



NSAI
Agrément

**IRISH AGRÉMENT BOARD
CERTIFICATE No. 06/0238**

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**Daltex Frameshield® , Reflectashield® TF
& Roofshield Membranes**

**System de revetment
Dachbelagsystem**

NSAI Agrément (Irish Agrément Board) is designated by Government to issue European Technical Approvals.

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 and subsequent revisions**.

PRODUCT DESCRIPTION:

This Certificate relates to following products:

- Daltex Frameshield® Breather Membrane for timber frame walls (Detail Sheet 1);
- Reflectashield® TF Reflective Insulating Breather Membrane for timber frame walls (Detail Sheet 2);
- Roofshield® Breather Underlay (Detail Sheet 3).

This Certificate, and related Detail Sheets, certifies compliance with the requirements of the Irish Building Regulations 1997 and subsequent revisions.



is a registered trademark of Don & Low Ltd.

MANUFACTURE AND MARKETING:

The products are manufactured by:

Don & Low Ltd Nonwovens,
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Forfar,
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The products are marketed by:

A Proctor Group Ltd,
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Readers are advised to check that this Certificate has not been withdrawn or superseded by a later issue by contacting NSAI Agrément, NSAI, Santry, Dublin 9 or online at <http://www.n sai.ie>

1.1 ASSESSMENT

In the opinion of NSAI Agrément the Shield range of products described in this Certificate, if used in accordance with the relevant Detail Sheet, can meet the requirements of the Irish Building Regulations 1997 and subsequent revisions, as indicated in Section 1.2 of this NSAI Agrément Certificate.

1.2 BUILDING REGULATIONS REQUIREMENT:

Part D – Materials and Workmanship

D3 – The Shield range of products, as certified in this Certificate, are comprised of ‘proper materials’ fit for their intended use (see Part 4 of this Certificate).

D1 – The Shield range of products, as certified in this Certificate, meet the requirements for workmanship.

Part A - Structure

A1 – Loading

Tests indicate that roofs incorporating Roofshield® meet the requirements provided the installation complies with the conditions set out in Detail Sheet 3.

Part B – Fire Safety

B2 & B7 – Internal Fire Spread (Linings)

Daltex Frameshield® and Reflectashield® TF installed in accordance with Detail Sheets 1 and 2 may be used on the internal surfaces of buildings to meet this requirement.

B3 & B8 – Internal Fire Spread (Structure)

Daltex Frameshield® and Reflectashield® TF installed in accordance with Detail Sheets 1 and 2 will not adversely affect the control of fire and smoke within concealed spaces in the structure of fabric of a properly designed building.

B4 & B9– External Fire Spread

Roofshield® will not prejudice the external fire resistance of the roof, as indicated in Detail Sheet 3.

Part C – Site Preparation and Resistance to Moisture

C4 – Resistance to Weather and Ground Moisture

The Shield range of products meet the requirements when installed as indicated in their respective Detail Sheets.

Part F – Ventilation

F2 – Condensation in Roofs

Roofshield® will provide water vapour permeability significantly in excess of that quoted as a minimum for conventional roof tile underlays in BS 5534:2014: *Slating and Tiling for pitched roofs and vertical cladding - Code of Practice*, and hence, movement of moisture vapour will take place through the underlay.

Where Roofshield® is installed with ventilation, the design guidelines contained in Section 2 of the TGD to Part F of the Building Regulations and BS 5250:2011 *Code of Practice for Control of Condensation in Buildings, Annex H Application of design principles – Roofs*, must be met when installing this product.

Roofshield® can be treated as a vapour permeable underlay when considering the ventilation requirements of the roof.

Part L – Conservation of Fuel and Energy

- Dwellings
- Buildings other than Dwellings

L1 – Conservation of Fuel and Energy

Where Roofshield® is installed with ventilation and the ceiling has to be fixed to the soffit of the rafters as in dormer roof construction, a continuous ventilation space of at least 50mm should be arranged as shown in Diagram 11 of TGD to Part F of the Building Regulations. A vapour control layer shall be installed on the warm side of the insulation in all cases.

Roofshield® can be treated as a vapour permeable underlay when considering the ventilation requirements of the roof.

2.1 PRODUCT DESCRIPTION

Daltex Frameshield[®], Reflectashield[®] TF and Roofshield[®] are given detailed descriptions in their respective Detail Sheets.

2.2 QUALITY CONTROL

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

2.3 DELIVERY, STORAGE AND MARKING

The products are supplied in rolls and delivered to site individually wrapped in polyethylene. A technical leaflet bearing the product name, NSAI Agrément logo and Certificate number is included with each roll or available on request. Labels with lot identifiers are attached to each roll for traceability.

Rolls can be stored horizontally on a clean flat level surface and must be kept under cover to protect from long-term exposure to UV light. Care must be taken to avoid contact with solvents and with materials containing volatile organic components such as coal tar and timbers with newly treated creosote. Reasonable precautions must be taken in handling the rolls to prevent damage, such as tears or perforations, occurring before and during installation, and prior to the application of the roof covering.

The rolls must not be exposed to a naked flame or other ignition sources.

3.1 GENERAL

This matter is dealt with for each product in their Detail Sheet.

4.1 BEHAVIOUR IN FIRE

This matter is dealt with for each product in their Detail Sheet.

4.2 WATER PENETRATION

Daltex Frameshield®, Reflectashield® TF and Roofshield®, when used in accordance with this Certificate, present no significant risk of water penetration.

4.3 WATER VAPOUR PENETRATION AND CONDENSATION RISK

This matter is dealt with for each product in their Detail Sheet.

4.4 DURABILITY AND MAINTENANCE

The Shield range, when installed in accordance with this Certificate, the marketing company's instructions and relevant codes of practice, are virtually unaffected by conditions normally found in a timber frame wall or roof space and will have a design life comparable with that of traditional wall membranes and roof tile underlays, provided they are not exposed to sunlight for long periods during the installation phase. Like more similar materials, the membranes must also be protected from flame and solvents. Further advice on exposure of these underlays can be obtained from the Certificate holder.

The durability of Roofshield® will be dependent on the performance of the roof covering (slates/tiles) and this could be compromised if the roof is not routinely maintained or is subjected to inappropriate traffic. Such maintenance would involve building owners having their roofs inspected annually, preferably in late autumn. Inspection should include checking for missing, damaged or loose slates/tiles and their accessories or flashings. Clogged gutters or downpipes should be unblocked and cleaned.

4.5 REUSE AND RECYCLABILITY

The Shield range of products contain polyolefins which can be recycled.

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

This matter is dealt with for each product in their Detail Sheet.

4.7 OTHER INVESTIGATIONS

(i) Existing data on product properties in relation to, mechanical strength/stability, environmental impact 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) Driving rain resistance was assessed.

(iv) A condensation risk analysis was performed.

4.8 CE MARKING

The Certificate holder has taken responsibility of CE marking the product in accordance with harmonised European Standard EN 13859-1:2014 and EN 13859-2:2014. An asterisk (*) appearing in the Detail Sheets indicates that data shown is given in the manufacturers Declaration of Performance.

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 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.

