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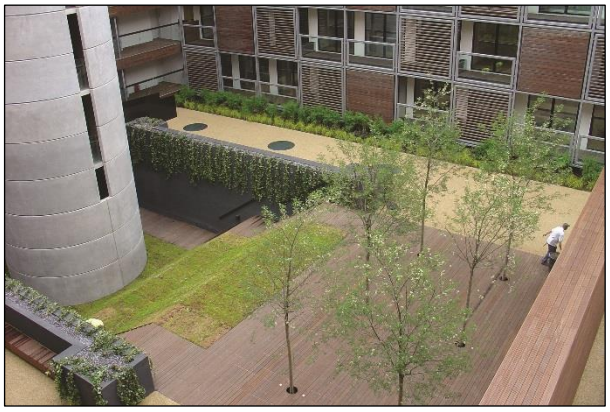
Agrément Certificate
05/4269
Product Sheet 1

ICOPAL ROOF GARDEN AND GREEN ROOF SYSTEMS

ROOTBAR MEMBRANES

This Agrément Certificate Product Sheet(1) relates to Rootbar Membranes, modified bitumen membranes for use in roof garden applications (including zero fall roof applications).

(1) Hereinafter referred to as 'Certificate'.



CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production†
- formal three-yearly review.†

KEY FACTORS ASSESSED

Weathertightness — the products will resist the passage of moisture into the building (see section 6).

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

Resistance to wind uplift — resistance to wind uplift is dependent upon the top layers of the roof garden/green roof specification (see section 8).

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

Resistance to penetration of roots — the products will adequately resist plant root penetration (see section 10).

Durability — under normal service conditions, the products will provide a durable waterproof covering 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 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

Date of Fifth issue: 8 May 2018

John Albon – Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

Originally certificated on 20 October 2005

This Certificate was amended on 22 May 2024 as part of a transition of The BBA Agrément Certificate scheme delivered under the BBA's ISO/IEC 17020 accreditation. This Certificate was issued originally under accreditation to ISO/ IEC 17065. Sections marked with the symbol † are not issued under accreditation. Full conversion to the ISO/IEC 17020 format will take place at the next Certificate review. The BBA is a UKAS accredited Inspection Body (No.4345). ***Readers MUST check the validity of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.*** *Any photographs are for illustrative purposes only, do not constitute advice and must not be relied upon.*

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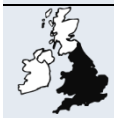
Regulations

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



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

Requirement:	**B4(2)**	**External fire spread**
Comment:		When used in irrigated roof gardens or green roofs, use of the membranes can be unrestricted under this Requirement. See sections 7.1 to 7.3 of this Certificate.
Requirement:	**C2(b)**	**Resistance to moisture**
Comment:		Tests for water resistance on the products, including joints, enable a roof to satisfy this Requirement. See section 6.1 of this Certificate.
Regulation:	**7**	**Materials and workmanship**
Comment:		The products are 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 products can contribute to a construction satisfying this Regulation. See sections 11 and 12.1 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	2.8	Spread from neighbouring buildings
Comment:		When used in irrigated roof gardens or green roofs, the membranes can be regarded as having low vulnerability under clause 2.8.1[(1)(2)] of this Standard. See sections 7.1 and 7.3 of this Certificate.
Standard:	3.10	Precipitation
Comment:		Use of the products will 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 6.1 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The products can contribute to meeting the relevant Requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	**12**	**Building standards applicable to conversions**
Comment:		All comments given for the products 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 products are acceptable. See section 12.1 and the *Installation* part of this Certificate.
Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The products, including joints, will enable a roof to satisfy this Regulation. See section 6.1 of this Certificate.

Regulation:	**36(b)**	**External fire spread**
Comment:		When used in irrigated roof gardens or green roofs, use of the products can 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 section: 1 *Description* (1.2) of this Certificate.

Additional Information

NHBC Standards 2018

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

CE marking

The Certificate holder has taken the responsibility of CE marking the products in accordance with harmonised European Standard EN 13707 : 2013. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

Description

1.1 Rootbar Membranes are torch-on, styrene-butadiene-styrene (SBS)-modified bitumen sheets with non-woven polyester reinforcement, consisting of a capsheet and underlay. Rootbar Capsheet is treated with Preventol 'B' Root Inhibitor.

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

Table 1 Nominal characteristics

Characteristic (unit)	Premium SBS Torch-on Underlay	Rootbar Capsheet
Thickness* (mm)	2.6	3.2
Thickness including mineral finish (mm)	–	4
Roll width (m)	1	1
Roll length (m)	10	8
Mass per unit area ($kg \cdot m^{-2}$)	3.85	5.0
Tensile strength* [$N(50\ mm)^{-1}$]		
longitudinal	700	740
transverse	400	540
Elongation at break* (%)		
longitudinal	20	40
transverse	25	49
Low temperature flexibility* (°C)	≤ –10	≤ –15
Flow resistance* (°C)	≥ 105	≥ 100
Dimensional stability* (%)	–	≤ –1
Impact* (mm) (soft substrate B)	–	≥ 1500
Static loading* (kg) (soft substrate A)	–	20
Mass per unit area of polyester reinforcement ($g \cdot m^{-2}$)	145	180
Surface finish		
lower	thermofusible film	thermofusible film
upper	thermofusible film	slate flakes

1.3 Siplast Primer is an SBS bitumen primer for priming bitumen substrates.

2 Manufacture

2.1 The membranes are manufactured by saturating and coating the reinforcement with SBS modified bitumen and calendering to the correct thickness. The upper and lower surfaces of Premium SBS Torch-on Underlay and the lower surface of Rootbar Capsheet are finished by the application of thermofusible film, and the upper surface of Rootbar Capsheet with mineral granules. The sheets are 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 Icopal SAS has been assessed and registered as meeting the requirements of EN ISO 9001 : 2008 by Bureau Veritas (Certificate 1.927.221/C).

