IRISH AGRÉMENT BOARD
CERTIFICATE NO. 16/0387
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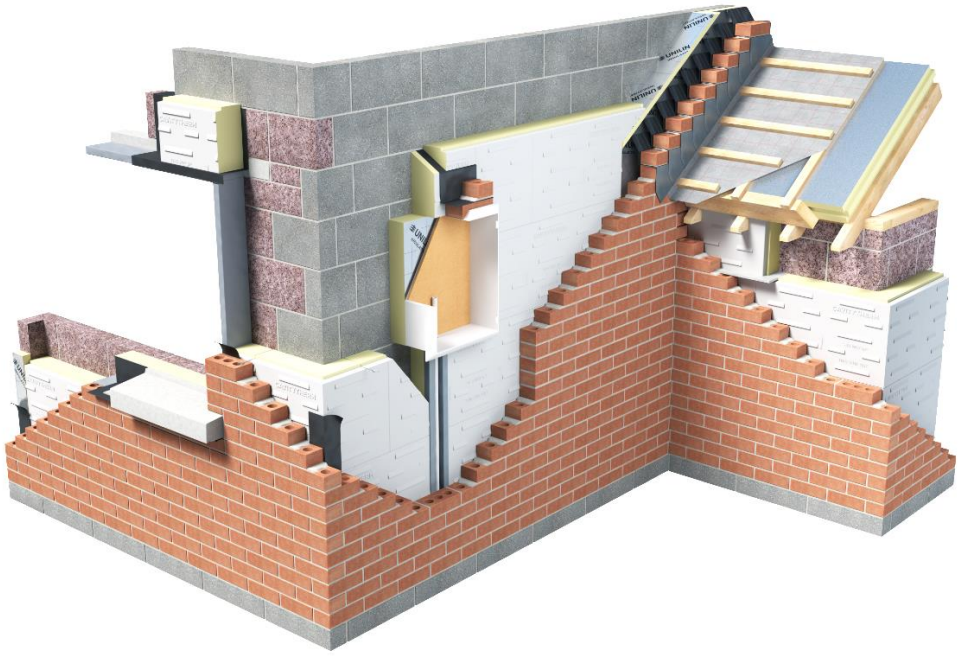
Unilin CavityTherm Cavity Wall Insulation System

Isolation
Wärmedämmung

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 and subsequent revisions.**



PRODUCT DESCRIPTION:
This Certificate relates to the Unilin CavityTherm Cavity Wall Insulation System. This system consists of polyisocyanurate (PIR) boards, foil faced on both sides, bonded to a profiled high impact polystyrene sheet (HIP) on the outer face. The insulation boards have profiled edges incorporating pre-spaced wall tie slots, allowing them to be tightly interlocked when installed as a full fill cavity wall insulation system. The panels are 450mm x 1200mm and are available in range of thicknesses. 5mm tapered flutes on the face of the HIP panel provide a drainage path.

In the opinion of NSAI the Unilin CavityTherm Cavity Wall Insulation System as described in this Certificate complies with the requirements of the Irish Building Regulations.

USE:
The product is used for the thermal insulation of new buildings with rendered walls up to 12 metres in height and unrendered brick walls up to 8 meters in height and facilitates the control of surface and interstitial condensation in walls. The product is installed during construction of the wall.

MANUFACTURE AND MARKETING:
The product is manufactured and marketed by:

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1.1 ASSESSMENT

In the opinion of NSAI Agrément, the Unilin CavityTherm Insulation System, if used in accordance with this certificate meets the requirements of following clauses of the Building Regulations:

Part D - Materials and Workmanship

D3 – Proper Materials
D1 – Materials and Workmanship
The Unilin CavityTherm Insulation System is comprised of 'proper materials', i.e. materials which are fit for their intended use and for the conditions in which they are to be used.

Part B – Fire Safety
B3 & B8 – Internal fire spread (Structure)

Part C – Site Preparation and Resistance to Moisture
C4 – Resistance to Weather and Ground Moisture

Part F – Ventilation
F1 – Means of ventilation

Part J – Heat Producing Appliances
J3 – Protection of Building

Part L – Conservation of Fuel and Energy
L1 – Conservation of Fuel and Energy

2.1 PRODUCT DESCRIPTION

Unilin CavityTherm comprises of a polyisocyanurate (PIR) board, manufactured in accordance with the requirements of I.S. EN 13165[0] with a foil-facing on both sides which is then bonded to a thermoformed high impact polystyrene (HIP) sheet on the outer face. The boards have the nominal dimensions as shown in Table 1.

Each board incorporates a rebated edging, enabling the boards to interlock when installed. The external face of the board incorporates a thermoformed HIP sheet with tapered flutes to provide a drainage plane and shed water away from the internal leaf, and to act as a guide to the construction of the outer leaf. Each board is marked to identify the correct orientation for installation. See Figure 1.

The product is suitable for use in cavities of widths, 100 mm, 110 mm, 125 mm and 150 mm.

Table 1: Nominal Dimensions	
Size (mm)	1200 x 450
Thickness (1)	100,125 and 150mm
Joint detail	Rebated

(1) Overall thickness of the boards including HIP sheet. HIP sheets with flutes are 5.4mm in width. Other thicknesses of boards are available at the request of the manufacturer. See Figure 2.

2.2 MANUFACTURE

Raw materials, mixed to a controlled formulation, are blended and poured onto the foil-facing then cured to form the rigid Polyisocyanurate (PIR) panel to meet the requirements of I.S. EN 13165[0]. Polyisocyanurate is one type of Polyurethane (PU) foam which is a rigid cellular thermoset polymeric insulation with a substantially closed cell structure. It is this closed celled structure that assists in the insulation properties of the PIR board. The edges of the foil faced PIR boards are given an interlocking profiled rebate prior to the bonding of a thermo-formed HIP sheet incorporating 5mm projecting flutes with edges folded to match those of the profiled PIR panel. See Figure 2.

The manufacturers declared Thermal conductivity ($\lambda_{90/90}$) of the polyisocyanurate (PIR) is 0.021 W/m.K *.