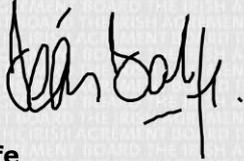
5.7 Where reference is made in this Certificate to any Act of the Oireachtas, Regulation made thereunder, Statutory Instrument, Code of Practice, National Standards, manufacturer's instructions, or similar publication, it shall be construed as reference to such publication in the form in which it is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

NSAI Agrément

This Certificate No. **06/0238** is accordingly granted by the NSAI to **Don & Low Ltd Nonwovens** on behalf of NSAI Agrément.

Date of Issue: **January 2006**

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.n Sai.ie

Revisions:

- **March 2015:** Amendment to weight of Roofshield®; updated references to Building Regulations and standards; new reference to CE marking of the products.
- **21 June 2023:** References to Building Regulations updated



Daltex Frameshield® Breather Membrane

PRODUCT DESCRIPTION

This Detail Sheet relates to Daltex Frameshield®, as defined in NSAI Agrément Certificate 06/0328.

USE:

Daltex Frameshield® is suitable for timber frame constructions either factory or site applied. The product is water resistant and is used to prevent water passing to the timber structure. It is water vapour permeable thus allowing the timber structure to breathe.

Any vapour which enters the wall construction from inside can pass into the wall cavity where it can be removed by air movement or condense and drain safely away. A vapour control layer should be considered on the internal structure of the building.

Daltex Frameshield® must be fitted with the approved fixing nails or stainless steel staples with the minimum vertical and horizontal laps.

This Detail Sheet is a confirmation of BBA Certificate No. 89/2313 issued by the British Board of Agrément, PO Box 195, Bucknalls Lane, Garston, Watford WD25 9BA.

CE MARKING:

The Certificate holder has taken responsibility of CE marking the product in accordance with harmonised European Standard EN 13859-2:2014. An asterisk (*) appearing in this Detail Sheets indicates that data shown is given in the manufacturers Declaration of performance.

1.1 ASSESSMENT

In the opinion of NSAI Agrément, Daltex Frameshield®, if used in accordance with this Detail Sheet, meets the requirements of the Irish Building Regulations 1997 and subsequent revisions, as indicated in Section 1.2 of Certificate 06/0238.

1.2 BUILDING REGULATIONS

This matter is dealt with in NSAI Agrément Certificate 06/0238.

2.1 PRODUCT DESCRIPTION

Daltex Frameshield® is manufactured by extruding polypropylene to produce filaments. These filaments are laid down as a fabric and bonded together using a combination of heat and pressure in a continuous process. The nominal characteristics are shown in Table 1.

Characteristic	Value/Units
Thickness	0.5 mm
Mass per unit area*	100 g/m ²
Roll length*	100 m
Roll width*	1.5 to 3.0 m
Colour	Grey
Tensile strength*: • Longitudinal • Transverse	240 N/50mm 180 N/50mm
Elongation*: • Longitudinal • Transverse	85 % 100 %
Tear resistance*: • Longitudinal • Transverse	135 N 145 N
Resistance to penetration of air*	320 m ³ /m ² .h.50Pa
Watertightness*: • Unaged • Aged	W2 W2
Water vapour transmission*	0.006 S _d
Water vapour resistance*	0.03 MNs/g
Other roll sizes and colours are available	

Table 1: Nominal characteristics

2.1.1 Ancillary Products

- Stainless steel staples or nails
- Adhesive HDPE tape
- PVC banding tape

2.2 INSTALLATION

2.2.1 General

Daltex Frameshield® must be installed in accordance with the marketing company's instructions and the recommendations given in this Detail Sheet.

2.2.2 Procedure

Daltex Frameshield® must be secured with austenitic stainless steel nails or staples at max 500mm centres.

Upper layers should always overlap lower layers to facilitate the easier shedding of rain and water away from the sheeting material.

Horizontal joints should overlap by 100mm minimum. Vertical joints should overlap by 150mm minimum and be staggered or offset wherever possible.

Allow for sufficient overlap at the bottom of panels to ensure that the bottom timbers and sole plates are well covered. Daltex Frameshield® should extend at least 50mm below the top of the rising wall.

At window sills, a dpc should be folded on-site to provide protection for the bottom, back and ends of the sill. A layer of Daltex Frameshield® should be folded over and inwards to cover all timber cavity barriers.

Both vertical and horizontal proprietary polythene sleeved cavity barriers should be fitted in front of Daltex Frameshield® according to the manufacturer's instructions.

All stud positions must be marked to facilitate fixing of wall ties.

Should any damage occur through mishap or vandalism, these areas should be repaired or replaced before the final outer cladding is applied, ensuring that the laps are maintained and that the upper sheets overlap the lower ones.

Cavity barriers in accordance with Section 3 of TGD to Part B of the Building Regulations must be installed after the installation of Daltex Frameshield®.

