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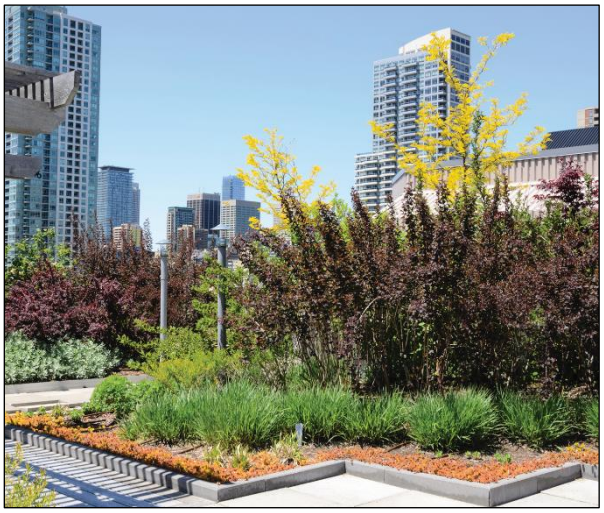
Agrément Certificate
95/3098
Product Sheet 3

SOPREMA SBS MODIFIED BITUMEN MEMBRANES

SOPRALENE FLAM GARDEN 250 AF



This Agrément Certificate Product Sheet(1) relates to Sopralene Flam Garden 250 AF, a polyester-reinforced SBS modified bitumen waterproofing membrane, for use on flat and zero fall roofs in roof gardens (intensive), brown and biodiverse roofs, and in flat, zero fall and pitched 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 product, including joints, will resist the passage of moisture into the interior of a building (see section 6).

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

Resistance to wind uplift — the product will resist the effects of any likely wind suction acting on the roof (see section 8).

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

Resistance to penetration by roots — the product will resist the penetration by plant roots and rhizomes (see section 10).

Durability — under normal service conditions, the product will provide a durable roof waterproofing with a service life in excess of 30 years (see section 12).

The BBA has awarded this Certificate to the company named above for the product described herein. This product 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

Hardy Giesler
Chief Executive Officer

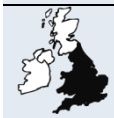
Date of Fourth issue: 22 February 2021

Originally certificated on 28 March 1995

Certificate amended on 13 May 2021 to incorporate fire annex.

Regulations

In the opinion of the BBA, Sopralene Flam Garden 250 AF, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



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

Requirement: **B4(1)** **External fire spread**
Comment: The product is restricted by this Requirement in some circumstances. See section 7.4 of this Certificate.

Requirement: **B4(2)** **External fire spread**
Comment: On suitable substructures, the use of the product, can enable a roof to be unrestricted under this Requirement. See sections 7.1 to 7.3 of this Certificate.

Requirement: **C2(b)** **Resistance to moisture**
Comment: The product, including joints, will enable a roof to satisfy this Requirement. See section 6 of this Certificate.

Regulation: **7(1)** **Materials and workmanship**
Comment: The product is acceptable. See section 12.1 and the *Installation* part of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation: **8(1)(2)** **Durability, workmanship and fitness of materials**
Comment: The use of the product satisfies the requirements of this Regulation. See sections 11.1 and 12.1 and the *Installation* part of this Certificate.

Regulation: **9** **Building standards applicable to construction**
Standard: 2.6 Spread to neighbouring buildings
Comment: The product is restricted under clause 2.6.4(1)(2) of this Standard in some circumstances. See section 7.5 of this Certificate.

Standard: 2.8 Spread from neighbouring building
Comment: The product, when applied to a suitable substructure, is classified as having low vulnerability and can enable a roof to be unrestricted under this Standard, with reference to clause 2.8.1(1)(2). See sections 7.1 to 7.3 of this Certificate.

Standard: 3.10 Precipitation
Comment: The product, including joints, can enable a roof to satisfy the requirements of this Standard, with reference to clauses 3.10.1(1)(2) and 3.10.7(1)(2). See section 6 of this Certificate.

Standard: 7.1(a) Statement of sustainability
Comment: The product 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: Comments in relation to the product under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1(1)(2) and Schedule 6(1)(2).