The management system of Unilin Ltd has been assessed and registered as meeting the requirements of I.S. EN ISO 9001[0] and I.S. EN ISO 14001[0] by the BRE.

2.3 CAVITY WALL TIES

Cavity wall ties (of austenitic stainless steel material, approved by the Certificate holder and conforming to the requirements of I.S. EN 845-1[0] should be used for structural stability in accordance with with the relevant parts of I.S. EN 1996-1-1[0], I.S. EN 1996-2[0], I.S EN 1996-3[0] and SR 325[0].

Extra wall ties are required at the jamb of openings and movement joints as described in Diagram 9 of TGD Part A to the Irish Building regulations. Wall ties shall not be placed directly on the DPC.

The certificate holder recommends the use of HRT4 wall ties for use with the product in cavity widths up to 100 mm, the Staifix RT2 for a 125 mm cavity, and the Ancon Limited D-TRI 3.3 mm diameter wall tie for a 150 mm cavity.

The CavityTherm board is manufactured with pre-formed wall tie slots at 150m centres which can accommodate a range of wall tie types and horizontal spacings. Wall ties are placed on the sloped face of the HIP rebate which assists in directing moisture away from the inner leaf of the wall.

2.4 ANCILLARY ITEMS

The following is a list of ancillary items available from the Certificate holder in support of the Unilin CavityTherm Cavity Wall Insulation System.

- Unilin CavityTherm Riser Panel. 225mm wide (half board) panel for first course below DPC. See Figure 1.
- Unilin CavityTherm Preformed corner panels [External or Internal]. A preformed CavityTherm panel that folds to provide a 90° corner. The corner boards ensure accurate detailing to prevent cold bridging. A 300mm vertical damp proof course (DPC) should be installed and internal and external corners as an additional safeguard against the ingress of moisture. See Figure 3.
- Unilin CavityTherm meter box board. 50mm thick PIR board for the back of meter boxes to limit cold bridging. See Figure 4 and 5. Cavity tray to be installed as required.
- Unilin CavityTherm Hockey Stick board. Profiled PIR board to accommodate electrical services in cavity (from electrical meter box) while limiting cold bridging. See Figure 4 and 5.

- Unilin Insulated Cavity Tray Channel. An insulated channel to allow for insulation continuity around stepped cavity trays at gable junctions. See Figure 8.
- Unilin CavityTherm Service Void Panel. A preformed panel that creates an insulated Service Void for periscopic Floor Vents in suspended floor situations. See Figure 9.
- Bostik/Venture Tapes. Tapes approved by the certificate holder for the sealing of cut butt joints to prevent in ingress of moisture.
- Unilin CavityTherm Sealing strips. For sealing of cut boards (without mitred vertical joints) where access to seal with tapes is not available. See Figure 7.

2.5 DELIVERY, STORAGE AND MARKING

Boards are delivered to site in packs wrapped in polythene. Each pack contains a label bearing the manufacturer's trade name and the NSAI identification mark incorporating the number of this Certificate.

The product should be protected from prolonged exposure to sunlight and stored either under cover or protected with opaque polythene sheeting. The boards should also be protected from moisture. Care should be taken to avoid contact with solvents and with materials containing volatile organic components.

Boards must be stored flat, protected from high winds and raised above damp surfaces. Damaged and wet boards should be discarded. Boards must not be exposed to open flame or other ignition sources.

2.6 INSTALLATION PROCEDURE

2.6.1 General

On request, the Certificate holder's specialists will attend the site to provide demonstrations to ensure correct installation.

Adequate supervision of the installation must be maintained and the Certificate holder's specialists should have right of access to site to ensure correct installation.

Typically, the internal leaf is constructed ahead of the external leaf. Care should be taken to ensure that any mortar droppings do not bridge the space in the cavity between the outer leaf and the insulation board. The use of a cavity board is recommended to protect the insulation board edges and to make cleaning easier.

Any mortar protruding into the cavity space from the back of the internal leaf shall be cleaned off before installing the product. Boards should be protected from inclement weather during breaks in the installation process.

As recommended in SR 325[0], no more than two courses of block should be laid on the preceding course before installation of the insulation. This allows for wall ties to be inserted accurately in the preformed slots in the HIP panel hand without bending or altering their physical characteristics. See Figures 1 and 6. Reference should also be made to S.R. 54 where applicable.

Workmanship should be in accordance with BS 8000-3[0].

Raked or recessed mortar joints in brickwork must be avoided in high exposure areas.

2.6.2 Procedure

The first course of CavityTherm insulation boards shall be installed at least 225 mm below the level of the top of the floor insulation to meet the requirements of the DoEHLG publication Limiting Thermal Bridging & Air Infiltration – Acceptable Construction Details (ACD).

Careful detailing of the damp proof membrane (DPM) and damp proof course (DPC) is required to provide the necessary resistance to weather and ground moisture in accordance with the requirements and provisions of TGD Part C: *Site preparation and resistance to moisture.* See Figure 3.

Installation of the Unilin CavityTherm boards should commence from adjacent corners using the Unilin pre-formed corner boards. The first row of insulation boards shall be installed, supported by at least 2 wall ties per board, maintaining a minimum clearance of 100mm between the bottom of the Cavity Therm boards and the ground level in the cavity.

Unilin CavityTherm Riser Panel boards (half board-225mm wide) are available for below DPC installations. See Figure 3.

On-site trimming of boards where necessary to maintain continuity of insulation around doors, windows or other opens, is easily executed using a fine tooth saw or builder's knife. Where cutting is made to coincide with block or brick courses, this should be limited to the top of the wall.

Where required, Radon barriers or stepped DPCs should be dressed over the cavity either dissecting the board or dressed behind the riser boards and across the cavity below the insulation. The insulation should be butted tightly either side of the barrier to provide thermal continuity.

Pre-formed detailing of Radon barriers provide a more accurate solution. It is recommended that drainage holes be provided at approximately 1m centres in the perpend block joints above radon membrane level. See Figure 3.

All boards are marked to identify the correct orientation for installation. It is essential that the boards are positioned (orientated) according to these instructions. All boards should be installed with their horizontal and vertical joints tightly interlocked and with subsequent vertical joints staggered. Installation of the boards is continued until a reveal is reached or boards abut mid wall.

