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Agrément Certificate

11/4870

Product Sheet 2

KINGSPAN ROOF TILE UNDERLAYS

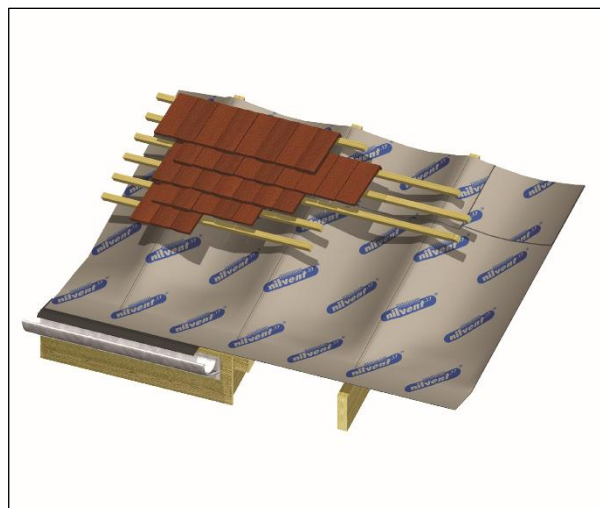
NILVENT.17 ROOF TILE UNDERLAY FOR USE IN COLD NON-VENTILATED ROOFS

This Agrément Certificate Product Sheet⁽¹⁾ relates to nilvent.17 Roof Tile Underlay, a vapour-permeable, high-density polyethylene, flexible membrane for use in energy-efficient cold non-ventilated tiled and slated pitched roof 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 — as part of a tiled or slated completed roof, the product will resist the passage of water and wind-blown snow and dust into the interior of the building (see section 6).

Risk of condensation — the product is a low water vapour resistance (Type LR) underlay and can be used as part of a cold non-ventilated pitched roof without specific provisions for ventilation (see section 7).

Wind loading — when installed on appropriately-spaced battens and/or rafters, the product's physical properties are deemed 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).

Properties in relation to fire — the product is classified as Class E in accordance with EN 13501-1 : 2018 and its use is restricted in some cases by the national Building Regulations (see section 10).

Durability — under 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

Date of Third issue: 17 May 2021

Originally certificated on 11 November 2011

Hardy Giesler
Chief Executive Officer



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 MUST check the validity and latest issue number 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 should not be relied upon.

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Regulations

In the opinion of the BBA, nilvent.17 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: Comment:	B4(1)	External fire spread The product, is restricted by this Requirement in some circumstances. See sections 10.1 and 10.2 of this Certificate.
Requirement: Comment:	C2(b)	Resistance to moisture The product will contribute to a roof meeting this Requirement. See section 6.1 of this Certificate.
Requirement: Comment:	C2(c)	Resistance to moisture The product will contribute to a roof meeting this Requirement. See sections 7.1 to 7.6 of this Certificate.
Regulation: Comment:	7(1)	Materials and workmanship The product is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: Comment:	8(1)	Durability, workmanship and fitness of materials The product can contribute to a construction satisfying this Regulation. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation: Standard: Comment:	9 2.6	Building standards applicable to construction Spread to neighbouring buildings The product is restricted under clause 2.6.4 ⁽¹⁾⁽²⁾ of this Standard, in some circumstances. See sections 10.1 and 10.3 of this Certificate
Standard: Comment:	3.10	Precipitation 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: Comment:	3.15	Condensation The product can enable a roof to satisfy this Standard with respect to interstitial condensation. See sections 7.1 to 7.6 of this Certificate.
Standard: Comment:	7.1(a)	Statement of sustainability 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: Comment:	12	Building standards applicable to conversions 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.
Regulation:	29	Condensation
Comment:		The product can enable a roof to satisfy this Regulation. See sections 7.1 to 7.6 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), Properties in Relation to Fire (10.4) and 3 *Delivery and site handling* (3.3) of this Certificate.

Additional Information

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.

Technical Specification

1 Description

1.1 nilvent.17 Roof Tile Underlay comprises vapour-permeable, high-density polyethylene (HDPE) backed with a polypropylene fleece.

1.2 The product has the nominal characteristics of:

Mass per unit area ($\text{g}\cdot\text{m}^{-2}$)	124
Roll length (m)	50
Roll width (m)	1.0, 1.5
Colour	
upper	grey
lower	white
Water vapour transmission S_d (m)	0.02
Water vapour resistance ($\text{MN}\cdot\text{s}^{-1}\cdot\text{g}^{-1}$)	0.1
Tensile strength [$\text{N}\cdot(50\text{ mm})^{-1}$]	
longitudinal	270
transverse	225
Elongation (%)	
longitudinal	14
transverse	23
Tear resistance (N)	
longitudinal	140
transverse	150

Watertightness

unaged	W1
aged ⁽¹⁾	W1.

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

1.3 An eaves guard should be used to protect the exposed underlay edge at the eaves. The Certificate holder can provide advice for recommended products.

