TLX Insulation Ltd

Moss Lane Blackrod Bolton Lancashire BL6 5JB

Tel: 01204 695666 Fax: 01204 695333

e-mail: tlx@tlxinsulation.co.uk website: www.tlxinsulation.co.uk



Agrément Certificate
06/4379
Product Sheet 3

MULTIFOIL INSULATION

TLX SILVER AND TLX SILVER FB FOR TIMBER FRAME AND MASONRY WALL APPLICATIONS

This Agrément Certificate Product Sheet⁽¹⁾ relates to TLX Silver and TLX Silver FB for Timber Frame and Masonry Wall Applications, reflective insulation materials for use on the inner side (warm side) of the timber frame or masonry substrate. They are held in place by timber battens creating an airspace between the products and the internal lining, in new and existing domestic and non-domestic buildings.

(1) Hereinafter referred to as 'Certificate'.

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 have an emissivity of 0.05 for the outer foil and thermal resistances of 0.91 $\text{m}^2 \cdot \text{K} \cdot \text{W}^{-1}$ for TLX Silver and 1.43 $\text{m}^2 \cdot \text{K} \cdot \text{W}^{-1}$ for TLX Silver FB (see section 6).

Condensation risk — the products can provide effective control to the passage of water vapour (see section 7).

Behaviour in relation to fire — the products are combustible but may be used in suitably designed walls (see section 9).

Durability — under normal conditions, the products will have a life equivalent to that of the building in which they are incorporated (see section 14).

The BBA has awarded this 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 Third issue: 26 March 2015

Originally certificated on 21 April 2011

John Albon — Head of Approvals

Construction Products

Claire Curtis-Thomas Chief Executive

Claim

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.

British Board of Agrément Bucknalls Lane Watford Herts WD25 9BA tel: 01923 665300 fax: 01923 665301 clientservices@bba.star.co.uk www.bbacerts.co.uk

Regulations

In the opinion of the BBA, TLX Silver and TLX Silver FB for Timber Frame and Masonry Wall Applications, if installed, used and maintained in accordance with this Certificate, can contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement: C2(c) Resistance to moisture

The products can contribute to satisfying this Requirement. See sections 7.1 and 7.6 of this Certificate. Comment:

Requirement: L1(a)(i) Conservation of fuel and power

The products can contribute to satisfying this Requirement. See section 6 of this Certificate. Comment:

Regulation: Materials and workmanship

The products are acceptable. See section 14 and the Installation part of this Certificate. Comment:

Regulation: 26 CO₂ emission rates for new buildings

Fabric energy efficiency rates for new dwellings (applicable to England only) Regulation: 26A Regulation: Primary energy consumption rates for new buildings (applicable to Wales only) Fabric energy efficiency rates for new dwellings (applicable to Wales only) Regulation: 26B

The products can contribute to satisfying these Regulations; however compensating fabric/services Comment:

measures may be required. See section 6.2 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: Durability, workmanship and fitness of materials 8(1)

The products satisfy the requirements of this Regulation. See section 14 and the Installation part of Comment:

this Certificate

Regulation: 9 Building standards applicable to construction

3 1.5 Standard:

The products can contribute to satisfying this Standard, with reference to clauses $3.15.1^{(1)(2)}$, $3.15.4^{(1)(2)}$ Comment:

and 3.15.5(1)(2). See sections 7.1 and 7.7 of this Certificate.

Standard: 6.1(a)(b) Carbon dioxide emissions Building insulation envelope Standard: 62

The products can contribute to a wall satisfying the clauses or parts of $6.1.^{1(1)}$, $6.1.2^{(1)(2)}$, $6.1.3^{(1)}$, $6.1.6^{(1)}$, Comment:

 $6.2.1^{(1)/2}$, $6.2.3^{(1)}$, $6.2.4^{(1)/2}$, $6.2.5^{(1)/2}$, $6.2.5^{(1)/2}$, $6.2.7^{(1)}$, $6.2.8^{(2)}$, $6.2.9^{(1)/2}$, $6.2.11^{(1)/2}$, $6.2.12^{(2)}$ and

6.2.13(1)(2) of these Standards. See section 6 of this Certificate.