Mortar should be struck from the inner cavity face of the block to ensure mortar squeeze is minimized on the cavity side. The two courses of blockwork can then be built, ensuring the mortar is struck back from the cavity face to prevent mortar squeeze. The block face should be built to the back of the CavityTherm board using the insulation as a template.

Where it is necessary to cut a board to form a vertical butt joint, the end profile should be removed by local trimming of abutting board(s) to provide a tight vertical joint. Any gaps greater than 2mm should be filled with expanding polyurethane foam approved by the Certificate holder. All cut butt joints must be protected by taping with Bostik or Venture tapes or by the installation of Unilin Jointing Strips. For construction where the outer leaf is constructed first and no access is available to seal the joint with tapes, Unilin jointing strips shall be used. See Figure 7. For smaller sections of adjoining boards with cut joints, the joint may be sealed with tape prior to being lifted into the cavity as a single unit as normal.

Slots are locally cut into the exposed foam edge of the board in line the pre-formed slots on the CavityTherm HIP panel to accommodate wall ties. Ties should follow the sloped surface of the facing to allow the ties to run down towards the outer leaf. It is essential that all wall ties slope downwards towards the outer leaf.

Additional wall ties at 300mm vertical centres within 225mm are recommended at all openings per I.S. EN 1996-1-1^0 and I.S. EN 1996-1-2^0. For the CavityTherm Panels this would involve piercing the boards which may introduce an unacceptable risk of water penetration. Therefore, a doubling of wall ties in the 225mm Zone adjacent to wall openings is required at 450mm centres vertically. See Figure 6.

This pattern of CavityTherm panel installation should be repeated with subsequent lifts installed with alternate boards cut to different lengths as required to accommodate a staggered pattern of the vertical joints.
Where insulation terminates at eaves/wall plate level within a wall, the top of the board should be cut level and a cavity closure installed to reinstate protection against moisture entering the board.

If installation of the CavityTherm insulation boards are terminated at any level other than the top of the wall, the top edge of the boards must be protected by an approved cavity tray, installed to manufacturer's recommendations in accordance with SR325^0 with alternate perpend joints in the masonry raked out to provide adequate drainage of water from the tray.

Where bridging of the cavity is unavoidable, e.g. by lintels, structural beams, flues, floor slabs or pipes, there is a potential that water will be conducted across it to cause dampness inside the building. To avoid this problem, it is essential that watertight cavity trays are provided above all bridges of the cavity (other than wall ties), so that water is diverted to the outer leaf or clear of the bridge and that alternate perpend joints are raked out to provide adequate drainage of water from the tray.

Where openings such as doors and windows are in close proximity, it is recommended that a continuous lintel is used. Damp-proofing at lintels, sills and penetrations must be provided with DPCs/Trays with stop ends and weep holes where required.

Where required, door and window reveals may incorporate an approved cavity closure depending on the set-back of the frame. See Figure 6.

CavityTherm preformed corner panels [External or Internal] are available from the certificate holder and are recommended to ensure accuracy is achieved at this crucial junction. Alternatively, internal & external corners can be formed on site by either close butt jointed or mitred methods. All corners details shall incorporate a 300mm vertical DPC, (150mm x 150mm for mitred board joints or 200mmx 100mm for butt jointed boards). See Figure 3. Any gaps greater than 2mm should be filled with expanding polyurethane foam approve by the Certificate holder.

Combustible cavity wall insulation material must be separated from the flue in a brick or blockwork chimney and from any heating appliance by solid non-combustible material not less than 200mm thick. Alternatively, combustible material should be separated by 40mm from the outer surface of a masonry chimney. Where a flue pipe from a heating system passes horizontally through a wall which is to be insulated with the Unilin CavityTherm system, the flue pipe shall be separated from the cavity insulation by non-combustible material in accordance with the Certificate holders installation instructions to meet the requirements of TGD, Part J to the Irish Building Regulations.

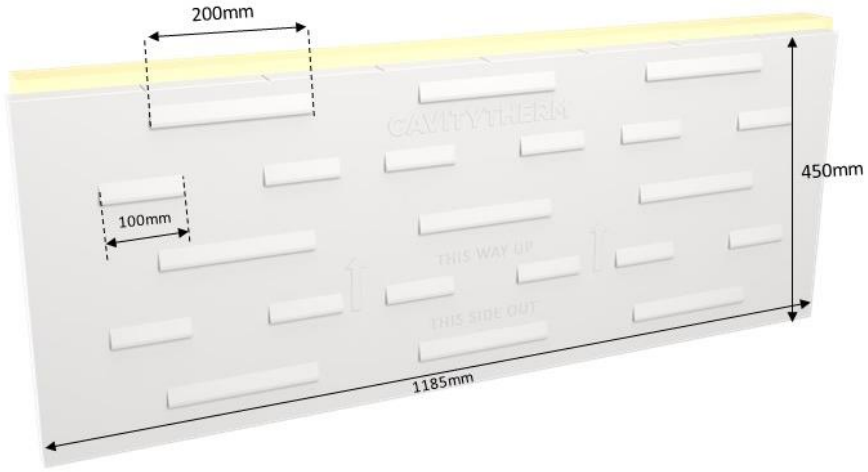

Figure 1 – Unilin CavityTherm Panel – Front elevation.