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

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

Regulation:	**23(a)(i)**	**Fitness of materials and workmanship**
Comment:	**(iii)(b)(i)**	The product is acceptable. See section 12.1 and the *Installation* part of this Certificate.
Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The product, including joints, will enable a roof to satisfy the requirements of this Regulation. See section 6 of this Certificate.
Regulation:	**36(b)**	**External fire spread**
Comment:		On suitable substructures, the use of the product can enable a roof to be unrestricted under the requirements of this Regulation. See sections 7.1 to 7.3 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 2021

In the opinion of the BBA, Sopralene Flam Garden 250 AF, 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*.

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

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard EN 13707 : 2013.

Technical Specification

1 Description

1.1 Sopralene Flam Garden 250 AF is a torch-on, styrene-butadiene-styrene (SBS) copolymer modified bitumen waterproofing membrane, including an anti-root additive, with a non-woven polyester reinforcement.

1.2 The products are manufactured to the nominal characteristics given in Table 1 and the physical properties given in Table 2.

Table 1 Nominal characteristics of Soprelene Flam Garden 250 AF

Dimension (unit)	Sopralene Flam Garden 250 AF
Thickness (mm)	4.5
Width (m)	1.0
Length (m)	8.0
Roll weight (kg)	45
Surface finish	
lower	thermofusible film
upper	slate

Table 2 Physical properties of Soprelene Flam Garden 250 AF

Characteristic (unit)	Sopralene Flam Garden 250 AF
Tensile strength at break (N per 50 mm)	
longitudinal	1200
transverse	950
Elongation at break (%)	
longitudinal	45
transverse	45
Tear strength (N)	225
Low temperature foldability (°C)	-20
Static indentation (kg)	20

1.3 The following membranes can be used in conjunction with Sopralene Flam Garden 250 AF:

Underlayers

- Ventiglass SBS 3 TF — a partially bonded SBS modified bitumen membrane with a glass fibre reinforcement. The upper surface is finished with talcum/sand and the lower surface has torch-activated SBS stripes alternated with non-stick stripes protected by a thermofusible film
- Ventirock SBS 3 TF — a partially bonded SBS modified bitumen membrane with polyester reinforcement. The upper surface is finished with talcum/sand, and the lower surface has torch-activated SBS stripes alternated with non-stick stripes, protected by a thermofusible film
- Soprarock SBS P3 TF — a fully bonded SBS modified bitumen membrane with a composite polyester reinforcement (glass mat and non-woven polyester). The upper surface is finished with talcum/sand and the lower surface is protected by a thermofusible film
- Elastophene Flam 25 AR — a fully bonded SBS modified bitumen membrane with glass fibre reinforcement. The upper surface is finished with slate and the lower surface is protected by a thermofusible film
- Sopralene Flam 180 TF — a fully bonded SBS modified bitumen membrane with a non-woven polyester reinforcement. The upper surface is finished with talcum or sand. The lower surface is protected by a thermofusible film
- Sopralene Flam 250 TF — a fully bonded SBS modified bitumen membrane with a non-woven polyester reinforcement. The upper surface is finished with talcum or sand. The lower surface by a thermofusible film
- Sopralene Flam Venti 250 TF — a partially bonded SBS modified bitumen membrane with a non-woven polyester reinforcement. The upper surface is finished with talcum or sand and the selvedge is protected by polypropylene film. The lower surface has thermofusible bitumen stripes alternated with non-stick stripes, protected by a thermofusible film
- Soprastick Venti FF — a self-adhesive SBS modified bitumen membrane with a composite polyester reinforcement (glass mat and non-woven polyester). The upper surface is finished with a thermofusible film, and the lower surface has alternating non-stick stripes and self-adhesive stripes, protected by a silicone release sheet
- Soprastick — a self-adhesive SBS modified bitumen membrane with a composite polyester reinforcement (glass mat and non-woven polyester). The upper surface is protected by a thermofusible film, and the lower surface is protected by a silicone release film. The membrane has a duo selvedge, part self-adhesive, part welding
- Ventiglass PB 3 TF — a partially bonded polymer modified bitumen membrane with a glass fibre reinforcement. The upper surface is finished with talcum or sand and the lower surface has torch-activated SBS stripes alternated with non-stick stripes, protected by a thermofusible film
- Soprarock Global SBS 30 TF — a fully bonded SBS modified bitumen membrane with a composite polyester reinforcement (glass mat and non-woven polyester). The upper surface is finished with talcum or sand and the lower surface is protected by a thermofusible film
- Sopravent SLP300 SF —a partially bonded SBS modified bitumen membrane with a composite polyester reinforcement (glass mat and non-woven polyester). The upper surface is finished with talcum or sand and the lower surface torch-activated SBS stripes alternated with non-stick stripes, protected by a thermofusible film.

