

NSAI

Agrément

IRISH AGRÉMENT BOARD CERTIFICATE NO. 02/0144

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DuPont™ Tyvek® Housewrap Breather Membrane for Timber Frame Construction

System de revetment Dachbelagsystem

NSAI Agrément (Irish Agrément Board) is designated by Government to carry out European Technical Assessments.

NSAI Agrément Certificates establish proof that the certified products are 'proper materials' suitable for their intended use under Irish site conditions, and in accordance with the **Building Regulations 1997 to 2014**.



PRODUCT DESCRIPTION:

This Certificate relates to Tyvek® Housewrap Breather Membrane to be used on timber framed construction. Tyvek® Housewrap is manufactured from non-woven, spunbonded high density polyethylene (HDPE) fibres which are bonded together with heat and pressure to form a flexible sheet for use as a housewrap for the protection of the inner leaf of timber framed walls. This Certificate certifies compliance with the requirements of the Building Regulations 1997 to 2014.

This Certificate is a confirmation of the BBA Certificate No. 90/2548 issued by British Board of Agrément, PO Box No. 195, Bucknalls Lane, Garston, Watford, Herts WD2 7NG.

USE:

The Tyvek® Housewrap Breather Membrane is suitable for timber frame constructions which may be factory or site applied. The product is both water and UV resistant and is used to prevent water passing to the timber structure, and is water vapour permeable thus allowing the timber structure to breathe. Any vapour which

enters the wall construction from inside can pass into wall cavity where it can be removed by air movement or condense and drain safely away. Air and Vapour Control Layers (AVCLs) can be used in conjunction with the product.

Tyvek® Housewrap Breather Membrane must be fitted with the approved fixing nails or stainless steel staples with the minimum vertical and horizontal laps (see Section 2.4 of this Certificate).

MANUFACTURE:

The product is manufactured by:

DuPont de Nemours (Luxembourg) S.à r.l.,
Rue General Patton,
L-2984 Luxembourg.

1.1 ASSESSMENT

In the opinion of the Irish Agrément Board (IAB), Tyvek® Housewrap Breather Membrane, if used in accordance with this Certificate can meet the requirements of the Building Regulations 1997 to 2014, as indicated in Section 1.2 of this Irish Agrément Certificate.

1.2 BUILDING REGULATIONS 1997 to 2014

REQUIREMENT:

Part D – Materials and Workmanship

D3 – Tyvek® Housewrap Breather Membrane, as certified in this Certificate, is comprised of ‘proper materials’ fit for their intended use (see Part 4 of this Certificate).

D1 – Tyvek® Housewrap Breather Membrane, as certified in this Certificate, meets the requirements of the building regulations for workmanship.

Part B – Fire Safety

B4 – External Fire Spread

Tyvek® Housewrap Breather Membrane will not prejudice the external fire resistance of the wall, as indicated in Section 4.1 of this Certificate.

Part C – Site Preparation and Resistance to Moisture

C4 – Resistance to Weather and Ground Moisture

Tyvek® Housewrap Breather Membrane, when used in accordance with Part 3 of this Certificate, will meet this requirement.

Part L – Conservation of Fuel and Energy

L1 – Conservation of Fuel and Energy

Based on the measured vapour resistance of Tyvek® Housewrap Breather Membrane, walls incorporating insulation can meet this requirement.

2.1 PRODUCT DESCRIPTION

Tyvek® Housewrap Breather Membrane is manufactured from non-woven, spunbonded high density polyethylene (HDPE) fibres which are bonded together with heat and pressure to form a flexible sheet for use as a housewrap for the protection of the inner leaf of timber framed walls/housing. The Tyvek® Housewrap can be installed on site or fixed to the timber framed panels before delivery to site. It is both water and UV resistant. The product has the nominal characteristics given in Table 1.

	Value
Thickness (Product/function layer)	175/175 µm
Weight	63 g/m ²
Roll Length	100 m
Roll Width	1.4 m, 2.7 m or 2.8 m
Colour	Grey / White

Table 1: Nominal Characteristics

2.1.1 Ancillary Products

- Black PVC banding.
- Nails/staples.

