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Agrément Certificate
87/1807
Product Sheet 2

ICOPAL NON-BREATHABLE ROOF TILE UNDERLAYS

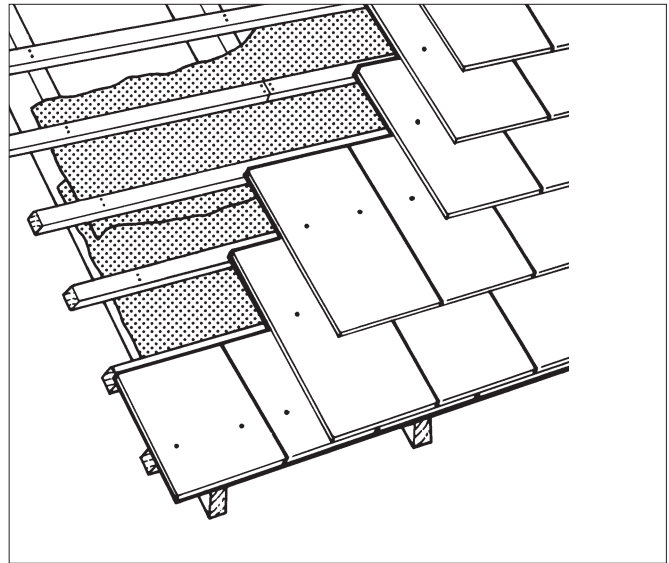
MONARTILE PROTECT ROOF TILE UNDERLAY

This Agrément Certificate Product Sheet⁽¹⁾ relates to Monartile Protect Roof Tile Underlay, a polypropylene underlay with a low-density polyethylene top layer, for use in tiled and slated ventilated pitched roofs.

(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 — as part of a complete roof, the product will resist the passage of water and wind-blown snow and dust into the interior of the building (see section 6).

Wind loading — when installed with appropriately spaced battens, the product's physical properties are adequate to resist the wind loads imposed on the underlay. The product will reduce the wind uplift forces acting on the roof covering (see section 8).

Strength — the product has adequate strength to resist the loads associated with the installation of the roof (see section 9).

Durability — under the normal conditions found in a roof space, the product will have a service life comparable to a traditional roof tile underlay (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

John Albon — Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

Date of Fifth issue: 20 April 2017

Originally certificated on 31 March 2004

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, Monartile Protect Roof Tile Underlay, 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:	C2(b)	Resistance to moisture
Comment:		The product will contribute to a roof meeting this Requirement. See section 6.1 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The product is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:		The product can contribute to a construction satisfying this Regulation. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	3.10	Precipitation
Comment:		The product will contribute to a roof satisfying clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.8 ⁽¹⁾⁽²⁾ of this Standard. See section 6.1 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:		All comments given for this 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)(iii)(b)(i)	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The product will contribute to a roof satisfying this Regulation. See section 6.1 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* and 14 *General* (14.2) of this Certificate.

Additional Information

NHBC Standards 2017

NHBC accepts the use of Monartile Protect Roof Tile Underlay, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 7.2 *Pitched roofs*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 13859-1 : 2014. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

Monartile Protect Roof Tile Underlay is a non-woven spunbonded black polypropylene sheet laminated with a matt black, low-density polyethylene (LDPE) top layer. The product's nominal characteristics are given in Table 1.

Table 1 Nominal characteristics

Characteristic (unit)	Monartile Protect
Thickness (mm)	0.45
Mass per unit area* ($\text{g}\cdot\text{m}^{-2}$)	125
Roll length* (m)	15, 45 ⁽¹⁾
Roll width* (m)	1.0 ⁽¹⁾
Colour	
upper	black (matt)
lower	black
Tensile strength* ($\text{N}\cdot 50\text{ mm}^{-1}$)	
longitudinal	160
transverse	150
Elongation* (%)	
longitudinal	80
transverse	85
Tear resistance* (N)	
longitudinal	130
transverse	140
Watertightness*	
unaged	W1
aged ⁽¹⁾	W1
Water vapour transmission* (S_g)(m)	30

(1) 1.5 m x 30 m available to special order.

