Bord Agrément na hÉireann
Irish Agrément Board

**CERTIFICATE No. 03/0188**

Aerobord Ltd.,
Askeaton, Co. Limerick.
Tel: +353 61 604600
Fax: +353 61 604601
Email: mail@aerobord.ie
Website: www.aerobord.ie

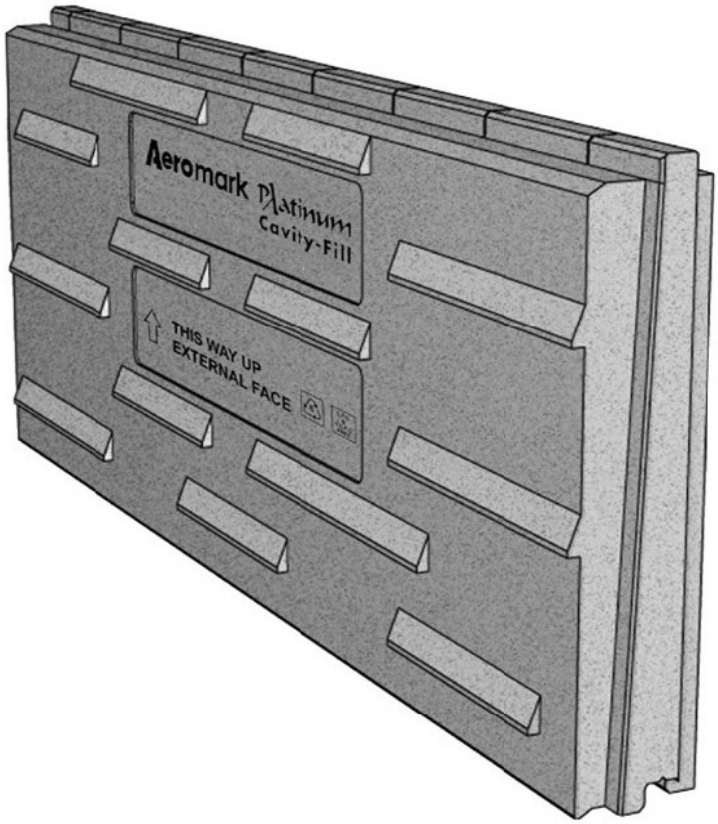
# Aerobord 'Platinum' Cavity-Fill Cavity Wall Insulation System

## Isolants en polystyrene pour murs à double parol
## Kerndämmung

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

Irish Agrément Board Certificates establish proof that the certified products are **'proper materials'** suitable for their intended use under Irish site conditions, and in accordance with the **Building Regulations 1997 to 2006**.

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




**PRODUCT DESCRIPTION:**
This Certificate relates to the Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System manufactured from high performance polystyrene granules. The system is a tightly interlocking cavity-fill cavity panel system comprised of individually moulded polystyrene panels incorporating a tongue and grooved interlocking system with pre-spaced wall tie slots. The panels are 450mm high, 1200mm long and come in three different thicknesses with 10mm projecting flutes.

This Certificate certifies compliance with the requirements of the Building Regulations 1997 to 2006.

**USE:**
The product is used for the thermal insulation of rendered walls up to 12 metres in height, unrendered brick walls up to 8 metres in height (two storeys) and is not allowed for use with unrendered masonry walls. The product also facilitates the control of surface and interstitial condensation in walls.

**MANUFACTURE AND MARKETING:**
The product is manufactured and marketed by **Aerobord Ltd.**, Askeaton, Co. Limerick, and **Aircell Ltd.**, Loch Gowna, Co. Cavan.

**1.1 ASSESSMENT**

In the opinion of the Irish Agrément Board (IAB), Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System, if used in accordance with this Certificate can meet the requirements of the Building Regulations 1997 - 2006 as indicated in Section 1.2 of this Certificate.

**1.2 BUILDING REGULATIONS 1997 to 2006 REQUIREMENT:**

***Part D – Materials and Workmanship***

**D3 –** Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System as certified in this Certificate, is comprised of proper materials fit for their intended use.

**D1 –** Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System as certified in this Certificate, can meet the requirements of the building regulations for workmanship.

