



Bord Agrément na hÉireann
Irish Agrément Board

CERTIFICATE NO. 04/0206

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Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System

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

Irish Agrément Board Certificates establish proof that the certified products are 'proper materials' suitable for their intended use under Irish site conditions, and in accordance with the **Building Regulations 1997 to 2002**.

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

PRODUCT DESCRIPTION:

This Certificate relates to the Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System.

Aerofloor 'Platinum' Under Floor Insulation System is manufactured from high performance polystyrene granules, cut from moulded blocks of EPS. The Under Floor Insulation System is manufactured in accordance with I.S. EN 13163: 2001. The boards are plain edge boards and should be laid closely butting.

Aerofloor 'Original' Under Floor Insulation System consists of rigid polystyrene boards cut from moulded blocks of EPS manufactured in accordance with I.S. EN 13163: 2001. The boards are plain edge boards and should be laid closely butting.

This Certificate certifies compliance with the requirements of the Building Regulations 1997 to 2002.

USE:

The product is used as thermal insulation in ground supported and suspended floors and may be installed:

1. Below a concrete floor slab, or
2. Below a cement based screed on a concrete slab with a hardcore base.
3. Above a suspended concrete floor (e.g. block and beam) with cement based screed.
4. Between the joists of a suspended timber floor.

This Certificate replaces Certificate 92/0037 Aerofloor Insulation System. It certifies compliance with the requirements of the Building Regulations 1997 to 2002.

MANUFACTURE AND MARKETING:

These products are manufactured and marketed by:

Aerobord Ltd.,
Askeaton,
Co. Limerick,
Ireland

and

Aircell Ltd.,
Loch Gowna,
Co. Cavan,
Ireland.

1.1 ASSESSMENT

In the opinion of the Irish Agrément Board (IAB), Aerofloor ‘Original’ and Aerofloor ‘Platinum’ Under Floor Insulation System if used in accordance with this certificate can meet the requirements of the Building Regulations 1997 to 2002 as indicated in Section 1.2 of this Agrément Certificate.

1.2 BUILDING REGULATIONS 1997 to 2002

REQUIREMENT:

Part D – Materials and Workmanship

D3 - Aerofloor ‘Original’ and Aerofloor ‘Platinum’ Under Floor Insulation System as certified in this Irish Agrément certificate is comprised of proper materials fit for their intended use as indicated in Part 4 of this Certificate.

D1 - Aerofloor ‘Original’ and Aerofloor ‘Platinum’ Under Floor Insulation System, as certified in this Irish Agrément Certificate, meets the requirements of the building regulations for workmanship.

Part A – Structure

A1 - Loading

Aerofloor ‘Original’ and Aerofloor ‘Platinum’ Under Floor Insulation System has adequate strength and stiffness to accept floor loads (see Section 3.2 of this certificate).

Part B – Fire Safety

B3 – Internal Fire Spread (Structure)

Aerofloor ‘Original’ and Aerofloor ‘Platinum’ Under Floor Insulation System shall be separated by solid non-combustible material not less than 200 mm thick, from any heating appliance or from any flue pipe or opening to a heating appliance.

Part C – Site Preparation and Resistance to Moisture

C4 – Resistance to Weather and Ground Moisture

Aerofloor ‘Original’ and Aerofloor ‘Platinum’ Under Floor Insulation System meets the requirements of this regulation, when installed as indicated in Section 2.4, in floors constructed in compliance with the conditions indicated in Part 3 of this Certificate.

Part L – Conservation of Fuel and Energy

L1 - Conservation of fuel and energy

Based on the measured thermal conductivity of $\lambda = 0.037 \text{ Wm}^{-1} \text{ k}^{-1}$ for the Aerofloor ‘Original’ and $\lambda = 0.031 \text{ Wm}^{-1} \text{ k}^{-1}$ for Aerofloor ‘Platinum’ Under Floor Insulation System, floors incorporating Aerofloor ‘Original’ and Aerofloor ‘Platinum’ Under Floor Insulation System can meet the current U-value requirements as indicated in Table 2.

2.1 PRODUCT DESCRIPTION

Aerofloor ‘Platinum’ Under Floor Insulation System consists of expanded polystyrene boards using expanded polystyrene board manufactured to EN 13163: 2001: Factory made products of expanded polystyrene (EPS) Specification. The boards are plain edge boards and should be laid closely butting.

Aerofloor ‘Original’ Under Floor Insulation System consists of rigid polystyrene boards cut from moulded blocks of EPS manufactured in accordance with I.S. EN 13163: 2001. The boards are plain edge boards and should be laid closely butting.