2 Manufacture

2.1 The membrane is manufactured by spinning strands of HDPE and bonding them together with heat and pressure to form a flexible sheet. A polypropylene scrim is glued to one side of the 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.

3 Delivery and site handling

3.1 Rolls are delivered to site in packages that carry a label bearing the Certificate holder's name, the grade identification 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.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on nilvent.17 Roof Tile Underlay.

Design Considerations

4 Use

4.1 nilvent.17 Roof Tile Underlay is satisfactory for use fully supported or draped over rafters or counter battens, in dwellings with non-ventilated tiled or slated roofs of any conventional plan and size. Features⁽¹⁾ assessed include:

- | | | |
|----------------|--------------|---------------------------------------|
| • duo pitched | • gable ends | • room-in-roof ⁽²⁾ |
| • mono-pitched | • verges | • dormers |
| • hipped | • abutments | • timber sarking ⁽³⁾⁽⁴⁾⁽⁵⁾ |
| • mansard | • valleys. | |

(1) For roofs incorporating other features, non-conventional roof geometries or construction materials, the advice of the Certificate holder should be sought.

(2) Where a room-in-roof results in part of a roof pitch being insulated (ie a warm roof), design and detailing of that part of the roof should comply with relevant guidance given in Product Sheet 1 of this Certificate.

(3) Timber sarking, Scottish practice: the membrane is laid over open-jointed timber planks (nominally 150 mm wide with a 2 mm gap) and fixed with galvanized clout nails. Slates are nailed through the membrane onto the sarking without battens.

(4) Timber sarking, tiled roofs: Counter battens of 12 mm minimum thickness should be used to provide a drainage path beneath the tiling battens. The membrane may be laid directly over the timber planks or draped over the counter battens.

(5) Sheet sarking materials should not be used.

4.2 It is important that the designers, planners, contractors and/or installers ensure that the roof and ceiling are constructed in accordance with the Certificate holder's instructions and the information given in this Certificate.

4.3 The product can be installed by draping over rafters and securing with tiling battens, or installed taut over rafters and secured with counter battens and tiling battens.

4.4 In conventionally-ventilated roof constructions, energy loss by ventilation can account for up to 25% of the total heat lost through the roof. The non-ventilated system will significantly reduce this mechanism of heat loss.

4.5 In non-ventilated roof systems, the risk of condensation is equivalent to, or less than, that for conventionally-ventilated cold roof systems (see section 7).

5 Practicability of installation

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

6 Weathertightness



6.1 The product is Class W1 in accordance with BS EN 13859-1 : 2014. The product will resist the passage of water, wind-blown rain 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.

6.2 The product resists penetration of liquid water and consequently may be used as a temporary waterproofing prior to the installation of the slates or tiles. The period of use should, however, be kept to a minimum. Further information is given in BBA Information Bulletin 2 *Permeable Roof Tile Underlay – Guide to Good Site Practice*.

7 Risk of condensation



7.1 For design purposes, the product's water vapour resistance may be taken as not more than $0.25 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}$ and for roofs designed in accordance with BS 5534 : 2003 or BS 5250 : 2011, Annex H, it may be regarded as a Type LR membrane.

7.2 The complete roof construction, ceiling boards to roof tiles, must be considered as a total system with regard to condensation risk. It is important that the product is laid in accordance with the Certificate holder's instructions and this Certificate to minimise the risk of condensation.

7.3 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*.

7.4 All penetrations into and out of the roof space must be properly sealed in accordance with the Certificate holder's instructions which includes the use of the Certificate holder's recommended sealing tape. In addition, such features as vent stacks and boiler flues passing through the roof space must be sealed.

7.5 It is essential to minimise water vapour transfer into the loft space from the dwelling below. Appropriate measures include:

- ventilating the dwelling below in accordance with national Building Regulations and Standards for the dispersal and rapid dilution of water vapour, particularly from rooms that may experience high humidity (such as kitchens, utility rooms and bathrooms)
- covering all water tanks in the loft space and lagging pipework
- sealing penetrations in the ceiling and making loft hatches convection-tight by using a compressible draught seal
- ensuring that there is continuity of jointing with walls (and behind wall linings) at ceiling perimeters
- ensuring that masonry wall cavities do not interconnect with roof cavities.

7.6 For additional protection, the use of a vapour control layer/vapour check plasterboard can be considered.

7.7 Convective water transfer into the roof construction can be reduced by installing a continuous airtight sheet such as an air and vapour control layer (AVCL) between the internal lining and roof construction.

8 Wind loading

8.1 Project design wind speeds for the roof in which the product is to be installed should be determined, and wind uplift forces calculated, by a suitably experienced and competent individual 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 1, where a well-sealed ceiling, as defined in BS 9250: 2007, Clause 3.7, is present and the roof has a ridge height ≤ 15 m, a pitch between 12.5° and 75° , and a site altitude ≤ 100 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 in Table 2.

