

Recticel Insulation Products

(a division of Recticel Ltd)

Enterprise Way

Meir Park

Stoke-on-Trent

Staffordshire ST3 7UN

Tel: 01782 590470 Fax: 01782 590497

e-mail: technicalservices@recticel.com

website: www.recticelinsulation.co.uk



Agrément Certificate

02/3905

Product Sheet 1

EUROTHANE GP

EUROTHANE GP PITCHED ROOF INSULATION

This Agrément Certificate Product Sheet⁽¹⁾ relates to Eurothane GP Pitched Roof Insulation, a rigid polyisocyanurate foam board with a composite foil-facing on both sides, for use in timber pitched roofs of 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.

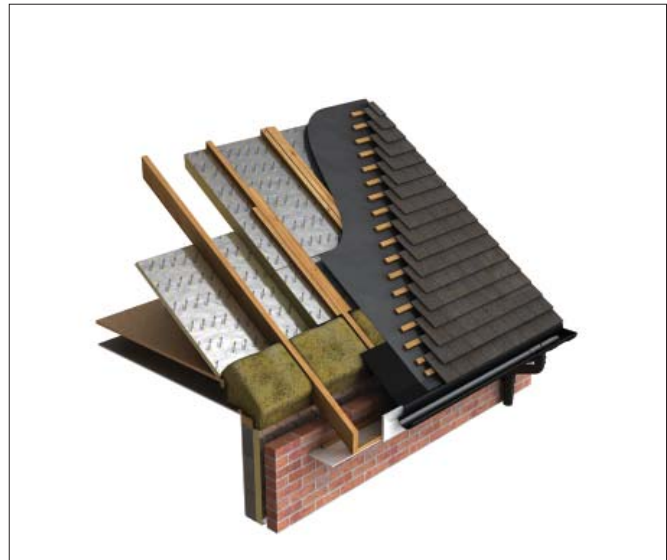
KEY FACTORS ASSESSED

Thermal performance — the product has a declared thermal conductivity (λ_D value) of $0.022 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ and the foil-facing has an emissivity value of 0.05 (see section 6).

Condensation — the insulation core has a water vapour resistivity of approximately $300 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}\cdot\text{m}^{-1}$ and each foil-facing has a high water vapour resistance of $4000 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}$, but the risk of interstitial condensation will depend on the construction and should be assessed for each project (see section 7).

Behaviour in relation to fire — the product will not contribute to the development stages of a fire or present a smoke or toxic hazard (see section 8).

Durability — the product is durable, rot-proof and sufficiently stable and will remain effective as an insulating material for the life of the roof structure in which it is incorporated (see section 13).



The BBA has awarded this Certificate to the company named above for the product described herein. The product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Second issue: 17 October 2013

John Albon — Head of Approvals
Energy and Ventilation

Claire Curtis-Thomas
Chief Executive

Originally certificated on 22 March 2002

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

e-mail: mail@bba.star.co.uk

website: www.bbacerts.co.uk

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Regulations

In the opinion of the BBA, Eurothane GP Pitched Roof Insulation, if installed, used and maintained in accordance with this Certificate, will meet or contribute to meeting 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
Comment:	The risk of interstitial condensation must be assessed for each construction. The product can adequately limit the risk of surface condensation. See sections 7.1 and 7.5 of this Certificate.
Requirement: L1(a)(i)	Conservation of fuel and power
Comment:	The product can contribute to satisfying this Requirement. See section 6 of this Certificate.
Regulation: 7	Materials and workmanship
Comment:	The product is acceptable. See section 13 and the <i>Installation</i> part of this Certificate.
Regulation: 26	CO₂ emission rates for new buildings
Comment:	The product can contribute to satisfying this Regulation. See section 6 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)	Durability, workmanship and fitness of materials
Comment:	The product can satisfy the requirements of this Regulation. See section 13 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards applicable to construction
Standard: 3.15	Condensation
Comment:	The risk of interstitial condensation must be assessed for each construction. The product can adequately limit the risk of surface condensation, with reference to clauses 3.15.1 ⁽¹⁾⁽²⁾ , 3.15.3 ⁽¹⁾⁽²⁾ , 3.15.4 ⁽¹⁾⁽²⁾ and 3.15.5 ⁽¹⁾⁽²⁾ . See sections 7.1 and 7.6 of this Certificate.
Standard: 6.1(b)	Carbon dioxide emissions
Standard: 6.2	Building insulation envelope
Comment:	The product can contribute to satisfying clauses, or parts of clauses, 6.1.2 ⁽²⁾ , 6.1.6 ⁽¹⁾ , 6.2.1 ⁽¹⁾⁽²⁾ , 6.2.3 ⁽¹⁾ , 6.2.4 ⁽²⁾ , 6.2.5 ⁽²⁾ , 6.2.6 ⁽¹⁾ , 6.2.7 ⁽¹⁾ , 6.2.8 ⁽²⁾ , 6.2.9 ⁽¹⁾⁽²⁾ , 6.2.10 ⁽¹⁾ , 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
Comment:	The product can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and, therefore, will contribute to a construction meeting a bronze level of sustainability as defined in this Standard. In addition, the product 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
Comment:	Comments made in relation to the product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012