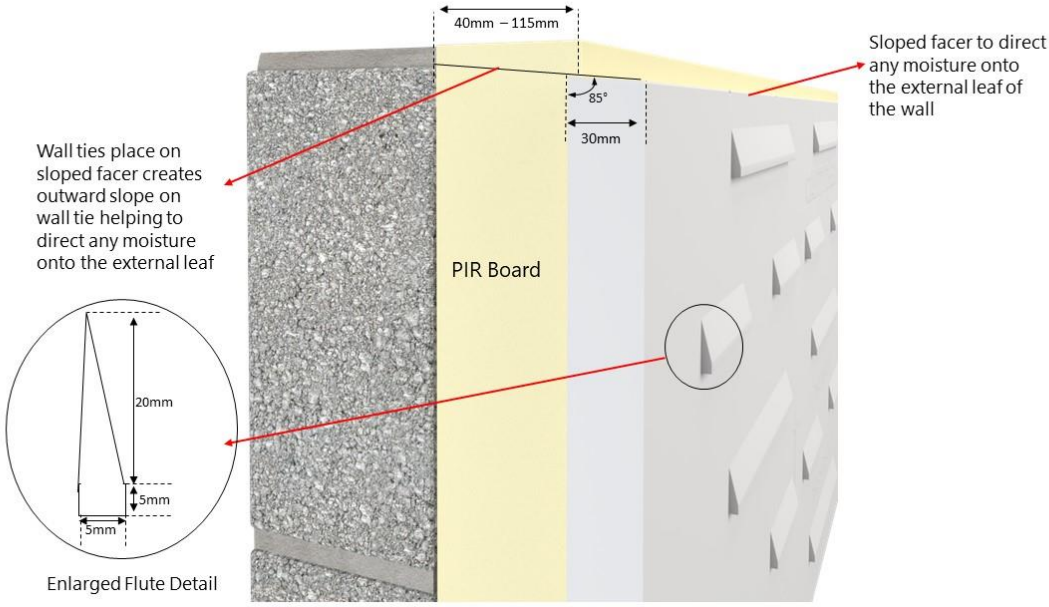

Figure 2 – Unilin CavityTherm Panel – Profiled Edge and Drainage

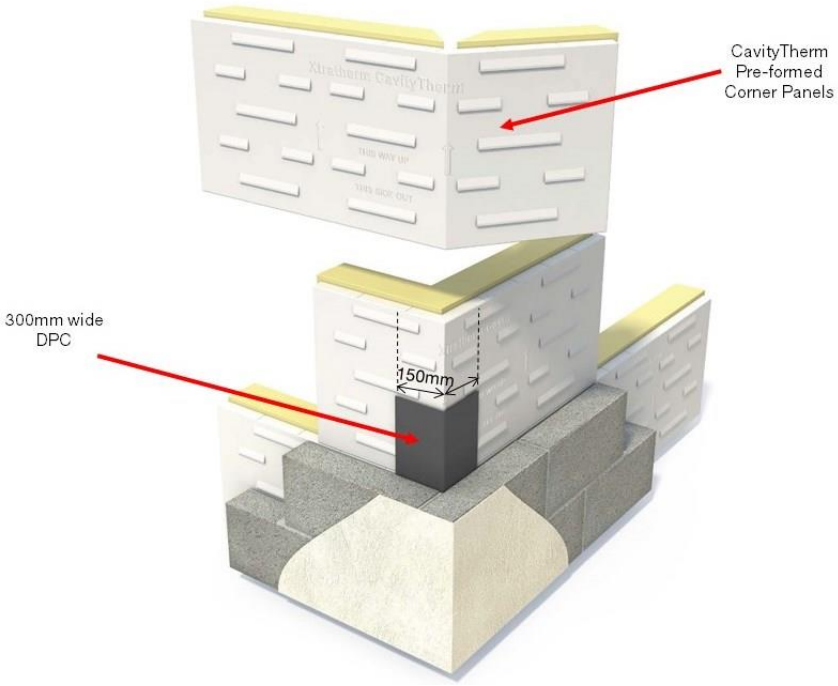

Figure 3 – Installation Detail at Corners Including Unilin Pre-formed Corner Panels.

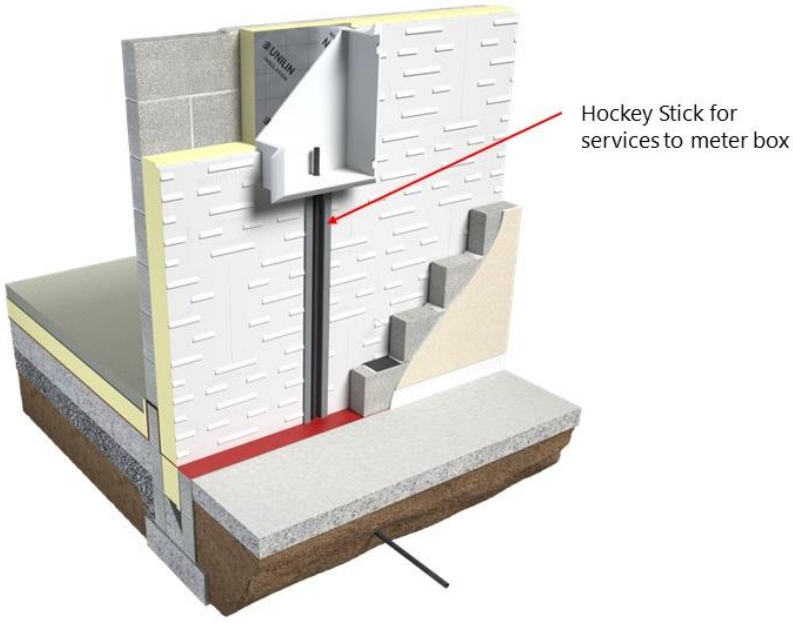

Figure 4 – Unilin CavityTherm Hockey Stick & Meter Box Board Installation Detail

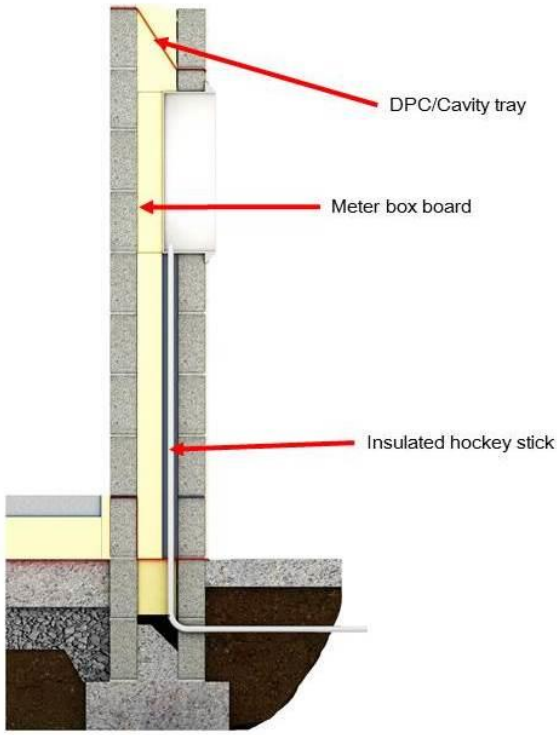

Figure 5 - Unilin CavityTherm Meter Box Board Cross-section Including Typical DPC/Cavity Tray Installation Detail.