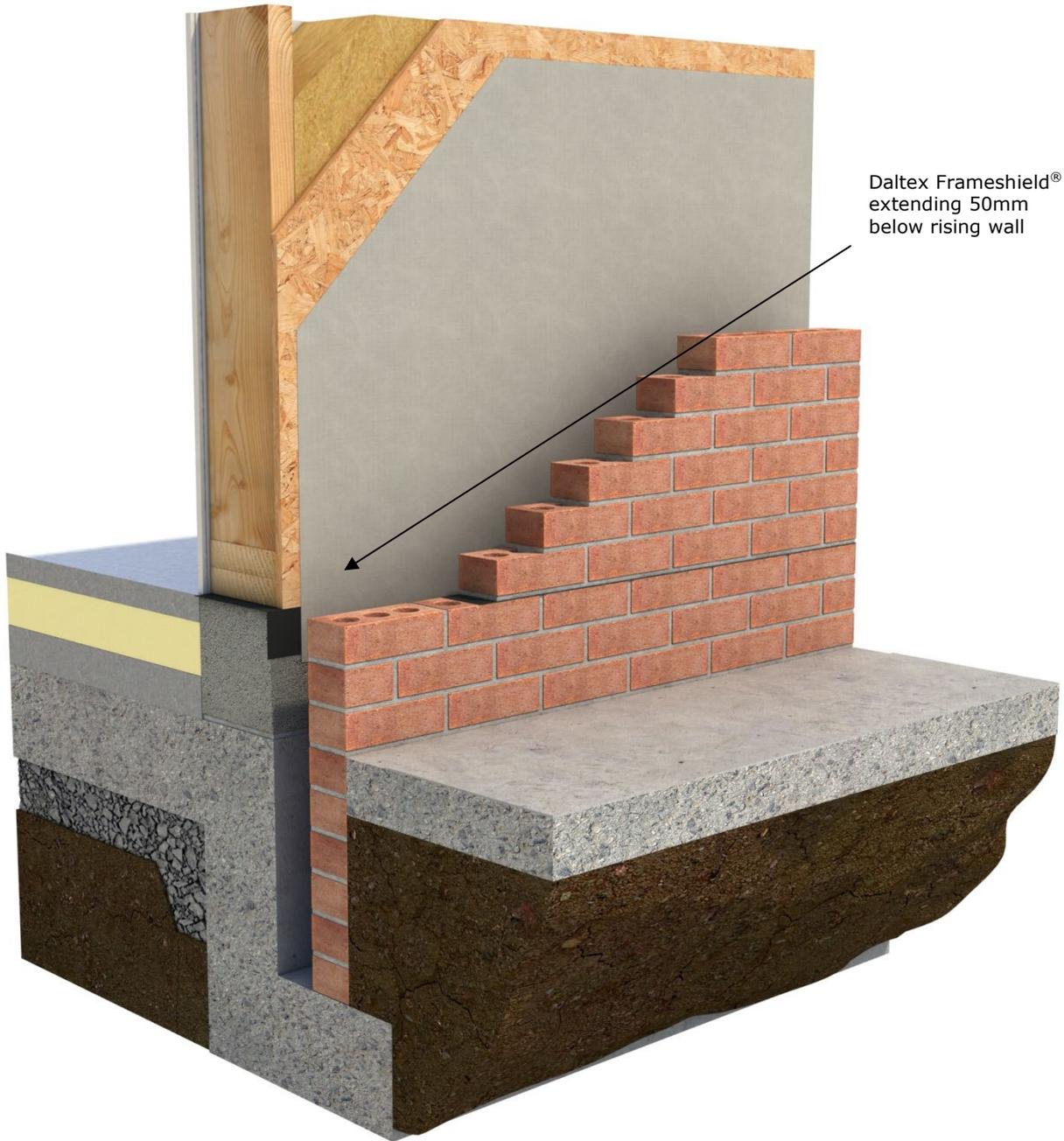


Figure 1: Foundation Level

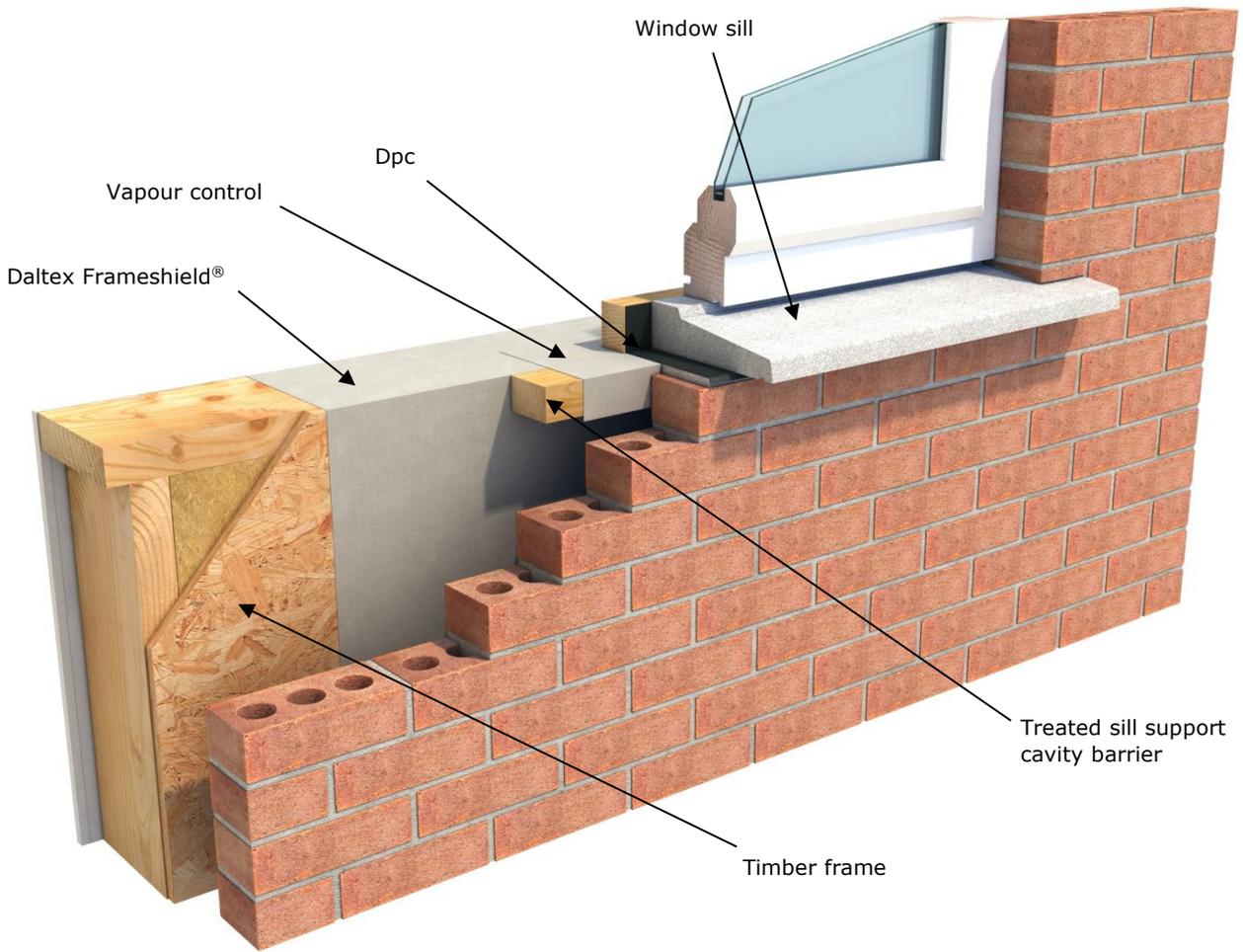


Figure 2: Window Sill Detail

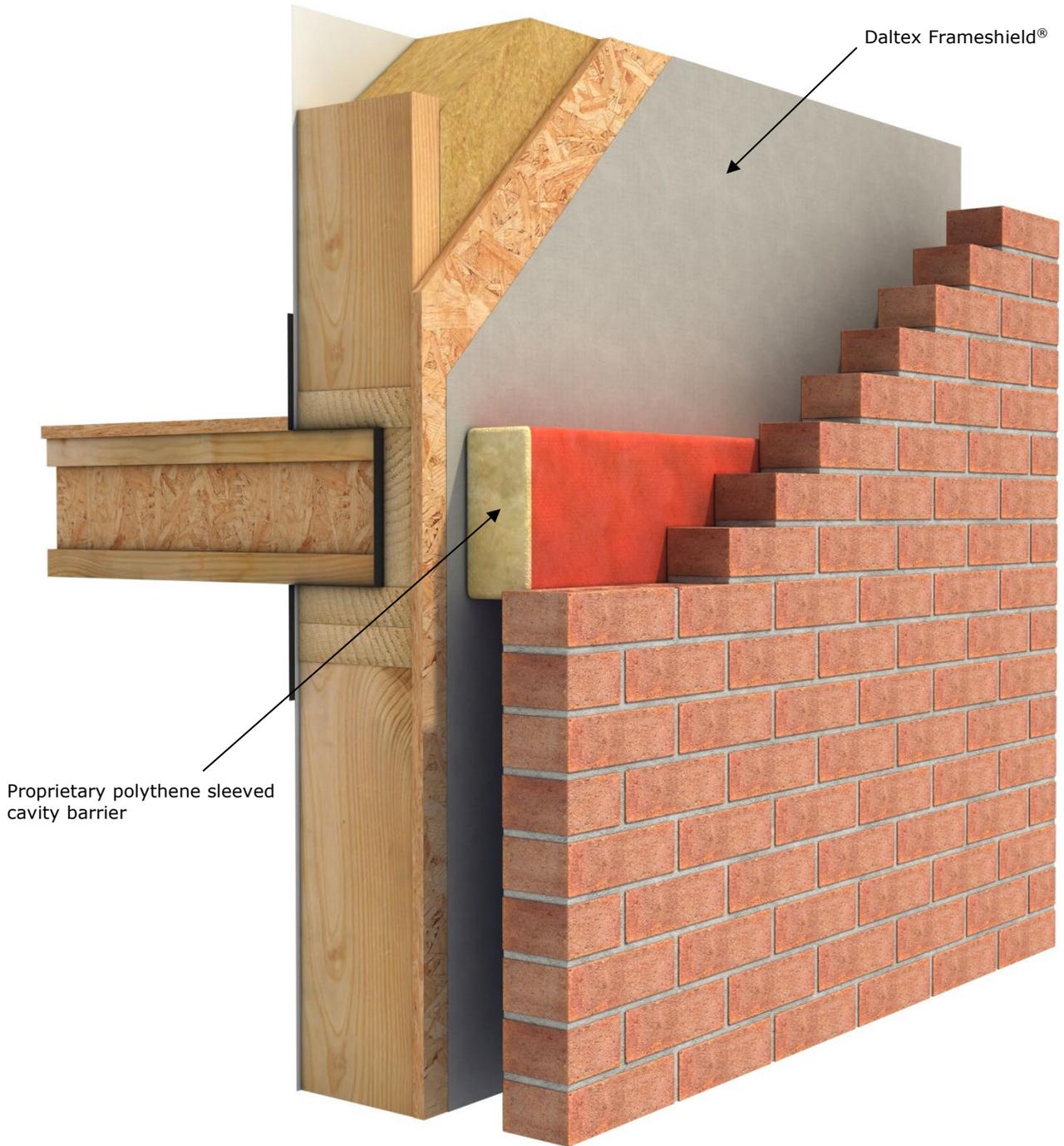


Figure 3: Cavity Barrier Detail

3.1 GENERAL

Daltex Frameshield® breather membrane is suitable for timber frame constructions, either in the factory or on-site installation.

3.2 STRENGTH

Daltex Frameshield® will resist the loads associated with the installation of the membrane onto a timber frame stud wall.

Suitable timber frame constructions are defined as those designed and built in accordance with the relevant parts of IS EN 1995-1-1:2004 + AMD 2:2014 *Eurocode 5: Design of timber structures – Part 1-1: General – Common rules and rules for buildings*.

The membrane may be damaged by high winds, careless handling or by vandalism and should not be left uncovered for longer than is absolutely necessary. Any damaged areas should be repaired or replaced before the final outer cladding is applied.

3.3 WEATHERTIGHTNESS

Tests confirm that Daltex Frameshield® 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 IS EN 1995-1-1:2004 + AMD 2:2014 and BS 8000-6:2013 *Workmanship on building sites – Code of practice for slating and tiling of roofs and walls*.

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.

4.1 BEHAVIOUR IN FIRE

Daltex Frameshield® has similar properties in relation to fire to other polyolefinic sheets, tending to melt and shrink away from a heat source, but it will burn in the presence of an ignition source. Daltex Frameshield® is therefore unclassifiable in terms of the Building Regulations. When tested in accordance with IS EN 13501-1:2007 + A1:2009 *Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests*, the product achieved a Class F classification. This should be considered when assessing the overall risks to the construction of the building.

Cavity barriers must be provided as indicated in Section 3 of TGD to Part B of the Building Regulations.

Toxicity – Negligible when used in a wall construction situation.

4.2 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.

The general design guides contained in BS 5250:2011 *Code of practice for control of condensation in buildings* must be met when installing this product.

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

- Dimensions*
- Mass per unit area*
- Tensile strength*
- Elongation*
- Resistance to tear*
- Dimensional stability*
- Resistance to water penetration*
- Resistance to artificial ageing*
- Resistance to penetration of air*
- Water vapour transmission*



Reflectashield® TF Reflective Membrane

PRODUCT DESCRIPTION

This Detail Sheet relates to Reflectashield® TF, as defined in NSAI Agrément Certificate 06/0328.

USE:

Reflectashield® TF is suitable for timber frame constructions either factory or site applied. The product is water resistant and is used to prevent water passing to the timber structure. Although metallised, the product remains microporous and will allow the timber structure to breathe.