Aerofloor ‘Original’ and Aerofloor ‘Platinum’ Under Floor Insulation System have been tested to ensure compliance with the requirements for compressive strength, water vapour transmission, thermal conductivity, thermal resistance and dimensional stability.

The boards do not contain CFC or HCFC gases and have zero Ozone Depletion Potential.

Table 1: Shows the ‘Aerofloor’ Floor Insulation System product range.

Length	1200, 1800 and 2400mm
Width	600 and 1200mm
Thickness	Any thickness from 12mm upwards
Grade	EPS 70, 100, 150 and 200

2.2 MANUFACTURE

Aerofloor ‘Platinum’ Under Floor Insulation System boards are manufactured from high performance polystyrene granules. The granules are expanded and moulded into blocks of EPS without the use of additional gases and cut to size from the block. They are plain edge on all four sides.

Aerofloor Original Under Floor Insulation System boards are manufactured from polystyrene granules and expanded into blocks of EPS without the use of additional gases and cut to size from the block. They are plain edge on all four sides.

Quality Control checks include board dimensions, density, compressive strength and thermal conductivity.

2.3 DELIVERY, STORAGE AND MARKING

Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System are delivered to site polyethylene wrapped. Each pack carries a label bearing the CE Marking together with the product description, product characteristics (λ and resistance values), manufacturer's name, IAB identification mark and IAB Certificate number for the system.

Handling and storage arrangements must comply with the recommendations of paragraph 8 and 9 of BS 6203:2003. 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.

2.4 INSTALLATION

Laying below the floor slab

Where Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System is used below the floor slab, lay the hardcore in layers; min 150 – 225 mm; each layer should be well compacted, with the surface blinded with quarry dust or sand to provide a suitable surface for laying a damp proof membrane (dpm).

A damp-proof membrane (dpm) e.g. 1200 gauge polythene or a Radon Barrier, subject to site conditions, should be laid over the blinding with joints taped to prevent the passage of ground moisture. The dpm should be carried up the wall until it meets and seals with the damp proof course.

Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System should be laid with closely butted joints, laid staggered with a break-bonded pattern and fitted tightly at the edges and around any service penetrations.

Vertical upstands of insulation 25 mm thick should be placed at the floor perimeter, party walls and internal rising walls to minimise thermal bridging.

Care should be taken to avoid damage to the insulation or damp proof membranes and radon barriers as the slab is being poured and operatives should make use of barrow runs and walkways whilst installation progresses.

Laying below the floor screed

Where Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System is used below the floor screed, the same procedure should be followed ensuring that the floor slab onto which the insulation is being laid is level.

The concrete floor over which the insulation is to be laid should be left as long as possible to maximise drying out in accordance with the relevant recommendations of BS 8203: 2001, Code of practice for the installation of resilient floor coverings.

The minimum thickness of sand and cement screed is 65 mm for domestic construction and 75 mm for most other buildings. However, architectural specifications should be consulted.

Laying on precast block and beam floor

The floor surface should be smooth and flat, any irregularities should be removed. Lay a Damp Proof Membrane, to ensure that it is correctly positioned and turned up to meet the seal with the dpc.

Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System should be laid with tightly butted and staggered joints. During construction the Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System boards must be protected from damage by moisture sources, water spillage, plaster droppings etc. Use scaffold boards to prevent wheelbarrow and other traffic damage to the boards.

As in the case with solid ground floors, attention should be given to detailing to avoid thermal bridging.

All surfaces should be level to accept the Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System. Uneven surfaces should be levelled prior to the laying of the floor.

Laying between the joists of a suspended timber floor Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System should be cut to fit between the timber joists and supported by carriers. These may be nails part driven into the side of the joists at selected level, timber battens or proprietary saddle clips.

Where services need to be accommodated below the floor, Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System can be lowered to provide an insulated duct.

Install flooring grade chipboard, ply or softwood timber flooring directly onto the joists fixing in the normal manner.

Ensure that the void below the insulated suspended floor is well ventilated and that sleeper walls do not restrict the airflow.

Cutting

On-site trimming of boards where necessary to maintain continuity of insulation around openings is easily executed using a fine tooth saw or builder's knife.