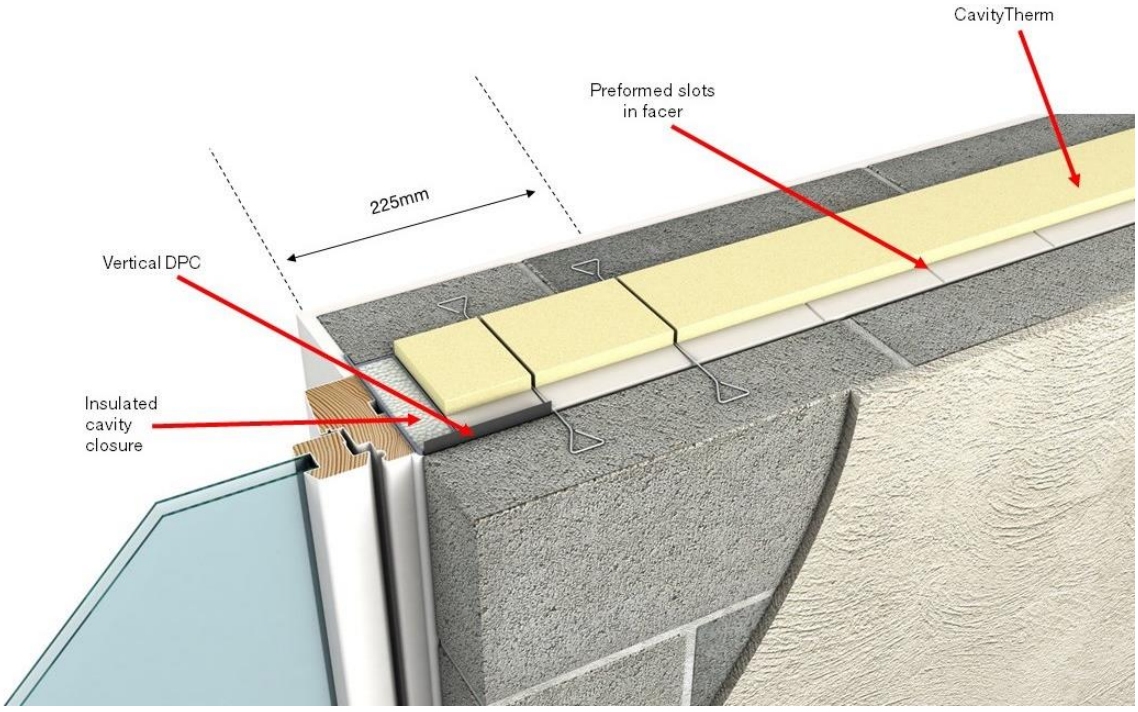

Figure 6 – Installation of Additional Wall Ties Windows/Door Openings.

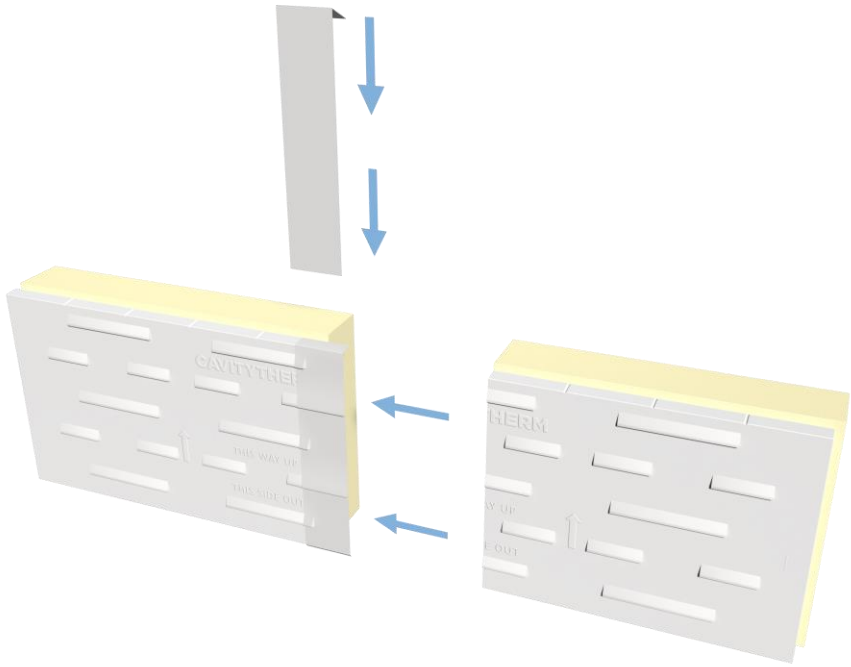

Figure 7 – Unilin CavityTherm Jointing Strip.

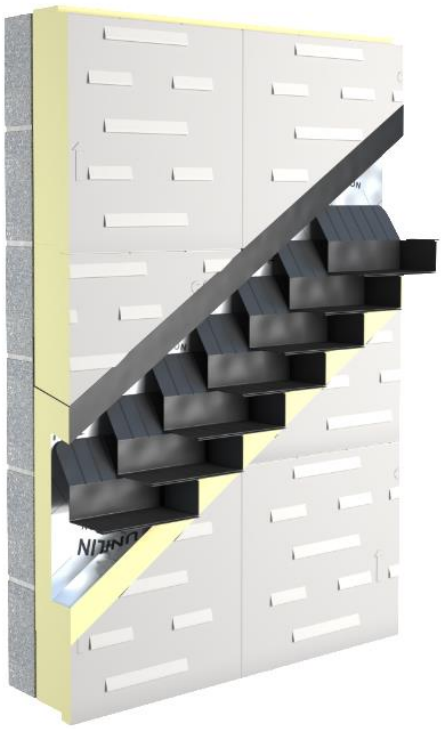

Figure 8 – Unilin Insulated Cavity Tray Channel.