Regulation: 23(a)(i)(iii)(b)	Fitness of materials and workmanship
Comment:	The product is acceptable. See section 13 and the <i>Installation</i> part of this Certificate.
Regulation: 29	Condensation
Comment:	The risk of interstitial condensation must be assessed for each construction. See section 7.1 of this Certificate.
Regulation: 39(a)(i) 40(2)	Conservation measures Target carbon dioxide emission rate
Comment:	The product can contribute to satisfying these Regulations. See section 6 of this Certificate.

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.

See sections: 3 *Delivery and site handling* (3.3) and 14 *General* (14.2) of this Certificate.

Additional Information

NHBC Standards 2013

NHBC accepts the use of Eurothane GP Pitched Roof Insulation, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards, Chapter 7.2 Pitched roofs*.

Technical Specification

1 Description

1.1 Eurothane GP Pitched Roof Insulation is manufactured from of rigid polyisocyanurate foam, faced with a composite foil-facing on both sides.

1.2 The product has the nominal characteristics as shown in Table 1.

Table 1 Nominal characteristics

Characteristic (unit)	Value
Length (mm)	2400
Width (mm)	1200
Thickness (mm)	30 to 200 (in 5 mm increments)
Minimum compressive strength at 10% compression (kPa)	140
Edge profile	Plain

1.3 Ancillary items for use with this product, but outside the scope of this Certificate, are:

- roof tile underlay — vapour-permeable
- Helifix InSkew 600 or similar spiral fixings
- galvanized slab nails and ring-shank nails
- pre-treated counter battens and tiling laths
- roofing slates or tiles
- vapour control layer (VCL) and plasterboard.

2 Manufacture

2.1 Raw materials are injected onto the lower foil-facing on a conveyor belt. The exothermic reaction expands the foam, which then comes into contact with the upper foil-facing. An automated process cures and cuts the product to the required size.

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.

2.3 The management system of Recticel Insulation Products has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by Lloyd's Register Quality Assurance (Certificate ANT951267.1).

3 Delivery and site handling

3.1 The product is delivered to site shrink-wrapped in polythene packs containing a label bearing the product description and characteristics, the manufacturer's name, and the BBA logo incorporating the number of this Certificate.

3.2 It is essential that the product is stored such that it is raised off the ground, is inside or under cover on a flat, dry, level surface in a well-ventilated area. The product must be protected from rain, snow and prolonged exposure to sunlight. Products that have been allowed to get wet or are damaged must not be used. Nothing should be stored on top of the product.

3.3 The product must not be exposed to a naked flame or other ignition sources. The product must not be exposed to solvents or other chemicals.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Eurothane GP Pitched Roof Insulation.

Design Considerations

4 General

4.1 Eurothane GP Pitched Roof Insulation is for use as thermal insulation in new and existing pitched roofs of dwellings or other buildings with similar temperature and humidity conditions, in conjunction with a vapour-permeable roof tile underlay:

- above sloping rafters
- above and between sloping rafters
- between sloping rafters
- between and below sloping rafters.