Table 1 Zones of applicability of nilvent.17 Roof Tile Underlay according to BS 5534 : 2014, clause A.8 with battened laps and taped laps

Product	≤ 345 mm batten gauge with battened lap	≤ 250 mm batten gauge with battened lap
nilvent.17	Zones 1 to 5	Zones 1 to 5

Table 2 Declared wind uplift resistance (Pa)

Product	≤ 345 mm batten gauge with battened laps ⁽²⁾	≤ 250 mm batten gauge with battened laps ⁽¹⁾⁽²⁾
nilvent.17	1652	1652

(1) 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 considered to satisfy the requirements for use at a 100 mm batten gauge in all wind zones.

(2) Mean of test results.

Supported

8.3 The product, when fully supported, have 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 timber based sarking (type 3 particleboard, type 3 OSB or type 2 plywood), and insulation for warm-roof design. It may also be used in applications where slates are nailed directly onto sarking boards.

8.5 Timber sarking, 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 Class E in accordance with EN 13501-1 : 2018.



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



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

10.4 When the product is used unsupported, 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.

10.5 When the product is used in a fully-supported situation, the reaction to fire will primarily be determined by the support.

11 Maintenance

As the product is confined within a roof system and has suitable durability (see section 12) maintenance is not required. However, any damage occurring before enclosure must be repaired (see section 16).

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 underlays, provided it is not exposed to sunlight for long periods (see section 14.5). Advice regarding exposure can be obtained from the Certificate holder.

Installation

13 General

13.1 nilvent.17 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, BS 8000-0: 2014 and BS 8000-6 : 2013. Installation can be carried out under all conditions normal to roofing work.

13.2 The product is installed with the printed side uppermost and lapped to shed water out and down the slope.

13.3 Overlaps must be provided with the minimum dimensions given in Table 3.

Table 3 Minimum overlaps

Roof pitch (°)	Horizontal lap (mm)		Vertical lap (mm)
	Not fully supported	Fully supported	
12.5 < 15	225	150	100
≥15	150	150	100

13.4 Where possible, eaves guards should be used to protect the product from sunlight and to direct water into the gutter. A suitable eaves carrier is recommended for this purpose.

14 Procedure

Draped and loose laps

14.1 The product can be installed as an unsupported system, and fixed in the traditional method for roof tile underlays, ie draped between the rafters, with the coloured printed side uppermost. The underlay should not drape more than 10 mm.

Taut

14.2 The product should be laid horizontally and must be pulled taut and not allowed to drape. Each sheet should be fixed to hold it in position, and counter battens (minimum thickness 25 mm) then fixed to the rafter. To assist in

achieving the design air permeability, the lap joints and penetrations through the underlay can be sealed with a 75 mm wide double-sided acrylic tape.

Timber sarking board

14.3 For fully-supported roofs (traditional Scottish practice), the slates are nailed through the underlay into the timber plank sarking, normally 150 mm wide with a 2 mm gap. The underlay must be fixed to the sarking board using galvanized clout nails.

14.4 For fully-supported roofs (where battens are used), counter battens of minimum thickness 12 mm should be installed either above or beneath the underlay for drainage purposes.

15 Repair

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

16 Finishing

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

16.2 To achieve a convection-tight loft space, it is important that the following details are maintained (see also sections 7.3, 7.5 and 7.6):

- all penetrations, eg pipework or electrical fittings to the loft space, must be sealed
- the loft hatch must be securely sealed to ensure a draught-free fit
- the eaves must be constructed to minimise air penetration into the loft space
- the insulation must be pushed into the eaves and against the underlay, taking care to avoid pushing the underlay against the tiling battens and blocking the drainage path.

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

Technical Investigations

17 Tests

17.1 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
- flexibility at low temperature
- resistance to water penetration
- water vapour transmission
- resistance to air penetration
- resistance to artificial weathering.

17.2 Tests were carried out to determine:

- slip resistance
- Mullen burst strength
- resistance to wind loads
- to assess:
 - safety during installation
 - robustness during installation

- properties when installed.

17.3 Data from previous tests and assessments were used to assess the properties for:

- wet strength
- heat ageing
- water immersion
- UV ageing.

18 Investigations

18.1 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

18.2 Using computer modelling, cold non-ventilated roofs were analysed for risk of condensation.

18.3 An assessment of practicability of installation was made from data gathered during previous assessments.

18.4 An evaluation was made of monitored data covering internal loft space temperature and relative humidity, plus moisture content of the rafters. The data was collected over winter and summer periods.

18.5 An evaluation was also made of data relating to reduction in unwanted energy loss from roofs incorporating the nilvent.17 non-ventilated system.

Bibliography

BS 5250 : 2011 + A1 : 2016 *Code of practice for control of condensation in buildings*

BS 5534 : 2014 *Slating and tiling for pitched roofs and vertical cladding — Code of practice*

BS 8000-0 : 2014 *Workmanship on construction sites – Introduction and general principles*

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

BS 9250 : 2007 *Code of practice for design of the airtightness of ceilings in pitched roofs.*

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*

EN 13501-1 : 2018 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

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

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

19 Conditions

19.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

19.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

19.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

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

19.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

19.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.