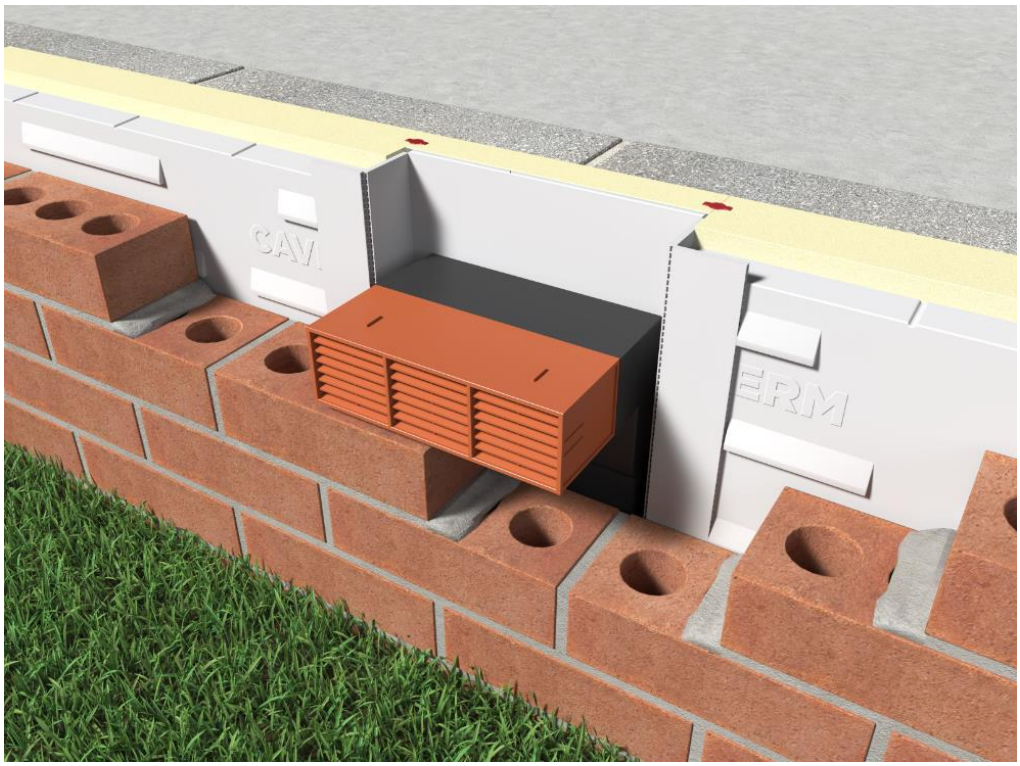

Figure 9 – Unilin Subfloor Services/Ventilation Panel.
(Cavity tray/flashing not shown for clarity).

3.1 The Unilin Cavitytherm Cavity Wall Insulation System when installed in accordance with this Certificate, is effective in reducing the 'U' value (thermal transmittance) of new external masonry cavity walls, or calcium silicate bricks, concrete blocks, or natural and reconstituted stone blocks. It is essential that such walls are designed and constructed to prevent moisture penetration.

3.2 New masonry buildings should be constructed to comply with the requirements of TGD Part A to the Irish Building Regulations.

3.3 As with all cavity wall insulation, the construction detailing must comply with good building practice and meet DoEHLG Acceptable Construction Details requirements.

3.4 It is recommended that installation be carried out to the highest level on each wall. On-site trimming of boards may be necessary to achieve this. As detailed in Cl. 2.4.2 of this certificate, where appropriate, the top edge, and any other vertical break in the insulation, should be protected by a cavity tray.

3.5 The CavityTherm Cavity Wall Insulation System is suitable for use in any exposure conditions in rendered walls up to 12 metres in height and un-rendered brick walls up to 8 metres in height. The Unilin CavityTherm Cavity Wall Insulation System is not allowed for use with unrendered masonry walls.

It is important to ensure during installation that:

a) Wall ties and fixings are installed correctly and are thoroughly clean.
b) Excess mortar is cleaned from the inside face of the leading leaf and any debris is removed from the cavity.
c) Mortar droppings are cleaned from the exposed edges of installed slabs.

3.6 Data obtained by NSAI Agrément confirms that a masonry wall incorporating the Unilin CavityTherm Cavity Wall Insulation System and constructed in accordance with the relevant recommendations of Eurocode 6 and SR 325^0 will not transmit water to the inner leaf.

3.7 The product can be used in situations where it bridges the damp–proof course (DPC) in walls, but must be kept clear of contact with the ground by supporting the lowest row of installed insulation boards on wall ties providing a minimum clearance of 100mm between the bottom of the boards and the cavity ground level. Perpend block joints to incorporate drainage holes at where required.

3.8 The type and spacing of wall ties must conform to structural design requirements and will be dependent on, cavity width, wall length and height, and opening sizes. The effect of the wall ties should be included in the calculations for the thermal performance of the final construction.

3.9 The construction of walls with cavities in excess of 110mm wide requires adjustments to lintels, wall ties, cavity barriers, etc. It is therefore necessary that cavity walls are adequately designed in respect of structural stability and fire safety in accordance with Technical Guidance Documents (TGD), Parts A and B of the Building Regulations.

3.10 On request, and where installation guidance is sought, the Certificate holder's specialists will attend the site to provide demonstrations to ensure correct installation of the insulation system.

4.1 BEHAVIOUR IN FIRE

(i) The Unilin CavityTherm Cavity Wall Insulation board is classified as NPD (Fire Classification) to EN 13501-1[0].

(i) The Unilin CavityTherm Cavity Wall Insulation System may be used in buildings of any purpose group without the need for cavity barriers, provided the construction complies with Diagram 17 of the TGD to Part B of the Irish Building Regulations and provided there is no combustible material exposed or situated within the cavity other than:

- timber lintels, window or door frames or the end faces of joists,
- pipes, ducts or cables,
- closers, flashings, dpc's or wall ties,
- thermal insulating material, or
- meter boxes which require an opening in the outer leaf of not greater than 800mm x 500mm and do not penetrate the inner leaf except through a sleeve of not more than 80mm x 80mm which is fire stopped where it passes through the inner leaf.

