

The Irish Agrément Board is designated by Government to issue European Technical Approvals.

Irish Agrément Board 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 2002**.

## The Irish Agrément Board operates in association with the National Standards Authority of Ireland (NSAI) as the National Member of UEAtc.



#### PRODUCT DESCRIPTION

This Certificate relates to Tyvek® 1060B Housewrap breather membrane to be used on timber framed housing. Tyvek® Housewrap is manufactured from nonwoven, 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.

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. A vapour control layer must be utilised on the internal structure of the building. 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 AND MARKETING:

The product is marketed by:

Insulation Distributors Limited Unit 15 Parkwest Industrial Park Nangor Road Dublin 12 Ireland.

The product is manufactured by:

DuPont Engineering Products S.a r.l. Rue General Patton L-2984 Luxembourg Luxembourg.

# CERTIFICATION

#### **1.1 ASSESSMENT**

In the opinion of the Irish Agrément Board (IAB), Tyvek® Housewrap 1060B Breather Membrane is satisfactory for the purpose defined above, and can meet the requirements of the Building Regulations 1997 to 2002 as indicated in Section 1.2 of this Certificate.

#### **1.2 BUILDING REGULATIONS 1997 to 2002**

#### **REQUIREMENT:**

#### Part D - Materials and Workmanship

**D3** - Tyvek® Housewrap Breather Membrane as certified in this certificate, is manufactured from proper materials and is fit for its intended use. See Part 4 of this Certificate.

**D1** - Tyvek® Housewrap Breather Membrane, used in accordance with this certificate and can meet the requirements for materials and workmanship.

#### Part B - Fire Safety

#### **B4 - External fire spread**

Tyvek $^{\textcircled{B}}$  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

 $\mbox{Tyvek} \circledast$  Housewrap Breather Membrane can meet the requirements when installed as indicated in Part 2 of this Certificate.

#### 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 the requirements of Part L the Building Regulations 1997 -2002.



### **TECHNICAL SPECIFICATION AND CONTROL DATA**

#### 2.1 PRODUCT DESCRIPTION

This Certificate relates to Tyvek® Housewrap Breather Membrane to be used for timber frame housing. 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/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.

#### **Product Range**

The product has the nominal characteristics given in Table 1.

## Table 1: Nominal characteristics of Tyvek®Housewrap 1060B Breather Membrane

	Tyvek <sup>®</sup> Housewrap		
Thickness (mm)	174		
Weight (gm-2)	61		
Roll length (m)	100		
Roll width (m)	1.4, 2.7 or 2.8		
Colour	Grey / white		

Ancillary items: Black PVC banding

Nails/Staples

ples

#### 2.2 MANUFACTURE

Tyvek<sup>®</sup> Housewrap Breather Membrane is manufactured by spinning strands of high density polyethylene (HDPE) and bonding them together with heat and pressure to form a flexible sheet. The nominal characteristics of the housewrap are given in Table 1.

#### 2.2.1 QUALITY CONTROL

Ouality 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, thickness), tensile strength, tear resistance, roll weight, water vapour permeability and water penetration resistance.

The management systems of DuPont Engineering Products S.a r.l. have been assessed and registered as meeting the requirements of ISO 9001:1994 by DQS Deutsche Gesellschaft zur Zertifizierung von Qualitatssicherungssystemem GmbH ( Certificate No. 31093-01).

#### 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, 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 PROCEDURE

#### 2.4.1 GENERAL

Tyvek® Housewrap Breather Membrane must be installed in accordance with the manufacturers instructions and the recommendations given in this Certificate. Figures 1, 2 3 and 4 show details of installation at walls, windows, corners and cavity barriers.

#### 2.4.2 Installation

#### Site Installation:

#### Lapping and jointing

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 100 mm and horizontal laps at least 150 mm. 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 500mm centres maximum in the vertical and horizontal planes respectively.

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

#### Marking stud positions:

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

#### Lowest timbers:

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

#### **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. PVC banding is fixed corresponding to the studs in the panel with the selected fixings at maximum centres of 500mm. 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 housewrap lapped and fixed in position. The panels should then be stored in an upright position.

#### **Cavity Barriers:**

Cavity fire barriers in accordance with section 3 of the TGD to Part B of the Building Regulations 2002 must be installed after the installation of the. Tyvek ${}^{\textcircled{B}}$  Housewrap.



Fig. 3 Detail showing cavity barrier







#### **3 GENERAL**

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

#### 3.1 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 BS 5268: Part 1: 1996 Structural use of timber

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.

#### 3.2 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 BS 5268: Part 1: 1996 Structural use of timber .and BS 8000: Part 6: 1990: Code of practice for slating and tiling of roofs and claddings. **Care must be taken to ensure that all timber in the cavity is covered by the membrane including base timbers.** 

Ventilation: 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 2002.



