



NSAI
Agrément

**IRISH AGREEMENT BOARD
CERTIFICATE NO. 08/0324**

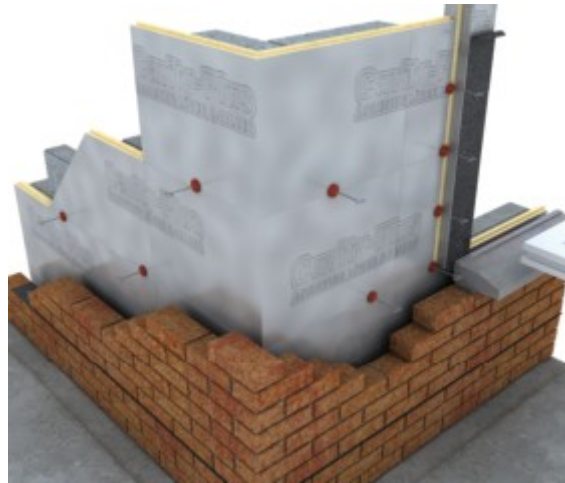
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Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board

**Isolation
Wärmedämmung**

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 to 2007**.



PRODUCT DESCRIPTION:

This Certificate relates to Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board, a rigid polyisocyanurate modified polyurethane foam board manufactured in accordance with IS EN 13165:2001 *Thermal insulation products for buildings – Factory made rigid polyurethane foam (PUR) products – Specification* with a foil laminate facing on both sides.

This Certificate certifies compliance with the requirements of the Building Regulations 1997 to 2007.

This Certificate is a confirmation of BBA Certificate No. 07/4407 issued by the British Board of Agrément, PO Box 195, Bucknalls Lane, Garston, Watford WD25 9BA.

USE:

The product is used for the thermal insulation of new external cavity masonry walls. It also facilitates the control of surface and interstitial condensation in walls.

MANUFACTURE AND MARKETING:

The product is manufactured and marketed by:

Xtratherm Ltd.,
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Navan,
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1.1 ASSESSMENT

In the opinion of NSAI Agrément, Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board if used in accordance with this Certificate, meets the requirements of the Building Regulations 1997 - 2007 as indicated in Section 1.2 of this Certificate.

1.2 BUILDING REGULATIONS 1997 to 2007

REQUIREMENT:

Part D – Materials and Workmanship

D3 – Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board, as certified in this Certificate, is comprised of proper materials fit for their intended use (See Part 4 of this Certificate).

D1 – Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board, as certified in this Certificate, meets the requirements of the building regulations for workmanship.

Part B – Fire Safety

B3 – Internal Fire Spread (Structure)

Walls using Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board meet the requirement, provided the completed walls comply with the conditions described in Section 4.1 of this Certificate.

Part C – Site Preparation and Resistance to Moisture

C4 – Resistance to Weather and Ground Moisture

Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board meets the requirements of this regulation when installed as indicated in Section 2.4, in walls constructed in compliance with Part 3 of this Certificate. Xtratherm Cavity-Plus does not absorb water by capillary action.

Part J – Heat Producing Appliances

J3 – Protection of Building

Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board, if used in accordance with this Certificate, meets the requirements of the Building Regulations 1997 to 2007.

Part L – Conservation of Fuel and Energy

L1 - Conservation of fuel and energy

Based on the measured thermal conductivity 0.021W/mK, walls incorporating Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board can meet current 'U-value' requirement of 0.27W/m²K for walls (see Section 4.4 of this Certificate).

2.1 PRODUCT DESCRIPTION

Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board consists of a rigid polyisocyanurate modified polyurethane foam board manufactured in accordance with IS EN 13165:2001 *Thermal insulation products for buildings – Factory made rigid polyurethane foam (PUR) products – Specification*. Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board also includes an optional pre-formed insulation panel that forms a 90° corner to effectively insulate a junctions that is normally vulnerable to thermal bridging and cold spots.

Table 1 shows the Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board product range.

| | |
|---------------------------|---------------|
| Length | 1200mm |
| Width | 450mm |
| Thickness | 60, 80, 100mm |
| Other sizes are available | |

Table 1: Product Range

2.2 MANUFACTURE

Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board is manufactured from a formulation of chemicals, which is poured onto the foil facers subsequently autohesively bonded to the foam core during manufacture, and then cut to the prescribed width and length.

