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Agrément Certificate

09/4640

Product Sheet 1

YBS FOIL INSULATION

FOIL-TEC SINGLE AND FOIL-TEC DOUBLE FLOOR INSULATION

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Foil-Tec Single and Foil-Tec Double Floor Insulation, a multi-layer foil-faced laminate for use as a floor insulation.

AGRÉMENT CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Thermal performance — the products can be used to improve the thermal performance of a floor construction (see section 5).

Condensation risk — performance of the products with regard to interstitial and surface condensation has been considered (see section 6).

Behaviour in relation to fire — the products do not prejudice the fire-resistance properties of the floor (see section 7).

Durability — the design life of the products under typical UK conditions has been considered and the products will remain effective as an insulant for the life of the building (see section 10).

The BBA has awarded this Agrément Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 10 March 2009

Chris Hunt
Head of Approvals — Physics

Greg Cooper
Chief Executive

Certificate amended on 1 June 2011 to amend wording on Page 2 under Regulation F2(a)(i).

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In opinion of the BBA, Foil-Tec Single and Foil-Tec Double Floor Insulation, if used in accordance with the provisions of this Certificate will meet or contribute to meeting the relevant requirements of the following Building Regulations:



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

Requirement:	C2(a)(c)	Resistance to moisture
Comment:		Floors incorporating the product can meet this Requirement. See sections 3.3, 3.4, 6.1 and 6.2 of this Certificate.
Requirement:	L1(a)(i)	Conservation of fuel and power
Comment:		The products, when used in a floor, can contribute to a building meeting the Target Emission Rate. See sections 5.2 to 5.4 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		These products are acceptable. See section 10 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		These products can contribute to a construction satisfying this Regulation. See sections 9 and 10 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards – construction
Standard:	3.15	Condensation
Comment:		These products can contribute to satisfying this Standard, with reference to clauses 3.15.1 ⁽¹⁾ , 3.15.4 ⁽¹⁾ and 3.15.5 ⁽¹⁾ . See sections 3.3, 3.4, 6.1 and 6.3 of this Certificate.
Standard:	6.1(a)(b)	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		The floors incorporating the products can satisfy or contribute to satisfying these Standards, with reference to clauses 6.1.2 ⁽¹⁾ , 6.1.3 ⁽²⁾ , 6.1.6 ⁽¹⁾ , 6.2.1 ⁽¹⁾⁽²⁾ , 6.2.3 ⁽¹⁾⁽²⁾ , 6.2.4 ⁽²⁾ , 6.2.6 ⁽¹⁾ , 6.2.7 ⁽¹⁾⁽²⁾ and 6.2.12 ⁽¹⁾ . See sections 5.2 to 5.4 of this Certificate. (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		These products are acceptable. See section 10 and the <i>Installation</i> part of this Certificate.
Regulation:	B3(2)	Suitability of certain materials
Comment:		The products do not normally require maintenance. See section 9 of this Certificate.
Regulation:	C5	Condensation
Comment:		Floors incorporating these products can meet this Regulation. See sections 3.3, 3.4 and 6.1 of this Certificate.
Regulation:	F2(a)(i)	Conservation measures
Comment:		These products will enable a floor to satisfy or contribute to satisfying this Regulation. See sections 5.2 to 5.4 of this Certificate.

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

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

Non-regulatory Information

NHBC Standards 2008

NHBC accepts the use of Foil-Tec Single and Foil-Tec Double Floor Insulation, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 5.1, *Substructure and ground bearing floors and Chapter 5.2, Suspended ground floor*.

Zurich Building Guarantee Technical Manual 2007

In the opinion of the BBA, Foil-Tec Single and Foil-Tec Double Floor Insulation, when installed and used in accordance with this Certificate, satisfies the requirements of the *Zurich Building Guarantee Technical Manual*, Section 3 *Substructure*, Sub-section *Floors*.

General

This Certificate relates to Foil-Tec Single and Foil-Tec Double Floor Insulation, for use in suspended timber ground floors or concrete ground floors of dwellings or similar occupancy, type and condition.

Technical Specification

1 Description

1.1 Foil-Tec Single and Foil-Tec Double Floor Insulation comprise a multi-layer coated foil laminate with reinforcement. Product details are given in Table 1.

Table 1 Product details

Product	Nominal thickness (mm)	Aluminium foil
Foil-Tec Single	Less than 1 mm	One side
Foil-Tec Double	Less than 1 mm	Both sides

1.2 The products are supplied in rolls of 1 m, 1.5 m width and 50 m length.

1.3 Ancillary component with these products include:

- Foil-Tec saddle clips
- nails.

