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**Agrément Certificate**
**90/2548**
Product Sheet 3 Issue 9

# TYVEK CONSTRUCTION MEMBRANES

## TYVEK REFLEX INSULATING BREATHER MEMBRANE

This Agrément Certificate Product Sheet(1) relates to the Tyvek(2) Reflex Insulating Breather Membrane, a low-emissivity, insulating breather membrane, for use in external walls in timber-frame (either factory or site applied), steel-frame and masonry constructions behind lightweight cladding panels and masonry facades.

(1) Hereinafter referred to as 'Certificate'.
(2) Tyvek is a registered trademark of E.I. du Pont de Nemours & Co. or its affiliates.

### The assessment includes

**Product factors:**

- compliance with Building Regulations
- compliance with additional regulatory or non-regulatory information where applicable
- evaluation against technical specifications
- assessment criteria and technical investigations
- uses and design considerations

**Process factors:**

- compliance with Scheme requirements
- installation, delivery, handling and storage
- production and quality controls
- maintenance and repair

**Ongoing contractual Scheme elements†:**

- regular assessment of production
- formal 3-yearly review

**KEY FACTORS ASSESSED**

Section 1. Mechanical resistance and stability
Section 2. Safety in case of fire
Section 3. Hygiene, health and the environment
Section 4. Safety and accessibility in use
Section 5. Protection against noise
Section 6. Energy economy and heat retention
Section 7. Sustainable use of natural resources
Section 8. Durability

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 Ninth issue: 6 June 2024
Originally certified on 27 September 2004

Hardy Giesler
Chief Executive Officer

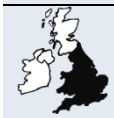
*Certificate amended on 15 January 2025 to update section 6.*

## SUMMARY OF ASSESSMENT AND COMPLIANCE

This section provides a summary of the assessment conclusions; readers should refer to the later sections of this Certificate for information about the assessments carried out.

## Compliance with Regulations

Having assessed the key factors, the opinion of the BBA is that Tyvek Reflex Insulating Breather Membrane, 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 Building Regulations 2010 (England and Wales) (as amended)

| | | |
|---|---|---|
| **Requirement:** | **B3(4)** | **Internal fire spread** |
| Comment: | | The product can contribute to satisfying this Requirement. See section 2 of this Certificate. |
| **Requirement:** | **B4(1)** | **External fire spread** |
| Comment: | | The product is restricted by this Requirement. See section 2 of this Certificate. |
| **Requirement:** | **C2(b)** | **Resistance to moisture** |
| Comment: | | The product will contribute to satisfying this Requirement. See section 3 of this Certificate. |
| **Requirement:** | **C2(c)** | **Resistance to moisture** |
| Comment: | | The product can contribute to satisfying this Requirement. See section 3 of this Certificate. |
| **Regulation:** | **L1(a)(i)** | **Conservation of fuel and power** |
| Comment: | | The product can contribute to satisfying this Requirement. See section 6 of this Certificate. |
| **Regulation:** | **7(1)** | **Materials and workmanship** |
| Comment: | | The product is acceptable. See sections 8 and 9 of this Certificate. |
| **Regulation:** | **25B** | **Nearly zero-energy requirements for new buildings** |
| **Regulation:** | **26** | **$CO_2$ emission rates for new buildings** |
| **Regulation:** | **26A** | **Fabric energy efficiency rates (applicable to England only)** |
| **Regulation:** | **26A** | **Primary energy efficiency rates for new buildings (applicable to Wales only)** |
| **Regulation:** | **26B** | **Fabric performance values for new dwellings (applicable to Wales only)** |
| **Regulation:** | **26C** | **Target primary energy rates for new buildings (applicable to England only)** |
| **Regulation:** | **26C** | **Energy efficiency rating (applicable to Wales only)** |
| Comment: | | The product can contribute to satisfying these Regulations. See section 6 of this Certificate. |

### The Building (Scotland) Regulations 2004 (as amended)

| | | |
|---|---|---|
| **Regulation:** | **8(1)** | **Fitness and durability of materials and workmanship** |
| Comment: | | The product can contribute to satisfying this Regulation. See sections 8 and 9 of this Certificate. |
| **Regulation:** | **9** | **Building standards – construction** |
| Standard: | 2.4 | Cavities |
| Comment: | | The product can contribute to satisfying this Standard, with reference to clause 2.4.2[(1)(2)]. See section 2 of this Certificate. |