Any vapour which enters the wall construction from inside can pass into the wall cavity where it can be removed by air movement or condense and drain safely away. A vapour control layer should be considered on the internal structure of the building.

Reflectashield® TF must be fitted with the approved fixing nails or stainless steel staples with the minimum vertical and horizontal laps.

This Detail Sheet is a confirmation of BBA Certificate No. 11/4732 issued by the British Board of Agrément, PO Box 195, Bucknalls Lane, Garston, Watford WD25 9BA.

CE MARKING:

The Certificate holder has taken responsibility of CE marking the product in accordance with harmonised European Standard EN 13859-2:2014. An asterisk (*) appearing in this Detail Sheets indicates that data shown is given in the manufacturers Declaration of performance.

1.1 ASSESSMENT

In the opinion of NSAI Agrément, Reflectashield® TF, if used in accordance with this Detail Sheet, meets the requirements of the Irish Building Regulations 1997 and subsequent revisions, as indicated in Section 1.2 of Certificate 06/0238.

1.2 BUILDING REGULATIONS

This matter is dealt with in NSAI Agrément Certificate 06/0238.

2.1 PRODUCT DESCRIPTION

Reflectashield® TF is manufactured by heat laminating a nonwoven spunbond polypropylene fabric to a coated, perforated reflective foil. The nominal characteristics are shown in Table 1.

Characteristic	Value/Units
Thickness	0.55 mm
Mass per unit area*	134 g/m ²
Roll length*	50, 100 m
Roll width*	1.5 to 3.0 m
Colour:	
• Upper	Silver
• Lower	White
Tensile strength*:	
• Longitudinal	230 N/50mm
• Transverse	160 N/50mm
Elongation*:	
• Longitudinal	70 %
• Transverse	80 %
Tear resistance*:	
• Longitudinal	160 N
• Transverse	160 N
Resistance to penetration of air*	9.3 m ³ /m ² .h.50Pa
Watertightness*:	
• Unaged	W2
• Aged	W2
Water vapour transmission*	0.083 S _d
Water vapour resistance*	0.41 MNs/g
Other roll sizes and colours are available	

Table 1: Nominal characteristics

2.1.1 Ancillary Products

- Stainless steel staples or nails
- Adhesive HDPE tape
- PVC banding tape

2.2 INSTALLATION

2.2.1 General

Reflectashield® TF must be installed in accordance with the marketing company's instructions with the reflective side outward, and with the recommendations given in this Detail Sheet.

2.2.2 Procedure

Reflectashield® TF must be secured with austenitic stainless steel nails or staples at max 500mm centres.

Upper layers should always overlap lower layers to facilitate the easier shedding of rain and water away from the sheeting material.

Horizontal joints should overlap by 100mm minimum. Vertical joints should overlap by 150mm minimum and be staggered or offset wherever possible.

Allow for sufficient overlap at the bottom of panels to ensure that the bottom timbers and sole plates are well covered. Reflectashield® TF should extend at least 50mm below the top of the rising wall.

At window sills, a dpc should be folded on-site to provided protection for the bottom, back and ends of the sill. A layer of Reflectashield® TF should be folded over and inwards to cover all timber cavity barriers.