2 Delivery and site handling

2.1 The products are labelled, details on which includes date of manufacture and an instruction leaflet is enclosed.

2.2 The products should be stored laid down on a firm, level and dry base and protected from damage in clean, dry conditions.

2.3 The products are combustible and care must be exercised when storing large quantities on site. The products must not be exposed to open flame or other ignition sources and must be stored away from flammable material such as paint and solvents.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Foil-Tec Single and Foil-Tec Double Floor Insulation.

Design Considerations

3 General

3.1 Foil-Tec Single and Foil-Tec Double Floor Insulation are effective in reducing the U value (thermal transmittance) of new or existing suspended timber ground floors or concrete ground floors of dwellings or buildings of similar occupancy, type and condition.

3.2 Foil-Tec Single is for use on a concrete ground floor under a timber raft and Foil-Tec Double is for use with suspended timber ground floors.

 3.3 Suspended timber floors incorporating the product must include suitable ventilation or a damp-proof membrane laid in accordance with CP 102 : 1973.

3.4 Where Foil-Tec Single is laid on ground-supported concrete floors, these must include a suitable damp-proof membrane laid in accordance with the relevant clauses of CP 102 : 1973, BS 8102 : 1990 and/or BS 8215 : 1991.

3.5 The products cannot be used as a radon barrier.

4 Practicality of installation

The products are designed to be installed by a competent general builder or contractor, experienced with this type of product.

5 Thermal performance

5.1 Calculations of the thermal transmittance (U value) of specific floor constructions should be carried out in accordance with BS EN ISO 6946 : 1997, BS EN ISO 13370 : 1998 and BRE report (BR 443 : 2006) *Conventions for U-value calculations*, using an emissivity of 0.07 and an air space of 50 mm. Examples U values are shown in Tables 2 and 3.

Table 2 Example U values for timber suspended floor construction (Foil-Tec Double)

P/A ratio	U Value (Wm ⁻² K ⁻¹) (50 mm airspace)	U Value (Wm ⁻² K ⁻¹) (100 mm airspace)
0.2	0.24	0.22
0.4	0.30	0.27
0.6	0.33	0.30
0.8	0.34	0.31
1.0	0.36	0.32

Table 3 Example U values for concrete ground floor construction (Foil-Tec Single)

P/A ratio	U Value (Wm ⁻² K ⁻¹) (50 mm airspace)	U Value (Wm ⁻² K ⁻¹) (100 mm airspace)
0.2	0.24	0.22
0.4	0.35	0.30
0.6	0.41	0.35
0.8	0.44	0.38
1.0	0.47	0.40



5.2 When used in conjunction with additional insulation as appropriate the products can contribute to achieving the following design U values:

England and Wales and Northern Ireland

- 0.25 Wm⁻²K⁻¹ required for 'notional' dwellings in SAP 2005
- 0.25 Wm⁻²K⁻¹ limit average specified in Approved Documents L1A (Table 2), and Technical Booklet F1 (Table 2.2)
- 0.70 Wm⁻²K⁻¹ limit for an individual element specified in Approved Documents L1A (Table 2), and Technical Booklets F1 (Table 2.2).

Scotland

- 0.20 Wm⁻²K⁻¹ required for the 'simplified approach – solid fuel packages 3 and 6' 'notional' dwelling
- 0.22 Wm⁻²K⁻¹ required for 'notional' dwellings in SAP 2005 (for Scotland) and the 'simplified approach – packages 1, 2, 4 and 5' in Mandatory Standard 6.1, clause 6.1.2⁽¹⁾
- 0.25 Wm⁻²K⁻¹ required for 'notional' dwellings as described in Mandatory Standard 6.1, clause 6.1.6⁽¹⁾
- 0.22 Wm⁻²K⁻¹ for extensions the value described by the Table to Mandatory Standard 6.2, clause 6.2.9⁽¹⁾
- 0.70 Wm⁻²K⁻¹ limit for an individual element specified in Mandatory Standard 6.2, clause 6.2.1⁽¹⁾.

(1) Technical Handbook (Domestic).

5.3 Where a proposed floor U value is not better than the value specified in section 5.2, additional energy saving measures will be required in the building envelope and/or service to achieve the required overall carbon dioxide emission rate reduction of about 20% in dwellings (18% to 25% in Scotland).

5.4 The products can contribute to maintaining continuity of thermal insulation at junctions between the floor and the other building elements. Guidance in this respect, and on limiting heat loss by air infiltration, can be found in:

England and Wales – *Limiting thermal bridging and air leakage: Robust construction details for dwellings and similar buildings* TSO 2002.