### **TECHNICAL INVESTIGATIONS**

#### 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 products are therefore unclassifiable in terms of the Building Regulations 1997 - 2003. This should be considered when assessing the overall risks to the construction of the building.

Cavity barriers must be provided as indicated in Part 3.3 of TGD to Part B Fire of the Building Regulations 1997 - 2002.

Toxicity - Negligible when used in a wall construction situation.



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

## 4.3 WATER VAPOUR PENETRATION 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.

 $Tyvek \circledast$  Housewrap Breather Membrane has a vapour resistance of equal to or less than 1750 g/m2/24 hr..

The general design guides contained in BS 5250: 1989 Code of practice for control of condensation in buildings, must be met when installing this product.

Table 2			
Physical properties of TYVEK 1060B - directional			

Test (units)	Mean Result	Method
Tensile strength (N/mm <sup>2</sup> )		BS 2782 : 320A
Unaged long (1) trans (2)	39.79 52.77	
Aged (3) long (1) trans (2)	45.00 46.74	
Water soak (4) long (1) trans (2)	39.10 47.56	
UV (5) long (1) trans (2)	32.64 38.40	
Elongation at break (%)		BS 2782 : 320A
Unaged long (1) trans (2)	14.38 18.18	
Aged (3) long (1) trans (2)	14.11 16.07	
Water soak (4) long (1) trans (2)	14.13 16.90	
UV (5) long (1) trans (2)	9.58 13.79	
Resistance to tear		Moat 27 : 5.4.1
(nail) (N) long (1) trans (2)	38.8 44.8	
Resistance to tear		BS 2782 : Part 3
(trouser) (6) (N) unaged aged (3) water soak (7)	20.9 21.1 18.0	
Density g/m <sup>2</sup>	61	BS 2782 Method 620A

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- (1) longitudinal direction
- (2) transverse direction
- (3) heat aged at 60°C for 36 days
- (4) water soak at 20°c for 28 days
- (5) UV QUV for 100 light hours (4 hours at  $45^{\circ}$ C, 4 hours condensation at  $40^{\circ}$ C)
- (6) peak load results only
- (7) water soak at 20°C for 56 days.

#### 4.4 DURABILITY

Tyvek® Housewrap will be unaffected by the normal conditions found in a timber frame wall and will have a life comparable with other elements of construction (e.g. vapour checks, etc.). 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

The results of these tests are summarised in Tables 2 and 3.

#### 4.6 OTHER INVESTIGATIONS

- 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.

#### Table 3.Service performance

Tests (units)	Mean result	Method
Water vapour permeability at 25 °C (gm <sup>-2</sup> d <sup>-1</sup> )	1195	BS 3177
Water Vapour resistance (g/m²/24hr)	1750	BS 3177
Mullen Burst strength (kNm <sup>-2</sup> )	978	BS 3137
1 metre head of water	No penetration	MOAT 27 : 5.1 4.2
Resistance to water penetration (Eosin Test)	Pass	BS 4016



#### 5.1 CONDITIONS OF CERTIFICATION

- The National Standards Authority of Ireland ("NSAI") following consultation with the Irish Agrément Board ("IAB") has assessed the performance and method of installation of the system and the quality of the materials used in its manufacture and certifies the system 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 manufacture's instructions and usual trade practice. This certificate shall remain valid so long as:
- (a) the specification of the product is unchanged;
- (b) the Building Regulations, 1997 to 2002 and any other regulation or standard applicable to the product/process/system, its use or installation remain 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 system continues to be manufactured, installed, used and maintained in accordance with the description, specifications and safety recommendations set out in this certificate.
- **5.2** The IAB mark and certification number may only be used on or in relation to the system in respect of which a valid certificate exists. If the certificate becomes invalid, the certificate holder must not use the IAB mark and certification number and must remove them from products already marked.

- **5.3** In granting this certificate, the NSAI makes no representation as to:
  - (a) the presence or absence of patent rights subsisting in the product/process/system; or
  - (b) the legal right of the certificate holder to market, install or maintain the product/ process/system; 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 or 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, 1989 or of any other current or future statute or 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.

### THE IRISH AGRÉMENT BOARD

This Certificate No. 02/0144 is accordingly granted by NSAI to DuPont Engineering Products s.a r.l. on behalf of The Irish Agrément Board.

Date of Issue: March 2002.

Signed:

Sinon Kelly

Chief Executive, NSAI



BUILDING PRODUCT CERTIFICATION

Readers may check that the status of this Certificate has not changed by contacting the Irish Agrément Board, NSAI, Glasnevin, Dublin 9. Ireland, or by consulting the IAB website.

Telephone: (01) 807 3800. Telefax: (01) 807 3842. www.nsai.ie

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