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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.