| | | |
|---|---|---|
| **Standard:** | 3.10 | Precipitation |
| Comment: | | The product will contribute to satisfying clauses 3.10.1(1)(2) and 3.10.5(1)(2) of this Standard. See section 3 of this Certificate. |
| Standard: | 3.15 | Condensation |
| Comment: | | The product can contribute to satisfying this Standard, with reference to 3.15.1(1)(2) and 3.15.5(1)(2). See section 3 of this Certificate. |
| Standard: | 6.1(b)(c)(d) | Energy demand and carbon dioxide emissions |
| Comment: | | The product can contribute to satisfying this Standard, with reference to clauses 6.1.1(1) and 6.1.2(2). See section 6 of this Certificate. |
| Standard: | 6.2 | Building insulation envelope |
| Comment: | | The product can contribute to satisfying these Standards, with reference to clauses 6.2.4(1), 6.2.5(2), 6.2.6(2), 6.2.10(1), 6.2.11(1)(2) and 6.2.12(1). See section 6 of this Certificate. |
| Standard: | 7.1(a)(b) | Statement of sustainability |
| Comment: | | The product can contribute to satisfying 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. In addition, the product can contribute to a construction meeting a higher level of sustainability as defined in this Standard, with reference to clauses 7.1.4(1), 7.1.6(1)(2), 7.1.7(1), 7.1.9(2) and 7.1.10(2). See section 6 of this Certificate. |
| **Regulation:** | **12** | **Building standards – conversion** |
| Comment: | | All comments given for the 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(1)(a)(i)** | **Fitness of materials and workmanship** |
| Comment: | **(iii)(b)(i)** | The product is acceptable. See sections 8 and 9 of this Certificate. |
| **Regulation:** | **28(b)** | **Resistance to moisture and weather** |
| Comment: | | The product will contribute to satisfying this Regulation. See section 3 of this Certificate. |
| **Regulation:** | **29** | **Condensation** |
| Comment: | | The product can contribute to satisfying this Regulation. See section 3 of this Certificate. |
| **Regulation:** | **35(4)** | **Internal fire spread – structure** |
| Comment: | | The product can contribute to satisfying this Regulation. See section 2 of this Certificate. |
| **Regulation:** | **36(a)** | **External fire spread** |
| Comment: | | The product is restricted by this Regulation. See section 2 of this Certificate. |
| **Regulation:** | **39(a)(i)** | **Conservation measures** |
| Comment: | | The product can contribute to satisfying this Regulation. See section 6 of this Certificate. |
| **Regulation:** | **40(2)** | **Target carbon dioxide emission rate** |
| **Regulation:** | **43B** | **Nearly zero-energy requirements for new buildings** |
| Comment: | | The product can contribute to satisfying these Regulations. See section 6 of this Certificate. |

## Additional Information

### NHBC Standards 2024

In the opinion of the BBA, Tyvek Reflex Insulating Breather Membrane, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapters 6.1 *External masonry walls*, 6.2 *External timber framed walls*, 6.9 *Curtain walling and cladding* and 6.10 *Light steel framed walls and floors*.

## Fulfilment of Requirements

The BBA has judged the Tyvek Reflex Insulating Breather Membrane to be satisfactory for use as described in this Certificate. The product has been assessed as a low-emissivity breather membrane in walls of timber-frame (either factory or site applied) steel-frame and masonry constructions, behind lightweight cladding panels and masonry facades.

## ASSESSMENT

## Product description and intended use

The Certificate holder provided the following description for the product under assessment. Tyvek Reflex Insulating Breather Membrane is a low emissivity, insulating breather membrane and is a spunbonded high-density polyethylene (HDPE) membrane, metallised and lacquered on one face.

The product has the nominal characteristics given in Table 1.

*Table 1 Nominal characteristics of Tyvek Reflex Insulating Breather Membrane*

| Characteristic (unit) | Tyvek Reflex Insulating Breather Membrane |
|---|---|
| Thickness (mm) | 0.23 |
| Mass per unit area ($g \cdot m^{-2}$) | 83 |
| Roll length (m) | 100 |
| Roll width (m) | 0.48, 1.5, 2.7 or 3.0 |
| Colour | White inner/silver outer with red logo |

Ancillary Items

The following ancillary items are essential to use with the product and have been assessed with the product:

- Air and vapour control layers (AVCLs) or air leakage barriers (see Product Sheets 4, 5 and 10 of this Certificate)
- Tyvek Metallised Tape (2060M) — a single-sided tape for sealing laps and making good around windows, doors and service penetrations
- Tyvek Double-sided Tape (1310D) — an acrylic tape for sealing laps and bonding the membrane to other materials, such as timber, masonry and steelwork
- Tyvek Butyl Tape (1311B) — a double-sided tape for sealing penetrations, eg behind metal brackets and timber battens under compression
- Tyvek Acrylic Tape (2060B) – a single-sided tape for sealing joints.