***Part B – Fire Safety***

**B3 – Internal Fire Spread (Structure)**

Walls using Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System 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**

Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System meets the requirements of this regulation, when installed in compliance with the conditions indicated in Part 2 of this Certificate, in walls constructed in compliance with the conditions indicated in Part 3 of this Certificate. Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System does not absorb water by capillary action and may be used in exposures indicated in Section 3.6 of this Certificate.

***Part J – Heat Producing Appliances***

**J3 – Protection of Building**

In the opinion of the IAB, Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System, if used in accordance with this Certificate, meets the requirements of the Building Regulations 1997 to 2006.

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

**L1 - Conservation of fuel and energy**

Based on the measured thermal conductivity $\lambda$ = 0.031 W/mK, walls incorporating Aeromark 'Platinum' Cavity-Fill Cavity Wall Insuation System can meet the current 'U Value' requirements (see Section 4 of this Certificate).

## 2.1 PRODUCT DESCRIPTION

The Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System consists of individually moulded polystyrene panels with a moulded skin finish, and 10mm projecting flutes. The boards are tongued and grooved on all four edges to facilitate tight and accurate jointing which prevent cold bridging and water penetration. On the external face, along the bottom edge of the board, an angle fillet or bellcast, designed to overlap the top of the next board helps to protect the lateral board joints by shredding water past the joint. The projecting flutes also direct any water which has penetrated the external leaf of the wall down the external face of the Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation and back onto the outer masonry leaf. Accurate positioning of wall ties is facilitated by slots in the tongue in the upper edge of the panels. The system is used with the Aerobord Aeromark Cavity-Fill wall tie which are fitted in only one way and do not need any special retaining clips to hold the board in place during installation. Other IAB approved wall ties may also be used with the system. The boards do not contain CFC or HCFC gases and have zero Ozone Depletion Potential.

Table 1 shows the Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System product range.

| | |
|---|---|
| **Length** | 1200 mm |
| **Width** | 450 mm |
| **Thickness** | 95, 120 and 140 mm |
| **Grade** | EPS 50 |

**Table 1: Product range**

At the time of publication of this Certificate, the following wall ties and insulation retaining fixings are approved for use with the system:

1. Aerobord Ltd. Aerobord Aeromark Cavity-Fill stainless steel wall tie.
2. Aircell Ltd. Aircell Cavity-Fill stainless steel wall tie.

## 2.2 MANUFACTURE

Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System boards are manufactured from high performance polystyrene granules. The granules are expanded and injection moulded without the use of additional gases, to form a smooth rigid board with tongued and grooved edges, and pre-spaced wall tie slots.

## 2.3 DELIVERY, STORAGE AND MARKING

Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System boards are polyethylene shrink-wrapped for delivery to site in packs, the quantity depending on the board thickness. Each board has the manufacturer's name and brand (product) name moulded on its surface. Each pack carries a label bearing the CE Marking together with the product description, product characteristics ($\lambda$ and R values), manufacturer's name, quantity per pack, IAB identification mark and IAB Certificate number for the system.

Installation instructions and details outlining the steps necessary to ensure proper installation are included in each pack, together with a statement that only installers who have been trained in the proper installation of the product should be authorised to use it.

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. Care must be taken to avoid contact with solvents and with materials containing volatile organic components such as coal tar and timber newly treated with creosote.

The boards must not be exposed to a naked flame or other ignition sources. Handling and storage arrangements should comply with the recommendations of BS 6203:2003 *Guide to fire characteristics and fire performance of expanded polystyrene materials (EPS and XPS) used in building applications*.

## 2.4 INSTALLATION

Proper workmanship principles should be followed when installing the Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System. Figure 1 shows a cavity wall section detail with this system. It is recommended that drainage holes be provided in the perpend block joints below dpc level at approximately 1m centres. On-site trimming of boards where necessary to maintain continuity of insulation around doors, windows or other opes 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.

It is recommended that the wall ties are not placed directly on the damp-proof course. The first run of insulation boards should be commenced one block below damp-proof course level to provide some edge insulation for the floor, as required by the Technical Guidance Document (TGD) to Part L of the Building Regulations 1997 to 2006, having regard to the level of mortar fill below dpc level. Ensure that any installed radon barrier is not damaged.

Wall tie spacings are not to exceed 750mm horizontally and 450mm vertically and must conform to structural design requirements. Table

2 shows the recommended spacing of wall ties. The availability of wall tie slots on the tongued and grooved Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System boards permits a wide variety of spacing requirements to be accommodated. For accurate positioning, allow three raised sections for 450mm spacing and five for 750mm. It is important that the ties are carefully fitted into these slots and that no damage is done to the insulation panel.

