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Agrément Certificate

17/5437

Product Sheet 1

ICOPAL UNIVERSAL ROOF WATERPROOFING MEMBRANES

UNIVERSAL AND UNIVERSAL SA ROOF WATERPROOFING MEMBRANES FOR ADHERED AND PROTECTED SYSTEMS

This Agrément Certificate Product Sheet⁽¹⁾ relates to Universal and Universal SA Roof Waterproofing Membranes, polyester/glass reinforced, polyolefin copolymer binder (POCB) membranes for use in fully bonded warm roof applications and loose-laid and ballasted warm roof waterproofing applications with limited pedestrian access and inverted flat roof protected systems.

(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).

Behaviour in relation to fire — the products can enable a roof to be unrestricted under the national Building Regulations (see section 7).

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

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

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

Claire Curtis-Thomas

Date of First issue: 15 September 2017

John Albon – Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

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
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, Universal and Universal SA Roof Waterproofing Membranes for adhered and protected systems, 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:		On suitable non-combustible substrates, the use of the products can enable a roof to be unrestricted under this Requirement. See section 7 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		The products, including joints, will 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 11 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Durability, workmanship and fitness of materials
Comment:		Use of the products satisfies the requirements of this Regulation. See sections 10 and 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:		The products, when applied to suitable substructure, are 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 section 7 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The products, including joints, 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:		Comments in relation to the products under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽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 11 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The products, including joints, will enable a roof to satisfy the requirements of this Regulation. See section 6.1 of this Certificate.

Regulation: 34(b) External fire spread

Comment: On a suitable substructure, the use of the products can enable a roof to be unrestricted under the requirements of this Regulation. See section 7 of this Certificate.

Construction (Design and Management) Regulations 2015 Construction (Design and Management) Regulations (Northern Ireland) 2016

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

See sections: 1 *Description* (1.2) and 3 *Delivery and site handling* (3.3) of this Certificate.

Additional Information

NHBC Standards 2017

In the opinion of the BBA, Universal and Universal SA Roof Waterproofing Membranes for adhered and protected systems, 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

1 Description

1.1 Universal and Universal SA Roof Waterproofing Membranes for adhered and protected systems comprise:

- Universal membrane — a PO CB membrane, reinforced with polyester/glass scrim (250 gm⁻²) with a polypropylene fleece to the upper and lower surfaces, for use as a single layer waterproofing membrane
- Universal SA membrane — a PO CB membrane, reinforced with polyester/glass scrim (250 gm⁻²) with a polypropylene fleece on the upper surface and heat activated self-adhesive PO CB layer with a polypropylene release film on the underside, for use as a detailing membrane at roof perimeters and penetrations through the roof.

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

Table 1 Nominal characteristics

Characteristic (unit)	Universal	Universal SA
Roll width (m)	1	1
Roll length (m)	10	10
Roll weight (kg)	32	35
Thickness (mm)	3.2	3.5
Mass per unit area (kg·m ⁻²)	3.2	3.5
Tensile strength* (N per 50 mm)		
longitudinal direction	≥1000	≥1000
transverse direction	≥1000	≥1000
Elongation at break* (%)		
longitudinal direction	≥20	≥20
transverse direction	≥20	≥20
Tear resistance – nail (N)		
longitudinal direction	≥300	≥300
transverse direction	≥300	≥300
Resistance to cold bend* (C°)	≤-20	≤-20
Watertightness	Pass	Pass
Peel resistance of joints (N per 50mm)*	≥50	≥50
Shear resistance of joints (N per 50mm)*	≥800	≥800
Resistance to static loading (kg)*	>20	>20
Resistance to impact (mm)*	≥1250	≥1250
Surface finish		
upper	PP fleece	PP fleece
lower	PP fleece	PP film

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

- Icopal TPM Membrane Adhesive — for use in bonded applications
- Icopal Hose and Gun Cleaner — for cleaning spray equipment and to remove adhesive spillages from surfaces
- Icopal SA Primer — for priming substrates.

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

- Icopal TorchSafe T.A — vapour control layers
- Monarperm All Zones Breather Membrane (covered by BBA Certificate 02/3932)
- Icopal Thermazone Roofboard (covered by BBA Certificate 15/5253) — an HCFC- and CFC-free rigid polyisocyanurate foam, faced with mineral-coated glass tissue
- Roofguard Universal Parapet Outlets, roof outlets, vent pipes, cable and pipe ducts
- Roofguard Universal Lightning Conductor Pads
- Roofguard Universal Cowled Telescopic Vent.

2 Manufacture

2.1 The membranes are manufactured by impregnating the reinforcement with a modified POCB coating. Both or one side are finished with a spunbonded PP fleece or removable PP film.

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 being operated by the manufacturer are being maintained.

2.3 The management system of Icopal BV has been assessed and registered as meeting the requirements of EN ISO 9001 : 2008 by Kiwa NV (Certificate K74027/01).