Definitions for products and applications inspected

In the absence of other guidance, suitable external masonry wall, external timber framed wall, curtain walling and light cladding, and light steel frame wall constructions are defined as those designed and built in accordance with *NHBC Standards 2024*, Chapters 6.1, 6.2, 6.9 and 6.10 respectively.

## Product assessment – key factors

The product was assessed for the following key factors, and the outcome of the assessments is shown below. Conclusions relating to the Building Regulations apply to the whole of the UK unless otherwise stated.

# 1 Mechanical resistance and stability

Data were assessed for the following characteristics.

1.1 Resistance to mechanical damage

1.1.1 Results of resistance to mechanical damage tests are given in Table 2.

*Table 2 Mechanical damage tests*

| Product assessed | Assessment method | Requirement | Result |
|---|---|---|---|
| Tyvek Reflex Insulating Breather Membrane | Nail tear to BS EN 12310-1 : 2000 | Declared values | |
| | Longitudinal direction | ≥ 65 N | Pass |
| | Transverse direction | ≥ 60 N | Pass |
| | Mullen burst strength to BS 3137 : 1972 | Value achieved | 870 $kN \cdot m^{-2}$ |
| | Tensile strength to BS EN 12311-1 : 2000 | Declared values | |
| | Longitudinal direction | ≥ 200 $N \cdot (50\ mm)^{-1}$ | Pass |
| | Transverse direction | ≥ 170 $N \cdot (50\ mm)^{-1}$ | Pass |
| | Elongation to BS EN 12311-1 : 2000 | Declared values | |
| | Longitudinal direction | ≥ 6% | Pass |
| | Transverse direction | ≥ 8.5 % | Pass |

1.1.2 On the basis of data assessed, the product has adequate strength to resist the loads associated with construction and installation into a building.

1.1.3 The wet strength of the product was assessed using test data from a relevant representative product. The product is not adversely affected by water and will retain its properties when wet.

# 2 Safety in case of fire

Data were assessed for the following characteristics.

2.1 Reaction to fire

2.1.1 The Certificate holder has not declared a reaction to fire classification to EN 13501-1 : 2018.

2.1.2 On the basis of data assessed, the product will be restricted in use under the documents supporting the national Building Regulations in some cases.

2.1.3 In England, Wales and Northern Ireland, the product must not be used on buildings that have a storey at least 18 m above ground level and which contain one or more dwellings, an institution, a room for residential purposes (excluding, in Wales and Northern Ireland only, any room in a hostel, hotel or boarding house), student accommodation, care homes, sheltered housing, hospitals or dormitories in boarding schools and, additionally in Northern Ireland, nursing homes and places of lawful detention.

2.1.4 In Scotland, the use of the product is unrestricted in terms of height and proximity to a relevant boundary by the documents supporting the national Building Regulations.

2.1.5 Designers must refer to the relevant national Building Regulations and guidance for detailed conditions of use, particularly in respect of requirements for substrate fire performance, cavity barriers, service penetrations and combustibility limitations for other materials and components used in the overall construction.

## 3 Hygiene, health and the environment

Data were assessed for the following characteristics.

3.1 Weathertightness

3.1.1 Results of weathertightness tests are given in Table 3.

*Table 3 Weathertightness tests*

| Product assessed | Assessment method | Requirement | Result |
|---|---|---|---|
| Tyvek Reflex Insulating Breather Membrane | Resistance to water penetration to BS 4016 : 1997 (Eosin test) | Class W1 | Pass |
| | Hydrostatic head to BS EN 20811 : 1992 | Declared value 2.3 m | Pass |
| | Watertightness to EN 1928 : 2001 (A) | Class W1 | Pass |

3.1.2 On the basis of data assessed, the product is Class W1 in accordance with BS EN 13859-2: 2014 and will resist liquid water penetration and wind-blown snow and will protect the sheathing and frame from external moisture.

3.1.3 The product satisfies the NHBC requirement given in *NHBC Standards* 2024, Chapter 6.2, for use in very severe conditions(1).

(1) Very severe conditions are defined in the *NHBC Standards* 2024, Chapter 6.1.6 (see Exposure Zones map, showing categories of exposure to wind-driven rain).

3.1.4 The product resists penetration of liquid water and consequently can be used as temporary weather protection during construction, prior to the completion of external brickwork or claddings. The period of such use must, however, be kept to a minimum, and not exceeding four months. The membrane must be adequately secured during this time and suitable precautions must be taken during periods of high wind. Advice must be sought from the Certificate holder, but such advice is outside the scope of this Certificate.