Quality control checks include board dimensions, squareness, flatness, alignment of facers, density, compressive strength and thermal conductivity.

2.3 DELIVERY, STORAGE AND MARKING

Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Boards are supplied in polyethylene shrink-wrapped packs. Each pack carries a label with the product description, product characteristics (λ and R values), manufacturer's name, NSAI Agrément identification mark and NSAI Agrément Certificate number for the system.

Boards must be protected from prolonged exposure to sunlight, should be stored under cover in their original wrapping, not in contact with ground moisture and raised above ground level. If boards are stored outside, they should be raised above ground level and not in contact with ground moisture. Care must be taken to avoid contact with solvents and with materials containing volatile organic components such as coal tar, and newly treated timber.

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

2.4 INSTALLATION

A section of the inner leaf is built with the first row of ties at not greater than 600mm horizontal centres. This first row of insulation boards should be commenced 1 block below dpc level to provide improved edge insulation for the floor, as required by TGD to Part L of the Building

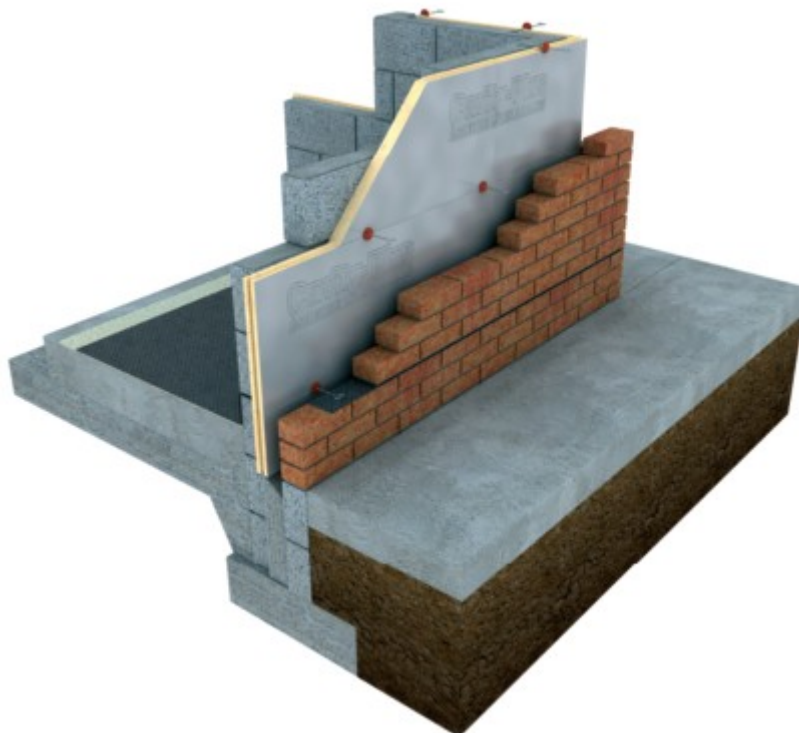


Figure 1: Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board installed with brick outer leaf and block inner leaf

Regulations 1997 to 2007. It is recommended that the wall ties are not placed directly on the dpc.

The leading leaf is built up to the required height, with wall ties placed at a vertical height of 450mm ensuring the drip of the tie is located halfway across the residual cavity width. Excess mortar is cleaned from the cavity face of the leading leaf, and the boards are placed on the wall ties, behind the retaining clips. The second row of wall ties is fitted to retain the tops of the boards. It is essential that all wall ties slope downwards towards the outer leaf and at centres not exceeding 900mm to ensure that each board is secured at a minimum of 3 points. Additional wall ties may be required at corners, junctions and cut board ends. The other leaf is then built up to the level of the top of the boards. Use of a cavity board will protect the installed board edges and help to keep the cavity clean as the following leaf is built.

