



CERTIFICATE

CERTIFICATION CODE: CU-PEFC-867959

Field of attention:
PEFC

Issued to:
Recticel NV
Wevelgem, BELGIUM
Project in: BELGIUM

Standard:

The COC requirements of the PEFC Council Technical Document as set by the PEFC Council (Programme for the Endorsement of Forest Certification schemes), and Control Union Certifications (CU) Inspection Regulations.

PEFC ST 2002:2013, ST 2002:2013 (multi)

Valid until: 25 June 2025

Control Union Certifications declares to have inspected the process of Chain of Custody of forest based products of the above mentioned client, and has found it in accordance with the requirements mentioned above.

The product(s) resulting from this process as well as the applicable material input(s) and method(s) applied are mentioned in the authenticated Annex of this certificate.

This certificate remains in force until further notice, provided that the participant continues to meet the conditions as laid down in the client contract with Control Union Certifications B.V. and verified in inspections by Control Union Certifications B.V.

Date of certification:
26 June 2020
Place and date of issue:
ANTWERPEN, 07 February 2022

CERTIFICATE No: C 867959CU-
PEFC-01.2022
REGISTRATION No: CU 867959



Declared by:

On behalf of the Managing Director

Mrs. J. Ritter

Certifier
Control Union Certifications B.V.
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**Annex to
CERTIFICATION CODE: CU-PEFC-867959PEFC**

**The COC requirements of the PEFC Council Technical Document
as set by the PEFC Council (Programme for the Endorsement of Forest Certification schemes), and
Control Union Certifications (CU) Inspection Regulations.**

Recticel NV
Zuidstraat 15
B-8560 Wevelgem
BELGIUM

Certified products

Product no.	Name of product	Material input and method applied	Processing unit(s)
P 009964	5044 Insulating board	Forest based materials, physical separation	PRC 107921, PRC 114069, PRC 116200

Processing unit(s)

Unit no.	Name of unit	Unit ref.	Address	Processes
PRC 107921	Recticel ltd	D-01	Enterprise Way, Whittle Road, Meir Park Stoke-on-Trent, Staffordshire GREAT BRITAIN	Secondary processing
PRC 116200	Recticel Insulation SAS	D-02	1 Ferdinand de Lesseps ZAC Du Parc de la Voie Romaine BOURGES, FRANCE	Secondary processing
PRC 114069	Recticel NV/SA	ICS en D-03	Zuidstraat 15 Wevelgem, BELGIUM	Internal Control System (ICS), Secondary processing

This certificate including the annex remains property of Control Union Certifications B.V. and can be withdrawn in case of terminations as mentioned in the licensee contract, or in case changes or deviations of the above mentioned data occur. The licensee is obliged to inform Control Union Certifications B.V. immediately of any changes in the above mentioned data. Only an original and signed certificate with accompanying attachments is valid.

Date of certification:
26 June 2020

Authenticated by

Place and date of issue:
ANTWERPEN, 07 February 2022


i.o.
On behalf of the Managing Director
Mrs. J. Ritter
Certifier

This certificate cannot be used as guarantee certificate for delivered goods!

Recticel Insulation Products

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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.

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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	CO ₂ 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	50	0.18
	47 x 150 at 600 centres	100	50	0.16
	47 x 100 at 600 centres	70	50	0.18
	47 x 150 at 600 centres	125	50	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

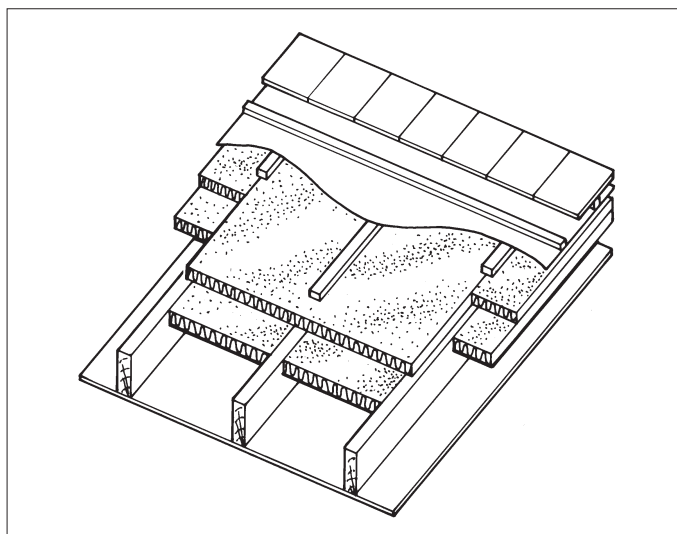


The product will have a life equivalent to that of the roof structure in which it is incorporated.

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.

Recticel Limited
t/a Recticel Insulation Products

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Agrément Certificate
02/3905
Product Sheet 3

EUROTHANE GP

EUROTHANE GP TIMBER FRAME BOARD

This Agrément Certificate Product Sheet⁽¹⁾ relates to Eurothane GP Timber Frame Board, comprising rigid polyisocyanurate (PIR) foam board with a composite foil-facing on both sides. The product is for use as a thermal insulation layer in new conventional timber-frame walls of domestic buildings up to 18 m in height with a masonry outer leaf.

(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

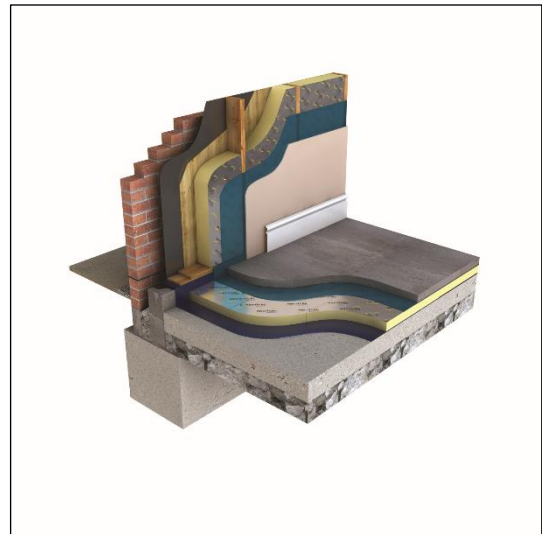
Thermal performance — the product has a declared thermal conductivity (λ_D) of $0.022 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ and the foil-facer has an emissivity value of 0.05 (see section 6).

Condensation risk — the product can contribute to limiting the risk of condensation (see section 7).

Behaviour in relation to fire — the product has a reaction to fire classification of Class F to BS EN 13501-1 : 2007 (see section 8).

Water resistance — the product will resist water transfer across the cavity (see section 10).

Durability — the product is durable, rot proof and sufficiently stable to remain effective as insulation for the life of the building (see section 14).



The BBA has awarded this Certificate to the company named above for the product described herein. This 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

Claire Curtis-Thomas

Date of Third issue: 18 July 2017

John Albon – Head of Approvals
Construction Products

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.