3.2 Condensation

3.2.1 Results of water vapour and air resistance tests are given in Table 4.

*Table 4 Water vapour and air resistance tests*

| Product assessed | Assessment method | Requirement | Result |
|---|---|---|---|
| Tyvek Reflex Insulating Breather Membrane | Water vapour diffusion - equivalent air layer thickness ($s_d$) to BS EN 1931 : 2000 | Declared value $S_d \leq 0.12$ m(1) | Pass |
| | Water vapour resistance to BS EN ISO 12572 : 2016 Climate C | $\leq 0.6$ MN·s·g$^{-1}$ | Pass |
| | Resistance to the penetration of air to BS EN 12114 : 2000 at 50 Pa | Declared value $\leq 0.05$ m$^3$·h$^{-1}$·m$^{-2}$ | Pass |

(1) Water vapour resistance may be taken as 5 x $s_d$ value

3.2.2 A condensation risk analysis was carried out based on the result given in Table 4, and satisfactory conclusions were drawn.

3.2.3 On the basis of data assessed, the product is breathable and will limit the risk of condensation within the wall structure.

3.2.4 The risk of interstitial condensation must be calculated in accordance with BS 5250 : 2021, using a vapour resistance of 0.35 MN·s·g$^{-1}$ for the product.

3.2.5 Walls designed in accordance with BS 5250 : 2021, and incorporating the product, will adequately minimise the risk of condensation.

## 4 Safety and accessibility in use

Not applicable.

## 5 Protection against noise

Not applicable.

## 6 Energy economy and heat retention

Data were assessed for the following characteristics.

6.1 Thermal performance

6.1.1 Results of emissivity tests are given in Table 5.

*Table 5 Emissivity tests*

| Product assessed | Assessment method | Requirement | Result |
|---|---|---|---|
| Tyvek Reflex Insulating Breather Membrane | Emissivity to BS EN 15976 : 2011 Control | ≤0.1 | Pass |

6.1.2 Calculations for thermal transmittance (U value) must be carried out in accordance with BS EN ISO 6946 : 2017 and BRE Report BR 443 : 2019, using an emissivity value of 0.10 for the foil surface of the product.

6.1.3 Where the product faces into an unventilated cavity (≥ 20 mm thick), this corresponds to a cavity thermal resistance value of 0.57 $m^2 \cdot K \cdot W^{-1}$.

6.1.4 Where the cavity is well ventilated, this corresponds to an external boundary layer resistance (Rse) value of 0.33 $m2 \cdot K \cdot W^{-1}$

6.1.5 Examples U values were calculated for a construction with and without the product and the results are given in Table 5.

*Table 6 Example U values for a timber-frame wall with brick outer leaf*

| Breather membrane type | U value ($W \cdot m^{-2} \cdot K^{-1}$) |
|---|---|
| Non-reflective(1) | 0.29 |
| Tyvek Reflex(2) | 0.26 |

(1) Wall construction – 102.5 mm thick external brickwork (λ = 0.77 $W \cdot m^{-1} \cdot K^{-1}$); 50 mm clear cavity; breather membrane; 11 mm OSB sheathing board (λ = 0.13 $W \cdot m^{-1} \cdot K^{-1}$); 140 mm thick timber frame (λ = 0.13 $W \cdot m^{-1} \cdot K^{-1}$) bridging at 600 mm centres (15%) with 140 mm mineral wool insulation (λ = 0.038 $W \cdot m^{-1} \cdot K^{-1}$); AVCL; and 12.5 mm plasterboard (λ = 0.25 $W \cdot m^{-1} \cdot K^{-1}$).

(2) Wall construction – 102.5 mm thick external brickwork (λ = 0.77 $W \cdot m^{-1} \cdot K^{-1}$); 50 mm low emissivity clear cavity; Tyvek Reflex; 11 mm OSB sheathing board (λ = 0.13 $W \cdot m^{-1} \cdot K^{-1}$); 140 mm thick timber frame (λ = 0.13 $W \cdot m^{-1} \cdot K^{-1}$) bridging at 600 mm centres (15%) with 140 mm mineral wool insulation (λ = 0.038 $W \cdot m^{-1} \cdot K^{-1}$); AVCL; and 12.5 mm plasterboard (λ = 0.25 $W \cdot m^{-1} \cdot K^{-1}$).

6.1.6 On the basis of data assessed, the product improves the U value when compared to the same wall with a standard (non-reflective) breather membrane.

6.1.7 The product can contribute towards a wall construction satisfying the national Building Regulations in respect of energy economy and heat retention. The product can contribute to maintaining continuity of thermal insulation at junctions and openings.