Both vertical and horizontal proprietary polythene sleeved cavity barriers should be fitted in front of Reflectashield® TF according to the manufacturer's instructions.

All stud positions must be marked to facilitate fixing of wall ties.

Should any damage occur through mishap or vandalism, these areas should be repaired or replaced before the final outer cladding is applied, ensuring that the laps are maintained and that the upper sheets overlap the lower ones.

Cavity barriers in accordance with Section 3 of the TGD to Part B of the Building Regulations must be installed after the installation of Reflectashield® TF.

3.1 GENERAL

Reflectashield® TF is suitable for timber frame constructions, either in the factory or on-site installation.

3.2 STRENGTH

Reflectashield® TF will resist the loads associated with the installation of the membrane onto a timber frame stud wall.

Suitable timber frame constructions are defined as those designed and built in accordance with the relevant parts of IS EN 1995-1-1:2004 + AMD 2:2014 *Eurocode 5: Design of timber structures – Part 1-1: General – Common rules and rules for buildings*.

The membrane may be damaged by high winds, careless handling or by vandalism and should not be left uncovered for longer than is absolutely necessary. Any damaged areas should be repaired or replaced before the final outer cladding is applied.

3.3 WEATHERTIGHTNESS

Tests confirm that Reflectashield® TF 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 IS EN 1995-1-1:2004 + AMD 2:2014 and BS 8000-6:2013 *Workmanship on building sites – Code of practice for slating and tiling of roofs and walls*.

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.

3.4 THERMAL INSULATION

For the purposes of U-value calculations to determine if the requirements of the Building Regulations are met, it has been established by test that when the metallised face of the Reflectashield® TF membrane faces into a cavity, the product will provide an additional thermal resistance, which can be incorporated into the calculations carried out in accordance with IS EN ISO 6946:2007 *Building components and building elements – Thermal resistance and thermal transmittance – Calculation method*. The ultimate thermal performance of the product will depend on the construction of the wall against which it is installed. The thermal resistance value shown in Table 2 relates to the total thermal resistance of the cavity incorporating Reflectashield® TF.

Element	Direction of heat flow	Thermal resistance of Reflectashield® TF within a 50mm cavity
Wall	Horizontal	0.64 m ² K/W

Table 2: Thermal resistance value

4.1 BEHAVIOUR IN FIRE

Reflectashield® TF has similar properties in relation to fire to other polyolefinic sheets, tending to melt and shrink away from a heat source, but it will burn in the presence of an ignition source. Reflectashield® TF is therefore unclassifiable in terms of the Building Regulations. When tested in accordance with IS EN 13501-1:2007 + A1:2009 *Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests*, the product achieved a Class D classification. This should be considered when assessing the overall risks to the construction of the building.

Cavity barriers must be provided as indicated in Section 3 of TGD to Part B of the Building Regulations.

Toxicity – Negligible when used in a wall construction situation.

4.2 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.

Reflectashield® TF has additional insulating value (see Section 3.4) 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 vapour control layer 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 vapour control layer.

The general design guides contained in BS 5250:2011 *Code of practice for control of condensation in buildings* must be met when installing this product.

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

- Dimensions*
- Mass per unit area*
- Tensile strength*
- Elongation*
- Resistance to tear*
- Dimensional stability*

- Resistance to water penetration*
- Resistance to artificial ageing*
- Resistance to penetration of air*
- Water vapour transmission*



Roofshield® Breather Underlay

PRODUCT DESCRIPTION

This Detail Sheet relates to Roofshield® Breather Underlay, as defined in NSAI Agrément Certificate 06/0328.

USE:

Roofshield® is manufactured for use under tiles or slates on open rafter (unsupported) or fully supported pitched roofs. The underlay may be used in cold or warm pitched roof systems:

Roofshield® provides a barrier which:

- Prevents the ingress of windblown rain, dust and snow.
- Has adequate strength to resist wind loads when installed in accordance with this Detail Sheet.
- Offers resistance to tearing during installation.
- Remains flexible at low ambient temperatures.
- Facilitates the control of surface and interstitial condensation in the roof by allowing the safe dispersal of water vapour, when installed in accordance with this Detail Sheet.
- Reduces heat loss caused by air movement through the attic space once installed with no ventilation.

This Detail Sheet is a confirmation of BBA Certificate No. 96/3220 and 99/3648 issued by the British Board of Agrément, PO Box 195, Bucknalls Lane, Garston, Watford WD25 9BA.

CE MARKING:

The Certificate holder has taken responsibility of CE marking the product in accordance with harmonised European Standard EN 13859-1:2014. An asterisk (*) appearing in this Detail Sheets indicates that data shown is given in the manufacturers Declaration of performance.

1.1 ASSESSMENT

In the opinion of NSAI Agrément, Roofshield®, if used in accordance with this Detail Sheet, meets the requirements of the Irish Building Regulations 1997 and subsequent revisions, as indicated in Section 1.2 of Certificate 06/0238.

1.2 BUILDING REGULATIONS

This matter is dealt with in NSAI Agrément Certificate 06/0238.

2.1 PRODUCT DESCRIPTION

Roofshield® is a watertight, vapour permeable, flexible membrane intended for use as an underlay on unsupported or supported pitched roofs, constructed in accordance with SR 82:2017 *Irish code of practice for slating and tiling*.

Roofshield® is manufactured by a lamination of a water vapour permeable membrane between two layers of nonwoven polypropylene spunbond to form a flexible sheet. The nominal characteristics are shown in Table 1.

Characteristic	Value/Units
Thickness	0.7 mm
Mass per unit area*	185 g/m ²
Roll length*	50, 100 m
Roll width*	1.5 to 3.0 m
Colour:	
• Upper	Green
• Lower	White
Tensile strength*:	
• Longitudinal	390 N/50mm
• Transverse	230 N/50mm
Elongation*:	
• Longitudinal	55 %
• Transverse	75 %
Tear resistance*:	
• Longitudinal	230 N
• Transverse	275 N
Resistance to penetration of air*	34.4 m ³ /m ² .h.50Pa
Watertightness*:	
• Unaged	W1
• Aged	W1
Water vapour transmission*	0.013 S _d
Water vapour resistance*	0.065 MNs/g
Other roll sizes and colours are available	

Table 1: Nominal characteristics

2.2 INSTALLATION

2.2.1 General

Roofshield® must be installed and fixed in accordance with the marketing company’s instructions with the reflective side outward, the recommendations given in this Detail Sheet, and the relevant requirements of SR 82:2017 and BS 5534:2014.

2.2.2 Procedure

Installation of Roofshield® can be carried out in all conditions normal to pitched roofing work. In roof construction it is important to remember that the underlay is the second line of defence in

excluding water penetrating the roof. For this reason, the requirements of SR 82:2017, BS 5534:2014 and the following list of criteria must be met to comply with the requirements of this Detail Sheet:

- Installation commences by unrolling the Roofshield® underlay horizontally across the rafters, starting at the eaves and working towards the ridges of the roof. The green side should be uppermost.
- When tacking the underlay to the rafters, it is recommended that 3mm diameter by 20mm long extra large head felt nails of copper, aluminium alloy or galvanised steel be used. The underlay should be tacked at the head of the sheet only, at centres not exceeding 1200mm. It is important that all tacking nails be covered by the overlap of the next underlay course so that the minimal headlap is maintained between the tacks and the lower edge of the overlapping underlay.
- Overlaps of the underlay should be in accordance with those stated in Table 2, and Annex A Figure A.2 of BS 5534-:2014.