(ii) For construction that do not comply with the requirements item (ii) above, cavity barriers must be provided to comply with TGD Part B, Section 3.3 of the Irish Building Regulations.

(iii) Combustibility Unilin CavityTherm insulation boards are combustible and must be protected from naked flames and other ignition sources during and after installation.

(iv) Cavity walls should always have a cavity closure at the top of the cavity and around openings. The materials must not be taken past fire stops. If fire does penetrate into an unventilated cavity the amount of air will be insufficient to support combustion and flame spread will be minimal.

4.1.1 Protection of Building

Combustible material should be separated from a masonry chimney or a flue block chimney by at least the following distance: (a) 200 mm from a flue, or (b) 40 mm from the outer surface of a chimney.

Reference should be made to TDG Part J Clause 2.5.6 and diagram 5-14. For chimneys covered by IS EN 1856-1[0],separation between this product and the external surface of the chimney shall be determined in accordance with Clause 2.5 of TGD Part J of the Building Regulations.

4.2 WATER PENETRATION

The product can be used in situations where it bridges the damp-proof course (DPC) in walls. Careful detailing is required at ground level as described in 2.4.2 of this certificate. Dampness from the ground will not pass through to the inner leaf provided the wall is detailed in accordance with the requirements and provisions on TGD Part C.

When the product is properly installed in accordance with this Certificate, it will resist water transfer across the cavity to the inner leaf.

4.3 CONDENSATION RISK

The Unilin CavityTherm Cavity Wall Insulation System which incorporates composite foil facing on both sides of the insulation board, will provide significant resistance to water vapour transmission, however the joints between boards will facilitate the passage of water vapour under normal conditions of temperature and humidity.

For the purposes of calculation, the water vapour resistivity/resistance values listed in Table 2 of this certificate should be referenced.

Table 2: Water Vapour Resistivity/Resistance Values

	Resistivity/ Resistance Values	Min. Sd Values
PIR Insulation	300MN.s.g^{-1}.m^{-1}	6
Foil-facing	7000MN	1400
HIP Panel	110MN.s.g^{-1}	0.0088

Note 1. Contact the Certificate holder for further advise as required.

4.3.1 Internal Surface Condensation

When improving the thermal performance of the external envelope of a building through the use of Cavity Wall Insulation, designers need to consider the impact of these improvements on other elements of the building.

As referenced in Cl. 4.5 of this Certificate, thermally bridged sections of the envelope such as window jambs, sills, heads, internal wall and floor junctions and eaves may experience a lower level of increased thermal performance.

As a result, best practice should be adopted in order to limit the risk of internal surface condensation which can result in dampness and mould growth. When site limiting factors give rise to substandard levels of insulation at bridged junctions, guidance should be sought from the Certificate holder as to acceptable minimum requirements.

Walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 0.7 $W.m^{-2}.K^{-1}$. At any point and the junctions with other elements are designed in accordance with the guidance referenced in Cl.4.5 of this certificate.

Walls will limit the risk of surface condensation adequately when the thermal transmittance (U value) of the wall does not exceed 1.2 $W.m^{-2}.K^{-1}$ at any point. Further guidance may be obtained from BS5250[0].

4.3.2 Interstitial condensation

If the product is to be used in the external walls of rooms expected to have high humidity, care must be taken to provide adequate permanent ventilation to avoid possible problems from the formation of interstitial condensation in the internal wall leaf.

When a potential interstitial condensation risk is identified at design stage, a condensation risk analysis must be carried out. A transient hygrothermal (condensation) risk analysis in accordance with I.S. EN 15026[0] can be used to predict one dimensional transient heat and moisture transfer in multi-layer building envelope components subjected to non-steady climate conditions on either side. When a problem is identified, the design shall be modified as appropriate to reduce the risk of interstitial condensation to acceptable levels.

Alternatively, a steady state condensation risk analysis can be performed to I.S. EN ISO 13788**Error! Reference source not found.** Further guidance may be obtained from BS5250[0].

4.4 THERMAL INSULATION

Calculations of the thermal transmittance (U-value) of specific constructions should be carried out in accordance with I.S. EN ISO 6946[0] using a thermal conductivity (λ-value) as outlined in Table 3 of this certificate. The U-value of a construction will depend on the materials used and the design. Examples of U-value calculations are given in Table 4.

A full listing of U-value calculations, along with AutoCAD building details on which calculations are based are available from the certificate holder on request. End users should seek guidance from the certificate holder on U-values that can be achieved.

The product can contribute to maintaining continuity of thermal insulation at junctions between elements and around openings. Guidance in this respect, and on limiting heat loss by air infiltration, can be found in the DECC publication Limiting Thermal Bridging & Air Infiltration – Acceptable Construction Details.

4.5 LIMITING THERMAL BRIDGING

The linear thermal transmittance ψ (Psi) describes the heat loss associated with junctions and around openings. The certificate holder has carried out ψ-value calculations for a wide range of thermally bridged junctions for new build. A full listing of ψ-value calculations, along with AutoCAD building details on which calculations are based, are available from the certificate holder on request.

For window jambs, door reveals and all building junctions, when shown to be equivalent or better than junctions detailed in the DECC publication Limiting Thermal Bridging & Air Infiltration – Acceptable Construction Details, then it is acceptable to use the linear thermal transmittance values outline in Table D1 of Appendix D of TGD to Part L of the Building Regulations. When all bridged junctions within a building comply with the requirements of Table D1 of appendix D of TGD to Part L, the improved 'y' factor of 0.08 can be entered into the Dwelling Energy Assessment Procedure (DEAP) Building Energy Rating (BER) calculation.

Where either of the above options are shown to be valid, or when the required values cannot be achieved, all relevant details should be recorded on the 'Certificate of Compliance' for that project for use in future BER calculations.