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

**Table 2: Maximum Wall Tie Spacing**

At unbonded jambs to all openings in cavity walls, provide wall ties at 225mm vertical centres, located within 150mm of the opening.

Successive section of wall incorporating Cavity-Fill stainless steel wall ties are constructed and Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System boards are installed as work proceeds up to the required height. The board should be installed with its fluting facing the outer leaf and the tongue upwards. Boards should be lightly butted together with the exposed edges protected at the end of each workday. Damp penetration across the cavity will be prevented with good practice. 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.

In the case of unrendered brickwork, commence each length with female edge of board butted to the first corner, and final panels at the opposite end of the wall cut neatly flush with the outer face of the insulation around the next corner. Internal corners will require the flutes on the external face of the board to be removed where they butt the opposing corner board. Both internal and external details must incorporate a vertical DPC, positioned between the Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation and the external leaf, returning along each direction a minimum 100mm. Any gap wider than 2mm should be fitted with expanding polyurethane foam.

To prevent damp penetrating across the cavity it is important to ensure the following:

- Mortar filling of cavity at wall base is not too high.
- The dpc should not project into cavity at ground floor level as it can lead to catching mortar droppings, resulting in bridging the cavity.
- Ensure the correct fitting of ties. Ties are fitted only in one direction and one way up. Avoid sloping wall ties, due to difference in level between the outer and inner leaf of the cavity wall.
- Keep wall ties clean 'free' from mortar droppings. This is achieved with the use of cavity batten and daily cleaning of wall ties.
- Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System is placed against the inner leaf properly; i.e. as specified in this Certificate and the manufacturer's instructions.
- Once the Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System is installed in the cavity wall ensure that there are no gaps in the insulation, as this will reduce the risk of cold bridging.
- Avoid the build up of mortar on trays and lintels.

Figures 1 and 2 show details of Cavity-Fill at floor/wall intersection and at windows and corners.