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Regulations

In the opinion of the BBA, Eurothane GP Timber Frame Board, if installed, used and maintained in accordance with this Certificate, can satisfy or 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:	B3(1)(4)	Internal fire spread (structure)
Comment:	The product can contribute to satisfying this Requirement. See sections 8.1, 8.2 and 8.5 of this Certificate.	
Requirement:	C2(b)	Resistance to moisture
Comment:	The product can contribute to satisfying this Requirement. See section 10.1 of this Certificate.	
Requirement:	C2(c)	Resistance to moisture
Comment:	The product can contribute to satisfying this Requirement. 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 14 and the <i>Installation</i> part of this Certificate.	
Regulation:	26	CO₂ emission rates for new buildings
Regulation:	26A	Fabric energy efficiency rates for new dwellings (applicable to England only)
Regulation:	26A	Primary energy consumption rates for new buildings (applicable to Wales only)
Regulation:	26B	Fabric energy efficiency rates for new dwellings (applicable to Wales only)
Comment:	The product can contribute to satisfying these Regulations. 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 is acceptable. See section 14 and the <i>Installation</i> part of this Certificate.	
Regulation:	9	Building standards applicable to construction
Standard:	2.4	Cavities
Comment:	Use of the product is restricted under this Standard, with reference to clause 2.4.2 ⁽¹⁾ . See section 8.4 of this Certificate.	
Standard:	2.6	Spread to neighbouring buildings
Comment:	Walls incorporating the product can contribute to satisfying this Standard, with reference to clause 2.6.1 ⁽¹⁾ . See sections 8.1 and 8.2 of this Certificate.	
Standard:	3.10	Precipitation
Comment:	The product can contribute to satisfying this Standard, with reference to clauses 3.10.1 ⁽¹⁾ and 3.10.3 ⁽¹⁾ . See section 10.1 of this Certificate.	
Standard:	3.15	Condensation
Comment:	The product can contribute to satisfying this Standard, with reference to clauses 3.15.1 ⁽¹⁾ , 3.15.4 ⁽¹⁾ and 3.15.5 ⁽¹⁾ . 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 this Standard, with reference to clauses, or parts of, 6.1.6 ⁽¹⁾ , 6.2.1 ⁽¹⁾ , 6.2.3 ⁽¹⁾ , 6.2.9 ⁽¹⁾ and 6.2.11 ⁽¹⁾ . 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⁾ [Aspects 1 ⁽¹⁾ and 2 ⁽¹⁾], 7.1.6 ⁽¹⁾ [Aspects 1 ⁽¹⁾ and 2 ⁽¹⁾] and 7.1.7 ⁽¹⁾ [Aspect 1 ⁽¹⁾]. See section 6 of this Certificate.	
Regulation:	12	Building standards applicable to conversions
Comment:	All comments given for the product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾ and Schedule 6 ⁽¹⁾ .	

(1) Technical Handbook (Domestic).



The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	23	Fitness of materials and workmanship
Comment:	The product is acceptable. See section 14 and the <i>Installation</i> part of this Certificate.	
Regulation:	28(b)	Resistance to moisture and weather
Comment:	The product can contribute to satisfying this Regulation. See section 10.1 of this Certificate.	
Regulation:	29	Condensation
Comment:	The product can contribute to satisfying this Regulation. See section 7.1 of this Certificate.	
Regulation:	35(1)(4)	Internal fire spread — Structure
Comment:	Walls incorporating the product can contribute to satisfying this Regulation. See sections 8.1, 8.2 and 8.5 of this Certificate.	
Regulation:	39(a)(i)	Conservation measures
Regulation:	40(2)	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 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See section: 3 *Delivery and site handling* (3.4) of this Certificate.

Additional Information

NHBC Standards 2017

Subject to a 50 mm minimum residual cavity being maintained, NHBC accepts the use of Eurothane GP Timber Frame Board, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, 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 13165 : 2012. 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 Eurothane GP Timber Frame Board is a rigid polyisocyanurate (PIR) foam board with a composite foil-facing on both sides.

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

Table 1 Nominal characteristics

Characteristic (unit)	Value
Length (mm)	2400
Width (mm)	1200
Thickness (mm)	25 to 160 (in 5 mm increments)
Minimum compressive strength at 10% compression* (kPa)	<50 mm = 120 50 to 160 mm = 140
Edge profile	Square

2 Manufacture

2.1 Raw materials are injected onto the lower insulation facer on a conveyor belt. The exothermic reaction expands the foam, which then comes into contact with the upper insulation facer. 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 Limited has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 and BS EN ISO 14001 : 2004 by Lloyd's Register Quality Assurance (Certificate ANT951267.1 and 1000665 respectively).

3 Delivery and site handling

3.1 The product is delivered to site in polythene-wrapped packs. Each pack contains a label bearing the manufacturer's name, board dimensions and the BBA logo incorporating the number of this Certificate.

3.2 The product must be protected from prolonged exposure to sunlight, and stored dry, flat and raised above ground level (to avoid contact with ground moisture). Where possible, packs should be stored inside. If stored outside, they should be under cover or protected with opaque polythene sheeting.

3.3 The product is light and easy to handle; care should be taken when handling individual items to avoid crushing the edges or corners. If damaged, the product should be discarded.

3.4 The product must not be exposed to open flame or other ignition sources, or 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 Timber Frame Board.

Design Considerations

4 Use

4.1 Eurothane GP Timber Frame Board is satisfactory for use as insulation fixed between the timber studding, a dry lining or insulated sheathing facing the cavity, and is effective in reducing the thermal transmittance (U value) of external walls of new domestic buildings up to 18 m in height with a conventional timber-frame internal leaf and a masonry outer leaf. It is essential that such walls are designed and constructed to incorporate the precautions in this Certificate to prevent moisture penetration, including having a breather membrane over the timber sheathing.

4.2 Buildings subject to the national Building Regulations should be designed and constructed in accordance with the relevant recommendations of:

- BS EN 1995-1-1 : 2004, BS EN 1996-1-1 : 2005 and BS EN 1996-2 : 2006, and their respective UK National Annexes
- BS EN 351-1 : 2007.

4.3 Buildings not subject to these Regulations should also be built in accordance with the Standards given in section 4.2 of this Certificate.

4.4 Wall ties and fixings to BS EN 845-1 : 2013 should be used for structural stability in accordance with BS EN 1995-1-1 : 2004, BS EN 1996-1-1 : 2005 and BS EN 1996-2 : 2006 and their UK National Annexes.

4.5 Services which penetrate the dry lining (eg light switches or power outlets) must be kept to a minimum to limit damage to vapour checks. In addition, to preserve the fire resistance of the wall, any penetrations should be enclosed in plasterboard, stone mineral wool or a suitably tested proprietary fire-rated system.

4.6 This application requires a vapour control layer (VCL) behind the internal finish, which should be a minimum thickness of 0.125 mm (500 gauge) polyethylene, or plasterboard backed with a vapour control membrane or similar.

4.7 Installation must not be carried out until the moisture content of the timber frame is less than 20%.

4.8 When used as insulated sheathing, the product will not contribute to the structural performance of the timber frame.

4.9 Care must be taken in the overall design and construction of walls incorporating the product to ensure the provision of appropriate:

- cavity trays and damp-proof courses (dpc's)
- cavity barriers and fire dampers
- resistance to the ingress of precipitation, moisture and dangerous gases from the ground
- resistance to sound transmission when flanking separating walls and floors.

4.10 The use of cavity battens or boards is strongly recommended to prevent thermal bridging by mortar droppings.

Residual cavity width for insulated sheathing

4.11 The minimum residual cavity width to be maintained during construction must be 25 mm. To achieve this, a greater nominal residual cavity width may need to be specified at the design stage (to allow for inaccuracies inherent in the building process). The specifier may either:

- design a nominal residual cavity width of 50 mm (a residual cavity nominally at least 50 mm wide will be required by the NHBC), or

- design a cavity width which takes into account the dimensional tolerances of the components which make up the wall (by reference to the British Standards relating to the bricks, blocks and boards, or by using the data from the respective manufacturers). Allowances may need to be made for the quality of building operatives and the degree of site supervision or control available. The limitations in respect of exposure of the proposed building, as set out in Table 2, must also be observed.

