in protected or inverted 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.

7.2 The designation of other specifications must be confirmed by:

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

**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.

7.3 In the opinion of the BBA, when used in irrigated green roofs, the use of the membrane will be unrestricted under the national Requirements:

**England and Wales** — Requirement B4(2)

**Scotland** — Mandatory Standard 2.8, clause 2.8.1

**Northern Ireland** — Regulation 36(b).

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

## 8 Resistance to wind uplift

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

## 9 Resistance to foot traffic

Results of tests indicate that the membranes can accept the limited foot traffic and light concentrated loads associated with the installation and maintenance. Reasonable care should be taken to avoid puncture by sharp objects or concentrated loads. Where traffic in excess of this is envisaged, such as maintenance of lift equipment, a walkway should be provided, for example, using concrete slabs supported on bearing pads.

## 10 Maintenance



10.1 Installed roofs must be the subject of annual inspections and maintenance to ensure continued performance.

10.2 Maintenance should include checks and operations to ensure the following where applicable:

- adequate ballast is in place and evenly distributed over the membrane
- protection layers are in good condition
- exposed membrane is free from the build-up of silt and other debris, and unwanted vegetation is cleared.

10.3 Where damage has occurred, it must be repaired in accordance with section 16 and the Certificate holder's instructions.

10.4 Green roofs and roof gardens must be the subject of regular inspections, particularly in autumn after leaf fall and in the spring, to ensure unwanted vegetation and other debris are cleared from the roof and drainage outlets. Guidance is available within *The GRO Green Roof Code, Green Roof Code of Best Practice for the UK 2011*.

## 11 Durability



Accelerated weathering tests and evidence from existing installations confirm that satisfactory retention of physical properties is achieved. Under normal conditions, the products will have a service life in excess of 20 years.

## 12 Reuse and recyclability

The products comprise thermoplastic polyolefin and glass, which can be recycled.

## Installation

### 13 General

13.1 Installation of Sureplan FPO Protected Roof Waterproofing Membranes must be carried out in accordance with the relevant clauses of the Certificate holder's instructions, BS 8000-4 : 1989 and this Certificate.

13.2 Conditions on site should be those for normal roof waterproofing work. Deck surfaces must be dry, clean and free from sharp projections such as nail heads and concrete nibs. When used over a rough substrate, a suitable protection layer must be placed over the substrate.

13.3 When using non-fleece backed membranes in inverted roof specifications, Icopal Protection Fleece is installed as a separation layer between the substrate and the membrane.

13.4 Installation should not be carried out during wet weather (eg rain, fog, snow) nor when the temperature is below 0°C unless suitable precautions against surface condensation are taken in accordance with the Certificate holder's instructions.

13.5 Details are formed in accordance with the Certificate holder's instructions.

13.6 Ballast or other bulk materials must not be stored on one single area of the roof prior to installation, to ensure localised overloading does not occur.

### 14 Procedure

14.1 The membranes are unrolled onto the substrate without undulations, with 110 mm minimum side laps and 60 mm minimum end laps being butt jointed and strapped.

14.2 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.

14.3 Warm ballasted and inverted roofs must be covered by at least a 50 mm depth of well-rounded gravel. In areas of high-wind exposure, paving slabs set on a suitable support (eg pads) may be considered.

14.4 For warm ballasted and green roof specifications, Icopal Protection Fleece is laid between the membrane and the ballast layer/planting medium.

14.5 Account must be taken in the design of the deck of the extra dead loading due to the weight of aggregate, growing medium and/or paving.

14.6 Details at perimeter upstands must be either fully adhered or mechanically fixed.

### 15 Jointing

15.1 Joints are made using either automatic or hand-operated machines with the temperature set in accordance with the Certificate holder's instructions.

15.2 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.

15.3 The welded width of the joint must be a minimum of 40 mm for field welds and detailing. Care must be taken to ensure that overheating of the membrane does not occur, as possible impairment of the membrane may result.

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

### 16 Repair

In the event of damage occurring, repairs must be carried out by cleaning around the damaged area and applying a patch of the appropriate membrane in accordance with the Certificate holder's instructions.

## 17 Tests

17.1 An assessment was made of data to EN 13956 : 2005 in relation to:

- thickness
- width
- watertightness
- tear resistance
- dimensional stability
- shear resistance of joints
- mass per unit area
- flatness and straightness
- tensile strength
- dynamic indentation
- low temperature foldability
- water vapour diffusion (equivalent air layer thickness).
- length
- visible defects
- elongation at break
- static indentation
- peel resistance of joint

17.2 Tests were carried out to determine:

- nail tear
- resistance to heat ageing
- resistance to bitumen exposure
- resistance to exposure to water
- resistance to UV ageing

in order to assess:

- robustness in service
- durability.

## Bibliography

- BS 6229 : 2003 *Flat roofs with continuously supported coverings — Code of practice*
- 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 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 *Eurocode 1 : Actions on structures — General actions — Snow loads*
- NA to BS EN 1991-1-3 : 2003 *UK National Annex to Eurocode 1 : Actions on structures — General actions — Snow loads*
- BS EN 1991-1-4 : 2005 *Eurocode 1 : Actions on structures — General actions — Wind actions*
- NA to BS EN 1991-1-4 : 200 *UK National Annex to Eurocode 1 : Actions on structures — General actions — Wind actions*
- EN 13956 : 2005 *Flexible sheet for waterproofing — Plastic and rubber sheets for roof waterproofing — Definitions and Characteristics*

## 18 Conditions

18.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- is copyright of the BBA
- is subject to English Law.

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

18.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

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

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

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

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

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