3 Delivery and site handling

3.1 The products are delivered to site in roll form, stood on end on pallets and covered by shrink-wrap bearing the Certificate holder's name and the BBA logo incorporating the number of this Certificate.

3.2 Rolls should be stored on end, upright on a clean level surface and not exposed to excessive heat.

3.3 The Certificate holder has taken the responsibility of classifying and labelling the products under the *CLP Regulation (EC) No 1272/2008 on the classification, labelling and packaging of the 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 Universal and Universal SA Roof Waterproofing Membranes for adhered and protected systems.

Design Considerations

4 Use

4.1 Universal membrane is satisfactory for use as a waterproofing on flat roofs with limited or pedestrian access on:

- fully adhered roofs
- loose-laid and ballasted roofs
- inverted roofs.

4.2 Universal SA membrane is for use in completing detailing.

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

4.4 Flat roofs are defined for the purpose of this Certificate as those having a minimum finished fall of 1:80. Pitched roofs are defined as those having a fall in excess of 1:6. 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 and direction of falls.

4.5 Decks to which the membranes are to be applied must comply with the relevant requirements of BS 6229 : 2003, BS 8217 : 2005 and, where appropriate, *NHBC Standards 2017*, Chapter 7.1.

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

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

4.7 Imposed loads, dead loading and wind load specifications are to be calculated by a suitably competent and experienced individual 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.

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

4.9 Contact with hydrocarbon and/or solvent based products such as white spirit, naphtha and paraffin must be avoided as the membranes are not compatible with these substances. Timber used in the construction of the roof deck must not be treated with solvent based preservatives.

5 Practicability of installation

Installation 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.

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

7 Behaviour in relation to fire



7.1 When classified in accordance with BS EN 13501-5 : 2005 a flat roof comprising a 18 mm plywood deck, primed with Icopal SA Spray Primer/Icopal SA Primer, a vapour control layer, a 120 mm tissue-faced foam insulation board, covered by fully bonded 3 mm Universal membrane is designated B_{ROOF}(t4) and can be considered to be unrestricted under the national Building Regulations.

7.2 Universal membranes when used in a loose-laid and ballasted specification, including an inorganic covering listed in the Annex of Commission Decision 2000/553/EC, can be considered to be unrestricted under the national Building Regulations.

7.3 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 also be considered to be unrestricted.

7.4 The designation of 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 2.8.1, clause 2.8.1

Northern Ireland — test or assessment by UKAS-accredited laboratory, or an independent consultant with appropriate experience.

8 Resistance to wind uplift

8.1 The adhesion of the bonded system is sufficient to resist the effects of wind suction, thermal cycling or other minor structural movements likely to occur in practice.

8.2 Where the membranes are bonded to insulation boards, the resistance to wind uplift will be dependent on the cohesive strength of the insulation and the method by which it is secured to the roof deck. This must be taken into account when selecting a suitable insulation material.

8.3 In loose-laid and ballasted systems, the precise ballast requirements should be calculated in accordance with the relevant parts of BS EN 1991-1-4 : 2005 and its UK National Annex. When gravel ballast is used, the system should always be loaded with a minimum depth of 50 mm aggregate.

8.4 The use of concrete slabs on suitable supports should be considered in areas of high wind exposure, and the advice of the Certificate holder should be sought. In such areas, the gravel may be bonded at the edges for a distance of one metre. The membranes should always be ballasted with a minimum depth of 50 mm of aggregate.

9 Resistance to mechanical damage

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

10 Maintenance



10.1 Systems must be the subject of annual inspections to ensure continued performance.

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

- exposed membrane is free from the build-up of silt and other debris
- integrity of joints in the membrane integrity of the detailing.

10.3 Where damage has occurred, it should be repaired in accordance with section 15 and the Certificate holder's instructions.

11 Durability



Under normal conditions of exposure and use, the products will have a service life in excess of 20 years.

Installation

12 General

12.1 Installation of Universal and Universal SA Roof Waterproofing Membranes for adhered and protected systems must be carried out in accordance with the relevant clauses of the Certificate holder's instructions, BS 8000-0 : 2014, BS 8000-4 : 1989, BS 8217 : 2005 and this Certificate.

12.2 Substrates to which the products are applied must be sound, dry, clean and free from sharp projections such as nail heads, concrete nibs etc. When used over a rough substrate, a suitable protection layer must be laid.

12.3 Installation should not be carried out during inclement weather conditions (eg rain, fog, snow). When the temperature is below 0°C, suitable precautions against surface condensation must be taken in accordance with the Certificate holder's instructions.

12.4 The membranes must be installed longitudinally with the direction of the roof fall or water flow and in such a manner that water flows over the head laps in the direction of the outlets and sealed using electric hot air equipment. A continuous 5 mm bead of bitumen must extrude from all overlaps and must be checked for security as work proceeds.

