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Agrément Certificate
07/4457
Product Sheet 1

IKO BREATHER MEMBRANES

RUBERSHIELD BREATHER MEMBRANES FOR USE IN WARM NON-VENTILATED AND COLD VENTILATED ROOFS

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Rubershield Breather Membranes for use in warm non-ventilated and cold ventilated pitched roof systems.

AGRÉMENT 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 — as part of a complete roof, the products will resist the passage of water and wind-blown snow and dust into the interior of the building (see section 5).

Risk of condensation — the products are regarded as a low water vapour resistance (Type LR) underlay and can be used as part of a warm non-ventilated and cold ventilated pitched roof system (see section 6).

Wind loading — when installed on appropriately spaced battens, the products' physical properties are deemed adequate to resist the wind loads imposed on the underlay. The products will reduce the wind uplift forces acting on the roof covering (see section 7).

Strength — the products have adequate strength to resist the loads associated with the installation of the roof (see section 8).

Durability — under the normal conditions found in a roof space the products will have a service life comparable to a traditional roof tile underlay (see section 11).



The BBA has awarded this Agrément Certificate to the company named above for the products described herein. The 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 Third issue: 22 February 2011

Originally certificated on 16 November 2007

A handwritten signature in black ink, appearing to read 'Stuart Sadler'.

Stuart Sadler
Head of Approvals — Materials

A handwritten signature in black ink, appearing to read 'Greg Cooper'.

Greg Cooper
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, Rubbershield Breather Membranes, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:



The Building Regulations 2010 (England and Wales)

Requirement:	C2(b)	Resistance to moisture
Comment:		The products will contribute to a roof meeting this Requirement. See section 5.1 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The products are acceptable materials. See section 11 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The products can contribute to a construction satisfying this Regulation. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards – construction
Standard:	3.10	Precipitation
Comment:		The products will contribute to a roof satisfying clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.8 ⁽¹⁾⁽²⁾ of this Standard. See section 5.1 of this Certificate.
Regulation:	12	Building standards – conversions
Comment:		All comments given for these products under Regulation 9, 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) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The products are acceptable materials. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	C4(b)	Resistance to ground moisture and weather
Comment:		The products will contribute to a roof satisfying this Regulation. See section 5.1 of this Certificate.

Construction (Design and Management) Regulations 2007

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

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: 1 *Description* (1.2) of this Certificate.

Non-regulatory Information

NHBC Standards 2011

NHBC accepts the use of Rubbershield Breather Membranes, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 7.2 *Pitched roofs*.

Technical Specification

1 Description

1.1 Rubershield Breather Membranes are thermally-bonded film laminate composites made of polyolefins.

1.2 The products have the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

Characteristic (units)	Rubershield-Trade	Rubershield-Light	Rubershield-Pro
Thickness (mm)	0.4	0.4	0.52
Weight per unit area (g·m ⁻²)	100	112	142
Roll length (m)	50	50	50
Roll width (m)	1.0 and 1.5	1.0 and 1.5	1.0 and 1.5
Colour			
upper	green	green	green
lower	white	white	white

1.3 Quality control checks are carried out on the incoming materials, during production and on the finished product.

2 Delivery and site handling

2.1 Rolls are delivered to site in packages that carry a label bearing the marketing company's name, the grade identification and the BBA identification mark including the number of this Certificate.

2.2 The rolls should be stored flat on their sides, on a smooth, clean, dry surface, under cover and protected from sunlight.

Assessment and Technical Investigations

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

Design Considerations


3 Use

Rubershield Breather Membranes are satisfactory for use as fully supported or unsupported underlays in tiled and slated pitched roofs constructed in accordance with the relevant Clauses of BS 5534 : 2003.

4 Practicability of installation

The products are designed to be installed by competent slaters/tilers experienced with this type of product.

5 Weathertightness

 5.1 Tests indicate that the products will resist the passage of water, wind-blown snow and dust into the interior of a building, under all conditions to be found in a roof constructed in accordance with the relevant Clauses of BS 5534 : 2003.

5.2 The products resist penetration of liquid water and consequently may be used as temporary waterproofing prior to the installation of slates or tiles. The period of such use should, however, be kept to a minimum. See BBA Information Bulletin No 2 *Permeable Roof Tile Underlay — Guide to Good Site Practice* and, see section 16, Table for *Physical properties — general*.

6 Risk of condensation

6.1 For design purposes, the products' water vapour resistance may be taken as not more than 0.25 MN·s·g⁻¹ and for roofs designed in accordance with BS 5534 : 2003 or BS 5250 : 2002, Section 8.4, it may be regarded as a Type LR membrane.

6.2 In common with all roofs, care must be taken in the overall design and installation to minimise the risk of water vapour coming into contact with cold parts of the construction. Factors to be considered and minimised include, moisture diffusion through the ceiling, infiltration through unsealed openings/penetrations in the ceiling and services evaporating or venting moisture into cold spaces.