## 7 Sustainable use of natural resources

Not applicable.

## 8 Durability

8.1 The potential mechanisms for degradation and the known performance characteristics of the materials in this product were assessed.

8.2 Specific test data were assessed as given in Table 7.

*Table 7 Results of durability tests*

| Product assessed | Assessment method | Requirement | Result |
|---|---|---|---|
| Tyvek Reflex Insulating Breather Membrane | Dimensional stability to BS EN 1107-2 : 2001 | ≤±2% | |
| | Longitudinal direction | | Pass |
| | Transverse direction | | Pass |
| | Flexibility at low temperature to BS EN 1109 : 2013 | Declared value ≤ -40°C | Pass |
| | Tensile strength to BS EN 12311-1 : 2000 ageing to BS EN 13859-1 : 2005 Annex C | | |
| | Longitudinal direction | < 10 % change on control values | Pass |
| | Transverse direction | | Pass |
| | Elongation to BS EN 12311-1 : 2000 ageing to BS EN 13859-1 : 2005 Annex C | Declared values | |
| | Longitudinal direction | < 25 % change on control values | Pass |
| | Transverse direction | < 30 % change on control values | Pass |
| | Resistance to water penetration (Eosin test) to BS 4016 : 1997 aged for 336 hours UVA, followed by 70°C for 56 days | No leakage | Pass |
| | Emissivity to BS EN 15976 : 2011 | | |
| | UVA aged for 14 days at 50°C | ≤0.1 | Pass |
| | heat aged for 90 days at 70°C | ≤0.1 | Pass |
| | humidity aged for 500 hours at 95% RH and 45°C | ≤0.1 | Pass |

8.3 Service life

Under normal service conditions, the product will have a life equivalent to the structure in which it is incorporated, provided it is designed, installed and maintained in accordance with this Certificate and the Certificate holder's instructions.

## PROCESS ASSESSMENT

Information provided by the Certificate holder was assessed for the following factors:

## 9 Design, installation, workmanship and maintenance

9.1 Design

9.1.1 The design process was assessed by the BBA, and the following requirements apply in order to satisfy the performance assessed in this Certificate.

9.1.2 Care must be taken in the overall design and construction of junctions with other elements and openings to minimise thermal bridges and air infiltration. Detailed guidance can be found in the documents supporting the national Building Regulations.

9.2 Installation

9.2.1 Installation instructions provided by the Certificate holder were assessed and judged to be appropriate and adequate.

9.2.2 Installation must be carried out in accordance with this Certificate, the Certificate holder's instructions and the recommendations given in *NHBC Standards 2024*, Chapters 6.1, 6.2, 6.9 and 6.10 where appropriate. A summary of instructions and guidance is provided in Annex A.

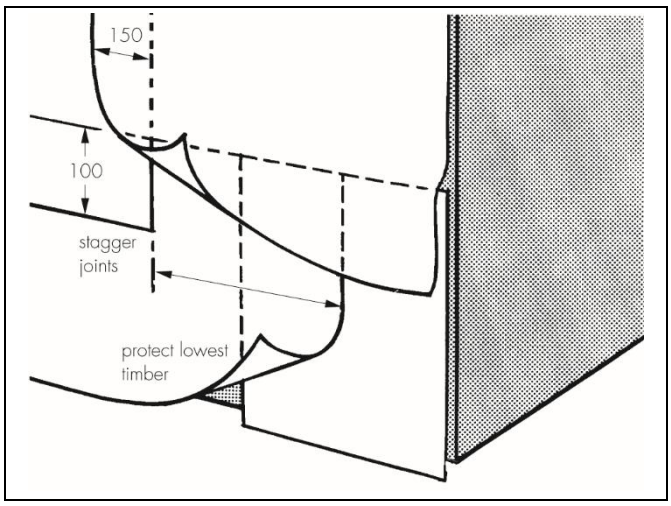
9.2.3 Where wood preservatives and damp-proofing treatments containing solvents have been applied, sufficient time must be allowed for solvents to disperse before the product is installed.

9.2.4 The products can be damaged by high winds, careless handling or vandalism, and must not be left exposed for longer than is necessary.

9.2.5 The product must be fixed in such a way as to shed water away from the sheathing, and below the lowest timber. Upper layers must be lapped over lower layers.

9.2.6 Horizontal laps must be at least 100 mm and vertical laps 150 mm. Vertical laps must be staggered wherever possible (see Figure 1).

*Figure 1 Laps (dimensions in mm)*




9.2.7 To assist in achieving the design air permeability, the lap joints and penetrations through the membrane can be sealed with Tyvek Metallised Tape (2060M), Tyvek Butyl Tape (1311B) or Tyvek Double-sided Tape (1310D).