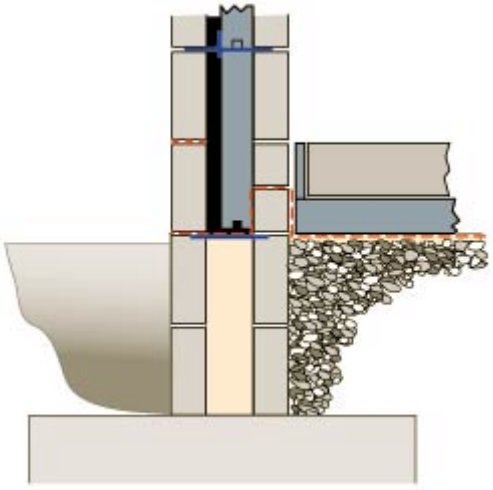


**Figure 1: Detail of cavity fill floor/wall intersection**

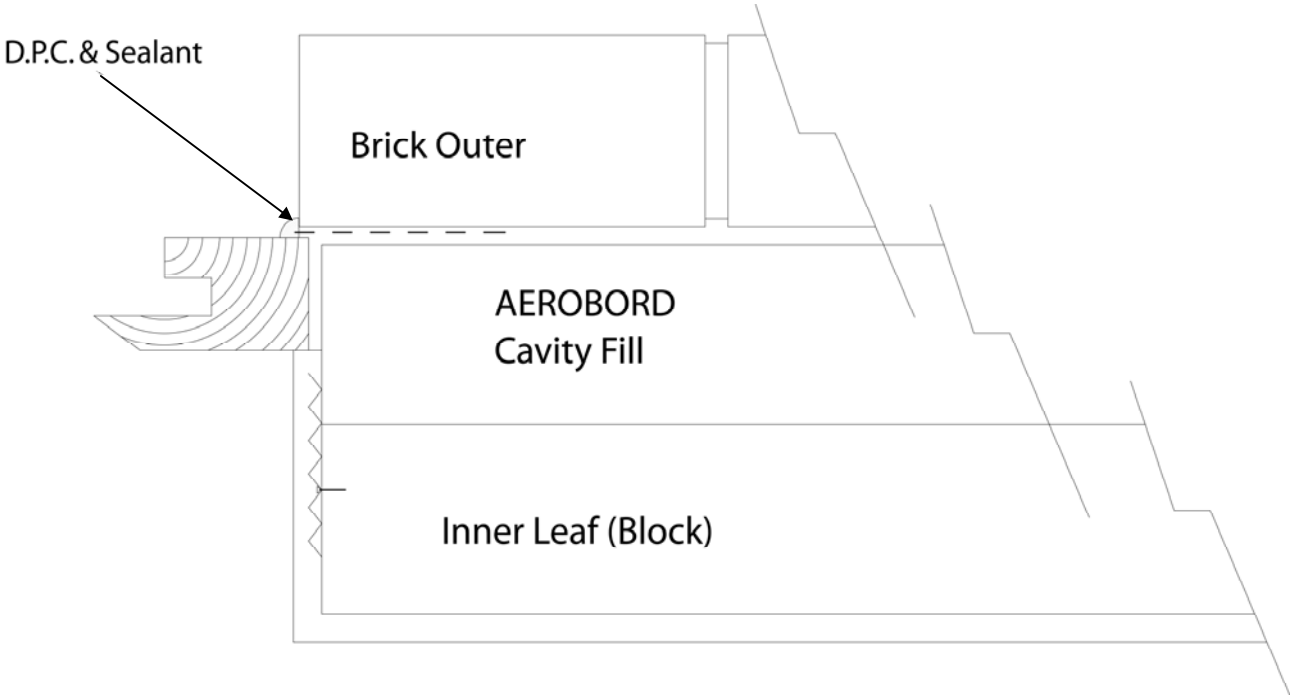



**Figure 2: Detail at window opes**

**3.1** Aeromark 'Platinum' Cavity-Fill 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, 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.

**3.2** Buildings subject to the relevant requirements of the Building Regulations 1997 to 2006 should be constructed in accordance with IS 325:Part 1:1986 (1996) *Code of practice for use of masonry, Part 1: 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*.

**3.3** As with all cavity wall insulation, the construction detailing should comply with good practice (see also reference to installers in Paragraph 2.3).

**3.4** 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.

**3.5** The Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System is suitable for use in any exposure conditions in rendered walls up to 12 metres in height and unrendered brick walls up to 8 metres in height (two storeys) – Aeromark 'Platinum' Cavity-Fill 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 the IAB confirms that a masonry wall incorporating the Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System and built to the requirements of IS 325-1:1986 (1996), will not transmit water to the inner leaf.

**3.7** Data obtained by the IAB also demonstrates that Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System boards do not absorb water by capillary action. The smooth moulded skin finish to all exposed surfaces further enhances the board's resistance to moisture.

**3.8** Where, for structural reasons, the cavity width is reduced by the intrusion of ring beams or other structural elements, the manufacturer's advice on fixing and weather-proofing should be sought. Raked or recessed mortar joints must be avoided in high exposure areas.

**4.1 BEHAVIOUR IN FIRE**

(i) Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System may be used in buildings of any purpose group in a wall in which the cavity intercommunicates with another such cavity, and my 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 to Part B of the Building Regulations 1997 to 2006.

(ii) a) The wall consists of two leaves, each being not less than 100mm thick and constructed of non-combustible materials;

b) The insulation material fills the cavity completely 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:
   (i) timber lintels, window or door frames or the end faces of joists,
   (ii) pipes, ducts or cables,
   (iii) closers, flashings, dpcs or wall ties,
   (iv) thermal insulating material, or
   (v) 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.

(iii) Combustibility – Although Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System board is combustible, when used in the context of this Certificate it is unlikely to become ignited should fire penetrate the cavity.

(iv) Spread of flame within the cavity – In an unventilated cavity the amount of air will be insufficient to support combustion and flame spread will be minimal.

(v) Toxicity – Negligible when used in a cavity wall situation.

(vi) As Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System board is manufactured without the use of CFCs or HCFCs, there is no release of such gas on burning.

**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 to Part J of the Building Regulations 1997 to 2006. It should also be separated by 40mm from the external surface of a masonry chimney. For chimneys covered by IS EN 1856-1:2003 *Chimneys – Requirements for metal chimneys – Part 1: System chimney products*, separation between this product and the external surface of the chimney shall be determined in accordance with Clause 2.17 of Part J of the Building Regulations 1997 to 2006.