2.2 MANUFACTURE

Tyvek® Housewrap Breather Membrane is manufactured by spinning strands of high density polypropylene (HDPE) and bonding them together with heat and pressure to form a flexible sheet.

2.2.1 Quality Control

Quality control checks are carried out on the incoming raw materials, during production and on the finished product. These quality control checks include visual inspection and checks on dimensions (length, width and thickness), tensile strength, tear resistance, roll weight, water vapour permeability and water penetration resistance.

The management systems of DuPont de Nemours (Luxembourg) S.à r.l. have been assessed and registered as meeting the requirements of ISO 9001:2008 by DQS Deutsche Gesellschaft zur Zertifizierung von Qualitätssicherungssystemem GmbH (Certificate No. 463950 QM08).

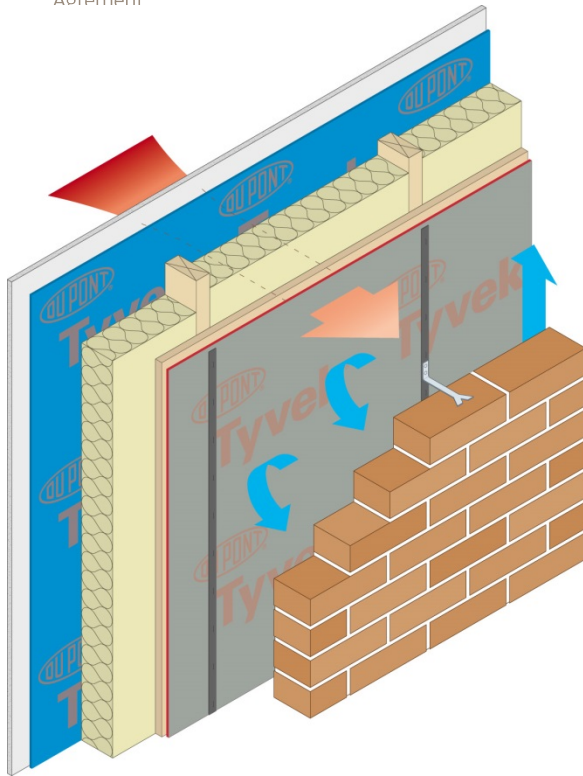


Figure 1: Detail of external wall section

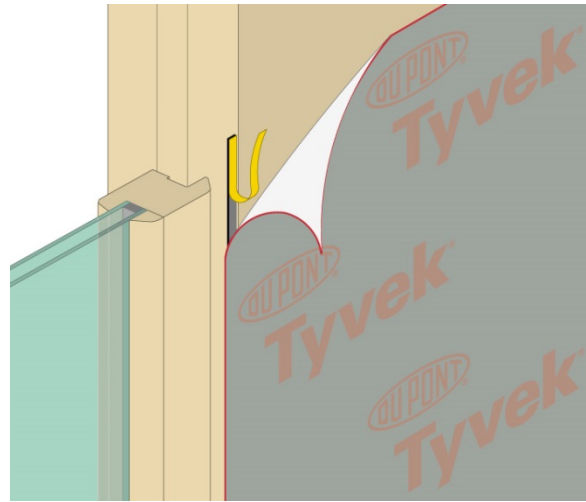


Figure 2: Detail at window

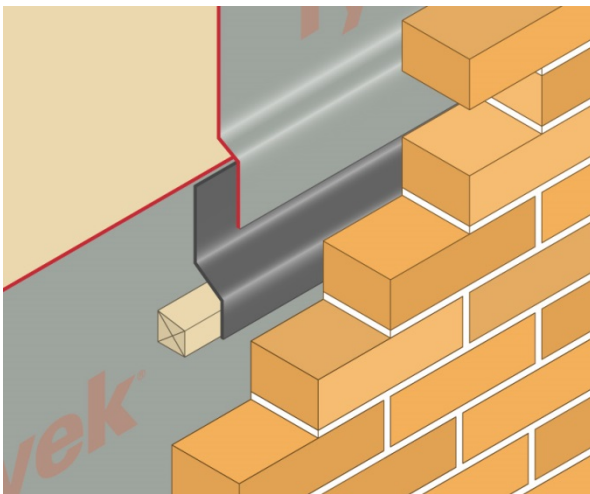


Figure 3: Detail showing cavity barrier

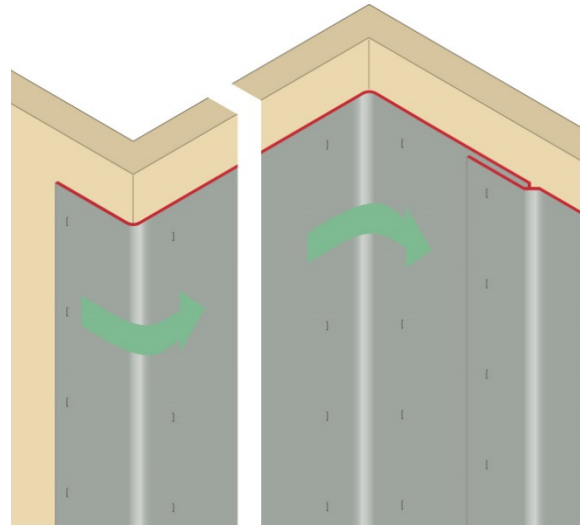


Figure 4: Detail of corner

2.3 DELIVERY, STORAGE AND MARKING

Tyvek® Housewrap Breather Membrane is delivered to site in 100m rolls on pallets and shrink wrapped. Each roll is labelled with paper wrapper showing the manufacturer's name, CE marking, product description and production batch number identifying date and time of production. The name of the product is also printed on the surface of the material – the product should be installed with the printed surface of the material on the cavity side of the panel. Every roll shows the IAB identification mark and Certificate number and contains instructions on storage and installation. Rolls

should be stored on their side, on a smooth, clean surface, under cover and protected from UV light. Care must be taken to avoid contact with solvents and with materials containing volatile organic components such as coal tar and timbers newly treated with solvent based preservative (creosote). The rolls must not be exposed to a naked flame or other ignition sources.