9.2.8 When used in timber frame constructions, the product must be secured at regular intervals with nails and staples to prevent damage by wind (see Figures 2 to 4). The fixing intervals are horizontally at 600 mm centres or at stud positions and vertically at 300 mm centres. In addition, fixings are required at 150 mm centres at openings, vertical membrane joints and at the end of panels.

*Figure 2 Factory method of installation on timber-frame panel*

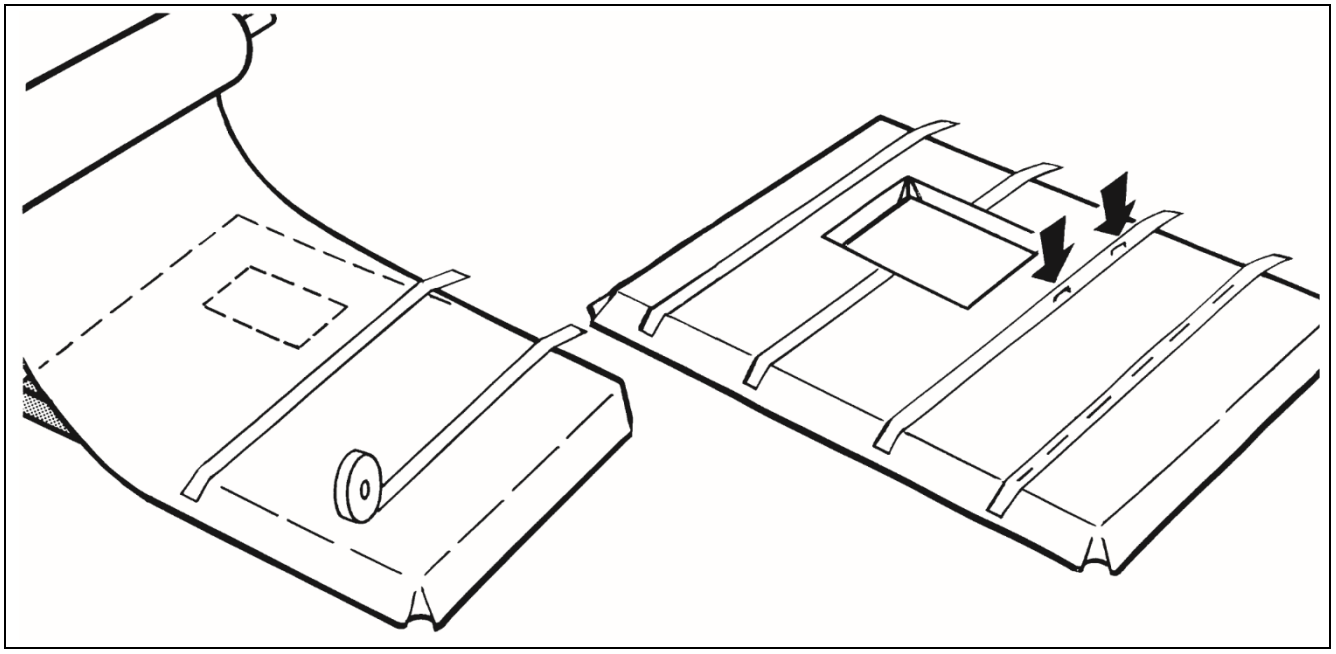


*Figure 3 Site installation — external corner*

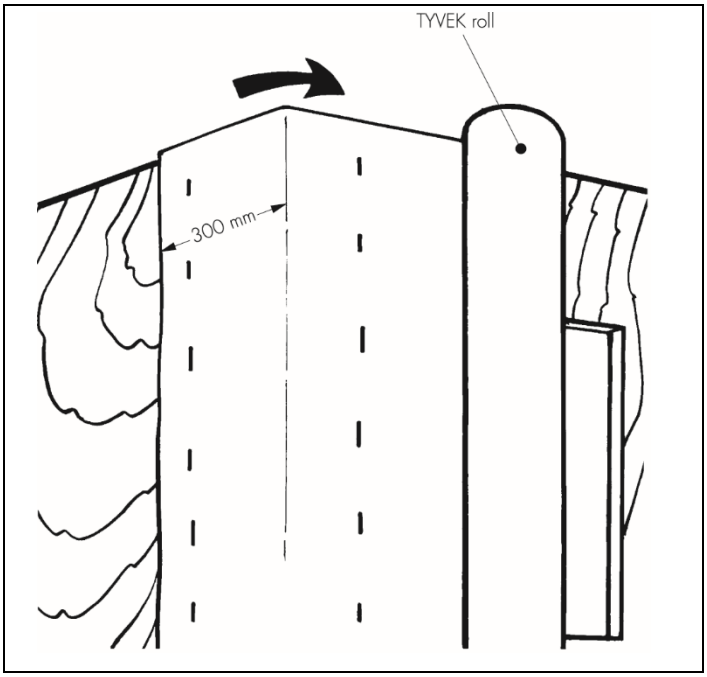
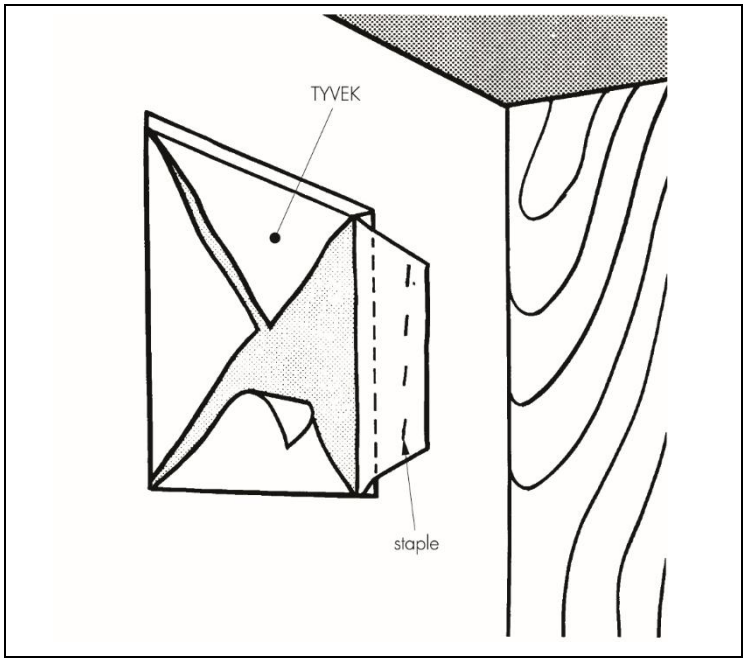


*Figure 4 Site installation — opening (internal view of window)*




9.2.9 Nails must be corrosion resistant and staples should be stainless steel.

9.2.10 It is essential that the positions of studs are marked to enable wall tie fixing.

9.2.11 It is essential that the lowest timbers in the wall are protected by the breather membrane.

9.2.12 When used in steel frame constructions, the product is fastened to the steelwork or sheathing board using an appropriate fixing system such as a 25 mm steel framing screw with an EPDM rubber washer in accordance with the Certificate holder's instructions.

9.2.13 When used in masonry constructions, the product is fastened to the masonry using an appropriate anchor fixing system or a masonry nail/screw and an EPDM rubber washer. Fixing should be at maximum 500 mm centres. Tyvek Double-sided Tape (1310D) can be used to fix the membrane in addition to the mechanical method. For airtightness, Tyvek Butyl Tape (1311B) can be used at fixing points where a compressible washer is not employed. A primer can be applied to chalky or porous masonry to seal the surface and improve adhesion before applying adhesive tape.