4.2 Roofs should be designed and constructed in accordance with the relevant clauses of BS 5534 : 2003, BS 5250 : 2011, BS 8212 : 1995 and BS EN 1995-1-1 : 2004.

4.3 The product is not a structural component.

4.4 During installation, care should be exercised to ensure that the product is not subjected to any construction, or foot traffic loads. Roof timbers of adequate strength should be used to support such loads.

4.5 It is essential that detailing and jointing of the boards achieves a convection-free envelope (see also section 7.3). Any gaps should be filled, and/or taped. Ridges, abutments and penetrations should also be sealed. Flue pipes passing through the insulation should be suitably sleeved.

4.6 Proper care and attention must be given to maintaining the integrity/continuity of the VCL.

4.7 The requirements/provisions of fire stops should be considered with regard to national Building Regulations.

5 Practicability of installation

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

6 Thermal performance

6.1 Calculations of the thermal transmittance (U value) should be carried out in accordance with BS EN ISO 6946 : 2007 and BRE Report BR 443 : 2006 using the declared thermal conductivity (λ_p) of 0.022 W·m⁻¹·K⁻¹ for the product and a foil surface emissivity (ϵ) of 0.05. When considering insulation requirements, designers should refer to the detailed guidance contained in the documents supporting the national Building Regulations. The U values shown in Table 2 indicate that the product can contribute to a roof achieving typical design U values referred to in those supporting documents.

Table 2 U values⁽¹⁾

Element type	Timber dimensions (mm)	Eurothane ⁽²⁾ (mm) and location with respect to rafters		U value (W·m ⁻² ·K ⁻¹)
		between	outside	
Sloping roof with LR underlay	47 x 100 at 600 centres	70 100	50 50	0.18 0.16
	47 x 150 at 600 centres	70 125	50 50	0.18 0.13

(1) Plasterboard taken as 12.5 mm at 0.25 W·m⁻¹·K⁻¹.

(2) Nearest available thickness.

6.2 The product can contribute to maintaining continuity of thermal insulation at junctions between elements and openings. For Accredited Construction Details the corresponding ψ -values (psi) in BRE Information Paper IP 1/06, Table 3 may be used in carbon emission calculations in Scotland and Northern Ireland. Detailed guidance for other junctions and on limiting heat loss by air infiltration can be found in:

England and Wales — Approved Documents to Part L and for new thermal elements to existing buildings, Accredited Construction Details (version 1.0). For new build, see also SAP 2009 *The Government's Standard Assessment Procedure for Energy Rating of Dwellings*, Appendix K, and the *iSBEM User Manual*

Scotland — Accredited Construction Details (Scotland)

Northern Ireland — Accredited Construction Details (version 1.0).

7 Condensation

Interstitial condensation



7.1 Roofs will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2011, Annex D and Annex H, and BRE Report BR 262 : 2002 for roofs in England and Wales.

7.2 For the purposes of assessing the risk of interstitial condensation, the insulation core has a water vapour resistivity of approximately $300 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}\cdot\text{m}^{-1}$ and a high water vapour resistance value of $4000 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}$ for each individual foil-facing.

7.3 The product, when installed on the internal surface of rafters, has an intrinsically high vapour resistance and, when installed in a continuous layer with tightly butted joints and durably taped, filled/sealed gaps and joints, will provide a convection-free envelope of high vapour resistance.

7.4 To minimise moisture entering the roof an effective VCL such as 125 μm minimum thickness polyethylene with sealed and lapped joints, should be placed under the inclined ceiling between the insulation and the internal finish.

Surface condensation



7.5 Roofs will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $0.35 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ at any point and the junctions are designed in accordance with *Limiting thermal bridging and air leakage : Robust construction details for dwellings and similar buildings* TSO 2002, BRE Information Paper IP 1/06 or section 6.2 of this Certificate.



7.6 Roofs will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $1.2 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ at any point. Guidance may be obtained from BS 5250 : 2011, Annex H, or section 6.2 of this Certificate. Additional information can be found in BRE Report BR 262 : 2002.