2.4 INSTALLATION

2.4.1 General

Tyvek® Housewrap Breather Membrane must be installed in accordance with the manufacturer's instructions and the recommendations given in this Certificate. Figures 1 - 4 show details of installation at walls, windows, corners and cavity barriers.

2.4.2 Site Installation

The membrane should be fixed in such a way as to shed water away from the sheathing, and must cover the lowest timbers. Upper layers should be lapped over lower layers.

Vertical laps should be at least 150mm and horizontal laps at least 100mm. Vertical laps should be staggered and an overlap of at least 300mm should be allowed at external corners.

The membrane must be secured with nails or staples at 600mm centres horizontally and 300mm centres vertically.

Nails should be of galvanised or sheradized mild steel, austenitic stainless steel, phosphor bronze or silicon bronze, and staples should be of austenitic stainless steel.

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

It is essential that all timbers particularly the lowest ones in the wall are protected by the Tyvek® Housewrap breather membrane.

2.4.3 Factory Installation

The Tyvek® Housewrap should be placed over the panel with overlaps as for site installation in addition, sufficient overlapping at the edges should be provided for the subsequent site installation. It is essential that the positions of studs are marked to enable wall tie fixing. This is necessary to ensure the correct fixing of the wall ties during the subsequent construction of the exterior masonry/brick outer leaf. Openings in the panels should be formed and the membrane lapped and fixed in position. The panels should then be stored in an upright position.

2.4.4 Cavity Barriers

Cavity fire barriers in accordance with Section 3 of the TGD to Part B of the Irish Building Regulations 2014 must be installed after the installation of the Tyvek® Housewrap Breather Membrane.

3.1 GENERAL

Tyvek® Housewrap Breather Membrane is suitable for timber frame constructions, either in the factory or on-site installation.

