



Warmfill Ltd

1 Church View
 Holywood
 Co Down BT18 9DP
 Tel: 028 9042 6042 Fax: 028 9042 4274
 e-mail: sales@warmfill.com
 website: www.warmfill.com

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Agreement Certificate
No 02/3938
*Third issue**

Designated by Government to issue European Technical Approvals

WARMFILL AND WARMFILL SILVER CAVITY WALL INSULATION

Isolation de murs à double paroi
 Kerndämmung

Product



Warmfill silver


Warmfill white

- THIS CERTIFICATE RELATES TO WARMFILL AND WARMFILL SILVER CAVITY WALL INSULATION, AN EXPANDED POLYSTYRENE MATERIAL INJECTED IN BEAD FORM, WITH OR WITHOUT A BONDING AGENT⁽¹⁾.
- The product is for use in buildings up to and including 12 metres in height. The product may also be used in buildings over 12 metres in height where a height restriction waiver has been issued by the BBA.
- It is used to reduce the thermal transmittance of completed, new or existing cavity walls with masonry inner and outer leaves.

continued

Regulations

1 The Building Regulations 2000 (as amended) (England and Wales)

 The Secretary of State has agreed with the British Board of Agrément the aspects of performance to be used by the BBA in assessing the compliance of cavity wall insulation with the Building Regulations. In the opinion of the BBA, Warmfill and Warmfill Silver Cavity Wall Insulation, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements.

Requirement: B3(4)	Internal fire spread (structure)
Comment:	Walls filled with the product meet this Requirement provided the wall complies with the conditions set out in sections 8.2 to 8.4 of this Certificate.
Requirement: C2(a)(b)	Resistance to moisture
Comment:	Tests by the BBA indicate that a wall incorporating this product can meet this Requirement provided the wall complies with the conditions set out in sections 7.6, 7.8 and 12.1 of this Certificate. The product does not absorb water by capillary action and may therefore be used in situations where it bridges the dpc's of the inner and outer leaf. See sections 10.2 and 10.3 of this Certificate.

continued

• *It is essential that new and existing walls comply with the conditions set out in the Design Data and Installation parts of this Certificate. Installation must be carried out under the BBA Surveillance Scheme for cavity wall insulation by installers trained by the Certificate holder and approved jointly by the Certificate holder and the BBA.*

(1) *When installed without a bonding agent, beads remain free flowing, therefore, care must be taken when making modifications to the wall (eg drilling holes, window installation).*

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Requirement:	L1(a)(i)	Dwellings
Requirement:	L2(a)	Buildings other than dwellings
Comment:		The product can meet or contribute to meeting these Requirements. See sections 11.2 and 11.3 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The product is an acceptable material. See section 13.1 of this Certificate.

2 The Building (Scotland) Regulations 2004



In the opinion of the BBA, Warmfill and Warmfill Silver Cavity Wall Insulation, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and related Mandatory Standards as listed below.

Regulation:	8	Fitness and durability of materials and workmanship
Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The product can contribute to a construction satisfying this Regulation. See section 13.1 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards — construction
Standard:	2.4	Cavities
Comment:		A wall containing the product must comply with this Standard, with reference to clauses 2.4.1 ⁽¹⁾⁽²⁾ and 2.4.2 ⁽¹⁾⁽²⁾ . See section 8.4 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Comment:		This product is combustible but it may be used in walls of buildings in accordance with the exceptions permitted in this Standard with reference to clauses 2.6.5 ⁽¹⁾ and 2.6.6 ⁽²⁾ . See section 8.5 of this Certificate.
Standard:	3.4	Moisture from the ground
Comment:		The product can contribute to a construction satisfying this Standard with reference to clause 3.4.1 ⁽¹⁾⁽²⁾ . The product can be used in situations where it bridges the dpc's of the inner and outer leaf. See section 10.2 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The product will contribute to satisfying this Standard with reference to clause 3.10.1 ⁽¹⁾ provided it complies with the conditions set out in sections 7.6 and 7.8 of this Certificate. See also section 10.3 of this Certificate.
Standard:	3.15	Condensation
Comment:		The product can contribute to satisfying this Standard, with reference to clauses 3.15.1 ⁽¹⁾ , 3.15.3 ⁽¹⁾ and 3.15.4 ⁽¹⁾ . See section 12.1 of this Certificate.
Standard:	6.2	Building insulation envelope
Comment:		The product will contribute to satisfying this Standard with reference to clause 6.2.1 ⁽¹⁾⁽²⁾ . See sections 11.2 and 11.3 of this Certificate. (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).