Ψ-values for other junctions outside the scope of this certificate should be assessed in accordance with the BRE IP1/06[0] and BRE Report BR 497[0] in accordance with appendix D of TGD to Part L of the Building Regulations.

4.6 ELECTRICAL & PLUMBING SERVICES

The positioning and future access to all plumbing and electrical cabling services should be carefully considered during the design phase of the construction. On request, the Certificate holder's specialists will attend the site to provide advice regarding correct installation with regard to electrical and plumbing services.

Electrical installations should meet all requirements of I.S 10101[0]. Unilin CavityTherm Cavity Wall Insulation board shall not be placed in

direct contact with electrical cables or hot water pipes (max. temp 80°C).

The Unilin CavityTherm Cavity Wall Insulation System includes the CavityTherm Hockey Stick board. This profiled PIR board provides a clear void in the cavity to accommodate electrical services (from the electrical meter box) and plumbing services while limiting (or preventing) cold bridging.

4.7 DURABILITY

Unilin CavityTherm boards are rot-proof non-toxic and durable. As cavity wall insulation, The Unilin CavityTherm boards is judged to have a design life compatible with the building in which they are used

4.8 MAINTENANCE

As the product is confined and protected within the wall cavity it will remain durable without the necessity for maintenance.

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

- Density
- Water vapour transmission
- Dimensional accuracy
- Dimensional stability
- Thermal conductivity
- Efficiency of the construction process

Table 3 shows the manufacturers declared values for essential characteristic of the Unilin CavityTherm Cavity Wall Insulation System.

4.10 OTHER INVESTIGATIONS

- Existing data on product properties in relation to fire, toxicity, environmental impact and on the ability of the installed system to limit thermal bridging was assessed.
- 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.
- Site visits were conducted to assess the practicability of installation and the history of performance in use of the product.
- Driving rain resistance was assessed.
- Condensation risk analysis of the system used in various constructions was performed.

4.11 CE MARKING

The manufacturer has taken the responsibility of CE marking Unilin CavityTherm product in accordance with the Construction Products Regulation No. 305/2011 and harmonised standard I.S. EN 13165[0]. An asterisk (*) appearing in this Certificate indicates that data shown is an essential characteristic of the product and declared in the manufacturer's Declaration of Performance (DoP).

Reference should be made to the latest version of the manufactures DoP for-current information on any essential characteristics declared by the manufacturer.

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Table 3: Characteristics of The Un Cavity Wall Insulation PIR bo		
Characteristics	**Test Standard**	**Perfo**
Thermal Conductivity	EN 12667	0.021 W/(mK) *
Reaction to fire	EN 13501	Euroclass F* (NPD)
Thickness	EN 823	T2
Length and Width	EN 822	<1000mm 1000mm – 2000m 2001mm – 4000m >4000mm
Squareness	EN 824	$S_b \leq 5$mm*
Flatness	EN 825	Length: Area ≤ 0.75m^2 Area > 0.75m^2
Dimensional Stability 48h,70°C, 90% R.H.	EN 1604	DS (70,90)4*
Dimensional Stability 48h, -20 °C	EN 1604	DS (-20, -)2*
Compressive strength	EN 826	CS(10/y)100*

(1) The manufacturer has taken the responsibility of CE marking the harmonised standard I.S. EN 13165^0. * Indicates that the data show Declaration of Performance. Reference should be made to the lates current information on any essential characteristics declared by the

Table 4: External Masonry Walls – Esti		
Cavity type	**Cavity Wi**	
	100mm	110mm
Rendered Cavity wall – Wall Type I	0.20	0.18
Brick cavity wall – Wall Type II	0.20	0.18

Note 1: The construction of walls requires adjustments to lintels cavity barriers, etc. It is adequately designed in respec structural stability and fi the Irish Building Regulations.

Note 2: The designer must ensur carried out where the densitie centres of wall ties speci EN 1996-1-1^0 or BS 845-1^0.

Wall type 1 - 19mm external re cavity wall (100-150mm cavit 13mm Lightweigh

Wall Type II- 102.5mm externa wall (100-150mm cavity) wit 13mm Lightweigh

(1) Overall thickness of CavityThe with 5mm tapered flutes). i.e. board with Circa 5mm HIP pa the manufacturers declared Th only the thickness of the PIR b values of the Unilin panel.

Table 4: External Masonry Walls – Estimated U-Values W/m^2.k				
Cavity type	**Cavity Width/Board Thickness (1)**			
	100mm	110mm	125mm	150mm
Rendered Cavity wall – Wall Type I	0.20	0.18	0.16	0.13
Brick cavity wall – Wall Type II	0.20	0.18	0.16	0.13

Note 1: The construction of walls with cavities in excess of 110mm wide requires adjustments to lintels, wall ties, cavity barriers, etc. It is therefore necessary that cavity walls are adequately designed in respect of structural stability and fire safety in accordance with Parts A and B of the Irish Building Regulations.

Note 2: The designer must ensure that sufficient structural calculations are carried out where the densities or centres of wall ties specified fall outside the basic requirements of I.S. EN 1996-1-1^0 or BS 845-1^0.

Wall type 1 - 19mm external render on 100/CavityTherm board /100 block cavity wall (100-150mm cavity) with 13mm Lightweight plaster per TGD Part L, Example A1.

Wall Type II- 102.5mm external brick/CavityTherm board/100 block cavity wall (100-150mm cavity) with 13mm Lightweight plaster'

(1) Overall thickness of CavityTherm panel including HIP sheet (0.4mm sheet with 5mm tapered flutes). i.e. 100mm Unilin consists of circa 95mm PIR board with Circa 5mm HIP panel. When calculating overall U-Values using the manufacturers declared Thermal Conductivity value of 0.021 W/(mK), only the thickness of the PIR board shall be considered for the thickness values of the Unilin panel.

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 latest date of revision 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. **16/0387** is accordingly granted by the NSAI to **Unilin Ltd.** on behalf of NSAI Agrément.

Date of Issue: **June 2016**

Signed

Kevin D. Mullaney
Director of Certification, NSAI

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

Revisions:
07th January 2021: General revisions
03rd June 2021: General revisions
06th October 2023 : Product Rebranding

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