Table 2 Maximum allowable total exposure factors of different constructions

Construction	Maximum allowable exposure factor $E^{(1)}$
All external masonry walls protected by: rendering (to BS EN 13914-1), tile or slate hanging, or timber, plastic or metal weatherboarding or cladding	No restriction
One or more external masonry walls constructed from facing clay brickwork or natural stone, the porosity of which exceeds 20% by volume. Mortar joints must be flush pointed or weatherstruck	100
One or more external masonry walls constructed from calcium silicate bricks, concrete blocks, reconstituted stone, or natural stone, the porosity of which is less than 20% by volume, or any material with raked mortar joints	88

(1) To BS 5618 : 1985.

4.12 From ground level, the maximum height of continuous cavity walls must not exceed 12 metres; above 12 metres, the maximum height of continuous cavity walls must not exceed 6 metres. In both cases, breaks should be in the form of continuous horizontal cavity trays and weepholes discharging to the outside.

4.13 An external render coat or other suitable finish should be applied in locations where such application would be normal practice; care should be taken to ensure that the residual cavity is not bridged by mortar.

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) of the product should be carried out in accordance with BS EN ISO 6946 : 2007 and BRE Report BR 443 : 2006 using the declared thermal conductivity (λ_D)* of 0.022 W·m⁻¹·K⁻¹ and a foil surface emissivity (ϵ) of 0.05.

6.2 The U value of a completed wall will depend on the selected insulation thickness, the insulating value of the external substrate masonry and the internal finish. Calculated U values for example constructions are given in Table 3.

Table 3 Example U values — new-build timber-framed external cavity wall⁽¹⁾

Target U value (W·m ⁻² ·K ⁻¹)	Insulation thickness (mm)			
	System 1	System 2	System 3	System 4
	Between timber-frame studs (140 mm)	Between timber-frame studs and over studs – sheathing ⁽²⁾ (140 mm)	Between timber-frame studs and over studs – dry lining ⁽³⁾ (140 mm)	All over timber-frame studs – sheathing ⁽²⁾ (140 mm)
0.18	–	85 + 25	90 + 25	100
0.19	–	75 + 25	80 + 25	95
0.25	95	–	–	65
0.26	85	–	–	60
0.27	80	–	–	60
0.28	75	–	–	55
0.30	70	–	–	50
0.35	50	–	–	40

(1) For system construction details, see section 8.3 of this Certificate.

(2) Fixing for sheathing assumed to be 5.6 fully-penetrating steel ($\lambda = 50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) fixings per square metre (300 mm centres) with a cross-sectional area of 9.6 mm² (3.5 mm diameter) and wall ties 18 mm² and 3.7 m⁻² ($\lambda = 50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$).

(3) Fixings for dry-lining assumed to be 11 fully-penetrating steel ($\lambda = 50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) fixings per square metre (150 mm centres) with a cross-sectional area of 13.2 mm² (screw diameter 4.1 mm).

Junctions



6.3 The product can contribute to maintaining continuity of thermal insulation at junctions with other elements and 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 will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2011, Annexes D and G, and the relevant guidance.

7.2 For the purposes of assessing the risk of interstitial condensation, the insulation core vapour resistivity may be taken as approximately 300 MN·s·g⁻¹·m⁻¹ and a resistance value of 4000 MN·s·g⁻¹ for each individual foil-facing.

7.3 When used as insulated sheathing, the joints between the boards must not be taped.

7.4 If the product is to be used in the external walls of rooms expected to have high humidity, care must be taken to provide adequate permanent ventilation to avoid possible problems from the formation of interstitial condensation in the internal wall leaf.

Surface condensation



7.5 Walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 0.7 W·m⁻²·K⁻¹ at any point, and the junctions with other elements are designed in accordance with section 6.3 of this Certificate.



7.6 For buildings in Scotland, walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 1.2 W·m⁻²·K⁻¹ at any point, and the junctions with other elements are designed in accordance 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 Behaviour in relation to fire



8.1 The product has a reaction to fire classification* of Class F to BS EN 13501-1 : 2007 and is therefore not classified as non combustible or of limited combustibility. The product is therefore restricted to buildings up to 18 m in height.

8.2 A fire-resistance test was carried out in accordance with BS 476-21 : 1987 on a loadbearing, timber stud wall system. An assessment considered the likely fire resistance of all systems (see section 8.3 of this Certificate) as if they had been tested to BS 476-21 : 1987. The main points of the assessment highlighted that:

- all systems are suitable for applications where a fire resistance of up to 30 minutes is required against the loadbearing capacity, integrity and insulation criteria of BS 476-21 : 1987 – for fire exposure from the inside, when subject to a total imposed load of 60 kN (10 kN load per stud)⁽¹⁾
- for loads greater than 60 kN (10 kN load per stud), a qualified structural engineer can utilise the BS 476-21 : 1987 fire-resistance test report and its accompanying assessment, to alter the design of the timber frame to ensure that the residual timber after 30 minutes will be adequate. The Certificate holder should be contacted for these reports
- timber studs must be at least 140 mm deep by 45 mm wide, located at maximum 600 mm centres. The same sections are used to form cross noggins at maximum 1200 mm centres. The noggins between each pair of studs are staggered by 600 mm from the noggins in the adjacent pair of studs
- openings for doors and windows should be framed out and any exposed timber covered with at least one layer of plasterboard (see also section 4.5).

(1) Relates only to walls with a masonry outer leaf. The performance of other weather-resistant claddings should be demonstrated by an appropriate test or assessment.

8.3 The four systems are:

System 1 — Eurothane GP Timber Frame Board between studs only

- outer brick leaf
- nominal 50 mm air cavity
- breather membrane
- sheathing board — OSB or similar, at least 9 mm thick
- 25 to 160 mm thick Eurothane GP Timber Frame Board between the studs, retained using timber battens, nominal 35 by 25 mm, secured to the sides of the studs
- VCL
- 12.5 mm gypsum plasterboard.

System 2 — Eurothane GP Timber Frame Board between studs and over studs (as insulated sheathing)

- outer brick leaf
- nominal 50 mm air cavity
- 25 to 100 mm thick Eurothane GP Timber Frame Board against a breather membrane/sheathing board
- breather membrane
- sheathing board — OSB or similar, at least 9 mm thick
- 25 to 160 mm thick Eurothane GP Timber Frame Board between the studs, retained using timber battens, nominal 35 by 25 mm, secured to the sides of the studs
- VCL
- 12.5 mm gypsum plasterboard.

System 3 — Eurothane GP Timber Frame Board between studs and over studs (as insulated dry lining)

- outer brick leaf
- nominal 50 mm air cavity
- breather membrane
- sheathing board — OSB or similar, at least 9 mm thick
- 25 to 160 mm thick Eurothane GP Timber Frame Board between the studs, retained using timber battens, nominal 35 by 25 mm, secured to the sides of the studs
- maximum 25 mm thick Eurothane GP Timber Frame Board against the internal face of timber studs
- Optional VCL (taping the insulation board joints with a foil tape to create a VCL)
- 12.5 mm gypsum plasterboard secured to vertical timber battens, 50 mm wide by 25 mm thick, using 38 mm screws at maximum 300 mm centres. The battens are secured through the insulation to each stud at maximum 300 mm centres using screws long enough to penetrate the timber studs by at least 25 mm.