Standard: 7.1(a)(b)Statement of sustainability

The products can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and, Comment:

therefore, will contribute to a construction meeting a bronze level of sustainability as defined in this Standard In addition, the products can contribute to a construction meeting a higher level of sustainability as defined in this Standard, with reference to clauses $7.1.4^{(1)(2)}$ [Aspects $1^{(1)(2)}$ and $2^{(1)}$], $7.1.6^{(1)(2)}$ [Aspects $1^{(1)(2)}$ and

 $2^{[1]}$ and $7.1.7^{[1][2]}$ [Aspect $1^{[1][2]}$]. See section 6.1 of this Certificate.

Regulation: 12 Building standards applicable to conversions

All comments given for these products under Regulation 9, Standards 1 to 6, also apply to this Regulation, Comment:

with reference to clause 0.12.1(1) and Schedule 6(1).

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012

Regulation: 23 Fitness of materials and workmanship

The products are acceptable. See section 14 and the Installation part of this Certificate. Comment:

29 Regulation: Condensation

The products can contribute to satisfying this Regulation. See section 7.1 of this Certificate. Comment:

Regulation: 39(a)(i) Conservation measures

Target carbon dioxide emission rate Regulation

The products can contribute to satisfying these Regulations. See section 6 of this Certificate. Comment:

Construction (Design and Management) Regulations 2007

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

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

3 Delivery and site handling (3.3) and 9 Behaviour in relation to fire (9.6) of this Certificate. See sections:

Additional Information

NHBC Standards 2014

NHBC accepts the use of TLX Silver and TLX Silver FB for Timber frame and Masonry Wall Applications, when installed and used in accordance with this Certificate, in relation to NHBC Standards, Chapter 6.1 External masonry walls and Chapter 6.2 External timber framed walls.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 13984: 2013 for its vapour control layer property. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

- 1.1 TLX Silver and TLX Silver FB for Timber Frame and Masonry Wall Applications are insulation materials comprising outer layers of coated metallised film, laminated to a nonwoven polypropylene fabric enclosing the core and welded along both long edges. The core of the products consists of five layers of polyester fibre wadding separated by four metallised film layers. A tape with acrylic adhesive, and a minimum width of 50 mm, may be used if required.
- 1.2 The products are available in rolls with the dimensions shown in Table 1.

Table 1 Prod	luct dimensions		
Product	Width (m)	Length (m)	Thickness (mm)
TLX Silver	0.4, 0.6, 1.2, 1.5, 2.4, 2.7, 3.0	10	30
TLX Silver FB	0.4, 0.6, 1.2, 1.5, 2.4, 2.7, 3.0	8	50

- 1.3 Ancillary items used with the products which are outside the scope of this Certificate include:
- plasterboard to BS EN 520: 2004
- staples or 14 mm nails
- timber battens
- screws
- additional insulation where required
- acrylic adhesive tape, minimum width 50 mm.

2 Manufacture

- 2.1 The outer layers of the products consist of non-woven polypropylene fabric adhesively laminated to a low emissivity film, coated to protect the reflective surface. The outer reflective laminate is purchased from approved suppliers and is supplied in roll form.
- 2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:
- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

3 Delivery and site handling

- 3.1 The products are delivered to site in rolls packed in a protective, branded bag, sealed with an end label. Fitting instructions are placed in the bag.
- 3.2 The rolls should be stored in clean, dry conditions not exposed to sunlight. The products must be protected from being dropped or crushed by objects. 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.
- 3.3 On site, to ensure maximum performance of the products when installed, precautions must be taken to protect them from mud and dirt.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on TLX Silver and TLX Silver FB for Timber Frame and Masonry Wall Applications.