Table 2 shows typical wall tie spacing.

| Cavity Width | Horizontal Spacing mm | Vertical Spacing mm | No. of Wall Ties per m ² |
|--------------|-----------------------|---------------------|-------------------------------------|
| 76 – 110 | 750 | 450 | 3.0 |
| 111 - 150 | 450 | 450 | 4.9 |

Table 2: Maximum Spacing of Wall Ties

Xtratherm reveal boards are pre-cut to tightly fit around reveals at window and door openings, allowing ties to be positioned 150mm in from the edge of the reveal and at every block joint.

3. GENERAL

Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board, when installed in accordance with this Certificate, is effective in reducing the 'U' value (thermal transmittance) of new external masonry cavity walls, using clay 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 having regard to the Driving Rain Index. Accredited construction details should be followed for limitation of thermal bridging (see Section 1.3.3.2 of TGD to Part L of the Building Regulations 1997 to 2007).

Buildings subject to the relevant requirements of the Building Regulations 1997 to 2007 should be constructed in accordance with IS 325-1:1996 *Use of masonry – Structural use of unreinforced masonry*, and BS 5628-3:2005 *Code of practice for use of masonry – Materials and components, design and workmanship*. Where reinforced masonry is involved, the design should be in accordance with BS 5628-2:2005 *Code of practice for use of masonry – Structural use of reinforced and prestressed masonry*. The relevant recommendations of Section 3 of BS 5390:1976 *Code of practice for stone masonry* should be followed where the wall incorporates stone or cast stone.

The use of a cavity board or cavity during construction is recommended to prevent accumulation of mortar droppings on the top edge of the Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board and to prevent bridging of cavity by mortar droppings.

It is recommended that installation be carried out to the highest level on each wall. Where appropriate the top edge of the insulation should be protected by a cavity tray. On site trimming of boards may be necessary to achieve this.

Where a nominal residual cavity width of 40mm is maintained, Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board is suitable for use in any exposure conditions, in building up to 12m in height. For buildings over 12m and up to 25m in height the exposure factor must not exceed 120, calculated in accordance with BS 5628-3:2005 *Code of practice for the use of masonry – Materials and components, design and workmanship* (with masonry or concrete inner and outer leaves) and using the Irish Map of Driving Rain Index.

It is important to ensure during installation that:

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

Data obtained by NSAI Agrément confirms that a masonry wall incorporating Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board and built to the requirements of IS 325-1:1996 will not transmit water to the inner leaf.

Data obtained by NSAI Agrément also demonstrates that Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board does not absorb water by capillary action. When the product is used in situations where it bridges the DPC in walls, dampness from the ground will not pass through, provided the cavity is taken down to at least 150mm below the level of the lowest DPC.

A minimum residual cavity width of 40mm should be maintained where possible.

4.1 BEHAVIOUR IN FIRE

Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board may be used in buildings of any purpose group in a wall in which the cavity intercommunicates with another such cavity, and may be unlimited in extent in respect of the provision of barriers provided the walls comply with Part B3, Diagram 17 (Cavity walls excluded from provisions for cavity barriers) of the TGD Part B, Building Regulations 1997 to 2007, as follows:

- a) The wall consists of two leaves, each being not less than 75mm thick and constructed of non-combustible materials;
- b) The cavity does not exceed 150mm in width and is closed by a cavity barrier at the top of the wall and at the top of any opening through any leaf of the wall, and
- c) 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, DPCs or wall ties
 - thermal insulating material
 - meter boxes which require an opening in the outer leaf of not greater than 800 x 500mm and do not penetrate the inner leaf except through a sleeve of not more than 80 x 80mm which is fire stopped where it passes through the inner leaf.

Combustibility – Although Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board is not classified as non-combustible, when used in the context of this Certificate, it is unlikely to become ignited should fire penetrate the cavity.

Spread of flame within the cavity – In an unventilated cavity the amount of air will be insufficient to support combustion and flame spread is unlikely to occur.

Toxicity – Negligible when used in a cavity wall situation.