1.4 The following products can be used in conjunction with Sopralene Flam Garden 250 AF, but which are outside the scope of this Certificate:

Air and vapour control layer (AVCL)

- Sopravap Stick C15 — a self-adhesive SBS modified bitumen membrane with polyester reinforcement. The upper surface is finished with talcum or sand
- Sopravap Stick A15 – a self-adhesive SBS modified bitumen membrane with a composite aluminium reinforcement (polyester and aluminium). The upper surface is finished with talcum or sand. The lower surface has a self-adhesive finish that is protected by a silicone release sheet
- Sopravap Stick S16 – a self-adhesive SBS modified bitumen membrane with a composite glass grid polyester / glass fleece reinforcement. The upper surface is finished with fine sand. The lower surface has a self-adhesive finish that is protected by a silicone release sheet
- Soprabase SLP300 SF – a fully bonded SBS modified bitumen membrane with composite polyester reinforcement (glass mat and non-woven polyester). The upper surface is finished with talcum or sand and the lower surface is protected by a thermofusible film
- Soprabase SLV200 SF – a fully bonded SBS modified bitumen membrane with a glass fibre reinforcement. The upper surface is finished with talcum or sand and the lower surface is protected by a thermofusible film
- Sopravap Global PB A30 TF – a fully bonded polymer modified bitumen membrane with an aluminium reinforcement. The upper surface is finished with talcum or sand and the lower surface is protected by a thermofusible film.

Vapour barriers

- Sopravap EVA 35 — an SBS modified bitumen membrane with a composite aluminium and a glass fibre reinforcement. The upper surface is finished with talcum/sand, and the lower surface is protected by a thermofusible film
- Sopravap PB Alu 3 TF — a polymer modified bitumen membrane with an aluminium reinforcement. The upper surface is finished with talcum or sand, and the lower surface is protected by a thermofusible film
- Sopravap Stick Alu S16 — a self-adhesive modified bitumen membrane with a composite glass grid/aluminium reinforcement. The upper surface has a sand finish and the lower surface is protected by a silicone release sheet
- Sopravap Alu Activa 2 — an SBS modified bitumen membrane with a composite aluminium reinforcement (polyester and aluminium). SBS lanes alternated with non-stick lanes protected with a thermofusible film are laid out on the upper and lower surfaces of the membrane
- Sopravap Stick Alu KSD — an SBS modified bitumen with a composite aluminium reinforcement (polyester and aluminium) also acting as the upper surface protection. The lower surface is protected by a silicone release film.

Primers

- Elastocol 500 – cold applied bitumen primer composed of elastomeric bitumen and volatile solvents, for the preparation of substrates, such as concrete, metal or wood
- Aquadere – cold applied bitumen emulsion primer (solvent free), used to increase adherence for bitumen-based waterproofing membranes
- Sopradere Quick - cold applied fast drying bitumen emulsion primer composed of bitumen, volatile solvents and adhesive additives, for the preparation of substrates such as concrete, metal or wood
- Elastocol 600 - cold applied bitumen primer composed of elastomeric bitumen and volatile solvents for self-adhesive, bitumen based, waterproofing sheets.

Protection board

- Sopraboard – a mechanically fixed rigid cover board, consisting of a mineral-reinforced bitumen core reinforced on both sides with a fiberglass fleece. To be used when fully bonded SBS modified bitumen membranes are to be applied on top. When used under the partially bonded and self-adhesive membrane Soprastick Venti FF, the board should be primed with Elastocol 600.