Scotland – Accredited Construction Details

Northern Ireland – Accredited Construction Details (version 1.0).

6 Condensation risk

Interstitial condensation



6.1 Floors will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2002, Section 8.5 and Appendix D. The membranes have a water vapour resistance of greater than 600 MNsg⁻¹. However, the products should not be used as a water vapour control layer as it is laid with unsealed joints.

Surface condensation



6.2 Floors will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 0.7 Wm⁻²K⁻¹ at any point, and the junctions with walls are designed in accordance with the relevant requirements of TSO publication *Limiting thermal bridging and air leakage: Robust construction details for dwellings and similar buildings*, 2002 or BRE Information Paper IP 1/06 *Assessing the effects of thermal bridging at junctions and around openings*.



6.3 Floors will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 1.2 Wm⁻²K⁻¹ at any point. Guidance may be obtained from Section 8 of BS 5250 : 2002 and BRE report (BR 262 : 2002) *Thermal insulation: avoiding risks*.

7 Behaviour in relation to fire

7.1 The products do not prejudice the fire-resistance properties of the floor.

7.2 When properly installed, the products will not add significantly to any existing fire hazard.

7.3 The products will be contained within the floor by the overlay until the overlay itself is destroyed. Therefore, the boards will not contribute to the development stages of a fire or present a smoke or toxic hazard.

8 Moisture penetration

8.1 The products will not allow moisture to cross the completed floor construction provided it is installed in accordance with this Certificate.

8.2 For floors subject to national Building Regulations, construction should be as detailed or designed in accordance with:

England and Wales — Approved Document C, Section 4

Scotland — Mandatory Standard 3.4, clauses 3.4.2⁽¹⁾ to 3.4.4⁽¹⁾ and 3.4.6⁽¹⁾

(1) Technical Handbook (Domestic).

Northern Ireland — Technical Booklet C, Section 1.

9 Maintenance



As the products are confined within the floor cavity and have suitable durability (see section 10), maintenance is not required.

10 Durability



The products are rot-proof, does not tear easily and will remain effective as an insulating material for the life of the building in which it is incorporated.

Installation

11 General

11.1 Foil-Tec Single and Foil-Tec Double Floor Insulation must be installed and fixed in accordance with the Certificate holder's instructions for suspended timber ground floors and concrete ground floors.

11.2 During construction, care must be taken to avoid tearing the sheet. Should damage by tearing occur, the sheet should be repaired or replaced.

12 Procedure

Suspended timber ground floors (Foil-Tec Single and Foil-Tec Double)

12.1 For suspended timber ground floors the sheet should be rolled out continuously either across or parallel to the timber joists.

12.2 The products must be dressed up behind the skirting board to 75 mm.

12.3 The sheet is fixed to the sides of the joists by Foil-Tec saddle clip, four per m² and fixed with galvanized nails.

12.4 Horizontal joints are overlapped by 100 mm and left open to allow any moisture to dissipate.

Concrete ground floor under a timber raft (Foil-Tec Single only)

12.5 The sheet should be rolled out on the concrete floor with the foil face upwards, leaving enough edge overlap for a 75 mm lip to be left behind the skirting.

12.6 Timber battens/joists (minimum 50 mm by 50 mm) are then laid on top of the Foil-Tec Single, spaced at centres to suit the particular flooring to provide an air space.

Technical Investigations

13 Tests

Tests and assessment were carried out on Foil-Tec Single and Foil-Tec Double Floor Insulation to determine:

- water vapour resistance
- thermal resistance
- emissivity
- durability
- behaviour in fire
- condensation risk analysis.

14 Investigations

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.

Bibliography

- BS 5250 : 2002 *Code of practice for control of condensation in buildings*
- BS 8102 : 1990 *Code of practice for protection of structures against water from the ground*
- BS 8215 : 1991 *Code of practice for design and installation of damp-proof courses in masonry construction*
- BS EN ISO 6946 : 1997 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*
- BS EN ISO 13370 : 1998 *Thermal performance of buildings — Heat transfer via the ground — Calculation methods*
- CP 102 : 1973 *Code of practice for protection of buildings against water from the ground*

15 Conditions

15.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English law.

15.2 Publications and documents referred to in this Certificate are those that the BBA deems to be relevant at the date of issue or re-issue of this Certificate and include any: Act of Parliament; Statutory Instrument; Directive; Regulation; British, European or International Standard; Code of Practice; manufacturers' instructions; or any other publication or document similar or related to the aforementioned.

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

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

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

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

15.5 Any information relating to the manufacture, supply, installation, use and maintenance of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used and maintained. It does 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; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any 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 manufacture, supply, installation, use and maintenance of this product/system.