3.2 STRENGTH

Tyvek® Housewrap Breather Membrane will resist the loads associated with the installation of the material on to a timber frame stud wall.

In the absence of other guidance, suitable timber frame constructions are defined as those designed and built in accordance with the relevant parts of I.S. EN 1995-1-1:2005/A2:2014, *Eurocode 5: Design of timber structures - Part 1-1: General – Common rules and rules for buildings*.

The membrane should not be left uncovered for longer than is absolutely necessary. Should the membrane be damaged by high winds, careless handling or by vandalism, the damaged areas should be repaired or replaced before completion of the masonry outer leaf.

3.3 WEATHERTIGHTNESS

Tests confirm that Tyvek® Housewrap Breather Membrane 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 wall constructed to I.S. EN 1995-1-1:2004/A2:2014.

Care must be taken to ensure that all timber in the cavity is covered by the membrane including the base timbers.

Particular attention should be given to ensure that adequate ventilation is provided and drainage to wall cavities must be catered for in accordance with the Building Regulations 1997 to 2014. The cavity must be open to atmosphere.

3.4 CE MARKING

The manufacturer has taken the responsibility of CE marking the products in accordance with harmonised standard I.S. EN 13859-2: 2014 *Flexible sheets for waterproofing – Definitions and characteristics of underlays – Underlays for walls*. An asterisk (*) appearing in this Certificate indicates that data shown is given in the manufacturer's Declaration of Performance (DoP).

4.1 BEHAVIOUR IN FIRE

Tyvek® Housewrap Breather Membrane has similar properties in relation to fire to other polyolefinic sheets, tending to melt and shrink away from a heat source, but they will burn in the presence of an ignition source. The product is classified in accordance with I.S. EN ISO 11925-2 as a Class E* material.

Cavity barriers must be provided as indicated in Part 3.3 of TGD to Part B of the Building Regulations 1997 to 2014.

Toxicity – Negligible when used in a wall construction situation.

4.2 WATER PENETRATION

Tyvek® Housewrap Breather Membrane, when used in accordance with this Certificate, presents no significant risk of water penetration.

4.3 WATER VAPOUR DIFFUSION AND CONDENSATION RISK

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 barrier.

Tyvek® Housewrap Breather Membrane has a water vapour transmission rate of less than 0.25 MN.s/g and as a result can be defined as a low resistance membrane (LR) in accordance with BS 5250:2016, *Codes of practice for control of condensation in buildings*.

The general design guides contained in BS 5250:2016 must be met when installing this product.

4.4 DURABILITY

Tyvek® Housewrap Breather Membrane will be unaffected by the normal conditions found in a timber frame wall and will have a life comparable with other elements of construction. However, the membrane like most similar materials must be protected from sunlight, flame and solvents.

4.5 TESTS AND ASSESSMENTS WERE CARRIED OUT TO DETERMINE THE FOLLOWING:

- Tensile strength
- Density
- Water vapour resistance
- Dimensional accuracy
- Tear strength
- Elongation at break
- Composition of materials used
- UV stability
- Efficiency of the construction process

Essential characteristics for the Tyvek® Housewrap Breather Membrane as stated on the manufactures DoP are summarised in Table 2 of this certificate.

4.6 OTHER INVESTIGATIONS

- (i) Existing data on product properties in relation to fire, toxicity, environmental impact and the effect on mechanical strength/stability and durability were assessed.
- (ii) The manufacturing process was examined including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.
- (iii) Site visits were conducted to assess the practicability of installation and the history of performance in use of the product.
- (iv) Driving rain resistance was assessed.
- (v) A condensation risk analysis was performed.