(2) Aged in accordance with BS EN 13859-1 : 2014, Annex C.

2 Manufacture

2.1 The membrane is manufactured by laminating a non-woven spunbonded black polypropylene sheet with a matt-black LDPE top layer to form a waterproof membrane.

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

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

2.3 The management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by DNV Det Norske Veritas Denmark A/S (Certificate 05710-2001-AQ-DEN-DANAK).

3 Delivery and site handling

3.1 Rolls are delivered to site in packages each carrying a label bearing the marketing company's name, the product name, dimensions and the BBA logo including the number of this Certificate.

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

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Monartile Protect Roof Tile Underlay.

4 General

Monartile Protect Roof Tile Underlay is satisfactory for use as a roof tile underlay in tiled or slated ventilated pitched roofs constructed in accordance with the relevant clauses of BS 5534 : 2014.

5 Practicability of installation

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

6 Weathertightness



6.1 The product is classified W1* in accordance with BS EN 13859-1 : 2014 and will resist the passage of water and 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 : 2014.

6.2 The product should not be used for prolonged periods as temporary waterproof covering prior to the installation of slates or tiles.

7 Risk of condensation

7.1 The product should be regarded as an impermeable underlay when considering ventilation of a roof space.

7.2 For design purposes, the product's water vapour resistance may be taken as not less than $50 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}$, and for roofs designed in accordance with BS 5534 : 2014 or BS 5250 : 2011, Annex H, they may be regarded as Type HR membranes.

7.3 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.

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

Ceiling and insulation horizontal (cold ventilated roof)

7.5 Roofs designed and constructed in accordance with BS 5250 : 2011 will adequately limit the risk of condensation.

Ceiling and insulation inclined (warm roof)

7.6 For roofs with an insulated inclined ceiling, ventilation between the insulation and underlay will be required, (see section 1.5.2).

8 Wind loading

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

Unsupported

8.2 The product is satisfactory for use in unsupported systems in the Geographical Wind Zones given in Table 2, where a well-sealed ceiling is present and the roof has a ridge height $\leq 15 \text{ m}$, a pitch between 12.5° and 75° and a site altitude $\leq 100 \text{ m}$, and where topography is not significant. For all other cases, the required uplift resistance should be determined using BS 5534 : 2014 and the Certificate holder's declared wind uplift resistances given in Table 3.

Table 2 Zones of applicability of the product according to BS 5534 : 2014, clause A.8 with battened laps, taped laps and laps with counterbattens

$\leq 345 \text{ mm}$ batten gauge with battened lap	$\leq 250 \text{ mm}$ batten gauge with battened lap	$\leq 345 \text{ mm}$ batten gauge with taped laps
Zones 1 to 3	Zones 1 to 5	Zones 1 to 5

Table 3 Declared wind uplift resistance (Pa)

$\leq 345 \text{ mm}$ batten gauge with battened laps ⁽¹⁾	$\leq 250 \text{ mm}$ batten gauge with battened laps ⁽¹⁾⁽²⁾	$\leq 345 \text{ mm}$ batten gauge with taped laps ⁽¹⁾
1291	2683	3007

(1) Mean of test results.

(2) Underlays with a wind uplift resistance at a 250 mm batten gauge that meet the minimum design wind pressure of 820 Pa for Zone 1 are deemed to satisfy the requirements for use at 100 mm batten gauge in all wind zones.

Supported

8.3 The product, when fully supported, has adequate resistance to wind uplift forces.

8.4 The product may be used at any batten gauge in all wind zones when laid over nominally airtight sheet sarking, for example OSB, plywood and insulation for warm-roof design. It may also be used in applications where slates are nailed directly onto sarking boards.