3 The Building Regulations (Northern Ireland) 2000



In the opinion of the BBA, Warmfill and Warmfill Silver Cavity Wall Insulation, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		The product is an acceptable material. See section 13.1 of this Certificate.
Regulation:	C4	Resistance to ground moisture and weather
Comment:		Tests by the BBA indicate that a wall incorporating this product can satisfy this Regulation. See sections 7.6 and 7.8 of this Certificate. The product does not absorb water by capillary action and may therefore be used in situations where it bridges the dpc's of the inner and outer leaf. See sections 10.2 and 10.3 of this Certificate.
Regulation:	E4	Internal fire spread — Structure
Comment:		The product may be used in buildings of purpose group 1 where compliance with paragraph 3.27 of Technical Booklet E is achieved. See sections 8.2 to 8.4 of this Certificate.

4 Construction (Design and Management) Regulations 1994 (as amended) Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

In the opinion of the BBA there is no information in this Certificate which relates to the obligations of the client, planning supervisor, designer and contractors under these Regulations.

Technical Specification

5 Description

5.1 Warmfill Cavity Wall Insulation is a white polystyrene bead and Warmfill Silver is a grey, low-lambda, polystyrene bead, both coated with an air-drying adhesive when injected into the cavity. The bonding agent is used to provide long-term stability to the insulant.

5.2 The target mean density for both products installed with the bonding agent is 12 kgm^{-3} and local areas within the wall when sampled over an area of 0.5 m^2 may have density variations of $\pm 2 \text{ kgm}^{-3}$.

6 Delivery and site handling

6.1 The product is delivered to site in polythene sacks or bulk containers marked with the BBA identification mark incorporating the number of this Certificate. The material has an indefinite storage life and should be kept dry.

6.2 Quotations, tenders and invoices bear the BBA identification mark incorporating the number of this Certificate.

6.3 The bonding agent is delivered to site in containers marked with the BBA identification mark incorporating the number of this Certificate and must not be allowed to freeze.

Design Data

7 General

7.1 Warmfill and Warmfill Silver Cavity Wall Insulation are effective in reducing the U value (thermal transmittance) of external cavity walls, with masonry inner and outer leaves (masonry includes clay and calcium silicate bricks, concrete blocks, natural and reconstituted stone blocks). It is essential that such walls are designed and constructed so as to incorporate the normal precautions to prevent moisture penetration.

7.2 This Certificate covers the use of the product in any exposure zone, subject to the following conditions being met.

7.3 The following design conditions have been taken from the BBA joint publication *Cavity insulation of masonry walls — Dampness risks and how to minimise them*. They are particularly important in areas subject to severe or very severe driving rain:

- the cavity width must be a nominal minimum of 50 mm
- walls must be in a good state of repair and must show no evidence of frost damage.
- mortar joints must not show evidence of more than hairline cracking. Raked or recessed mortar joints should be avoided in high exposure areas.

Partial filling

7.4 Partial filling of the gable apex (ie limiting the fill to several brickwork courses above ceiling level) is permitted provided the top of the wall is protected by the roof and:

- the roof void is not an occupied space
- where the loft insulation is at ceiling level.

7.5 Other situations where partial filling is allowed are:

- when separately insulating semi-detached or terraced properties; the type of cavity barriers used for this purpose must be as defined in section 18.2
- up to the underside of a horizontal boundary, other than the roof, where that horizontal boundary is protected by a cavity tray or similar waterproof barrier
- where filling is carried out above a horizontal boundary
- when treating properties where the wall to be insulated is below a waterproof cladding (eg tile hung) and this cladding either extends up to the roof or is protected at the top by other means (eg window sills).