Properties	Test Method	Nominal	Units
Functionality			
Water vapour transmission (s_d)*	EN ISO 12572 (C)	0,01	m
Water tightness *	EN 1928 (A)	W1	class
Reaction to fire*	EN ISO 11925-2	E ¹	class
Physical and Mechanical Properties			
Maximum tensile force (MD)*	EN 12311-1	310	N/50mm
Elongation at max. tensile force (MD)*	EN 12311-1	17	%
Maximum tensile force (XD)*	EN 12311-1	310	N/50mm
Elongation at max. tensile force (XD)*	EN 12311-1	20	%
Resistance to tearing MD (nail shank)*	EN 12310-1	55	N
Resistance to tearing XD (nail shank)*	EN 12310-1	50	N
Properties after Ageing			
Artificial ageing by UV and heat:	EN 1297 & EN 1296	residual value	
Water tightness*	EN 1928 (A)	W1	class
Maximum tensile force (MD)*	EN 12311-1	85	%
MD elongation at max. tensile force*	EN 12311-1	75	%
Maximum tensile force (XD)*	EN 12311-1	85	%
XD elongation at max. tensile force*	EN 12311-1	70	%

Table 2: Essential characteristics

¹ On mineral wool and wood

5.1 National Standards Authority of Ireland ("NSAI") following consultation with NSAI Agrément has assessed the performance and method of installation of the product/process and the quality of the materials used in its manufacture and certifies the product/process to be fit for the use for which it is certified provided that it is manufactured, installed, used and maintained in accordance with the descriptions and specifications set out in this Certificate and in accordance with the manufacturer's instructions and usual trade practice. This Certificate shall remain valid for five years from date of issue or revision date so long as:

- (a) the specification of the product is unchanged.
- (b) the Building Regulations 1997 to 2014 and any other regulation or standard applicable to the product/process, its use or installation remains unchanged.
- (c) the product continues to be assessed for the quality of its manufacture and marking by NSAI.
- (d) no new information becomes available which in the opinion of the NSAI, would preclude the granting of the Certificate.
- (e) the product or process continues to be manufactured, installed, used and maintained in accordance with the description, specifications and safety recommendations set out in this certificate.
- (f) the registration and/or surveillance fees due to NSAI Agrément are paid.

5.2 The NSAI Agrément mark and certification number may only be used on or in relation to product/processes in respect of which a valid Certificate exists. If the Certificate becomes invalid the Certificate holder must not use the NSAI Agrément mark and certification number and must remove them from the products already marked.

5.3 In granting Certification, the NSAI makes no representation as to;

- (a) the absence or presence of patent rights subsisting in the product/process; or
- (b) the legal right of the Certificate holder to market, install or maintain the product/process; or

(c) whether individual products have been manufactured or installed by the Certificate holder in accordance with the descriptions and specifications set out in this Certificate.

5.4 This Certificate does not comprise installation instructions and does not replace the manufacturer's directions or any professional or trade advice relating to use and installation which may be appropriate.

5.5 Any recommendations contained in this Certificate relating to the safe use of the certified product/process are preconditions to the validity of the Certificate. However, the NSAI does not certify that the manufacture or installation of the certified product or process in accordance with the descriptions and specifications set out in this Certificate will satisfy the requirements of the Safety, Health and Welfare at Work Act 2005, or of any other current or future common law duty of care owed by the manufacturer or by the Certificate holder.

5.6 The NSAI is not responsible to any person or body for loss or damage including personal injury arising as a direct or indirect result of the use of this product or process.

5.7 Where reference is made in this Certificate to any Act of the Oireachtas, Regulation made thereunder, Statutory Instrument, Code of Practice, National Standards, manufacturer's instructions, or similar publication, it shall be construed as reference to such publication in the form in which it is in force at the date of this Certification.

NSAI Agrément

This Certificate No. **02/0144** is accordingly granted by the NSAI to **DuPont de Nemours (Luxembourg) S.à r.l.** on behalf of NSAI Agrément.

Date of Issue: **March 2002**

Signed



Seán Balfe
Director of NSAI Agrément

Readers may check that the status of this Certificate has not changed by contacting NSAI Agrément, NSAI, 1 Swift Square, Northwood, Santry, Dublin 9, Ireland. Telephone: (01) 807 3800. Fax: (01) 807 3842. www.nsai.ie

Revisions: **February 2017**

Product specification updated to reflect manufactures Declaration of Performance.