Roof Pitch	Horizontal Lap		Vertical Lap
	Partially Supported	Fully Supported	
12.5° to 14°	225mm	150mm	100mm
15° to 34°	150mm	100mm	100mm
≥35°	100mm	75mm	100mm

Table 2: Minimum overlaps

- Where overlaps do not coincide with a batten, consideration should be given to either including an extra batten at the overlap or increasing the underlay overlap to coincide with the next batten.
- Batten gauges should not exceed that recommended by the tile/slate manufacturer for the particular tile/slate being used. In areas where the wind speed is greater than 48m/s, SR 82:2017 should be followed.
- Moisture content of battens at time of fixing should not exceed 22%. Where timbers on roofs have been treated with wood preservative due to high moisture content of timbers, it is essential that marketing company’s guidance be sought in relation to chemical attack from preservative on roofing underlay.
- Nails for use with battens, counterbattens and boarding (sarking boarding) should be zinc-coated in accordance with IS EN 10230-1:2000 *Steel wire nails – Loose nails for*

general applications. Reference should also be made to BS 5534-2014 Cl 4.12.1.2 and SR 82:2017.

- At the eaves, the use of a type 5U felt to meet the specification of IS EN 13707:2013 *Flexible sheets for waterproofing – Reinforced bitumen sheets for roof waterproofing – Definitions and characteristics* must be used. This felt should be laid typically in accordance with Table 2 and dressed 50mm into the gutter. The provision of a tilting fillet/continuous ply support or proprietary eaves tray is also required to avoid water being trapped behind the fascia board.
 - The product will resist the loads associated with installation of the roof. Where pressure on the underlay over a rafter is unavoidable, it should be noted that the membrane does not offer substantial grip, particularly at overlaps.
 - Where the underlay becomes damaged for whatever reason, repairs can be carried out by overlapping the damaged area with a layer of additional material ensuring a 150mm overlap all round, ensuring that the up-slope side is overlapped by the next highest horizontal run of underlay, and secured under a batten.
 - Standard methods of workmanship should be used to apply the underlay at penetrations and abutments. It must be ensured that the underlay is turned up at least 50mm at all abutments to be overlapped by the flashings, and that it overlaps the lining tray by at least 100mm at the back face of any abutment.
 - Courses of underlay over a hip should be overlapped by at least 150mm. Each course should overlap the underlay course on the adjacent elevation of the roof.
 - Hips and valleys should be covered with a 600mm wide strip of the Roofshield® underlay, running continually from eaves to hip. In valleys, the 600mm wide strip of underlay must be laid over the gutter bed but not under the main roof underlay, and held down by valley battens when used. The main roof underlay must be dressed over the valley battens in this case.
 - For duo pitch roofs not requiring ridge ventilation, underlay from each side of the ridge should overlap by at least 225mm. For mono pitch roofs, the underlay should extend over the mono ridge and the top fascia board by at least 100mm. Where proprietary ventilation ridge systems are specified, detailing of the underlay should be in accordance with the marketing company's recommendations.
 - When used in warm roof design, a vapour control layer shall be installed on the warm side of the insulation.
 - Reference should be made to Annex H of BS 5250:2011 for counter batten and ventilation requirements on tiled and slated roofs.
- Counter battens should be used when the membrane is to be fully supported (e.g. warm roofs, roofs using a sarking board). This will allow any moisture accessing the main system to drain away unhindered. In these instances (where no drape is provided) and where underlays are not self-sealing, for additional security against water leakage through nail holes batten tapes or other sealants approved by the Certificate holder should be used.
- When close fitting man-made slates are to be installed as the roof covering, which constitutes an impermeable external covering, counter battens shall be used. In addition, ventilation should be provided above the membrane in the form of ridge tile and eaves ventilation. Reference should be made to Section H.4.3 of BS 5250:2011. In case of doubt, the marketing company's advice should be sought.
 - When used in a cold roof design where the insulation is laid on top of the ceiling, it should be considered that a vapour control layer be used on the warm side of the insulation, and all perforations for pipes, electrical cables etc. should be sealed. The vapour control layer should be turned up around the edge of the insulation and sealed to the walls and soffit to inhibit warm humid air entering the attic. Reference should be made to TGD to Part F of the Building Regulations for ventilation requirements of the roof space. Other appropriate measures include:
 - Ventilating the dwelling below for the dispersal and rapid dilution of water vapour, particularly in rooms that may experience high humidity such as kitchens, bathrooms and utility rooms.
 - Covering and insulating all water tanks in the loft space and lagging pipe work.
 - Sealing penetrations in the ceiling and making loft hatches convection-tight by using a compressible draught seal.
 - Ensuring that there is continuity of joining with walls, and behind wall linings, at sealing perimeters.
 - Ensuring that masonry wall cavities do not interconnect with roof cavities.
 - After the underlay is installed, it should be covered by the finished roof covering as soon as practicable, to minimise the effects of long term exposure to UV light.
 - Roofshield® is not suitable for use in flat roof construction.