6.3 The risk of condensation is highest in new-build construction during the first heating period, where there is high moisture loading due to wet trades, such as in-situ cast concrete slabs or plaster. The risk of condensation diminishes as the building naturally dries out. See BBA Information Bulletin No 1 *Roof Tile Underlays in Cold Roofs during the Drying-out Period*.

Ceiling and insulation horizontal (cold roof)

6.4 Roofs designed and constructed in accordance with BS 5250 : 2002 will adequately limit the risk of interstitial condensation.

6.5 Alternatively, ridge or high ventilation equivalent to a continuous opening of 5 mm may be used. If this approach is adopted, users should refer to Product Sheet 2, in particular the additional guidance relating to limiting the risk of interstitial condensation.

Ceiling and insulation inclined (warm roof)

6.6 For roofs with an insulated inclined ceiling, ventilation above or below the underlay will not be required provided that the passage of moisture by diffusion and by convection is controlled, eg, by a vapour control layer or a continuous envelope of insulation with a high vapour resistance.

Ceiling and insulation partially inclined (warm roof and cold roof)

6.7 Where an insulated ceiling only spans part of the roofline, resulting cold roof spaces should be ventilated in accordance with BS 5250 : 2002, Section 8.4.2.5 and 8.4.2.6.

7 Wind loading

7.1 Project design wind speeds should be determined and wind uplift forces calculated, in accordance with BS EN 1991-1-4 : 2005 and the UK National Annex.

7.2 The products, when fully supported, have adequate resistance to wind uplift forces.

7.3 For an unsupported system, wind loading on the underlays should be calculated in accordance with BS 5534 : 2003, Section 5.5.2.7. For acceptable wind loads with specific batten spacings for the draped product, using a 25 mm deep tiling batten, see section 16, Table for *Physical properties — general*.

8 Strength

The products will resist the loads associated with installation of the roof.

9 Properties in relation to fire

9.1 The products will have similar properties in relation to fire to those of traditional polyethylene roof tile underlays.

9.2 When the products are used unsupported, there is a risk that fire can spread if the material is accidentally ignited during maintenance works, eg by a roofer's or plumber's torch. As with all types of underlay, care should be taken during building and maintenance to avoid the material becoming ignited.

9.3 When the products are used in a fully supported situation, the fire performance will be determined by the support.

10 Maintenance

As the products are confined within a roof system and have suitable durability maintenance is not required. However, it must be ensured that damage occurring before enclosure is repaired (see section 14).

11 Durability



The products will be virtually unaffected by the normal conditions found in a roof space and will have a life comparable with that of traditional roof tile underlays, provided they are not exposed to sunlight for long periods (see section 12.4). Advice regarding exposure can be obtained from the Certificate holder.

Installation

12 General

12.1 Rubershield Breather Membranes must be installed and fixed in accordance with the Certificate holder's instructions, provisions of this Certificate and the relevant recommendations of BS 5534 : 2003 and BS 8000-6 : 1990. Installation can be carried out under all conditions normal to roofing work.

12.2 The products are installed with the coloured or printed side uppermost and lapped to shed water out and down the slope.

12.3 Overlaps must be provided with the minimum dimensions given in Table 2.

Roof pitch (°)	Horizontal lap (mm)		Vertical laps (mm)
	Not fully supported	Fully supported	
12.5 to 14	225	150	100
15 to 34	150	100	100
35+	100	75	100

12.4 Where possible, eaves guards should be used to protect the products from sunlight and direct water into the gutter.

13 Procedure

Fully supported

13.1 The products may be used over sarking boards of softwood, C4 grade chipboard or water-resistant grade plywood or water-resistant grade OSB and either with continuous insulation or insulation placed between the rafters.

13.2 The products are secured to the support with counter battens at least 12 mm thick to create an air space between the product and the tiles for drainage and vapour dispersal. The counter battens are fixed with corrosion-resistant staples or clout nails as appropriate. Tiling battens are secured to the counter battens and rafters with appropriate fixings.

13.3 Care must be taken to minimise the risk of interstitial condensation as described in section 6.6 particularly for timber sarking which may be below the dew-point for extended periods during winter months.

Unsupported

13.4 The products, when installed as an unsupported system, are fixed in the traditional method for roof tile underlays, ie draped between the rafters.

14 Repair

Damage to the products can be repaired prior to the installation of slates or tiles by replacement of the damaged areas, by patching and sealing correctly. Care should be taken to ensure that the watertightness of the roof is maintained.

15 Finishing

15.1 Detailing of abutments, verges and hips must be in accordance with the Certificate holder's instructions.

15.2 The tiling and slating must be carried out in accordance with the relevant Clauses of BS 5534 : 2003, BS 8000-6 : 1990 and the Certificate holder's instructions, especially when using tightly-jointed slates or tiles.

Technical Investigations

16 Tests

Samples of Rubershield Breather Membranes were obtained from the Certificate holder for testing. The results of the tests carried out by, or on behalf of, the BBA are summarised in Tables 3 and 4.