12.5 When used over existing bitumen waterproofing, the surface must be prepared in accordance with the Certificate holder's instructions. In cases of doubt, the Certificate holder's advice should be sought.

13 Procedure

Adhered systems

13.1 The substrate is primed with Icopal SA Spray Primer/Icopal SA Primer in accordance with the application instructions and allowed to dry thoroughly.

13.2 Install Icopal TorchSafe T.A. Vapour Control Layer Sanded in accordance with the Certificate holder's instructions, alternatively Icopal TorchSafe T.A Vapour Control Layer Stripes may be installed allowing insulation boards to be torch bonded into the stripes on the upper surface of the vapour control layer.

13.3 The insulation is bonded using Icopal Insulation Adhesive or Icopal TPI Insulation Adhesive in accordance with the manufacturer's instructions.

13.4 Universal membrane is installed using the Icopal TPM Membrane Adhesive in accordance with the Certificate holder's installation instructions.

13.5 The membrane must be dressed and bonded to all upstands, a minimum 65 mm above the fastened height of the insulation and bonded to create a temporary seal/night joint until detailing can be completed.

13.6 All overlaps, side and end laps (minimum 130 mm wide) must be welded using electric hot air welding equipment in accordance with the Certificate holder's instructions.

Loose-laid and ballasted/ inverted systems

13.7 The Universal membrane is loose laid to the substrate with a 130 mm side lap and 150 mm end laps fully sealed using electric hot air equipment. The membrane must be turned up at all upstands (minimum 65mm) and bonded to create a temporary seal/night joint until detailing can be completed.

13.8 The insulation is loose-laid over the membrane, installing a filter layer in between the insulation and membrane.

13.9 A layer of Monarperm All Zones Breather Membrane is then loose-laid over the insulation to act as a water reducing and filter layer.

13.10 A 50 mm thick layer of washed, well-rounded gravel is applied. Alternatively, 50 mm concrete paving slabs on suitable supports can be used to ballast the system.

14 Jointing and detailing procedure

Hot-air welding

14.1 The welding area must be dry and clean. If the membranes in the weld area have become contaminated, they must be cleaned in accordance with the Certificate holder's instructions ensuring the correct welding temperature and speed are observed.

14.2 Welding is achieved with an Icopal-approved hot air welder in accordance with the Certificate holder's instructions.

14.3 All overlaps should be welded as work proceeds, with minimum 130 mm sidelaps and minimum 150 mm end/head laps. A continuous bead of bitumen must extrude from all laps as work proceeds. On completion of the weld, the seam should be tested with a suitable metal probe, and any weakness repaired immediately.

Detailing

14.4 Substrates such as masonry, concrete, plywood/OSB and metal must be primed with Icopal SA Primer.

14.5 Universal SA membrane is used to complete detailing areas by heating the bottom layer using electric hot air equipment to activate the self-adhesive bitumen backing on the membrane having removed the release film.

14.6 The membrane must be dressed at all upstands to a minimum of 150 mm above the finished roof level and fully-bonded to the membrane using electric hot air equipment and ensuring a continuous 5 mm bead of bitumen extrudes from all overlaps as works proceeds. Terminations should be completed in accordance with the Certificate holder's instructions and the membranes installed over 200mm should also be mechanically fixed.

15 Repair

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

Technical Investigations

16 Tests

16.1 An assessment was made on data to EN 13707 : 2013 in relation to:

- dimensions
- mass per unit area
- tensile strength and elongation at break
- foldability at low temperature
- effect of heat ageing
- effect of artificially ageing
- flow resistance at elevated temperature
- watertightness
- tear resistance
- dimensional stability.

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

- foldability at low temperatures on control and UV aged samples
- resistance to slippage
- de-lamination from the insulation board
- water vapour permeability
- peel resistance of joints
- shear resistance of joints
- resistance to dynamic and static indentation.

17 Investigations

17.1 Existing data on fire performance of the membranes was examined.

17.2 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.

Bibliography

- BS 6229 : 2003 *Flat roofs with continuously supported coverings — Code of practice*
- BS 8000-0 : 2014 *Workmanship on construction sites — Introduction and general principles*
- BS 8000-4 : 1989 *Workmanship on building sites — Code of practice for waterproofing*
- BS 8217 : 2005 *Reinforced bitumen membranes for roofing — Code of practice*
- BS EN 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 *Eurocode 1 : Actions on structures — General actions — Wind actions*
- NA to BS EN 1991-1-4 : 2005 UK National Annex to *Eurocode 1 : Actions on structures — General actions — Wind*
- BS EN 13501-5 : 2005 + A1 : 2009 *Fire classification of construction products and building elements — Classification using data from external fire exposure to roofs tests*
- EN 13707: 2013 *Flexible sheets for waterproofing — Reinforced bitumen sheets for roof waterproofing — Definitions and characteristics*
- EN ISO 9001: 2008 *Quality management systems — Requirements*

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 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.