1.5 Other products which may be used with Sopralene Flam Garden 250 AF, but which are outside the scope of this Certificate, include:

- Soprajoint — a flexible SBS elastomeric bitumen waterproofing strip, for use in expansion joints
- Alsan Flashing (Jardin) — a bitumen-polyurethane resin, for use in upstands
- Easy Torch — an SBS modified bitumen membrane. The upper surface has a sand/talcum finish and the lower surface is protected by a thermofusible film
- Sopravap 3 in 1 — a two-component, polyurethane-based vcl

- Alsan 770 and Alsan 770TX — PMMA-based liquid-applied roof waterproofing resins
- Insulation boards – rigid polyisocyanurate (PIR) foam boards
- Coltack Evolution CA or Coltack Evolution 750 - a single-component polyurethane spray-applied adhesive, for bonding insulation boards to the substrate
- Soprabond 525 - a single-component polyurethane liquid applied adhesive for bonding insulation boards to the substrate.

2 Manufacture

2.1 The membrane is manufactured by saturating and coating the reinforcement with SBS modified bitumen, then calendering to the correct thickness. The surfaces are finished by the application of slate chippings and thermofusible film. The membrane is cooled, trimmed and rolled for packaging.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of Soprema NV has been assessed and registered as meeting the requirements of EN ISO 9001 : 2015 and EN ISO 14001 : 2015 by SGS (Certificates FR18/81842815 and FR18/81842816 respectively).

3 Delivery and site handling

3.1 The product is delivered to site in rolls, in paper wrappings which are packed on pallets and shrink-wrapped in polythene. The roll labels bear the name of the product and the manufacturing data, and in some cases will include the BBA logo incorporating the number of this Certificate.

3.2 Individual rolls must be stored upright on the selvedge end, on a clean, smooth, level surface and kept under cover.

3.3 The Certificate holder has taken the responsibility of classifying and labelling the primers 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 Sopralene Flam Garden 250 AF.

Design Considerations

4 General

4.1 Sopralene Flam Garden 250 AF is satisfactory for use as a top-layer membrane in roof waterproofing systems on roofs with limited access in:

- roof gardens (intensive) on flat and zero fall roofs with limited access or pedestrian access
- green roofs (extensive) on flat, zero fall and pitched roofs with limited access
- biodiverse roofs on flat and zero fall roofs with limited access or pedestrian access
- brown roofs on flat and zero fall roofs with limited access or pedestrian access.

4.2 Decks to which the product is to be applied must comply with the relevant requirements of BS 6229 : 2018, BS 8217 : 2005 and, where appropriate, *NHBC Standards* 2021, Chapter 7.1.

4.3 The following terms are defined for the purpose of this Certificate as:

- roof garden (intensive) — a roof with a substantial layer of growing medium with planting that can include shrubs and trees, 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 wild flower species
- biodiverse roof — a roof planted with the aim either to recreate the habitat that was lost when the building was erected or to enhance it
- brown roof — a roof with a growing medium selected to allow indigenous plant species to inhabit the roof over time; no deliberate planting is undertaken.

4.4 Limited access roofs are defined for the purpose of this Certificate as those subjected only to pedestrian traffic for maintenance of the roof covering and cleaning of gutters, etc. Where traffic in excess of this is envisaged, additional protection to the waterproofing membrane must be provided as specified by the Certificate holder. Pedestrian access roofs are defined for the purpose of this Certificate as those not subject 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(1). 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.

4.6 Pitched roofs are defined for the purpose of this Certificate as those having a fall greater than 1:6.

4.7 Zero fall roofs are defined for the purpose of this Certificate as those having a finished fall which can vary between 0 and 1:80(1). Reference should also be made to the appropriate clauses in Liquid Roofing and Waterproofing Association (LRWA) Note 7 – *Specifier Guidance for Flat Roof Falls*.

(1) *NHBC Standards* 2021 require a minimum fall of 1:60 for green roofs and roof gardens.

4.8 Structural decks to which the systems are to be applied must be suitable to transmit the dead and imposed loads experienced in service. Imposed loads, dead loading and wind loads are 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.