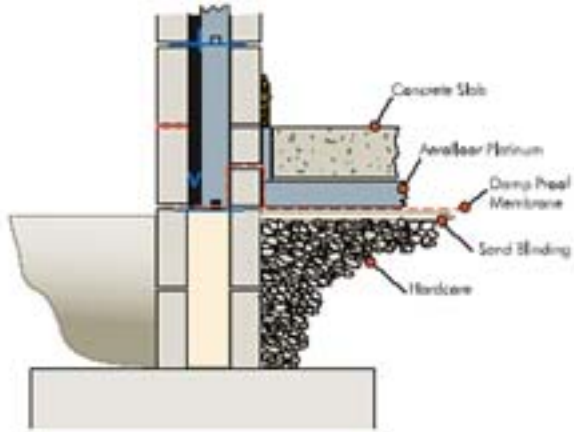


Fig 1. Concrete Slab Overlay

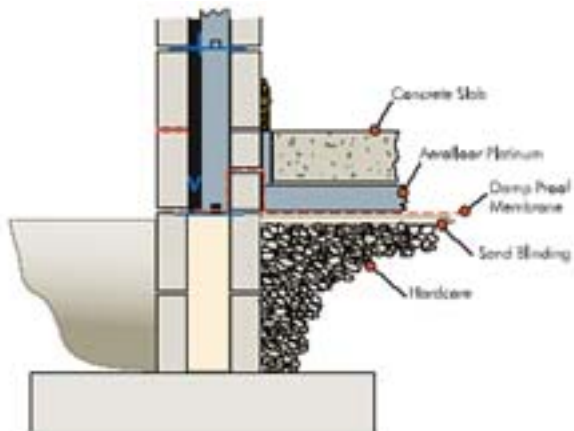


Fig 2. Concrete Screed Overlay

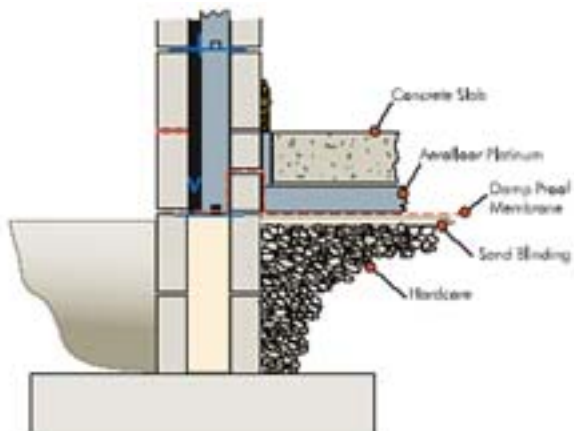


Fig 3. Chipboard Overlay

3.1 GENERAL

Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System when installed in accordance with this Certificate, is effective in reducing the 'U' value (thermal transmittance) of new and existing floor constructions.

Ground supported floors incorporating Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System must include a suitable damp proof membrane laid in accordance with BS CP 102: 1973 Code of Practice for the protection of buildings against water from the ground. (As read with AMD 1511; AMD 2196; and AMD 2470).

Suspended concrete ground floors incorporating Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System and must include suitable ventilation

The overlay to Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System should be: -

1. A cement based floor,
2. A concrete slab, or
3. Timber, OSB or particleboard.

3.2 FLOOR LOADING

The design loadings for the following uses are taken from BS 6399: Part 1: 1996 Loading for buildings – code of practice for dead and imposed loads, are:

Single family dwellings:

- Uniformly distributed load – 1.5 kPa.

Hotels:

- Uniformly distributed load – 5.0 kPa.

Education Buildings and Assembly Areas:

- Uniformly distributed load – 5.0 kPa.

Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System covered with the relevant grade of Timber, particle board, OSB or similar material or a screed can support these design loadings without undue deflection.

Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System is used under a concrete slab, resistance to concentrated and distributed loads is a function of the slab specification.

3.3 UNDERFLOOR SERVICES

The maximum continuous working temperature of EPS is 80°C. Where underfloor heating systems are to be used, the advice of the certificate holder should be sought.

3.4 WATERPROOFING

If an overlay of timber, chipboard, OSB or similar material is to be used in bathrooms or kitchens, a continuous waterproof finish (e.g. vinyl) must be provided to protect it.

4.1 BEHAVIOUR IN FIRE

- (i) Combustibility - Although Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System is combustible, when used in the context of this Certificate it is unlikely to become ignited should fire penetrate the floor. The increase in fire load in the building consequent to its use is small.
- (ii) The boards when in proximity to a constructional hearth must be protected by 250 mm of solid concrete or as detailed in Diagram 4 of TGD – J: Heat Producing Appliances.
- (iii) Toxicity - Negligible when used in a ground floor construction.
- (iv) Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System is manufactured without the use of CFC's or HCFC's, there is no release of such gas on burning.