Existing buildings



7.6 Existing buildings subject to the national Building Regulations and Standards should be suitable when assessed in accordance with BS 8208-1 : 1985.

7.7 The product may be installed only where there are no signs of dampness on the inner face of the cavity wall other than those caused solely by condensation.

New buildings



7.8 New buildings subject to the national Building Regulations and Standards should be constructed in accordance with the relevant recommendations of:

- BS 5628-3 : 2001. In particular, Clause 5.5 of the Code of practice *Exclusion of water* should be followed in that the designer selects a construction appropriate to the local wind-driven rain index paying due regard to the design detailing, workmanship and materials to be used
- BS 8000-3 : 2001.

7.9 Where the product is to be installed, injection of the insulant material must be left until the cavity is sealed from the weather, ie the roof is in place and the window and door openings are sealed.

7.10 Where applicable, construction should be in accordance with the relevant clauses of NHBC Standards and Zurich Building Guarantees Technical Standards.

7.11 Other new buildings not subject to any of the above should also be built in accordance with BS 5628-3 : 2001 and BS 8000-3 : 2001.

8 Behaviour in relation to fire

8.1 The use of the product does not prejudice the fire resistance properties of the wall. It is unlikely to become ignited within the cavity when used in the context of this Certificate. If fire does penetrate into the cavity, the amount of air present will be insufficient to support combustion. However, the instructions contained in this Certificate relating to the sealing of an uncapped cavity (section 15.3) and removing insulant present in the loft space after installation (section 19.4) must be carefully followed.



8.2 The requirements of the Building Regulations relating to fire spread in cavity walls, can be met in buildings of all purpose groups without the need for cavity barriers, provided the construction complies with the provisions detailed in:

England and Wales

Approved Document B, Diagram 32

Northern Ireland

Technical Booklet E, Diagram 3.5.

8.3 A summary of these provisions is given here:

England and Wales and Northern Ireland

- (1) the wall must consist of masonry inner and outer leaves, each at least 75 mm thick
- (2) the cavity must not be more than 100 mm (Northern Ireland only)
- (3) the cavity must be closed at the top of the wall and at the top of any opening
- (4) in addition to the insulation only the following combustible materials shall be placed in, or exposed to, the cavity:

- timber lintels, window or door frames, or end of timber joists
- pipe, conduit or cable
- dpc, flashing, cavity closer or wall tie
- domestic meter cupboard, provided that there are not more than two cupboards to a dwelling, the opening in the outer leaf is not more than 800 mm by 500 mm for each cupboard, and the inner leaf is not penetrated except by a sleeve not more than 80 mm by 80 mm, which is fire-stopped.



8.4 For constructions not covered by sections 8.2 and 8.3 cavity barriers must be provided to comply with:

England and Wales

Approved Document B, Section 10

Scotland

Mandatory Standard 2.4

Northern Ireland

Technical Booklet E, Paragraphs 3.27 to 3.30.



8.5 The product is combustible but it may be used in a wall on or less than one metre from a relevant boundary, where no storey is at a height of more than 18 metres above ground.

9 Proximity of flues and appliances

When installing the product in close proximity to certain flue pipes and/or heat producing appliances, the relevant provisions of the national Building Regulations are applicable:

England and Wales

Approved Document J

Scotland

Mandatory Standard 3.19

Northern Ireland

Technical Booklet L.

10 Liquid water penetration

10.1 The product will not allow water to cross the wall construction via the insulation. Water, which penetrates the outer leaf of the wall, will drain down the cavity face of the outer leaf.



10.2 Tests by the BBA demonstrate that when the product is used in situations where it bridges the dpc in walls, dampness from the ground will not pass through to the inner leaf provided the wall is detailed in accordance with the requirements and provisions of the national Building Regulations:

England and Wales

Approved Document C, Section 4

Scotland

Mandatory Standard 3.4

Northern Ireland

Technical Booklet C, Section 1.6.