Design Considerations

4 General

- 4.1 TLX Silver and TLX Silver FB for Timber Frame and Masonry Wall Applications are suitable for use to improve the thermal insulation of domestic and non-domestic buildings.
- 4.2 The wall or sub-frame should be structurally sound and should have been designed and constructed in accordance with the following standards:

Timber

BS EN 1995-1-1: 2004BS EN 351-1: 1996.

Masonry

BS EN 1996-1-1: 2005
BS EN 1996-1-2: 2005
BS EN 1996-2: 2006.

- 4.3 The installation requires careful detailing around doors and windows to achieve a satisfactory surface for finishing. In addition, every attempt should be made to minimise the risk of thermal bridging at reveals and where heavy separating walls are attached to the external wall. In new work, the construction must be designed to accommodate the thickness of the dry lining, particularly at reveals, heads, and sills and in relation to ceiling height.
- 4.4 Services can be incorporated behind the dry lining, making chasing of the wall unnecessary. Where possible, penetration of the products by services should be kept to a minimum to limit possible penetration by water vapour.
- 4.5 Installation of plasterboard must be in accordance with the relevant sections of BS 8212: 1995.

5 Practicability of installation

The products are designed to be installed by a competent general builder, or a contractor, experienced with these types of products.

6 Thermal performance



6.1 Calculations of thermal transmittance (U value) should be carried out in accordance with BS EN ISO 6946 : 2007 and BRE Report BR 443 : 2006 using the following values:

• 0.05 outer surface emissivity for TLX Silver and TLX Silver FB

0.91 m²·K·W⁻¹ R value for TLX Silver (30 mm thick)
 1.43 m²·K·W⁻¹ R value for TLX Silver FB (50 mm thick)

• 0.06 $m^2 \cdot K \cdot W^{-1}$ R value of products when compressed between battens and rafters, to a nominal 2 mm thickness

0.66^{[1][2]} m²·K·W⁻¹ R value of an air cavity adjacent to the product ≥20 mm thick (horizontal heat flow).

(1) Unventilated cavity with a width and length at least 10 times the thickness and one high emissivity surface.

(2) For guidance on U value calculations refer to the BBA Information Bulletin No 3 (see BBA website).

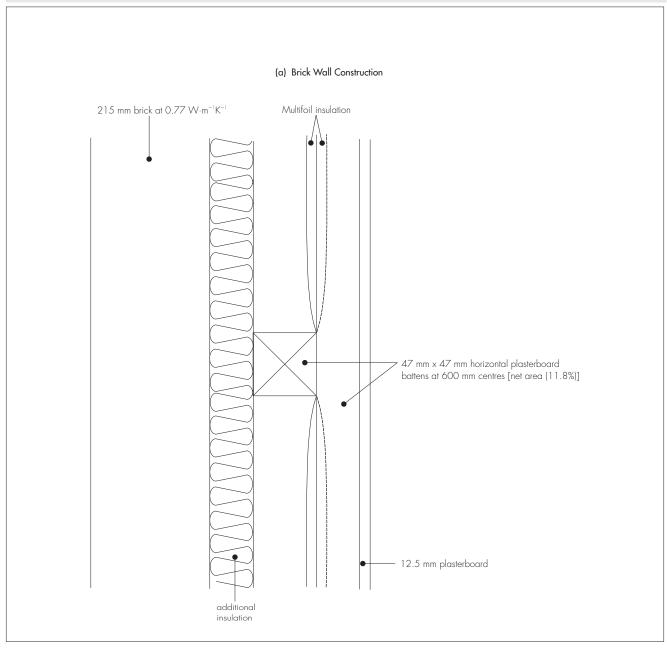
6.2 The U value of a completed wall will depend largely on the thickness and conductivity of the additional insulation used and the extent and arrangement of timber bridging. Example wall constructions are shown in Figure 1 and resulting U values in Table 2.