System 4 — Eurothane GP Timber Frame Board over studs (as insulated sheathing)

- outer brick leaf
- nominal 50 mm air cavity
- 25 to 160 mm thick Eurothane GP Timber Frame Board against a breather membrane/sheathing board
- breather membrane
- sheathing board — OSB or similar, at least 9 mm thick
- no insulation between the studs
- VCL
- 12.5 mm gypsum plasterboard.



8.4 For buildings in Scotland, cavity barriers must be provided to comply with:

Scotland — Mandatory Standard 2.4, clauses 2.4.1⁽¹⁾, 2.4.2⁽¹⁾ and 2.4.7⁽¹⁾

(1) Technical Handbook (Domestic).



8.5 Cavity barriers must be provided to comply with:

England and Wales — Approved Document B, Volume 1, Section 6

Northern Ireland — Technical Booklet E, paragraphs 4.36 to 4.39.

9 Proximity of flues and appliances

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

England and Wales — Approved Document J, sections 1 to 4

Scotland — Mandatory Standard 3.19, clauses 3.19.1⁽¹⁾ to 3.19.9⁽¹⁾

(1) Technical Handbook (Domestic).

Northern Ireland — Technical Booklet L, sections 1 to 4.

10 Water resistance



10.1 Constructions incorporating the product as insulated sheathing, and built in accordance with the Standards listed in section 4.2, will resist the transfer of precipitation to the inner leaf and satisfy the national Building Regulations.

10.2 In all situations, it is particularly important to ensure during installation that:

- wall ties are installed correctly and are thoroughly clean
- excess mortar is cleaned from the cavity face of the brick leaf and any debris removed from the cavity
- mortar droppings are cleaned from the exposed edges of installed boards
- insulation boards are properly installed and butt-jointed
- installation is carried out to the highest level on each wall, or the top edge of the insulation is protected by a cavity tray
- at lintel level, a cavity tray, stop ends and weep holes, are provided
- cavity battens and/or boards are used during construction to prevent bridging by mortar droppings
- dpc's at ground level do not project into the cavity as they can form a trap for mortar bridging
- raked or recessed mortar joints are avoided in very severe exposure areas.

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. In 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 Infestation

Use of the product does not in itself promote infestation. The creation of voids within the structure may provide habitation for insects or vermin in areas already infested. Care should be taken to ensure, wherever possible, that all voids are sealed, as any infestation may be difficult to eradicate. There is no food value in the materials used.

13 Maintenance

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

14 Durability



The product is unaffected by the normal conditions in a wall and is durable, rot proof, water resistant and sufficiently stable to remain effective as insulation for the life of the building.

Installation

15 General

15.1 Installation of the product must be in accordance with the relevant clauses of the Standards noted in section 4.2 of this Certificate and the Certificate holder's instructions.

15.2 The product is light to handle and can be cut easily using a fine-toothed saw; care must be taken in handling the product to prevent damage, particularly at edges. Damaged boards should not be used; small areas of damaged faces may be repaired with self-adhesive aluminium foil-tape.

Between studs

15.3 The product should be cut to fit tightly between the timber studding and positioned against the inner face of the sheathing board. Any gaps should be filled with expanding insulation foam. The insulation should be held in place by nails or timber battens to the warm side of the insulation.

15.4 The void created by the space between the inner surface of the product and the dry lining can be utilised as an insulated service duct.

15.5 A sealed polythene VCL with a minimum thickness of 0.125 mm (500 gauge) and lapped and sealed joints is placed over the stud face before applying the internal finish.

Over studs (as insulated dry lining)

15.6 The product should be cut to fit snugly between the timber studding.

15.7 A maximum 25 mm thick Eurothane GP Timber Frame Board is temporarily fixed to the inner face of the timber studding, ensuring that the insulation makes contact or overlaps with ceiling and floor insulation.

15.8 The line of the timber studs is marked on the product to allow fixing of vertical timber battens and plasterboard.

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

15.10 The product is sealed at all service penetrations.

15.11 Plasterboard is fixed to vertical timber battens (50 mm wide by 25 mm thick) and secured with 38 mm screws at maximum 300 mm centres, and finished as normal. The battens are secured through the insulation to each stud at maximum 300 mm centres using screws which penetrate the timber studs by at least 25 mm.

Over studs (as sheathing insulation)

15.12 Eurothane GP Timber Frame Board is fixed outside the breather membrane on the external surface and fixed with galvanized clout nails at 300 mm centres around the perimeter of the board and at 400 mm centres along any intermediate timbers.

15.13 The product is closely butted and joints are staggered.

15.14 The outer face of the product must not be taped.

15.15 Helical stainless steel wall ties are then driven through the insulation into the timber studs, ensuring that they slope down toward the outer leaf.

15.16 Internal finishes are applied as normal (see section 15.5).

Technical Investigations

16 Tests

Results of tests were assessed to determine:

- thermal conductivity
- dimensional accuracy
- compressive strength
- dimensional stability with temperature and humidity
- density
- water vapour transmission.

17 Investigations

17.1 A calculation was undertaken to confirm the declared thermal conductivity (λ_D).

17.2 A series of U value calculations was carried out.

17.3 A condensation risk analysis was carried out.

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

17.5 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

BRE Report BR 262 : 2002 *Thermal insulation: avoiding risks*

BRE Report BR 443 : 2006 *U-value conventions in practice*

BS 476-21 : 1987 *Fire tests on buildings materials and structures — Method for determination of fire resistance of loadbearing elements of construction*

BS 5250 : 2011 + A1 : 2016 *Code of practice for control of condensation in buildings*

BS 5618 : 1985 *Code of practice for thermal insulation of cavity walls (with masonry or concrete inner and outer leaves) by filling with urea-formaldehyde (UK) foam systems*

BS 7671 : 2008 + A3 : 2015 *Requirements for electrical installations — IET wiring regulations*

BS EN 351-1 : 2007 *Durability of wood and wood-based products — Preservative-treated solid wood — Classification of preservative penetration and retention*

BS EN 845-1 : 2013 + A1 : 2016 *Specification for ancillary components for masonry — Wall ties, tension straps, hangers and brackets*

BS EN 1995-1-1 : 2004 + A1 : 2014 *Eurocode 5 — Design of timber structures — General — Common rules and rules for buildings*

NA to BS EN 1995-1-1 2004 + A1 : 2014 *UK National Annex to Eurocode 5 — Design of timber structures — General — Common rules and rules for buildings*

BS EN 1996-1-1 : 2005 + A1 : 2012 *Eurocode 6 — Design of masonry structures — General rules for reinforced and unreinforced masonry structures*

NA to BS EN 1996-1-1 : 2005 + A1 : 2012 *UK National Annex to Eurocode 6 — Design of masonry structures — General rules for reinforced and unreinforced masonry structures*

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

NA to BS EN 1996-2 : 2006 *UK National Annex to Eurocode 6 — Design of masonry structures — Design considerations, selection of materials and execution of masonry*

BS EN 13165 : 2012 + A2 : 2016 *Thermal insulation products for buildings — Factory made rigid polyurethane foam (PUR) products — Specification*

BS EN 13501-1 : 2007 + A1 : 2009 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

BS EN 13914-1 : 2016 *Design, preparation and application of external rendering and internal plastering — External rendering*

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*

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 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.