8 Behaviour in relation to fire

8.1 The product is combustible but, when installed with an internal lining board securely fixed to timber, eg 12.5 mm thick plasterboard, the product will be contained between the element and internal lining board until one is destroyed. Therefore, the product will not contribute to the development stages of a fire until the lining is compromised.

8.2 The use of the product will not affect the fire rating obtained by tiled or slated roofs when evaluated by assessment or test to BS 476-3 : 2004.

8.3 Elements must incorporate cavity barriers at edges, around openings and at junctions with fire-resisting elements, and the maximum dimensions of any cavity in any direction must not exceed 10 m 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 Strength

The product, 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.

10 Structural stability (over rafter application only)

10.1 Resistance to wind uplift will depend largely on the building geometry and its geographical location and should be calculated in accordance with BS EN 1991-1-4 : 2005. Snow loadings should be calculated in accordance with BS EN 1991-1-3 : 2003.

10.2 When calculating the fixing spacing required to resist the calculated loadings, the requirements of BS EN 1995-1-1 : 2004 should be followed where possible. Further guidance can be obtained from the Certificate holder. The Certificate holder must advise on the use of the correct proprietary fixings and approved nails and fixing capacity in accordance with BS EN 1995-1-1 : 2004.

11 Water resistance

An effective roof tile underlay will protect the product from wind-driven snow or rain penetrating the tiles/slates in service.

12 Maintenance

As the product is placed within the roof and has suitable durability (see section 13), maintenance is not required.

13 Durability

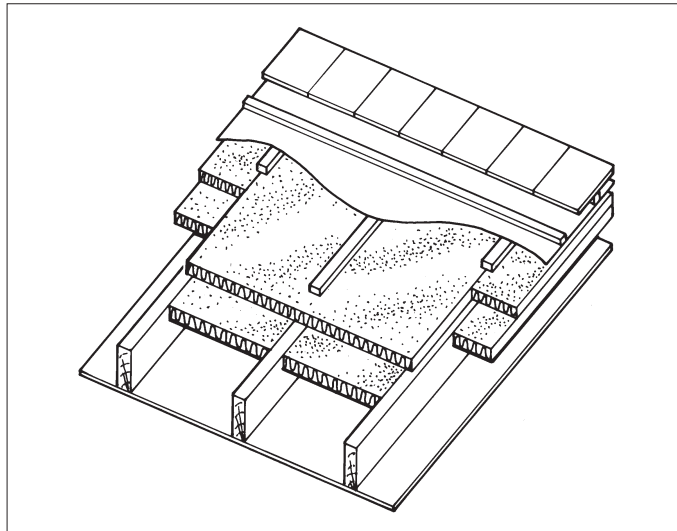


The product will have a life equivalent to that of the roof structure in which it is incorporated.

14 General

14.1 Installation of Eurothane GP Pitched Roof Insulation as shown in Figure 1 must be in accordance with the relevant clauses of BS 5534 : 2003, the manufacturer's instructions and can be carried out in all conditions normal to roofing work.

Figure 1 Typical installation



14.2 The product is light to handle but some handling difficulties may be experienced in windy conditions. Since the product will not support the weight of operatives, appropriate care must be taken during installation and tiling.

14.3 The product can be cut easily using a sharp knife or fine-tooth saw but care must be taken to prevent damage, particularly to edges. If damaged, the product should not be used.

14.4 A tight fit must be ensured between the product and rafters, the product at the ridge and at roof/wall junctions.

14.5 It is important to fill/seal gaps and joints in the insulation envelope (see section 4.5).

14.6 Where the product is installed in traditional and timber-frame construction, cavity barriers at the junction of the external wall and roof space should be provided.

14.7 Roof tiles or slates are installed in accordance with the relevant clauses of BS 5534 : 2003.

14.8 When applying roof tiles or slates to a warm roof construction, the recommendations of the manufacturer must be followed.

14.9 The product should be installed in conjunction with an appropriate internal lining board for example standard gypsum plasterboard to BS EN 520 : 2004 in accordance with BS 8212 : 1995.

15 Procedure

Above rafters

15.1 A treated-timber stop rail, the same thickness as the product, is fixed to the rafters close to the eaves to provide a firm fixing point for the counter battens. The product is laid above the rafters commencing at the stop rail. The product should be tightly butted and positioned in a staggered pattern with all the joints running from eaves to ridge occurring over the rafters. The procedure is continued until the whole area is covered.