Table 2 U values for specific constructions

Construction		Additional insulation thickness ⁽¹⁾		U value (W·m ⁻² ·K ⁻¹)
		TLX Silver	TLX Silver FB	
Brick wall ^[2] Figure 1 (a)		45 mm MWV 35 mm EPS 25 mm PUR 105 mm MWV 85 mm EPS 60 mm PUR	25 mm MWV 20 mm EPS 15 mm PUR 90 mm MWV 75 mm EPS 50 mm PUR	0.28 0.28 0.28 0.19 0.19 0.19
Timber frame wall Figure 1 (b)	Studs depth 89 89 89 140 140	50 mm MWV 40 mm EPS 25 mm PUR 100 mm EPS 75 mm PUR	35 mm MVV 30 mm EPS 20 mm PUR 95 mm EPS 70 mm PUR	0.28 0.28 0.28 0.19 0.19

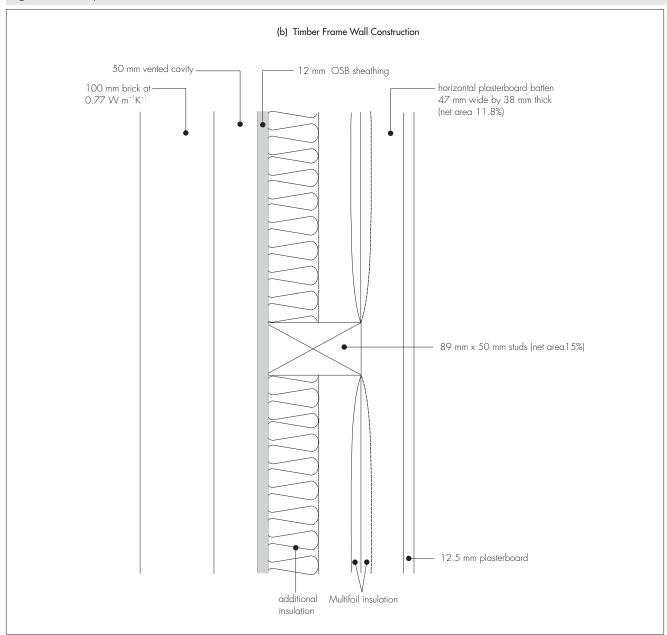
⁽¹⁾ MW insulation (conductivity 0.04 W·m⁻¹·K⁻¹), PUR Insulation (conductivity 0.022 W·m⁻¹·K⁻¹) and emissivity 0.2, and EPS (conductivity 0.032 W·m⁻¹·K⁻¹) thickness rounded to nearest 5 mm.

Figure 1 Example wall constructions



⁽²⁾ Brickwork bridged with mortar, studs and fixings correction (through the additional insulation) as per BR 443 : 2006 and plaster board ($\lambda = 0.021~\text{W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$).

Figure 1 Example wall constructions (continued)





6.3 Care must be taken in the overall design and construction of junctions with other elements and openings to minimise thermal bridges and air infiltration. Detailed guidance can be found in the documents supporting the national Building Regulations.

7 Condensation risk

Interstitial condensation



- 7.1 Walls incorporating the products will contribute to limiting the risk of interstitial condensation when designed and constructed in accordance with BS 5250 : 2011 (Annexes D and G).
- 7.2 The products have a water vapour resistance (μ) factor* in excess of 300 000 and will, therefore, provide significant resistance to the passage of water vapour and would be considered a vapour control layer (VCL) as defined in BS 5250 : 2011 provided all laps and joints are sealed.
- 7.3 The use of the products does not preclude the normal precautions against formation of condensation, especially in rooms expected to have high humidity.
- 7.4 When using these types of products, due consideration must be taken of the overall installation to minimise perforations by services, eg light switches and power outlets and the joints at ceiling and skirting level must be well sealed.
- 7.5 As with any other insulation applied to the inside of a wall, there may be risk of thermal bridging from the floor or ceiling, particularly in concrete slab construction. It has been demonstrated that the use of coving at the wall ceiling point will significantly reduce the problem.