Table 3 Physical properties — directional

Test (units)	Mean results			Method
	Rubershield-Trade	Rubershield-Light	Rubershield-Pro	
Tensile strength (N per 50 mm)				BS EN 12311-1
unaged				
longitudinal	193	287	296	
transverse	152	162	202	
aged ⁽¹⁾				
longitudinal	143	—	—	
transverse	133	—	—	
wet strength ⁽²⁾				
longitudinal	193	—	—	
transverse	148	—	—	
Elongation at break (%)				BS EN 12311-1
unaged				
longitudinal	31	58	52	
transverse	83	86	83	
aged ⁽¹⁾				
longitudinal	26	—	—	
transverse	57	—	—	
wet strength ⁽²⁾				
longitudinal	29	—	—	
transverse	76	—	—	
Tear resistance (nail) (N)				BS EN 12310-1
unaged				
longitudinal	101	121	207	
transverse	114	144	274	

(1) UVA aged for 336 hours at 50°C/heat aged for 90 days at (70±2)°C.

(2) Wet strength soak at 23°C for 24 hours — tested surface wet.

Table 4 Physical properties — general

Test (units)	Mean results			Method
	Rubershield-Trade	Rubershield-Light	Rubershield-Pro	
Water vapour permeability at 25°C/75% RH (g·m ⁻² ·day ⁻¹)	1348	—	—	BS 3177
Vapour resistance (MN·s·g ⁻¹)	0.15	—	—	BS 3177
Resistance to water penetration unaged	Class W1	—	—	EN 1928 ⁽¹⁾
aged ⁽²⁾	Class W1	—	—	
Resistance to streaming water supported	pass	—	—	MOAT 69 : 4.2.2
unsupported	pass	—	—	
Mullen burst strength (kN·m ⁻²)	338	—	—	BS 3137
Head of water (cm)	395	—	—	BS EN 20811
Resistance to wind loads (kPa) ⁽³⁾				MOAT 69 : 4.2.1
batten spacing 350 mm	0.5	—	1.0	
batten spacing 330 mm	1.0	0.5	1.5	
batten spacing 300 mm	1.0	0.5	1.5	
batten spacing 250 mm	2.5	2.5	2.5	

(1) As modified in accordance with EN 13859-1 : 2005.

(2) UVA aged for 336 hours at 50°C/heat aged for 90 days at (70±2)°C.

(3) Test carried out using 25 mm thick battens and a 600 mm rafter spacing.

17 Investigations

17.1 The condensation risk in warm roof constructions, and specifically those containing sarking boards, incorporating the product was examined.

17.2 The manufacturing process was assessed, including the method adopted for quality control, and details were obtained of the quality and composition of the materials used.

17.3 Existing data for a product of similar composition was assessed for the following properties:

- dimensional stability
- slip resistance (dry and wet).

17.4 Using computer modelling, cold non-ventilated roofs were analysed for risk of condensation. This assessment was used as a basis for acceptance for use of the products in cold roofs with ridge or high level ventilation only.

Bibliography

- BS 3137 : 1972 *Methods for determining the bursting strength of paper and board*
- BS 3177 : 1959 *Method for determining the permeability to water vapour of flexible sheet materials used for packaging*
- BS 5250 : 2002 *Code of practice for control of condensation in buildings*
- BS 5534 : 2003 *Code of practice for slating and tiling (including shingles)*
- BS 8000-6 : 1990 *Workmanship on building sites — Code of practice for slating and tiling of roofs and claddings*
- 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 actions*
- BS EN 12310-1 : 2000 *Flexible sheets for waterproofing — Determination of resistance to tearing (nail shank) — Bitumen sheets for roof waterproofing*
- BS EN 12311-1 : 2000 *Flexible sheets for waterproofing — Determination of tensile properties — Bitumen sheets for roof waterproofing*
- BS EN 20811 : 1992 *Textiles — Determination of resistance to water penetration — Hydrostatic pressure test*
- EN 1928 : 2000 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of watertightness*
- EN 13859-1 : 2005 *Flexible sheets for waterproofing — Definitions and characteristics of underlays — Underlays for discontinuous roofing*
- MOAT No 69 : 2004 *UEAtc Technical Report for the Assessment of Discontinuous Roofing Underlay Systems*

18 Conditions

18.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- 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 and documents referred to in this Certificate are those that the BBA deems to be relevant at the date of issue or re-issue of this Certificate and include any: Act of Parliament; Statutory Instrument; Directive; Regulation; British, European or International Standard; Code of Practice; manufacturers' instructions; or any other publication or document similar or related to the aforementioned.

18.3 This Certificate will remain valid for an unlimited period provided that the product/system and the manufacture and/or fabrication including all related and relevant 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 In granting this Certificate, the BBA is not responsible for:

- 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
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

18.5 Any information relating to the manufacture, supply, installation, use and maintenance 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 and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date 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. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.