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Agrément Certificate

02/3905

Product Sheet 2

EUROTHANE GP

EUROTHANE GP UNDERFLOOR INSULATION

This Agrément Certificate Product Sheet⁽¹⁾ relates to Eurothane GP Underfloor Insulation, comprising rigid polyisocyanurate foam board with a composite foil-facing on both sides for use on ground-supported or suspended concrete ground-floors or between the joists of suspended timber ground-floors in new and existing domestic or 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.

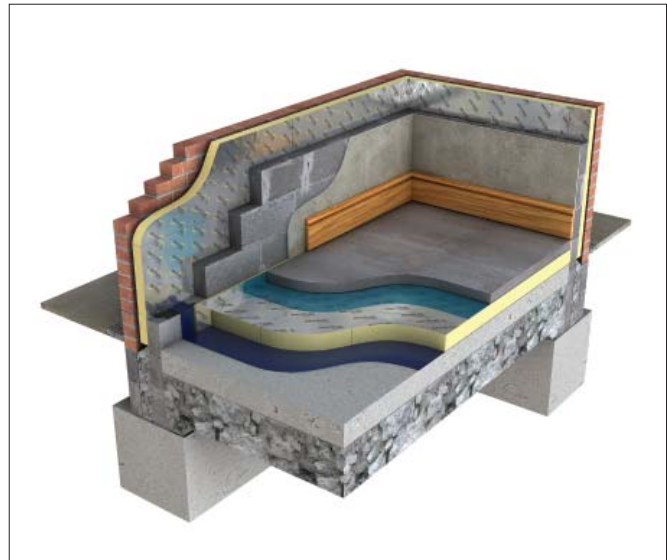
KEY FACTORS ASSESSED

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 product can adequately limit the risk of surface condensation on floors (see section 7).

Floor loading — the product, when covered with a suitable overlay as specified in section 4.5 can support a design loading without undue compression deflection (see section 9).

Durability — the product, when installed with the overlays specified, will remain effective as an insulating material for the life of the building in which it is incorporated (see section 11).



The BBA has awarded this Certificate to the company named above for the product described herein. This 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 30 August 2012

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 the opinion of the BBA, Eurothane GP Underfloor Insulation, if used 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:	A1	Loading
Comment:		The product has adequate strength and stiffness. See sections 9.2 and 9.3 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		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 11 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 contribute to a construction satisfying this Regulation. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	1.1(a)(b)	Structure
Comment:		The product has adequate strength and stiffness, with reference to clause 1.1.1 ⁽¹⁾⁽²⁾ . See sections 9.2 and 9.3 of this Certificate.
Standard:	3.15	Condensation
Comment:		The product can adequately limit the risk of surface condensation, with reference to clauses 3.15.1 ⁽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, 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 ⁽¹⁾⁽²⁾ to 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 this product under Regulation 9, Standards 1 to 6, also apply to this Regulation, 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
Comment:		The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	29	Condensation
Comment:		The product can adequately limit the risk of surface condensation. See section 7.1 of this Certificate.
Regulation:	30	Stability
Comment:		The product has adequate strength and stiffness. See sections 9.2 and 9.3 of this Certificate.
Regulation:	39(a)(i)	Conservation measures
Regulation:	40(2)	Target carbon dioxide emission rate
Comment:		Floors incorporating 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 section: 3 *Delivery and site handling* (3.3) of this Certificate.

NHBC Standards 2013

NHBC accepts the use of Eurothane GP Underfloor Insulation, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards, Chapter 5.1 Substructure and ground bearing floors.*

Technical Specification

1 Description

1.1 Eurothane GP Underfloor Insulation, comprises rigid polyisocyanurate foam board 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:

- saddle clips
- galvanized nails
- pre-treated battens
- acrylic adhesive foil tape
- damp-proof membrane (dpm)
- vapour control layer (VCL).

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 Underfloor Insulation.

Design Considerations

4 General

- 4.1 Eurothane GP Underfloor Insulation is for use on ground-supported or suspended concrete ground floors or between the joists of suspended timber ground floors in new and existing non-domestic buildings.
- 4.2 The product is effective in reducing the thermal transmittance (U value) of new or existing ground floors.
- 4.3 Ground-supported concrete floors incorporating the insulation must include a suitable dpm laid in accordance with the relevant clauses of CP 102 : 1973, BS 8102 : 2009 and/or BS 8215 : 1991.
- 4.4 Suspended concrete or timber ground floors incorporating the product must include a dpm or suitable ventilation of the sub-floor as appropriate.
- 4.5 The overlay to the product should be:
- a cement-based floor screed laid in accordance with the relevant clauses of BS 8204-1 : 2003 and/or BS 8204-2 : 2003, and BS 8000-9 : 2003, or
 - wood-based floor, eg tongue-and-groove, flooring grade particle board (Type P4 to P7) to BS EN 312 : 2010 or oriented strand board of type OSB/2 to OSB/4 to BS EN 300 : 2006, 18 mm thick (minimum), installed in accordance with DD CEN/TS 12872 : 2007 and BS EN 12871 : 2010, or
 - concrete slab to BS EN 1992-1-1 : 2004.

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) of a floor construction should be carried out in accordance with BS EN ISO 6946 : 2007, BS EN ISO 13370 : 2007 and BRE Report BR 443 : 2006, using the declared thermal conductivity (λ_D value) of $0.022 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ for the product and a foil surface emissivity (ϵ) of 0.05. The U value of a floor will depend on the thickness of the product, the perimeter/area ratio and the floor type. U values of example floors are shown in Table 2.

Table 2 Floor U values ($\text{W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$)⁽¹⁾

Floor type	Perimeter/ area ratio	Insulation thickness (mm)			
		30	80	130	200
Slab on ground support ⁽²⁾	0.2	0.22	0.15	0.11	0.08
	0.4	—	0.18	0.13	0.09
	0.6	—	0.20	0.14	0.10
	0.8	—	0.21	0.14	0.10
	1.0	—	0.21	0.14	0.10
Suspended timber floor ⁽²⁾⁽³⁾⁽⁴⁾	0.2	—	0.19	0.15	0.12
	0.4	—	0.23	0.17	0.13
	0.6	—	0.25	0.18	0.14
	0.8	—	—	0.19	0.14
	1.0	—	—	0.19	0.14
Suspended beam-and-block floor ⁽²⁾⁽³⁾⁽⁴⁾	0.2	0.23	0.15	0.11	0.08
	0.4	—	0.18	0.13	0.09
	0.6	—	0.19	0.13	0.09
	0.8	—	0.20	0.14	0.10
	1.0	—	0.20	0.14	0.10

(1) Edge insulation not included.

(2) Wall thickness (w) 0.3 m.

(3) Supporting wall (U_w) $1.5 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$.

(4) Ventilation area (ϵ) $0.0015 \text{ m}^2\cdot\text{m}^{-1}$.

6.2 The product can maintain, or contribute to maintaining, continuity of thermal insulation at junctions between elements. 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



7.1 Floors will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2011, Annex F, and BS EN ISO 10456 : 2007.

7.2 For suspended timber ground floors, it is not necessary to introduce a VCL provided adequate sub-floor cross-ventilation is provided.