9.3 Workmanship

Practicability of installation was assessed by the BBA, on the basis of the Certificate holder's information. To achieve the performance described in this Certificate, the product must be installed by a competent general builder, or a contractor, experienced with this type of product.

9.4 Maintenance and repair

9.4.1 As the product is confined within a wall and has suitable durability, maintenance is not required.

9.4.2 Damage to the product must be repaired prior to the installation of the external walls or cladding, by laying another sheet over the damaged area and sealing correctly using Tyvek Metallised Tape (2060M), ensuring water is shed away from the sheathing. Small linear tears can be fixed using a strip of Tyvek Metallised Tape (2060M).

## 10 Manufacture

10.1 The production processes for the product have been assessed, and provide assurance that the quality controls are satisfactory according to the following factors:

10.1.1 The manufacturer has provided documented information on the materials, processes, testing and control factors.

10.1.2 The quality control operated over batches of incoming materials has been assessed and deemed appropriate and adequate.

10.1.3 The quality control procedures and product testing to be undertaken have been assessed and deemed appropriate and adequate.

10.1.4 The process for management of non-conformities has been assessed and deemed appropriate and adequate.

10.1.5 An audit of each production location was undertaken, and it was confirmed that the production process was in accordance with the documented process, and that equipment has been properly tested and calibrated.

†10.2 The BBA has undertaken to review 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.