4.2 STRENGTH

Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System when installed in accordance with the manufacturer's instructions, and this certificate, will resist the loads likely to be met during installation and in service.

4.3 RESISTANCE TO MOISTURE

Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System will not allow moisture to cross the floor construction provided it is installed in accordance with this Certificate. See section 2.4.

4.4 WATER VAPOUR PENETRATION AND CONDENSATION RISK

Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System has a water vapour diffusion resistivity factor ' μ' ' of 20 to 40. It has a significant resistance to the passage of water vapour.

4.5 THERMAL INSULATION

The declared design thermal conductivity ' λ' value' of Aerofloor 'Platinum' Under Floor Insulation System when measured in accordance with I.S. 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 $\lambda = 0.031 \text{ Wm}^{-1} \text{ K}^{-1}$.

The declared design thermal conductivity ' λ' value' of Aerofloor 'Original Under Floor Insulation System when measured in accordance with I.S. 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 $\lambda = 0.037 \text{ Wm}^{-1} \text{ K}^{-1}$.

The required maximum U-values for ground floors can be obtained with Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System as indicated in Table 2.

4.6 DURABILITY

Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System are rot-proof and durable. As floor insulation, Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System is judged to be stable and will remain effective as an insulation system for the life of the building, so long as it is installed in accordance with this certificate.

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

- density
- water vapour transmission (tabulated value)
- long term water absorption by diffusion
- dimensional accuracy
- compressive stress
- bending strength
- dimensional stability
- thermal conductivity
- thermal resistance
- efficiency of the construction process

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. Aerofloor 'Original' and Aerofloor 'Platinum' Under Floor Insulation System does not contain CFC gas or HCFC gas and has 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) A condensation risk analysis was performed.

Table 2: Floor Insulation Thickness of Aerofloor 'Original' and Aerofloor 'Platinum'

Aerofloor 'Platinum' Floor Insulation Thickness in mm

P/A Ratio	Concrete Slab		Suspended Timber Floor	
	U = 0.25	U = 0.37	U = 0.25	U = 0.37
1	96	58	118	62
0.9	95	56	116	60
0.8	93	54	114	58
0.7	90	51	111	55
0.6	87	48	108	52
0.5	82	44	103	47
0.4	75	36	96	40
0.3	64	24	85	30
0.2	39	-	64	10
0.1	-	-	9	-

Aerofloor 'Original' Floor Insulation Thickness in mm

P/A Ratio	Concrete Slab		Suspended Timber Floor	
	U = 0.25	U = 0.37	U = 0.25	U = 0.37
1	115	69	141	74
0.9	113	67	138	72
0.8	111	64	136	69
0.7	107	61	132	66
0.6	104	57	129	62
0.5	98	53	123	56
0.4	90	43	115	48
0.3	76	29	101	36
0.2	47	-	76	12
0.1	-	-	11	-

Table 3: Physical Properties of Aerofloor 'Original' and Aerofloor 'Platinum'

Property	Declared Value Platinum	Declared Value Original	Test Method
Long Term Water absorption by Diffusion	WD (V) 10 (less than 10 %)	WD (V) 10 (less than 10 %)	EN 12088
Dimensional Stability	DS(N) 5	DS(N) 5	EN 1603
Thermal conductivity 'λ' value	0.031 W/mK	0.037 W/mK	EN 12667
Thermal Resistance			
25 mm	0.81 m ² K/W	0.68 m ² K/W	
30 mm	0.97 m ² K/W	0.81 m ² K/W	
40 mm	1.29 m ² K/W	1.08 m ² K/W	
50 mm	1.61 m ² K/W	1.35 m ² K/W	
60 mm	1.94 m ² K/W	1.61 m ² K/W	
80 mm	2.58 m ² K/W	2.16 m ² K/W	
100 mm	3.23 m ² K/W	2.70 m ² K/W	
Compressive stress/strength	70 kPa	70 kPa	EN 826
Cross breaking strength	115 kPa	115 kPa	EN 12089
Water vapour diffusion resistance factor μ	20 to 40	20 to 40	Tabulated Value
Water vapour permeability μ	0.018 – 0.036 mg/(Pa.N.M)	0.018 – 0.036 mg/(Pa.N.M)	Tabulated Value

- 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 2002 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. **04/0206** is accordingly granted by the NSAI to **Aerobord Ltd.** on behalf of The Irish Agrément Board.

Date of Issue: **August 2004**

Signed



Chief Executive, NSAI

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.n sai.ie