7.3 When the product is used above the dpm on a ground-supported floor, or on a beam-and-block floor, a VCL is installed on the warm side of the insulation to inhibit the risk of interstitial condensation on the upper slab surface.

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

Surface condensation



7.5 Floors will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $0.7 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ at any point, and the junctions with walls are designed in accordance with the relevant requirements of *Limiting thermal bridging and air leakage : Robust construction details for dwellings and similar buildings* TSO 2002 or BRE Information Paper IP 1/06.



7.6 Floors 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 F, and BRE Report BR 262 : 2002.

8 Behaviour in relation to fire

The product is combustible but, when properly installed, the product will not add significantly to any existing fire hazard. The product will be contained within the floor by the overlay until the overlay itself is destroyed. Therefore, the product will not contribute to the development stages of a fire.

9 Floor loading

9.1 The Certificate holder has declared a designation code CS(10\Y)140 in accordance with BS EN 13165 : 2012 (compressive stress at 10% deformation to BS EN 826 : 2013).



9.2 When overlaid with one of the coverings listed in section 4.5, the product is suitable for occupancies defined in this Certificate, and is capable of resisting the imposed loads defined in BS EN 1991-1-1 : 2002 and its UK National Annex, Tables NA.2 and NA.3 (see Table 3):

Table 3 Imposed loads on floor (BS EN 1991-1-1 : 2002)

Category of loaded area (use)	Uniformly distributed load (kN·m ⁻²)	Concentrated load (kN)
A1 and A2 (domestic)	1.5	2.0
B2 (office)	3.0	2.7
C33 (non-domestic)	4.0	4.5

9.3 The ability of the floor construction to resist the loads in service should be confirmed by the flooring overlay specification. The performance of the floor construction will depend on the insulation properties and type of floor covering used (including thickness and strength). Further guidance on the suitability of floor covering can be found in BS EN 13810-1 : 2002, DD CEN/TS 13810-2 : 2003 and BS 8204-1 : 2003.

10 Maintenance

The product is confined within the floor and has suitable durability (see section 11), therefore maintenance is not required.

11 Durability



The insulation is rot-proof, dimensionally stable and, when installed with the overlays specified in this Certificate, will remain effective as an insulating material for the life of the building in which it is incorporated.

Installation

12 General

12.1 Installation of Eurothane GP Underfloor Insulation must be in accordance with the Certificate holder's installation instructions and the requirements of this Certificate.