4.9 Recommendations for the design of green roofs 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*.

4.10 The drainage system for zero fall green roofs or roof gardens must be correctly designed, and the following points should 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 roofs and roof gardens can increase if the drains become partially or completely blocked causing waterlogging of the drainage layer.

4.11 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 6229 : 2018, or
- the subject of a current BBA Certificate and used in accordance with, and within the scope of, that Certificate.

4.12 The NHBC requires that roof membranes, once installed, be inspected in accordance with *NHBC Standards* 2021, Chapter 7.1, Clause 7.1.12, including the use of an appropriate integrity test, where required. Any damage to the membrane is repaired in accordance with section 15 of this Certificate and reinspected.

5 Practicability of installation

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

6 Weathertightness

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

7 Properties in relation to fire

7.1 When tested in accordance with CEN/TS 1187 : 2012, Test 4, the systems as included in Fire Annex 2 of this Certificate, are classified as $B_{ROOF}(t4)$ in accordance with EN 13501-5 : 2016(1).

(1) Individual reports are available from the Certificate holder.

7.2 In the opinion of the BBA, a roof incorporating the product will be unrestricted under the national Building Regulations in the following circumstances:

- Protected 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, green roofs, brown and biodiverse roofs.

7.3 The designation of other specifications should be confirmed by reference to the requirements of the documents supporting the national Building Regulations.

7.4 The product, when used in pitches of greater that 70°, excluding upstands, should not be used on buildings in England and Wales that have a storey at least 18 m above ground level and contain: one or more dwellings, an institution, a room for residential purposes (excluding any room in a hostel, hotel or boarding house), student accommodation, care homes, sheltered housing, hospitals or dormitories in boarding schools.

7.5 The product, when used in pitches greater than 70°, excluding upstands, should not be used on buildings in Scotland that have a storey more than 11 m above ground level.

7.6 If allowed to dry, the plants used may allow flame spread across a roof, and this must be taken into consideration when selecting the plants for a roof garden. Appropriate planting, irrigation and/or protection should be applied to ensure the overall fire-rating of the roof is not compromised by their use.

8 Resistance to wind uplift

8.1 The product, when used as part of a suitable roof garden or green roof specification, will adequately resist the effects of wind uplift likely to occur in practice.

8.2 The soil used in roof gardens should not be of a type that will be removed, or become localised, owing to wind scour experienced on site.

8.3 It should be recognised that the type of plants used could significantly affect the expected wind loads experienced in service.

9 Resistance to mechanical damage

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

9.2 Once a green roof or roof garden is installed it can be regarded as a suitable protection for the membrane in use.

9.3 The product is capable of accepting minor structural movement while remaining weathertight.

10 Resistance to penetration by roots

The product will adequately resist penetration by plant roots and can be used in a roof waterproofing system for roof gardens, green, brown and biodiverse roofs.

11 Maintenance

11.1 The roof system should be subject of six monthly inspections and maintenance in accordance with BS 6229 : 2018, Chapter 7, to ensure continued satisfactory performance.

11.2 For green roofs, biodiverse, brown roofs and roof gardens, guidance is available within the latest edition of *The GRO Green Roof Code – Green Roof Code of Best Practice for the UK.*

11.3 It is imperative that the drainage system of the green roof or roof garden is designed correctly, and provision is made for access for maintenance purposes. Inspection of the drains should be carried out regularly to avoid waterlogging of the garden and the subsequent increase in dead weight load.

12 Durability

12.1 Under normal service conditions, the product will have a service life in excess of 30 years.

12.2 It is possible that, over time, some localised loss of the mineral surfacing of the product may occur at exposed areas of complex detailing.

13 Reuse and recyclability

The product comprises bitumen and polyester, which can be recycled.

Installation

14 General

14.1 Installation of Sopralene Flam Garden 250 AF and detailing is carried out in accordance with the relevant clauses of BS 6229 : 2018, BS 8000-0 : 2014, BS 8000-4 : 1989 and BS 8217 : 2005, the Certificate holder's instructions and the provisions of this Certificate.

14.2 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.

14.3 The product may be laid in conditions normal to roofing work and must not be laid in rain, snow or heavy fog, nor if the temperature falls below 5°C, unless precautions against condensation have been taken.