**4.2 WATER PENETRATION**

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

Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System, when used in accordance with this Certificate, presents no significant risk of water penetration.

**4.3 WATER VAPOUR PENETRATION AND CONDENSATION RISK**

Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System board has a vapour resistivity factor $\mu$ of 20-40. It has a 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.

**4.4 THERMAL INSULATION**

The measured thermal conductivitiy '$\lambda$' value of Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System when measured in accordance with IS EN 12667:2000 *Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meters method – Products of high and medium thermal resistance*, is 0.031 W/mK. The high thermal resistance of Aerobord 'Platinum' Cavity-Fill Cavity Wall Insulation System ensures that cold bridging and extra heat loss around the edges of openings can be avoided.

Lintel, jamb and sill designs similar to those shown in Diagram 3 of the TGD to Part L of the Building Regulations 1997 to 2006 will be satisfactory to limit thermal bridging.

The required maximum 'U' values for external walls can be obtained with Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System constructions as indicated in Table 4.

**4.5 DURABILITY**

Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System boards are rot-proof and

durable. As cavity wall insulation, Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulaiton is judged to have a minimum design life of 60 years.

**4.6 ELECTRICAL & PLUMBING SERVICES**

Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System must not be used in contact with electrical cables or hot water pipes (max 80$^{o}$C).

It is recommended that neither electrical cables nor water pipes be run in the cavity with Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System as they could interfere with its water management performance by increasing the risk of water migrating to the inner leaf.

**4.7 TESTS AND ASSESSMENTS WERE CARRIED OUT TO DETERMINE THE FOLLOWING:**

- Density
- Water vapour resistance
- Water uptake
- Dimensional accuracy
- Compressive and cross breaking strength
- Dimensional stability
- Thermal conductivity
- Efficiency of the construction process

Table 3 shows the physical properties of Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System.

**4.8 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. Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System boards do not contain CFC or HCFC gases and have zero Ozone Depletion Potential.

(ii) The manufacturing process was examined including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

(iii) Site visits were conducted to assess the practicability of installation and the history of performance in use of the product.

(iv) Driving rain resistance was assessed.

(v) A condensation risk analysis was performed.

| Property | Declared Value | Test Method |
|---|---|---|
| Long term water absorption by diffusion | WD(V) 10 (less than 10%) | IS EN 12088 |
| Dimensional stability | DS(N) 5 or DS(N) 2 | IS EN 1603 |
| Thermal conductivity λ value | 0.031 W/m$^2$K | IS EN 12667 |
| Thermal resistance:<br>95 mm<br>120 mm<br>140 mm | <br>3.065 W/m$^2$K<br>3.871 W/m$^2$K<br>4.516 W/m$^2$K | |
| Compressive stress | 50 kPa | IS EN 826 |
| Cross breaking strength | 50 kPa | IS EN 12089 |

**Table 3: Physical Properties of Aeromark 'Platinum' Cavity-Fill Cavity Wall Insulation System**

| Construction | Insulation Thickness (mm) | | |
|---|---|---|---|
| | 95 | 120 | 140 |
| Brick outer leaf, 1700 kg/m$^3$<br>Concrete block inner leaf plastered | 0.27 | 0.22 | 0.19 |
| External render<br>Block outer leaf<br>Block inner leaf<br>Plaster | 0.27 | 0.22 | 0.20 |

**Table 4: External Wall Constructions Typical 'U' Values**

**5.1** National Standards Authority of Ireland ("NSAI") following consultation with the Irish Agrément Board ("IAB") 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 2006 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 IAB are paid.

**5.2** The IAB 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 IAB 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. 1989, 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.

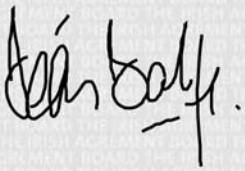
**5.7** Where reference is made in this Certificate to any Act of the Oireachtas, Regulation made thereunder, Statutory Instrument, Code of Practice, National Standards, manufacturer's instructions, or similar publication, it shall be construed as reference to such publication in the form in which it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

## The Irish Agrément Board

This Certificate No. **03/0188** is accordingly granted by the NSAI to **Aerobord Ltd.** on behalf of The Irish Agrément Board.

Date of Issue: **October 2003**

**Signed**



**Seán Balfe**
**Director of the Irish Agrément Board**

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

**Revision: November 2006**
General amendments to use of the product.