3 Delivery and site handling

3.1 The membranes are delivered to site in rolls with paper wrappings bearing the product name, manufacturing data, factory name and the BBA logo incorporating the number of this Certificate. The rolls are packed on pallets and shrink-wrapped in polythene.

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

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Rootbar Membranes.

Design Considerations

4 Use

4.1 Rootbar Membranes are satisfactory for use as fully or partially bonded waterproofing in warm roof systems on:

- pitched, flat and zero fall roofs in green roofs (extensive planting) with limited access
- flat and zero fall roofs in roof gardens (intensive planting).

4.2 Limited access roofs are defined for the purpose of this Certificate as those subjected only to pedestrian traffic for maintenance of the roof covering, cleaning of gutters etc. Where traffic in excess of this is envisaged, 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 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 such features as overall and local deflection and direction of falls. Pitched roofs are defined as those having a fall greater than 1:6. Zero fall roofs are defined for the purpose of this Certificate as those having a finished fall which can vary between 0 and 0.7°.

4.4 Decks to which the membranes are to be applied must comply with the relevant requirements of either BS 6229 : 2003 or BS 8217 : 2005 and, where appropriate, *NHBC Standards* 2018, Chapter 7.1.

4.5 Insulation systems or materials used in conjunction with the membranes must be either:

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

4.6 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.*

4.7 The structural decks to which the membranes 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 UK National Annexes.

4.9 The drainage system for both green roofs and roof gardens 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 On zero fall roofs it is particularly important to identify the correct drainage points to ensure that the drainage provided is effective. Recommendations for the design of roof falls are available in Liquid Roofing and Waterproofing Association (LRWA) Note 7 — *Specifier Guidance for Flat Roof Falls*.

5 Practicability of installation

The products are designed to be installed by a competent roofing contractor experienced with these types of products.

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.

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 A roof incorporating the membranes will be unrestricted under the national Building Regulations in the following circumstances:

- a roof garden covered with a drainage layer of gravel 100 mm thick and a soil layer 300 mm thick
- an irrigated roof garden or green roof
- when protected by an inorganic covering (eg gravel or paving slabs) listed in the Annex of Commission Decision 2000/553/EC.

7.2 Exposed areas of the capsheet, when used with one of the surface finishes detailed in Approved Document B, Appendix A, Table A5, part iii (England and Wales) and Technical Booklet E, Table 4.6, part iv (Northern Ireland) (listed below), would be deemed to be unrestricted:

- bitumen-bedded stone chippings covering the whole surface to a depth of not less than 12.5 mm
- bitumen-bedded tiles of non-combustible materials
- sand and cement screed, or
- macadam.

7.3 The designation of exposed areas of the capsheet installed to other specifications should 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.

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

8 Resistance to wind uplift

8.1 The membranes, when used with 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 intensive plantings 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 foot traffic

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

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

10 Resistance to penetration of roots

Results of root penetration resistance tests on the products, including joints, indicate that they are resistant to root penetration and can be used in a roof waterproofing system for roof gardens and green roofs.

11 Maintenance

Roofs should be inspected twice-yearly in autumn after leaf fall and in spring to ensure that vegetation and other debris are cleared from the roof, and drainage outlets cleared. Guidance is available within the latest edition of *The GRO Green Roof Code — Green Roof Code of Best Practice for the UK.*

12 Durability

12.1 Under normal conditions, the membranes will have a service life in excess of 30 years. When fully protected and subject to normal service conditions in roof garden and green roof specifications, the products can provide an effective barrier to the transmission of liquid water and water vapour for the design life of the roof in which they are incorporated.

12.2 The mineral-surfaced product, when exposed, will suffer some localised loss of mineral surfacing in areas where complex detailing of the roof design is incorporated.

Installation

13 General

13.1 Deck surfaces must be dry, clean and free from sharp projections such as nail heads and concrete nibs.

13.2 Installation of the membranes is carried out in accordance with this Certificate, the Certificate holder's instructions and the relevant clauses of BS 8000-4 : 1989 and BS 8217 : 2005.

13.3 The membranes 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.

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

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

13.6 Soil or other bulk material should not be stored on one area of the roof prior to installation, to ensure that localised overloading does not occur.

14 Procedure

14.1 Premium SBS Torch-on Underlay is fully bonded to the substrate by torching with laps of 70 mm and end laps of 100 mm.

14.2 The Rootbar Capsheet is fully bonded to the Premium SBS Torch-on Underlay by torching with the same width of laps as the underlay.

14.3 Laps between the underlay and capsheet should be offset by a minimum of 300 mm.

15 Repair

In the event of damage, the capsheet can be effectively repaired, after cleaning, by torch-bonding a patch of the capsheet to the damaged area with the recommended overlap.

Technical Investigations

16 Tests

Tests were conducted on the membranes and the results assessed to determine:

- roll weight
- length
- heat resistance
- tensile strength and elongation
- root resistance
- tensile shear of joints
- peel resistance of joints
- chemical resistance.
- thickness
- low temperature flexibility
- dimensional stability
- nail tear resistance
- resistance to leakage at joints
- adhesion
- water exposure (180 days at 60°C)

17 Investigations

17.1 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.

17.2 Test data were evaluated in the context of UK roofing practice and the national Building Regulations.

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

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

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, UKNI or 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.

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