12.2 Typical methods are shown in Figures 1 to 6; reference should also be made to BRE Report BR 262 : 2002.

Figure 1 Ground-supported concrete floor — screed overlay

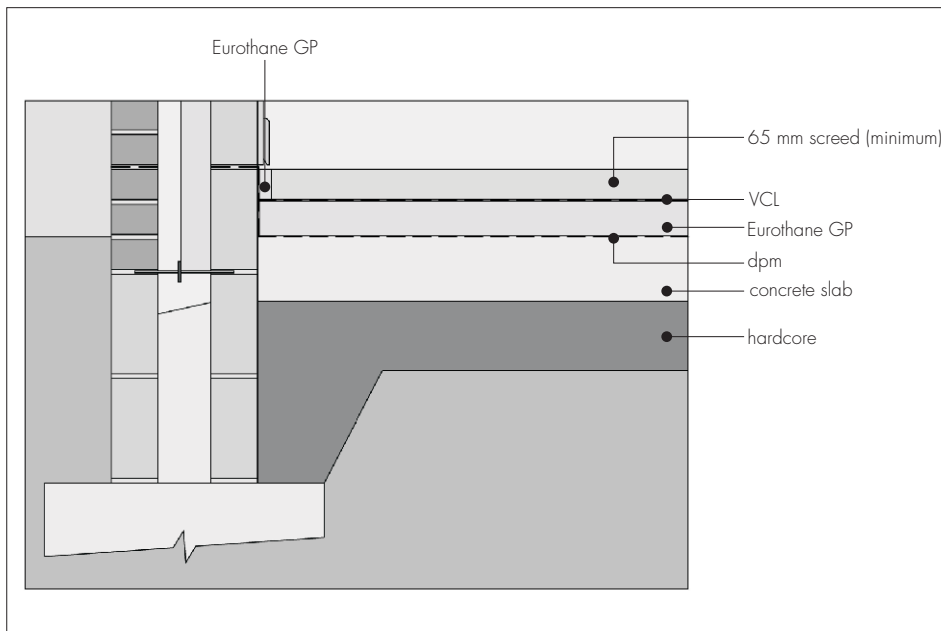


Figure 2 Suspended concrete floor, beam-and-block — screed overlay

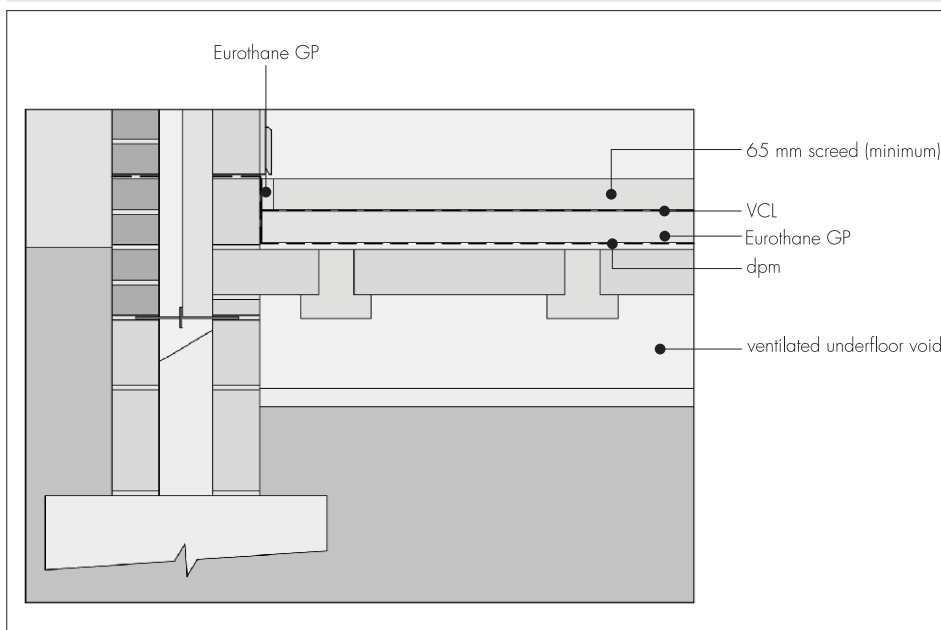


Figure 3 Ground supported blinded hardcore — concrete slab overlay

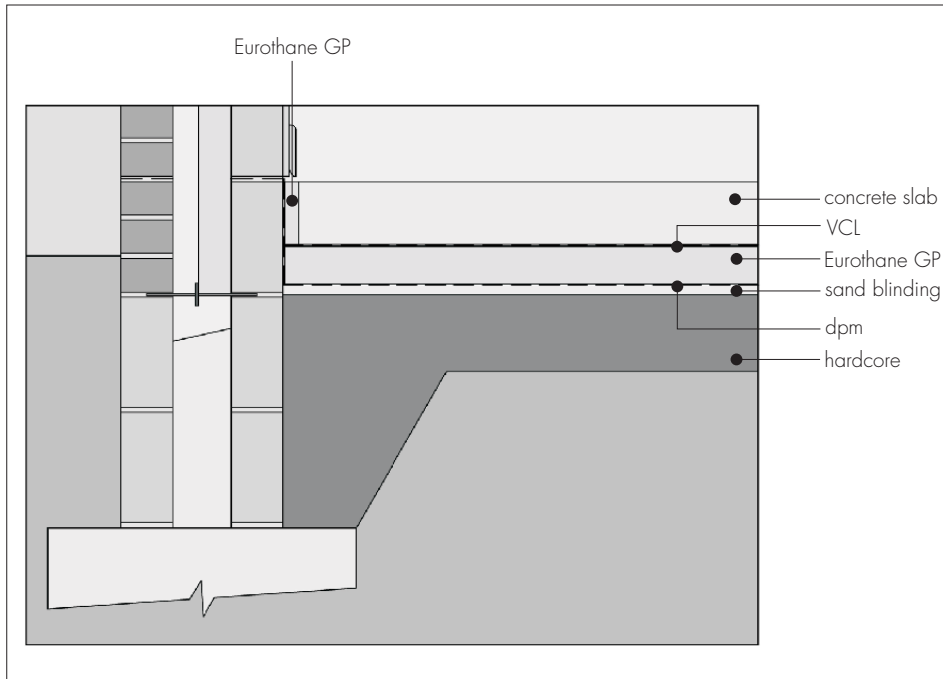


Figure 4 Ground-supported concrete floor — board overlay

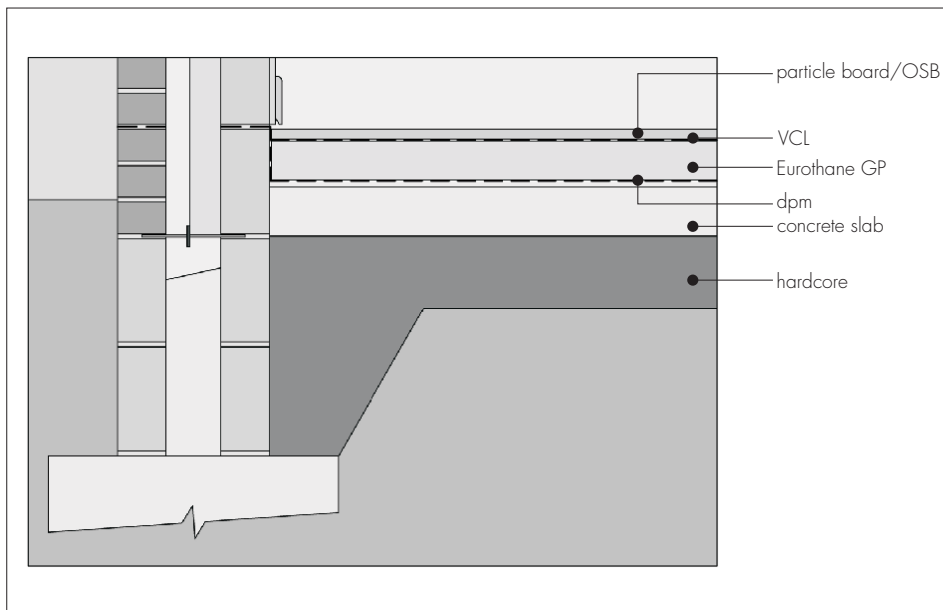


Figure 5 Suspended concrete floor, beam-and-block — board overlay

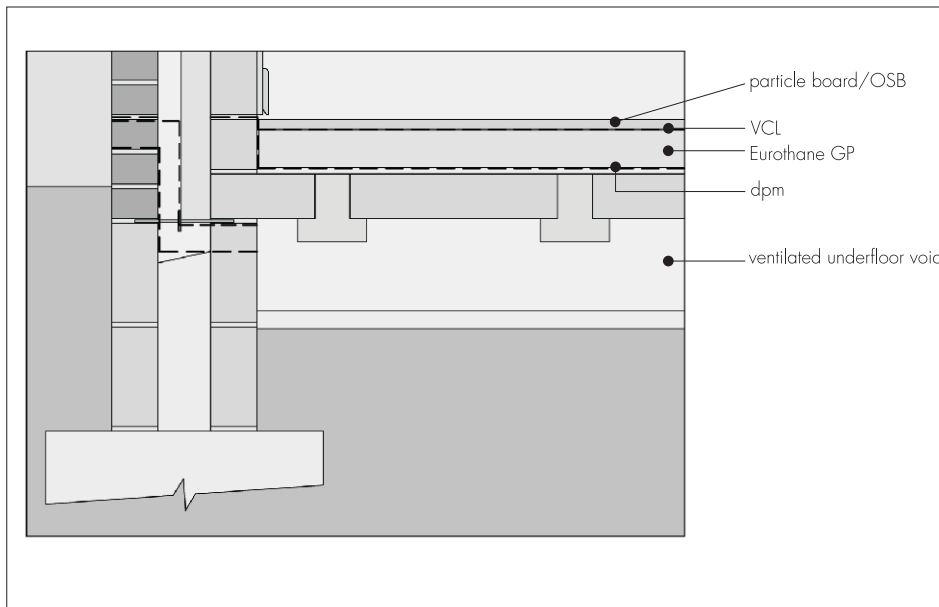
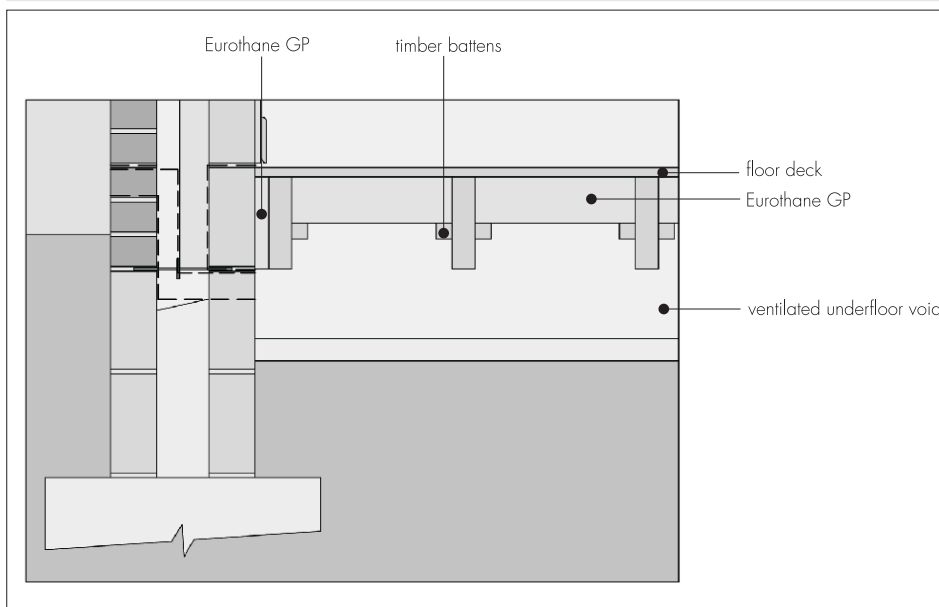


Figure 6 Suspended timber floors



12.3 All concrete floor surfaces should be smooth, level and flat to within 5 mm when measured with a two-metre straight-edge, irregularities greater than this must be removed. Minor irregularities (up to 10 mm deep) may be levelled with mortar or thin screed.