4.1.1 J3 – Protection of Building

Combustible wall insulation material shall generally be separated by solid non combustible material not less than 200mm thick, from any heating appliance or from any flue pipe or opening to a heating appliance. Particular details are given in Section 2, and in Diagrams 2 - 8 of the TGD Part J Building Regulations 1997 to 2007. It should also be separated by 40mm from the external surface of a masonry chimney. For chimneys covered by BS 4543-1:1990 *Factory made insulated chimneys – Methods of test* separation between this product and the external surface of the chimney shall be determined in accordance with clause 2.17, Part J Building Regulations 1997 to 2007.

4.2 WATER PENETRATION

Capillary Action – The closed cell structure does not allow water uptake by capillary action.

Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board, when used in accordance with this Certificate, presents no significant risk of water penetration.

4.3 WATER VAPOUR PENETRATION AND CONDENSATION RISK

Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board has a water vapour resistance greater than 100MNs/g when tested in accordance with BS 4370-2:1993 *Methods of test for rigid cellular materials – Methods 7 to 9*. It has significant resistance to the passage of water vapour when used in conventional masonry cavity wall construction. This obviates the risk of surface condensation and presents no significant risk of damage from interstitial condensation. Correct use of the heating and ventilation system is important. When insulating buildings, the recommendations of BS 5250:2002 *Code of practice for control of condensation in buildings* should be followed to minimise the risk of condensation within the building elements and structures.

4.4 THERMAL INSULATION

The aged thermal conductivity 'λ' value of Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board, when measured in accordance with IS EN 12667:2001, is 0.021W/mK. The foil face has an emissivity value of 0.05, equal to a cavity resistance of 0.665m²K/W. The required maximum U-value of 0.27 W/m²K for cavity walls stated in Part L of the Building Regulations 1997 to 2007 can be obtained with Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation board constructions as indicated in Table 3. These calculations were based on 102mm brick outer leaf and 100mm dense block inner leaf – the first column of U-values have 13mm dense plaster as finish, while the second use 50mm NSAI Agrément approved XT/TL thermal liner.

| Thickness (mm) | U-Value (W/m ² K) | U-Value (W/m ² K) (with thermal liner) |
|----------------|------------------------------|---|
| 60 | 0.25 | 0.17 |
| 80 | 0.20 | 0.15 |
| 100 | 0.17 | 0.13 |

Table 3: Typical U Values using Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board

The high thermal resistance of Xtratherm Cavity-Plus Partial Fill Cavity Wall Insulation Board ensures that cold bridging and extra heat loss around the edges of openings can be avoided. Lintel jamb and cill designs similar to those shown in Diagram 3 of TGD to Part L of the Building Regulations 1997 to 2007 will be satisfactory to limit thermal bridging.

The DoEHLG publication *Limiting Thermal Bridging & Air Infiltration – Acceptable Construction Details* gives guidance on limiting cold bridging and should be referred to.

4.5 MATERIALS IN CONTACT WITH ELECTRICAL WIRING

Electrical installations should be in accordance with the ETCI publication ET 207: 2003 *Guide to the National Rules for Electrical Installations as Applicable to Domestic Installations*. It is recommended that cables should not be buried in the insulation and carried in a conduit. In relation to recessed spotlights and other luminaires, ET 207 requires they be not less than the minimum distances from combustible materials as specified in clause 559.3.2 of the TCI National rules of the Electro Technical Council of Ireland (ET 101).

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

- Density
- Water vapour transmission
- Long term water absorption
- Dimensional accuracy
- Compressive and cross breaking strength
- Dimensional stability
- Thermal conductivity
- Efficiency of the construction process

4.7 OTHER INVESTIGATIONS

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

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 so long as:

- (a) the specification of the product is unchanged.
- (b) the Building Regulations 1997 to 2007 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.

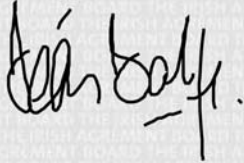
5.7 Where reference is made in this Certificate to any Act of the Oireachtas, Regulation made thereunder, Statutory Instrument, Code of Practice, National Standards, manufacturer's instructions, or similar publication, it shall be construed as reference to such publication in the form in which it is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

NSAI Agrément

This Certificate No. **08/0324** is accordingly granted by the NSAI to **Xtratherm Ltd.** on behalf of NSAI Agrément.

Date of Issue: **October 2008**

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