15.2 Any gaps must be sealed with flexible sealant or expanding foam. Large-headed clout nails can be used as a temporary securing measure until the counter battens are secured into place.

Between and above rafters

15.3 The product is cut to size and placed between the rafters on timber batten carriers or sarking clips nailed up the slope of the roof. The upper face of the product must be kept flush with the top of the rafter. The second layer is placed over the rafters as described in sections 15.1 and 15.2.

Between rafters

15.4 Following completion of the roof cladding, the product is cut to size and placed between the rafters. Timber battens or clips are fixed to the inner face of the rafters allowing sufficient depth for the insulation to sit flush with the underside of the rafters.

15.5 A sealed polythene VCL with a minimum thickness 125 μm with lapped and sealed joints is placed over the rafter face before applying the internal finish.

Between and below rafters

15.6 If required, after installation as described in section 15.4, a second layer of the product may be added below the rafters running transverse to the first, to provide a staggered layer, and secured accordingly.

15.7 The product should be butted tightly against each other to prevent gaps. Taping the joints with an acrylic adhesive foil tape provides an effective VCL and an air permeability barrier. To achieve an adequate bond, the product should be clean and free from any contamination.

External finishing

15.8 The vapour-permeable roof tile underlay is laid in accordance with the manufacturer's instructions.

15.9 Treated counter battens (minimum 38 mm deep) are fixed at each rafter run from eaves to ridge using the proprietary fixings at the required centres in accordance with the fixing manufacturer's instructions. The counter batten is also fixed to the anchor batten, with short lengths being tightly butted together.

15.10 Tiling laths are fixed horizontally at spacings to suit the specified tiles or slates with the nails penetrating the full depth of the laths and counter batten.

Finishing

15.11 The plasterboard and VCL are fixed to the internal face of timber rafters and are secured with conventional nails or screws to the appropriate length, and finished as normal.

Technical Investigations

16 Tests

Tests were carried out by the BBA on Eurothane GP Pitched Roof Insulation in accordance with BS EN 13165 : 2008 to determine:

- dimensional stability
- compressive strength
- thermal conductivity
- bowing under a thermal gradient.

17 Investigations

17.1 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.

17.2 Results of test data to BS EN 13165 : 2008 were assessed in relation to:

- dimensions
- squareness
- density
- value.

17.3 An assessment of the risk of interstitial condensation was made.

17.4 An assessment was made of typical constructions which achieve the design U values.

Bibliography

- BS 476-3 : 2004 *Fire tests on building materials and structures — Classification and method of test for external fire exposure to roofs*
- BS 5250 : 2011 *Code of practice for control of condensation in buildings*
- BS 5534 : 2003 *Code of practice for slating and tiling (including shingles)*
- BS 8212 : 1995 *Code of practice for dry lining and partitioning using gypsum plasterboard*
- BS EN 520 : 2004 *Gypsum plasterboards — Definitions, requirements and test methods*
- BS EN 1991-1-3 : 2003 *Eurocode 1 : Actions on structures — General actions — Snow loads*
NA to BS EN 1991-1-3 : 2003 *UK National Annex to Eurocode 1 : Actions on structures — General actions — Snow loads*
- BS EN 1991-1-4 : 2005 *Eurocode 1 : Actions on structures — General actions — Wind actions*
NA to BS EN 1991-1-4 : 2005 *UK National Annex to Eurocode 1 : Actions on structures — General actions — Wind actions*
- BS EN 1995-1-1 : 2004 *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*
NA to BS EN 1995-1-1 : 2004 *UK National Annex to Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*
- BS EN 13165 : 2008 *Thermal insulation products for buildings — Factory made rigid polyurethane foam (PUR) products — Specification*
- 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*
- BRE Information Paper IP 1/06 *Assessing the effects of thermal bridging at junctions and around openings*
- BRE Report (BR 262 : 2002) *Thermal insulation: avoiding risks*
- BRE Report (BR 443 : 2006) *Conventions for U-value calculations*

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.