14.4 The product has a mineral surface finish and, when used exposed on areas with limited access, does not require further surface protection.

14.5 The roof layers must always be installed with staggered overlaps and in such a manner that no counter-seams in the direction of outlets are made.

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

14.7 Soil or other bulk material must not be stored on one area of the roof, to ensure that localised overloading does not occur.

15 Procedure

Fully bonded applications

15.1 Bonding is achieved by melting the lower surface, by torching and pressing the membrane down. Care must be taken not to overheat the coating.

15.2 Side laps should be a minimum of 70 mm and edge laps 100 mm. A bead of molten material must exude from all laps to indicate a satisfactory seal.

15.3 A second layer of waterproofing is then fully torch bonded directly on to the first layer. All laps should be offset by at least 300 mm in relation to the joints in the first layer.

Partially bonded applications

15.4 A layer of Sopralene Flam Venti 250 TF, Ventiglass SBS 3 TF or Ventirock SBS 3 TF, Ventiglass PB 3 TF or Sopravent SLP300 SF is partially torch welded onto the substrate. Alternatively, Soprastick Venti FF is partially bonded to the substrate.

15.5 Side laps should be a minimum of 70 mm and edge laps 100 mm. A bead of molten material must exude from all laps to indicate a satisfactory seal.

15.6 A second layer of waterproofing is then fully torch bonded directly on to the first layer. All laps should be offset by at least 300 mm in relation to the joints in the first layer.

Loose-laid and ballasted

15.7 A separating layer is loose-laid over the substrate, with free overlapping by at least 100 mm, and fully secured around the perimeter and upstands for a minimum of 450 mm.

15.8 A first layer of waterproofing is loose-laid. Side laps should be a minimum of 70 mm and edge laps 100 mm. A bead of molten material must exude from all laps to indicate a satisfactory seal.

15.9 The second layer of waterproofing is fully torch bonded directly on to the first layer. All laps should be offset as described in section 15.3.

15.10 A minimum 50 mm depth of aggregate should be loaded onto the roof covering. Where roofs are likely to be subjected to uncontrolled pedestrian traffic, a concrete tile finish should be used.

15.11 Where concrete tiles are used, the waterproof system is first covered by a layer of sand into which the tiles are set. A separating layer may be used in place of the sand.

16 Repair

In the event of damage, the products can be effectively repaired, after cleaning, with pieces of the membrane torch welded to the damaged area in accordance with the Certificate holder's instructions.

Technical Investigations

17 Tests

17.1 Tests were carried out and the results assessed to determine:

- tensile strength and elongation
- nail tear strength
- low temperature flexibility
- flow at elevated temperatures
- resistance to static loading

- resistance to impact
- shear resistance of joints
- peel resistance of joints
- watertightness.

17.2 Testing on joints was carried out on membranes using the same coating mass as Sopralene Flam Garden 250 AF to determine:

- resistance to root penetration
- tensile strength of joints (control, after heat ageing and after 180 day at 60°C water exposure)
- peel resistance of joints (control and after 180 day at 60°C water exposure)
- resistance to air leakage at joints (control and after 180 day at 60°C water exposure).

18 Investigations

18.1 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.

18.2 Data provided by CSTB resulting in Avis Technique 5/11-2198 was evaluated in context of UK roofing practice and building regulations.

18.3 An evaluation was made of fire test data.

Bibliography

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 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 + A1 : 15 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*

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

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

EN 13707 : 2013 *Flexible sheets for waterproofing — Reinforced bitumen sheets for roof waterproofing — Definitions and characteristics*

EN ISO 9001 : 2015 *Quality management systems — Requirements*

EN ISO 14001 : 2015 *Environmental management systems — Requirements with guidance for use*

19 Conditions

19.1 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.

19.2 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.

19.3 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.

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

19.5 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.

19.6 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.