10.3 Tests by the BBA confirm that constructions built in accordance with BS 5628-3 : 2001, will resist the transfer of precipitation to the inner leaf and satisfy the national Building Regulations:

England and Wales

Requirement C2

Scotland

Mandatory Standard 3.10

Northern Ireland

Regulation C4.

11 Thermal insulation

11.1 For the purpose of U value calculations to determine if the requirements of the Building (or other statutory) Regulations are met, the thermal conductivity (λ value) of the insulation may be taken as:

Warmfill (white bead)	0.040 Wm ⁻¹ K ⁻¹
Warmfill (Silver)	0.034 Wm ⁻¹ K ⁻¹



11.2 The requirement for limiting the heat loss through the building fabric can be satisfied if the U values of the building elements, including thermal bridging, do not exceed the maximum values in the relevant Elemental Methods given in the national Building Regulations.

England and Wales

Approved Documents L1 and L2, Table 1

Scotland

Mandatory Standard 6.2

Northern Ireland

Technical Booklet F, Table 1.2 or 1.4.

11.3 Guidance is also given in these documents on selecting the thickness of insulation required to enable a wall to achieve the desired U value. Alternative approaches are also described which allow for some flexibility in design of U values for individual constructional elements.

12 Condensation

Surface condensation



12.1 Walls will limit the risk of surface condensation adequately when the thermal transmittance (U value) does not exceed 0.7 Wm⁻²K⁻¹ at any point, and the junctions with floors, roofs and openings are designed in accordance with the TSO publication *Limiting thermal bridging and air leakage : Robust construction details for dwellings and similar buildings* (TSO 2002) or the BRE document IP 17/01 *Assessing the effects of thermal bridging at junctions and around openings*.

Interstitial condensation

12.2 Walls will limit the risk of interstitial condensation adequately when they are designed and constructed in accordance with BS 5250 : 2002 (Section 8 and Annex D).

13 Durability



13.1 The product is durable, rot-proof, water resistant and sufficiently stable to remain effective as an insulation for the life of the building.

13.2 Should it for any reason become necessary, the product can be evacuated from the cavity void.

Installation

14 Site assessment

An assessment is carried out prior to installation of Warmfill and Warmfill Silver Cavity Wall Insulation by a trained assessor (who may also be the installing technician), to ascertain the suitability of the property or properties. An assessment report is prepared and held at the installer's offices. Particular problems are specifically identified and any reasons for rejection noted.

15 Site preparation

15.1 The installing operative ensures that the property has been correctly assessed and is suitable for insulation. Any problems encountered during drilling which prevent compliance with this Certificate are referred to the Certificate holder before proceeding.

15.2 Essential ventilation openings, such as those providing combustion air or underfloor ventilation, and all flues in the cavity wall are checked. If adequate sleeving or other cavity closures are not present, installation must not proceed until these openings have been sleeved or otherwise modified to prevent blockage by the insulant.

15.3 The tops of uncapped cavity walls should be closed with plugs of mineral fibre.

16 Approved installers

Installation of the product is carried out by the Certificate holder, or an approved installer, being a company which:

- is required to satisfy an initial site installation check by the BBA prior to approval by the Certificate holder and is subject to the BBA Surveillance Scheme
- is approved by the Certificate holder and the BBA to install the product
- has undertaken to comply with the Certificate holder's installation procedure
- is employing technicians who have been issued with appropriate identity cards by the Certificate holder; at least one member of each installation team must carry a card
- is subject to supervision by the Certificate holder, including unannounced site inspections.

17 Supervision

17.1 Installation should be carried out in accordance with the BBA Surveillance Scheme.

17.2 During installation, as an aid to determining that the installation conforms to the certificated method, checks can be made to ensure that:

- pattern of holes complies with the description given in section 19.1 and Figure 1.
- injection of the material takes place at each hole to complete the filling of the cavity space.

18 General

18.1 The product is installed using an approved equipment, marked with the appropriate BBA Certificate number. The Certificate holder provides all necessary hoses, drilling tools, equipment and materials for making good the walls after the installation.