Figure 1: Cold Roof detail with permeable roof covering

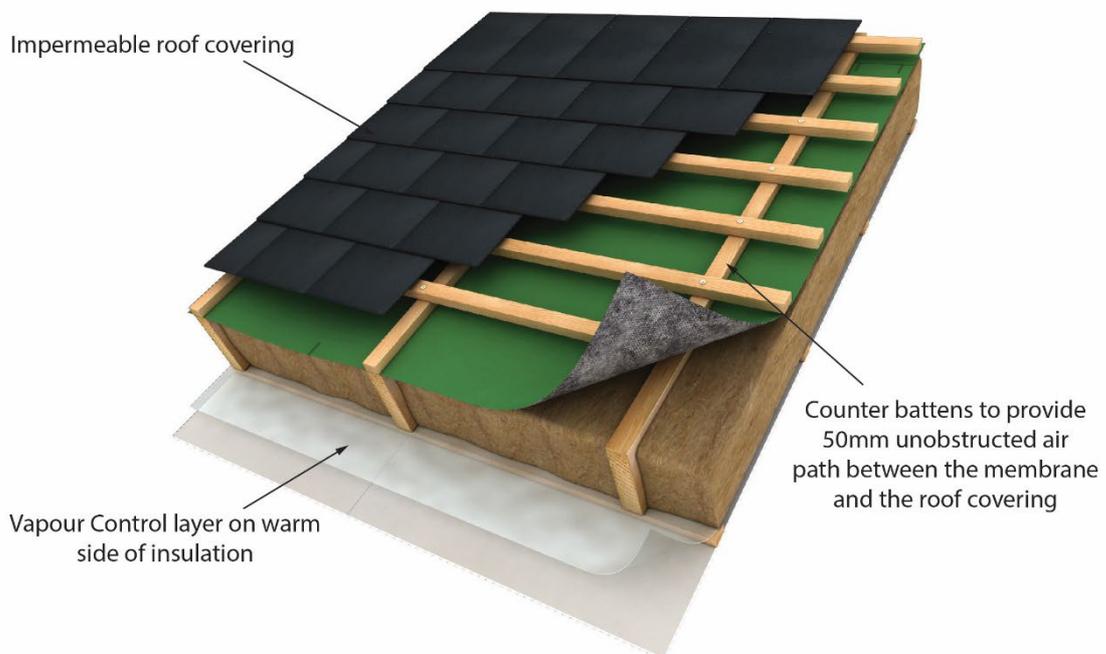


Figure 2: Warm Roof detail with impermeable roof covering



Figure 3: Cold Roof detail with impermeable roof covering - Ridge Detail

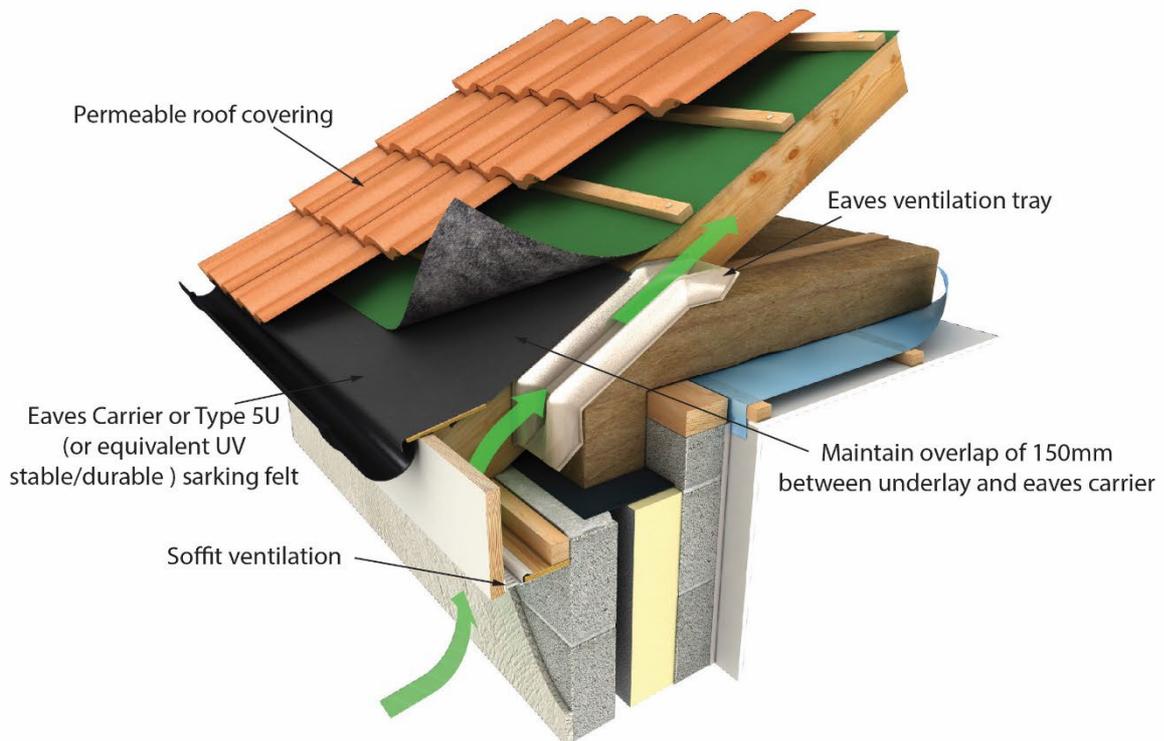


Figure 4: Cold Roof detail with permeable roof covering - Eaves Detail

3.1 GENERAL

Roofshield® provides a satisfactory underlay in tiled and slated pitched roofs constructed in accordance with SR 82:2017, BS 5534:2014 and BS 8000-6:2013.

3.2 STRENGTH

Roofshield® will resist the loads associated with the installation phase of the roof.

Wind Loading: Unsupported

Roofshield® is satisfactory for use in unsupported systems in all Geographical Wind Zones once the batten spacing requirements shown in Table 3 are met (see also Figure 5). These details are valid where a well-sealed ceiling is present and the roof has a ridge height $\leq 15\text{m}$, a pitch between 12.5° and 75° and a site altitude $\leq 100\text{m}$ where the topography is not significant. In addition, the wind uplift values and classifications shown in Table 3 are based on installations with battened under lap joints per BS 5534:2014 Annex A Figure A1 and A2.

When building and site conditions are outside these limitations, the design wind pressure p_u should be calculated in accordance with Equation H.13 of BS 5534:2014 in order to determine the required wind uplift resistance. Calculated values can then be compared to the wind uplift resistances in Table 3 of this Detail Sheet in order to select a suitable roof underlay and batten spacing.

Per Equation H.13 of BS 5534:2014, the design wind pressure $p_u = f_u \times q_p$, where:

$f_u = 0.75$ when a well-sealed ceiling is present;

$f_u = 0.90$ when no ceiling or no well-sealed ceiling is present;

$f_u = 1.10$ when no ceiling or no well-sealed ceiling is present on a permanent dominant opening on an external face of the building;

q_p = is the peak velocity pressure from IS EN 1991-1-4:2005 AMD 1:2010 *Eurocode 1: Actions on structures – Part 1-4: General actions – Wind actions (including Irish National Annex)*.

See BS 5534:2014 Cl H.6 for all other considerations.

Design wind speeds should be determined – the maximum net wind pressure must not exceed 2.5kPa as calculated in accordance with IS EN 1991-1-4:2005.

Wind Loading: Supported

Roofshield®, when fully supported, has adequate resistance to wind uplift forces.

The product may be used at any batten gauge in all wind zones when laid over normally airtight sarking sheet, for example OSB board, plywood and insulation for warm roof designs. It can also be used when slates and tiles are nailed directly into the sarking board.

Poorly fitted sarking board such as square-edged butt joints are not considered to be airtight and the underlay is treated as unsupported.

3.3 WEATHERTIGHTNESS

Tests confirm that Roofshield® 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 roof constructed to SR 82:2017, BS 5534:2014 and BS 8000-6:2013.

Roofshield® has been classified as having a resistance to water penetration of Class W1 in accordance with IS EN 13859-1:2014 *Flexible sheets for waterproofing – Definitions and characteristics – Part 1: Underlays for discontinuous roofing*. A Class W1 is the highest resistance to water penetration classification described in the standard.

The underlay may be used to provide temporary waterproofing to the structure of the building prior to the installation of slates or tiles. It is however recommended that this period of time be kept to a minimum in accordance with the marketing company's guidance.

3.4 VENTILATION/CONDENSATION

As the water vapour resistance given in Table 1 of this Detail Sheet is less than 0.25MN/g , the underlay may be regarded as Type LR membrane for roofs designed in accordance with BS 5534:2014 or BS 5250:2011 Annex H.

In pitched roofs where the insulation follows the line of the pitch, ventilation must be provided above the insulation. This ventilation gap can be above or below the Roofshield® underlay. For all roof coverings a continuous unobstructed 50mm ventilation gap can be provided in the space between the underlay and the insulation, or alternatively above the underlay and under the roof covering.

windows. The risk diminishes as the building

Product	Wind Uplift Pressure		
	345mm Batten Gauge Battened Lap	250mm Batten Gauge Battened Lap	345mm Batten Gauge Counter Batten
Roofshield®	1252 Pa	2574 Pa	2192 Pa
	Geographical Wind Zones		
	Zones 1 to 3	Zones 1 to 5	Zones 1 to 5

Table 3: Test results for wind uplift resistance to BS 5534:2014

dries out naturally.