## 11 Delivery and site handling

11.1 The Certificate holder stated that the product is delivered to site in rolls with paper wrappings bearing the Certificate holder's name, the grade identification, the technical specifications, installation instructions and the BBA logo incorporating the number of this Certificate.

11.2 Delivery and site handing must be performed in accordance with the Certificate holder's instructions and this Certificate, including:

11.2.1 Rolls must be stored flat on their sides, on a smooth, clean, dry surface, under cover and protected from sunlight.

## ANNEX A – SUPPLEMENTARY INFORMATION †

Supporting information in this Annex is relevant to the product but has not formed part of the material assessed for the 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.

### CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard EN 13859-2 : 2010.

### Management Systems Certification for production

The management systems of the manufacturer have been assessed and registered as meeting the requirements of EN ISO 9001 : 2015 by DQS GmbH (Certificate 000093 QM15).

### Additional Guidance on Installation

#### Condensation

A.1 The risk of condensation occurring within the wall of a timber-frame building will depend upon the properties and vapour resistance of other materials used in the construction, the internal and external conditions and the effectiveness of the internal vapour control layer.

A.2 Convective water transfer into the wall construction can be reduced by installing a vapour control layer/air barrier such as the DuPont AirGuard AVCLs or air leakage barrier behind the internal lining (see Product Sheets 4, 5 and 10 of this Certificate).

**Interstitial condensation**

A.3 The risk of condensation occurring within the wall of a building will depend upon the properties and vapour resistance of other materials used in the construction, the internal and external conditions and the effectiveness of the AVCL.

A.4 The risk of interstitial condensation is greatest when the building is drying out after construction. Guidance on preventing condensation from this and other sources is given in BRE Report BR 262 : 2002.

A.5 The product has additional insulating properties and will maintain the frame sheathing at a higher temperature than for the same construction incorporating a conventional breather membrane. This will in turn assist in limiting the risk of interstitial condensation arising from breaches/imperfections in the AVCL in the wall's internal lining. However, it must not be relied upon as an alternative to conventional good practice for maintaining integrity of the AVCL.

**Surface condensation**

A.6 In England and Wales, walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 0.7 $W \cdot m^{-2} \cdot K^{-1}$ at any point, and the junctions and openings are designed in accordance with the relevant requirements of limiting thermal bridging and air leakage.

A.7 For buildings in Scotland, wall constructions will be acceptable when the thermal transmittance (U value) does not exceed 1.2 $W \cdot m^{-2} \cdot K^{-1}$ at any point, and the junctions with other elements are designed in accordance with the guidance referred to in BS 5250 : 2021. Further guidance may be obtained from BRE Report BR 262 : 2002.

## Bibliography


BRE Report BR 262 : 2002 *Thermal insulation : avoiding risk*

BRE Report BR 443 : 2019 *Conventions for U-value calculations*

BS 3137 : 1972 *Methods for determining the bursting strength of paper and board*

BS 4016 : 1997 *Specification for flexible building membranes (breather type)*

BS 5250 : 2021 *Code of practice for control of condensation in buildings*

BS EN 1107-2 : 2001 *Flexible sheets for waterproofing – Determination of dimensional stability – Plastic and rubber sheets for roof waterproofing*

BS EN 1109 : 2013 *Flexible sheets for waterproofing – Bitumen sheets for roof waterproofing – Determination of flexibility at low temperature*

BS EN 1931 : 2000 *Flexible sheets for waterproofing – Bitumen, plastic and rubber sheets for roof waterproofing – Determination of water vapour transmission properties*

BS EN 12114 : 2000 *Thermal performance of buildings – Air permeability of building components and building elements – Laboratory test methods*

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 – Bitumen sheets for roof waterproofing – Determination of tensile properties*

BS EN 13859-2 : 2014 *Flexible sheets for waterproofing – Definitions and characteristics of underlays – Underlays for walls*

BS EN 15976 : 2011 *Flexible sheets for waterproofing – Determination of emissivity*

BS EN 20811 : 1992 *Textiles – Determination of resistance to water penetration – Hydrostatic pressure test*

BS EN ISO 6946 : 2017 *Building components and building elements – Thermal resistance and thermal transmittance – Calculation methods*

BS EN ISO 12572 : 2016 *Hygrothermal performance of building materials and products. Determination of water vapour transmission properties. Cup method*

EN 1928 : 2001 *Flexible sheets for waterproofing. Bitumen, plastic and rubber sheets for roof waterproofing. Determination of watertightness*

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

EN 13859-2 : 2014 *Flexible sheets for waterproofing – Definitions and characteristics of underlays – Underlays for walls*

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- relates only to the product that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
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- are reviewed by the BBA as and when it considers appropriate.

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