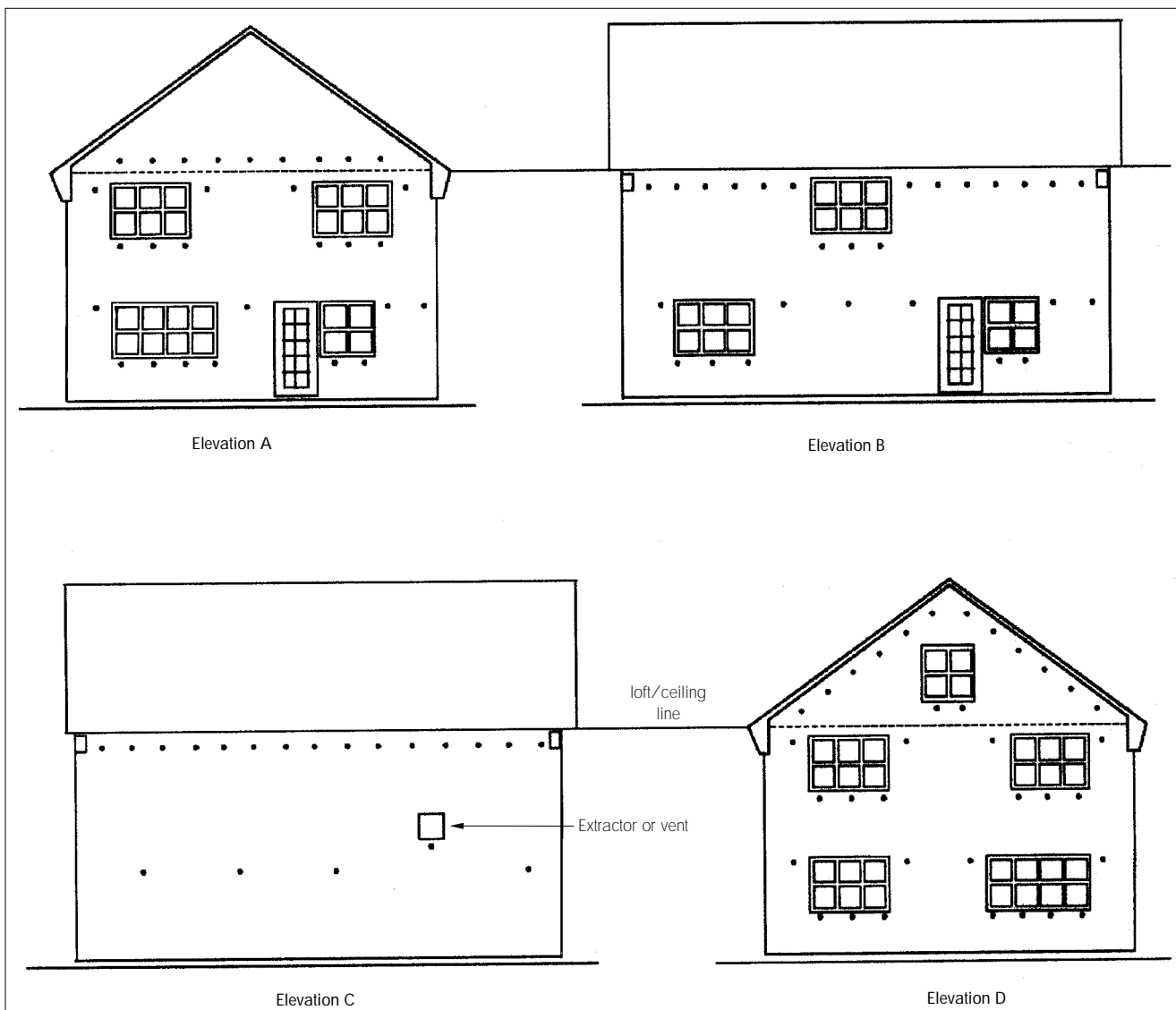
18.2 Where a semi-detached or terraced property is to be treated, the insulant is contained by inserting a cavity barrier at the line dividing the properties. This consists of a polypropylene brush

which remains in place when the installation is completed.