Certificate 95/3098 Product Sheet 3 – Fire Annex 2 – Fire Data for Sopralene Flam Garden 250 AF Roof Waterproofing Membranes

Systems A

SUBSTRATE	PRIMER	VAPOUR BARRIER	INSULATION* LAYER 1	INSULATION* LAYER 2 (Optional)	SEPARATION LAYER	BASE SHEET	TOP LAYER	SYSTEMS	FIRE REPORTS ASSESSED
Wood Particle Board (Density: 680 kg/m^3; thickness ≥ 16 mm) or Trapezoidal profiled Steeldeck 106/750 (Thickness ≥ 0.75 mm) or Fibre cement board (Density: 1850 kg/m^3 ; thickness ≥ 8 mm)	-	• No vapour control layer Or • PE vapour control layer (Reaction to fire F or better) LOOSE LAID	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED	-	• SOPRABOARD 3,2 mm thickness MECHANICALLY FASTENED	• Soprarock SBS P3 TF Or • Soprarock Global SBS 30 TF TORCHED	• Sopralene Flam Garden 250 AF TORCHED	Systems A1 and A2	19798D
	-	• No vapour control layer Or • PE vapour control layer (Reaction to fire F or better) LOOSE LAID	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED				Systems A1 and A2	
	• Sopradere Quick Or • Aquadere	All SBS AVCL with RTF E or better • SOPRABASE SLP300 SF • SOPRABASE SLV 200 SF • SOPRAVAP GLOBAL PB A30 TF TORCHED	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED/ GLUED**	-				Systems A3	
	• Sopradere Quick Or • Aquadere	All SBS AVCL with RTF E or better • SOPRABASE SLP300 SF • SOPRABASE SLV 200 SF • SOPRAVAP GLOBAL PB A30 TF TORCHED	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED/ GLUED**	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED/ GLUED**				Systems A3	
	• Elastocol 600	All SBS AVCL with RTF E or better SOPRAVAP STICK A15 SELF ADHERED	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED/ GLUED**	-				Systems A4	
	• Elastocol 600	All SBS AVCL with RTF E or better SOPRAVAP STICK A15 SELF ADHERED	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED/ GLUED**	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED/ GLUED**				Systems A4	

Certificate 95/3098 Product Sheet 3 – Fire Annex 2 – Fire Data for Sopralene Flam Garden 250 AF Roof Waterproofing Membranes

Systems B

SUBSTRATE	PRIMER	VAPOUR BARRIER	INSULATION* LAYER 1	INSULATION* LAYER 2 (Optional)	BASE SHEET	TOP LAYER	SYSTEMS	FIRE REPORTS ASSESSED
Wood Particle Board (Density: 680 kg/m^3 ; thickness ≥ 16 mm) or Trapezoidal profiled Steeldeck 106/750 (Thickness ≥ 0.75 mm) or Fibre cement board (Density: 1850 kg/m^3 ; thickness ≥ 8 mm)	-	• No vapour control layer Or • PE vapour control layer (Reaction to fire F or better) LOOSE LAID	• Sopratherm T Or • Sopratherm F • Sopratherm G 40-140 mm thickness MECHANICALLY FASTENED	-	• Ventirock SBS 3 TF • Ventiglass PB 3 TF • Sopravent SLP300 SF PARTIALLY TORCHED	• Sopralene Flam Garden 250 AF TORCHED	Systems B1 &B2	19798D
	-	• No vapour control layer Or • PE vapour control layer (Reaction to fire F or better) LOOSE LAID	• Sopratherm T Or • Sopratherm F • Sopratherm G 40-140 mm thickness MECHANICALLY FASTENED	• Sopratherm T 40-140 mm thickness MECHANICALLY FASTENED			Systems B1 &B2	
	• Sopradere Quick Or • Aquadere	All SBS AVCL with RTF E or better • SOPRABASE SLP300 SF • SOPRABASE SLV 200 SF • SOPRAVAP GLOBAL PB A30 TF TORCHED	• Sopratherm T Or • Sopratherm F • Sopratherm G 40-140 mm thickness MECHANICALLY FASTENED	-			Systems B3	
	• Sopradere Quick Or • Aquadere	All SBS AVCL with RTF E or better • SOPRABASE SLP300 SF • SOPRABASE SLV 200 SF • SOPRAVAP GLOBAL PB A30 TF TORCHED	• Sopratherm T Or • Sopratherm F • Sopratherm G 40-140 mm thickness MECHANICALLY FASTENED	• Sopratherm T 40-140 mm thickness MECHANICALLY FASTENED/ GLUED**			Systems B3	
	• Elastocol 600	All SBS AVCL with RTF E or better SOPRAVAP STICK A15 SELF ADHERED	• Sopratherm T Or • Sopratherm F • Sopratherm G 40-140 mm thickness MECHANICALLY FASTENED	-			Systems B4	
	• Elastocol 600	All SBS AVCL with RTF E or better SOPRAVAP STICK A15 SELF ADHERED	• Sopratherm T Or • Sopratherm F • Sopratherm G 40-140 mm thickness MECHANICALLY FASTENED/ GLUED**	• Sopratherm T 40-140 mm thickness MECHANICALLY FASTENED/ GLUED**			Systems B4	