Ventilation of the space above the insulation may not be required provided that the roof coverings are air permeable.

The general principle when designing a roof system that can successfully manage moisture, whether the source of the moisture is from the external environment or if the source arises internally from occupants, bathrooms, cooking etc., is that the most vapour tight layer is located on the inside of the roof structure and all subsequent outer layers become increasingly vapour permeable as we move towards the roof coverings.

In pitched roofs where the insulation follows the line of the ceiling, attic ventilation must be provided in accordance with TGD to Part F of the Building Regulations. The optimum size and disposition of vents should be determined by the size and shape of the loft; large and/or complex roofs may require vents at both high and low levels. Further design guidance can be found in BS 5250:2011.

A vapour control layer should be installed on the warm side of the insulation unless a hygrothermal analysis to IS EN ISO 13788:2001 *Hygrothermal performance of building components and building elements – Internal surface temperature to avoid critical surface humidity and interstitial condensation – Calculation methods (Glazer)*, or IS EN 15026:2007 *Hygrothermal performance of building components and building elements – Assessment of moisture transfer by numerical simulation (Wufi)* deems it to be unnecessary.

It is essential that roofs be constructed so as to prevent moisture penetration and the formation of condensation. In accordance with good building construction practice, all openings for services and trap doors should be draught sealed and trap doors should not be located in bathroom, shower rooms or kitchens.

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 cast concrete slabs or plaster. Additional ventilation should be provided during this period, including the opening of doors and

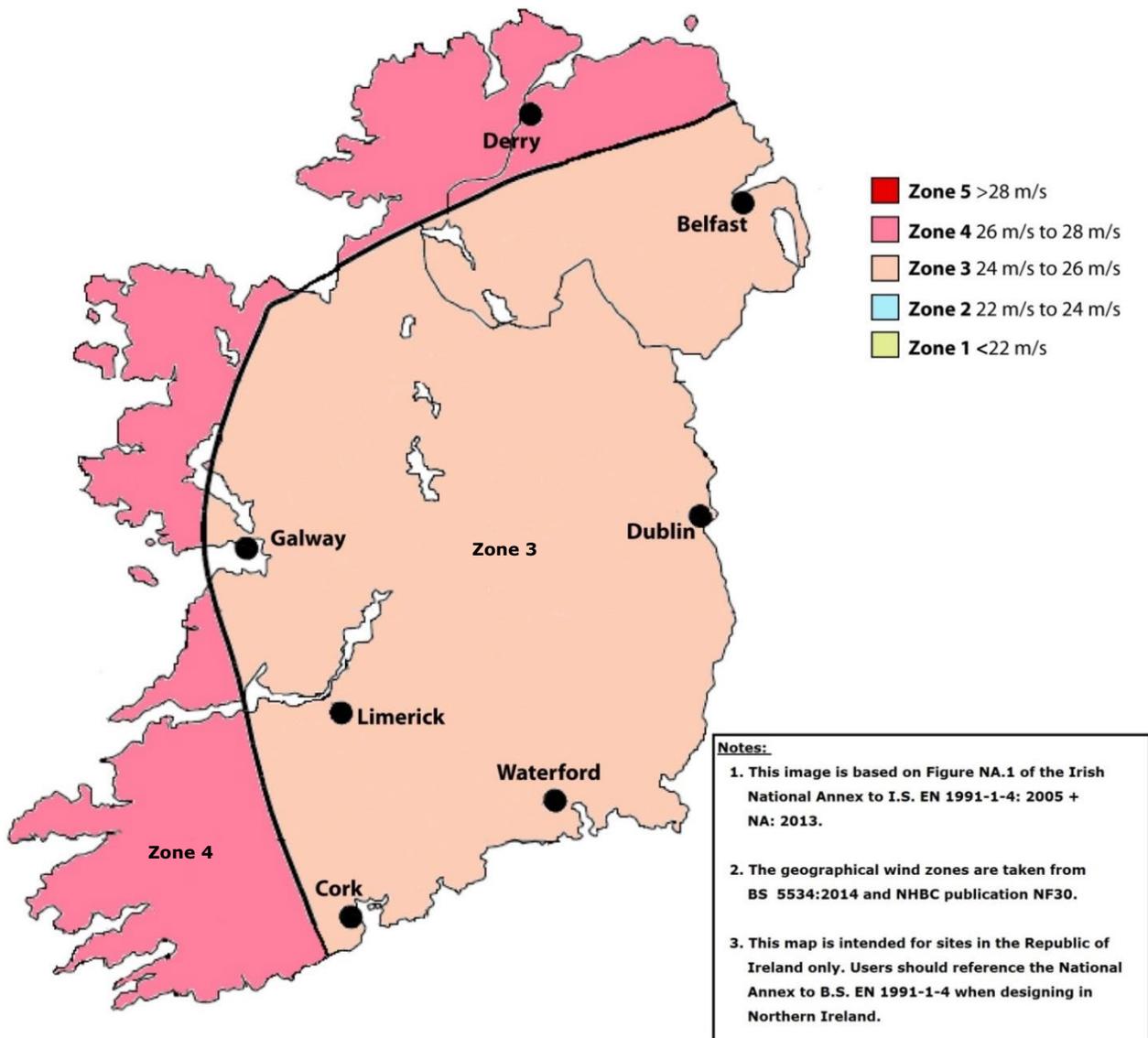


Figure 5: Design wind speeds for geographical wind zones in Ireland

4.1 BEHAVIOUR IN FIRE

Roofshield® has similar properties in relation to fire to other polythene sheets, and so will present no additional fire hazard to a roof structure in which it is incorporated. When tested in accordance with IS EN 13501-1:2007 + A1:2009 *Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests*, the product achieved a Class D classification.

Tests indicate that Roofshield® has the risk of fire spread when used unsupported, should the material be accidentally ignited during maintenance works etc. (e.g. by a roofer or plumbers torch). As with all types of sarking material, care must be taken during building and maintenance to avoid the material becoming ignited.

When the product is used in a fully supported situation, the reaction to fire will be determined by the supporting deck.

Roofshield®, being a combustible material, must be separated from chimneys and flues as indicated in CI 2.5.6, CI 3.8.2 and CL 3.11.1 of TGD to Part J of the Building Regulations.

If a fire does occur, the contribution of toxic gas attributed to the underlay is negligible.

4.2 WATER VAPOUR PENETRATION AND CONDENSATION RISK

Roofshield® has a significantly higher water vapour permeability than that quoted as a minimum for conventional roof tile underlays in BS 5534:2014, and hence movement of moisture vapour can take place through the underlay for water vapour egress by convection thereby reducing condensation risk.

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

- Dimensions*
- Mass per unit area*
- Tensile strength*
- Elongation*
- Resistance to tear*
- Dimensional stability*
- Resistance to water penetration*
- Resistance to artificial ageing*
- Resistance to penetration of air*
- Water vapour transmission*
- Slip resistance
- Resistance to streaming water
- Mullen burst strength

- Resistance to wind loads