19 Procedure

19.1 Holes of 22 mm diameter are drilled between bricks at the junction of the horizontal and vertical mortar joints. Sufficient injection holes must be drilled to ensure that the cavity will be completely filled without voids. The holes are normally spaced approximately 0.6 m horizontally apart and the top row of holes in each wall is not more than 200 mm from the top of the wall. A similar series of holes are drilled below windows and obstructions and, if found to be necessary, along the lines of the roof slope at gable ends. Alternatively, a series of holes are drilled approximately 0.6 m horizontally apart and 200 mm above the highest ceiling level. A further series of holes (2.0 m apart) are drilled at the middle height of a two-storey building to ensure complete fill of the cavity space. Care should be taken that these holes do not coincide with the intermediate suspended timber floor. A typical drilling pattern is shown in Figure 1.

Figure 1 Drilling pattern



19.2 The product is injected into the cavity through a flexible pipe fitted with a non-directional nozzle. The material packs to a uniform density in the cavity. Holes beneath ground-floor windows are injected first and filling continues upwards until a complete fill has been achieved.

19.3 After injection, the wall is made good to match the existing finish as closely as possible. All the trunked air vents are checked, eg those providing underfloor ventilation and combustion air for heating appliances. In all cases flues are carefully checked on completion of the installation by means of an appropriate test (eg a smoke test) to ensure they are not obstructed by the insulant.

19.4 Any insulant that has been blown through the top of the cavity into the loft space is removed and plugs of mineral wool are used to points of leakage.

Technical Investigations

The following is a summary of the technical investigations carried out on Warmfill and Warmfill Silver Cavity Wall Insulation.

20 Tests

Tests were carried out to determine:

- the water resistance of a cavity wall filled with the insulant
- adequacy of fill using specified installation equipment and drilling pattern
- material characterisation tests.

21 Investigations

21.1 Existing data on thermal properties, toxicity, durability and properties in relation to fire were evaluated.

21.2 The Certificate holder's training arrangements were evaluated.

21.3 An assessment of the practicability of installation was carried out.

Bibliography

BS 5250 : 2002 *Code of practice for control of condensation in buildings*

BS 5628-3 : 2001 *Code of practice for use of masonry — Materials and components, design and workmanship*

BS 8000-3 : 2001 *Workmanship on building sites — Code of practice for masonry*

BS 8208-1 : 1985 *Guide to assessment of suitability of external cavity walls for filling with thermal insulants — Existing traditional cavity construction*

Conditions of Certification

22 Conditions

22.1 This Certificate:

- (a) relates only to the product that is named, described, installed, used and maintained as set out in this Certificate;
- (b) is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Certificate;
- (c) is valid only within the UK;
- (d) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- (e) is copyright of the BBA;
- (f) is subject to English law.

22.2 References in this Certificate to any Act of Parliament, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

22.3 This Certificate will remain valid for an unlimited period provided that the product and the manufacture and/or fabrication including all related and relevant processes thereof:

- (a) are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA;

(b) continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine; and

(c) are reviewed by the BBA as and when it considers appropriate.

22.4 In granting this Certificate, the BBA is not responsible for:

- (a) the presence or absence of any patent, intellectual property or similar rights subsisting in the product or any other product;
- (b) the right of the Certificate holder to market, supply, install or maintain the product; and
- (c) the actual works in which the product is installed, used and maintained, including the nature, design, methods and workmanship of such works.

22.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future statutory, common law or other duty of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the installation and use of this product.



In the opinion of the British Board of Agrément, Warmfill and Warmfill Silver Cavity Wall Insulation is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 02/3938 is accordingly awarded to Warmfill Ltd.

On behalf of the British Board of Agrément

Date of Third issue: 12th September 2005

A handwritten signature in black ink, appearing to read 'G. A. Cooper'.

Chief Executive

**Original Certificate issued 30th August 2002. This amended version includes revised national Building Regulations inclusion of additional product and new Conditions of Certification.*