Certificate 95/3098 Product Sheet 3 – Fire Annex 2 – Fire Data for Sopralene Flam Garden 250 AF Roof Waterproofing Membranes

Systems C								
SUBSTRATE	**PRIMER**	**VAPOUR BARRIER**	**INSULATION* LAYER 1**	**INSULATION* LAYER 2 (Optional)**	**BASE SHEET**	**TOP LAYER**	**SYSTEMS**	**FIRE REPORTS ASSESSED**
Wood Particle Board (Density: 680 kg/m^3 ; thickness ≥ 16 mm) or Trapezoidal profiled Steeldeck 106/750 (Thickness ≥ 0.75 mm) or Fibre cement board (Density: 1850 kg/m^3 ; thickness ≥ 8 mm)	-	• No vapour control layer Or • PE vapour control layer (Reaction to fire F or better) LOOSE LAID	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED	-	• SopraStick Venti FF SELF-ADHERED (fully or partially)	• Sopralene Flam Garden 250 AF TORCHED	Systems C1&C2	19798D
	-	• No vapour control layer Or • PE vapour control layer (Reaction to fire F or better) LOOSE LAID	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED			Systems C1&C2	
	• Sopradere Quick Or • Aquadere	All SBS AVCL with RTF E or better • SOPRABASE SLP300 SF • SOPRABASE SLV 200 SF • SOPRAVAP GLOBAL PB A30 TF TORCHED	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED/ GLUED**	-			Systems C3	
	• Sopradere Quick Or • Aquadere	All SBS AVCL with RTF E or better • SOPRABASE SLP300 SF • SOPRABASE SLV 200 SF • SOPRAVAP GLOBAL PB A30 TF TORCHED	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED/ GLUED**	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED/ GLUED**			Systems C3	
	• Elastocol 600	All SBS AVCL with RTF E or better SOPRAVAP STICK A15 SELF ADHERED	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED/ GLUED**	-			Systems C4	
	• Elastocol 600	All SBS AVCL with RTF E or better SOPRAVAP STICK A15 SELF ADHERED	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED/ GLUED**	• Sopratherm G or • Sopratherm F 40-140 mm thickness MECHANICALLY FASTENED/ GLUED**			Systems C4	

*Insulation is outside the scope

**Glued with Soprabond 525 or Coltack CA or Coltack Evolution 75

Certificate 95/3098 Product Sheet 3 – Fire Annex 2 – Fire Data for Sopralene Flam Garden 250 AF Roof Waterproofing Membranes

REPORT REFERENCE	NATURE OF REPORT	TEST CENTRE	DATE OF REPORT
19798D	Extended Application Report to CEN/TS 16459 : 2013	Exova Warrington Fire	22/06/2020

Note:
Systems A, B and C are determined by different base sheets and their fixing method. The number after the systems determines the type of vapour barrier used or not used and its fixing method. Further details of the system definitions can be obtained from the Certificate holder.

System A	Base sheets x - fixing method 1
System B	Base sheets y - fixing method 2
System C	Base sheets z - fixing method 3

System A1	NO VAPOUR CONTROL LAYER
System A2	PE VAPOUR CONTROL LAYER - fixing method 1
System A3	BITUMINOUS VCL - fixing method 2
System A4	BITUMINOUS VCL - fixing method 3