8.5 Sarking boards, such as square-edged butt jointed planks, are not considered to be airtight and the underlay is treated as unsupported.

9 Strength

The product will resist the normal loads associated with installation of the roof.

10 Properties in relation to fire

10.1 The product is classified F* in accordance with BS EN 13501-1 : 2007. The product will melt and shrink away from heat, but will burn in the presence of a naked flame.

10.2 There is a risk that fire can spread if it 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 ignition.

11 Maintenance

As the product is confined within a roof space and has suitable durability, maintenance is not required. However, any damage occurring before enclosure must be repaired (see section 17).

12 Durability



The product 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 underlay, provided it is not exposed to sunlight for long periods (see section 14.7). Advice regarding exposure can be obtained from the Certificate holder.

13 Reuse and recyclability

The product comprises polyolefins, which can be recycled.

Installation

14 General

14.1 Monartile Protect Roof Tile Underlay must be installed and fixed in accordance with the Certificate holder's instructions, the provisions of this Certificate and the relevant recommendations of BS 5534 : 2014 and BS 8000-6 : 2013. Installation can be carried out under all conditions normal to roofing work.

14.2 The product has a low coefficient of friction and care should be taken during installation work, especially when wet, to avoid slipping.

14.3 Valleys and ridges should be covered with a 600 mm wide strip of the product.

14.4 The product is installed with the matt black side uppermost, fixed using galvanized clout nails every 150 mm and lapped to shed water out and down the slope.

14.5 Overlaps must be provided with the minimum dimensions given in Table 4.

Table 4 Minimum overlaps

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

14.6 Minimum overlaps at hips should be 150 mm and 300 mm in valleys.

14.7 MonarFlex Eaves Guards must always be used to protect the product from sunlight and to direct water into the gutter.

14.8 For easy and correct ridge ventilation of the Monartile Protect, the IcoAir ridge ventilation piece can be used.

15 Procedure

15.1 The product is fixed in the traditional method for roof tile underlays, ie draped between the rafters to allow drainage of liquid water under the tiling battens.

15.2 When used in warm roof specifications, a ventilation gap of at least 50 mm between the insulation and the underlay should be allowed. A vapour control layer should be used on the warm side of the insulation.

15.3 For fully-supported roofs (traditional Scottish), the slates can be nailed through the underlay into the timber plank sarking, normally 150 mm wide with a 2 mm gap.

16 Finishing

16.1 Detailing of abutments and verges must be in accordance with the Certificate holder's instructions. Ingress of moisture to the roof space should be restricted by sealing around pipes and other penetrations and details.

16.2 The tiling and slating must be carried out in accordance with the relevant clauses of BS 5534 : 2014, BS 8000-6 : 2013 and the tile/slate manufacturer's instructions, especially when using tightly-jointed slates or tiles.

17 Repair

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

Technical Investigations

18 Tests

18.1 An assessment was made on data to BS EN 13859-1 : 2014 in relation to:

- dimensions
- mass per unit area
- tensile strength and elongation
- resistance to tear
- dimensional stability
- resistance to water penetration
- resistance to artificial ageing
- water vapour transmission.

18.2 Tests were carried out to determine:

- slip resistance
- resistance to streaming water
- Mullen burst strength
- resistance to wind loads

in order to assess:

- safety during installation
- performance under typical service conditions
- robustness during installation
- properties when installed.

19 Investigations

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 5250 : 2011 *Code of practice for control of condensation in buildings*

BS 5534 : 2014 + A1 : 2015 *Code of practice for slating and tiling (including shingles)*

BS 8000-6 : 2013 *Workmanship on building sites — Code of practice for slating and tiling of roofs and claddings*

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 13501-1 : 2007 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

BS EN 13859-1 : 2014 *Flexible sheets for waterproofing — Definitions and characteristics of underlays — Underlays for discontinuous roofing*

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

20 Conditions

20.1 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.

20.2 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.

20.3 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.

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

20.5 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.

20.6 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.