12.4 In ground-supported concrete floors, the concrete floor slab over which the product is laid should be left for as long as possible to maximise drying out and the dissipation of construction moisture, in accordance with BS 8203 : 2001, section 3.1.2.

12.5 Where the product is used over ground-supported concrete floor slabs a suitable dpm must be installed in accordance with CP 102 : 1973, section 11, and BS 8204-1 : 2003 or BS 8204-2 : 2003 to resist moisture from the ground. If a liquid-type dpm is applied to the slabs, it should be of a type compatible with the product and be allowed to dry out fully prior to installing the insulation.

12.6 Ground floors with a hardcore base must be compacted and blinded with a thin layer of sand before laying the dpm, product and concrete slab.

12.7 The product can be used on beam-and-block suspended concrete floors, that are subject of a current Agrément Certificate. It should be installed in accordance with, and within the limitations imposed by, that Certificate, or those designed and installed to the precast and general loading codes, that have been assessed as suitable.

12.8 Where a screed or concrete slab is laid over the product, vertical upstands of insulation should be provided and be of sufficient depth to fully separate the screed or slab from the wall. If used, a suitable cavity wall insulation material can be extended below the damp-proof course (dpc) level to provide edge insulation to the floor.

12.9 In suspended timber floors, the product is installed between the floor joists.

12.10 To limit the risk of damage from condensation and other sources of dampness, the product and overlays should only be laid after the construction is made substantially weathertight, eg after glazing. During construction, the product must also be protected from water spillage, plaster droppings and traffic.

12.11 The product can be cut using a sharp knife or fine-toothed saw to fit around service penetrations.

13 Procedure

13.1 The product is cut to size, as necessary, and laid with closely-butted, staggered cross-joints, ensuring that all spaces are completely filled.

13.2 The laying pattern should ensure that all cut edges are at the perimeter of the floor or some other feature, eg mat wells, thresholds or access ducts. Spreader boards should be used to protect the product.

Timber-based board overlay

13.3 Before laying the timber overlay, pre-treated timber battens in accordance with BS 8417 : 2011, are positioned at doorways, access panels and to support partitions. Adequate time should be allowed for solvents from solvent-based preservatives to evaporate.

13.4 When the dpm is laid below the slab, a VCL of polyethylene sheet of minimum thickness 250 µm, is laid between the product and the overlay boards. The polyethylene sheet must have 150 mm overlaps taped at the joints and turned up 100 mm at the walls.

13.5 Tongue-and-groove 18 mm thick flooring grade, particle board (types P4 to P7), or oriented strand board OSB/2 to OSB/4, is laid with staggered cross-joints in accordance with DD CEN/TS 12872 : 2007 and BS EN 12871 : 2010.

13.6 An expansion gap between the overlay board and the perimeter walls should be provided at the rate of 2 mm per metre run or a minimum of 10 mm, whichever is the greater.

13.7 Where there are long, uninterrupted lengths of floor, eg corridors, proprietary expansion joints should be installed at intervals on the basis of a 2 mm gap per metre run of overlay board.

13.8 Before the overlay boards are interlocked, a waterproof PVA adhesive is applied to the joints.

13.9 Once the overlay board is laid, temporary wedges are inserted between the walls and the floor to maintain tight joints until the adhesive has set.

13.10 When the wedges are removed and before the skirting boards are fixed, a suitable compressible filler, eg foamed polyethylene, should be fitted around the perimeter of the floor between the overlay board and the walls.

13.11 Where there is a likelihood of regular water spillage in rooms such as kitchens, bathrooms, shower and utility rooms, additional particle board protection should be considered, eg by a continuous flexible vinyl sheet flooring, with welded joints, turned up at abutments and cove skirting.

Cement-based screed overlay

13.12 Perimeter edge pieces are cut and placed around the edges and all floor joints taped, or a polythene VCL, minimum 125 µm thick, is laid over the product with 150 mm laps. A compacted screed is poured over to a depth of 65 mm for a domestic dwelling and 75 mm for others. The relevant clauses of BS 8204-1 : 2003 should be followed and BRE Digest 224 : 1981 and BRE Digest 104 : 1979 should be consulted.

Concrete slab overlay (ground-bearing only)

13.13 Perimeter edge pieces are cut and placed around the edges and taped at joints. A polyethylene VCL, minimum 125 µm thick, is laid over the product with 150 mm laps. The concrete slab is laid to the required thickness in accordance with BS 8000-9 : 2003 and BS 8204-1 : 2003.

Suspended timber floors

13.14 Saddle clips are placed at intervals not exceeding one metre along the timber floor joists. Where the product is to be installed only on one side of a joist, twin clips can be cut into single clips and nailed into place with galvanized nails.

13.15 If saddle clips are not used, the product may be retained using preservative-treated timber battens. Battens should be wide enough to retain the product in place and secured in place with corrosion protected nails at a depth that will accommodate the thickness of the product.

13.16 The product should be cut to fit tightly between joists and pushed down onto the spikes of the saddle clips, or onto the beads. Small gaps should be insulated with cut strips of the product.

14 Incorporation of services

14.1 De-rating of electrical cables should be considered where the insulation restricts air cooling of cables and the product must not be used in direct contact with electrical heating cables or hot water pipes.

14.2 Where the product is installed on a floor of a suspended beam-and-block design, all services must be installed in accordance with the Agrément Certificate for that floor and/or with the relevant codes of practice.

14.3 Where possible, electrical conduits, gas and water pipes or other services should be contained within ducts or channels within the concrete slab. Where this is not possible, the services may be accommodated within the product, provided they are securely fixed to the concrete slab. Electrical cables should be enclosed in a suitable conduit. With hot pipes, the product must be cut back to maintain an air space.

14.4 Where water pipes are installed below the product they should be pre-lagged. Pipes installed above the product do not require lagging, although some provision may be needed for expansion and contraction.

14.5 In situations where access to the services is desirable on board overlay floors, a duct may be formed by mechanically fixing to the floor, timber bearers of the same thickness as the product to provide support for a particle board cover. The duct should be as narrow as possible and not exceed 400 mm in width or the maximum particle board spans given in DD CEN/TS 12872 : 2007 without intermediate support. Services should be suitably fixed to the floor base and not to the product (see section 6.2 with regard to limiting heat loss).

Technical Investigations

15 Tests

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

- dimensional stability
- compressive strength
- thermal conductivity
- compressive creep.

16 Investigations

16.1 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.

16.2 An assessment was made of the results of test data to BS EN 13165 : 2008 in relation to:

- dimensions
- density
- λ value.

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

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

Bibliography

- BS 5250 : 2011 *Code of practice for control of condensation in buildings*
- BS 8000-9 : 2003 *Workmanship on building sites — Cementitious levelling screeds and wearing screeds — Code of practice*
- BS 8102 : 2009 *Code of practice for protection of structures against water from the ground*
- BS 8203 : 2001 *Code of practice for installation of resilient floor coverings*
- BS 8204-1 : 2003 *Screeds, bases and in-situ floorings — Concrete bases and cementitious levelling screeds to receive floorings — Code of practice*
- BS 8204-2 : 2003 *Screeds, bases and in-situ floorings — Concrete wearing surfaces — Code of practice*
- BS 8215 : 1991 *Code of practice for design and installation of damp-proof courses in masonry construction*
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17 Conditions

17.1 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.

17.2 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.

17.3 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.

17.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

17.5 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.

17.6 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.