Surface condensation



7.6 Walls incorporating the products will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $0.7~\mathrm{W\cdot m^{-2}\cdot K^{-1}}$ at any point, and the junctions with other elements are designed in accordance with the guidance referred to in section 6.3 of this Certificate.

7.7 For buildings in Scotland, wall constructions will be acceptable when the thermal transmittance (U value) Adoes not exceed 1.2 W·m⁻²·K⁻¹ at any point, and the junctions with other elements are designed in accordance does not exceed 1.2 VV·m - K · al ally poilli, and the junctions with the guidance referred to in BS 5250 : 2011 Annex G. Further guidance may be obtained from BRE Report BR 262: 2002 and section 6.3 of this Certificate.

8 Infestation

The use of the products does not in itself promote infestation. The creation of voids may provide habitation for insects or rodents in area's already infested. Care should be taken to ensure that, wherever possible, all voids are sealed as any infestation may be difficult to eradicate. There is no food value in the materials used.

9 Behaviour in relation to fire

- 9.1 TLX Silver and TLX Silver FB have reaction to fire classifications of Class D* and Class F* respectively in accordance with BS EN 13501-1: 2007.
- 9.2 When installed with an internal lining board, eg 12.5 mm thick plasterboard, the insulation will be contained between the wall and internal lining board, until one is destroyed. Therefore, the insulation will not contribute to the development stages of a fire.
- 9.3 When installed with other additional insulation materials, the fire properties of these materials must be taken into consideration.
- 9.4 Construction elements must incorporate cavity barriers at edges, around openings, at junctions with fire-resisting elements in accordance with the relevant provisions of the national Building Regulations. The design and installation of cavity barriers must take into account any anticipated differential movement.
- 9.5 The products will melt and shrink away from heat, but will burn in the presence of a naked flame.
- 9.6 When the products are used unsupported, there is a risk that fire can spread if it is accidentally ignited during maintenance works, eg plumber's torch. Care should be taken during building and maintenance to avoid the material becoming ignited.

10 Air leakage

- 10.1 When tested to BS EN 12114: 2000 with positive pressure of 50 Pa, the products achieved an air leakage rate of 0.19 $\text{m}^3 \cdot \text{h}^{-1} \cdot \text{m}^{-2}$.
- 10.2 When used as a VCL and an air barrier, the products' effectiveness is reliant on the careful sealing of the laps, joints, perimeters and penetrations, in accordance with the Certificate holder's instructions.
- 10.3 The airtightness of the building will also be dependent on the performance of the other building elements.

11 De-rating of electrical cables

As with other insulation products, it may be necessary in some cases to de-rate electrical cables buried in insulation. BS 7671: 2008 suggests that where wiring is completely surrounded by insulation, it may need to be de-rated to as low as half its free air current carrying capacity. Guidance should be sought from a qualified electrician.

12 Proximity of flues and appliances

When installing the products in close proximity to certain flue pipes and/or heat-producing appliances, the following provisions to the national Building Regulations are acceptable:

England and Wales — Approved Document J., paragraph 2.15

Scotland — Mandatory Standard 3.19, clauses 3.19.1⁽¹⁾⁽²⁾ and 3.19.4⁽¹⁾⁽²⁾

- (1) Technical Handbook (Domestic).
- (2) Technical Handbook (Non-Domestic).

Northern Ireland — Technical Booklet L, paragraph 3.9.

13 Maintenance

As the products are confined behind the wall lining and have suitable durability (see section 14), maintenance is not required.

14 Durability



The products will have a life equivalent to that of the wall structure in which they are incorporated.

Installation

15 General

- 15.1 Installation of TLX Silver and TLX Silver FB for Timber Frame and Masonry Wall Applications and additional insulation products should be in accordance with the Certificate holder's instructions and current good building practice.
- 15.2 Care must be taken to ensure the products are not damaged during installation. Should damage occur by tearing, the products should be repaired by covering the holes with tape. The products are attached to wall studs using staples or nails of at least 14 mm length. The products must have overlap joints of at least 50 mm and be taped along the entire length of the joint with the 50 mm acrylic adhesive tape.
- 15.3 When the products are cut to fit around openings, care should be taken to minimise gaps. The products can be cut easily using sharp scissors or a knife. Any exposed cut edges of the products should be sealed with a suitable adhesive tape.

16 Procedure

Timber frame wall

- 16.1 Installation may be either vertical or horizontal runs. If horizontal, installation should start at the floor and go up to the ceiling.
- 16.2 The products are unrolled across the inside of the timber studs and fixed in accordance with section 15.2.
- 16.3 The products should be permanently fixed in place using wooden battens of size at least 38 mm by 50 mm, parallel or perpendicular to the wall studs held in place with nails.
- 16.4 When the top layer has been battened, any excess material may be removed by running a sharp knife along the edge of the batten.
- 16.5 Plasterboard is fixed to the battens in the conventional manner.

Solid masonry wall

- 16.6 Timber battens at least 38 mm wide by 50 mm deep are screwed to the wall at no greater than 600 mm vertical centres, at wall perimeters and horizontally as required.
- 16.7 The products are installed as for timber frame walls with plasterboard battens coinciding with the existing battens.

Additional insulation

16.8 When used with additional insulation, care should be taken that all air gaps are maintained in accordance with the Certificate holder's instructions for their products. Mineral wool can be placed inside the cavity formed when the product is installed across studs. Rigid insulation products can be placed inside the cavity. Suitable fixings such as wooden battens nailed to the sides of the studs can be used to generate an air layer between the rigid insulation and the other components of the wall.

Technical Investigations

17 Tests

Tests were carried out on TLX Silver and TLX Silver FB for Timber Frame and Masonry Wall Applications and the results assessed to determine the emissivity and durability of the outer foil. The thickness and the resistance of the core material of TLX Silver FB were also tested.

Bibliography

BS 5250: 2011 Code of practice for control of condensation in buildings

BS 7671: 2008 Requirements for electrical installations. IEE Wiring Regulations — Seventeenth Edition

BS 8212: 1995 Code of practice for dry lining and partitioning using gypsum plasterboard

BS EN 351-1 : 1996 Durability of wood and wood-based products — Preservative-treated solid wood — Classification of preservative penetration and retention

BS EN 520 : 2004 Gypsum plasterboards — Definitions, requirements and test methods

BS EN 1995-1-1 : 2004 Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings

BS EN 1996-1-1 : 2005 Eurocode 6 : Design of masonry structures — General rules for reinforced and unreinforced masonry structures

BS EN 1996-1-2 : 2005 Eurocode 6 : Design of masonry structures — General rules — Structural fire design

BS EN 1996-2 : 2006 Eurocode 6 : Design of masonry structures — Design considerations, selection of materials and execution of masonry

BS EN 12114 : 2000 Thermal performance of buildings — Air permeability of building components and building elements — Laboratory test method

BS EN 13501-1 : 2007 Fire classification of construction products and building elements — Classification using test data from reaction to fire tests

BS EN 13984 : 2013 Flexible sheets for waterproofing — Plastic and rubber vapour control layers — Definitions and characteristics

BS EN ISO 6946 : 2007 Building components and building elements — Thermal resistance and thermal transmittance — Calculation method

BS EN ISO 9001: 2008 Quality management systems — Requirements

BS EN ISO 14001: 2004 Environmental Management systems — Requirements with guidance for use

BRE Report (BR 262 : 2002) Thermal insulation: avoiding risks
BRE Report (BR 443 : 2006) Conventions for U-value calculations

Conditions of Certification

18 Conditions

18.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- 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.

18.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

18.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and 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.
- 18.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

18.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- 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
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

18.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal 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, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue 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.

British Board of Agrément Bucknalls Lane Watford Herts WD25 9BA tel: 01923 665300 fax: 01923 665301 clientservices@bba.star.co.uk www.bbacerts.co.uk