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Agrément Certificate
08/4613
Product Sheet 1

XTRATHERM THIN-R INSULATION

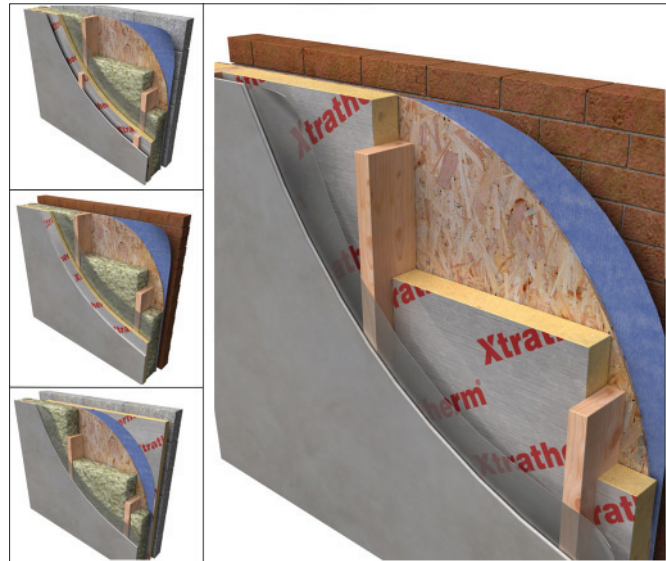
XTRATHERM THIN-R TIMBER FRAME BOARD XT/TF AND XT/TL THERMAL LINER

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Xtratherm Thin-R Timber Frame Board XT/TF and XT/TL Thermal Liner, rigid polyisocyanurate modified polyurethane foam boards with a composite foil facing on both sides. In addition, XT/TL Thermal Liner is bonded to 12.5 mm plasterboard. The products are for use between studding, or as an insulated lining, or as an insulated sheathing over new or existing walls of conventional timber-frame dwellings or similar buildings.

AGRÉMENT CERTIFICATION INCLUDES:

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



KEY FACTORS ASSESSED

Thermal performance — typical wall constructions incorporating the products can achieve U values between $0.19 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ and $0.35 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$. The thermal conductivity ($\lambda_{90/90}$ value) of the products are declared by the Certificate holder to be $0.022 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ (see section 5).

Condensation risk — the products can contribute to minimising the risk of surface condensation (see section 6).

Behaviour in relation to fire — walls incorporating the products have been tested to BS 476-21 : 1987 (see section 7).

Durability — the products are durable and sufficiently stable to remain effective insulants for the life of the building (see section 13).

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

On behalf of the British Board of Agrément

Sean Moriarty
Head of Approvals — Physics

Greg Cooper
Chief Executive

Date of Second issue: 5 August 2011

Originally certificated on 17 December 2008

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, Xtratherm Thin-R Timber Frame Board XT/TF and XT/TL Thermal Liner, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:



The Building Regulations 2010 (England and Wales)

Requirement: B2	Internal fire spread (linings)
Comment:	Xtratherm XT/TL Thermal Liner can meet this Requirement. See sections 7.4 and 7.5 of this Certificate.
Requirement: B3(1)	Internal fire spread (structure)
Comment:	Walls incorporating the products can meet this Requirement. See sections 7.1 and 7.2 of this Certificate.
Requirement: B3(4)	Internal fire spread (structure)
Comment:	Walls incorporating the products must comply with this Requirement. See section 7.3 of this Certificate.
Requirement: C2(c)	Resistance to moisture
Comment:	Walls incorporating the products can meet this Requirement. See sections 6.1 and 6.3 of this Certificate.
Requirement: L1(a)(i)	Conservation of fuel and power
Comment:	The products are acceptable. See sections 5.1 and 5.2 of this Certificate.
Requirement: Regulation 7	Materials and workmanship
Comment:	The products are acceptable. See section 13 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)(2)	Fitness and durability of materials and workmanship
Comment:	The products satisfy the requirements of this Regulation. See sections 12 and 13 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards – construction
Standard: 2.4	Cavities
Comment:	Walls incorporating the products must comply with this Standard, with reference to clauses 2.4.1 ⁽¹⁾⁽²⁾ and 2.4.2 ⁽¹⁾⁽²⁾ . See section 7.3 of this Certificate.
Standard: 2.5	Internal linings
Comment:	Xtratherm XT/TL Thermal Liner will satisfy this Standard, with reference to clause 2.5.1 ⁽¹⁾⁽²⁾ . See section 7.4 of this Certificate.
Standard: 2.6	Spread to neighbouring buildings
Comment:	Walls incorporating the products can satisfy this Standard, with reference to clause 2.6.1 ⁽¹⁾ . See sections 7.1 and 7.2 of this Certificate.
Standard: 3.15	Condensation
Comment:	The products can contribute to satisfying this Standard, with reference to clauses 3.15.1 ⁽¹⁾⁽²⁾ , 3.15.4 ⁽¹⁾⁽²⁾ and 3.15.5 ⁽¹⁾⁽²⁾ . See sections 6.2 and 6.3 of this Certificate.
Standard: 6.1(b)	Carbon dioxide emissions
Standard: 6.2	Building insulation envelope
Comment:	The products are acceptable, with reference to 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⁾ , 6.2.9 ⁽¹⁾ , 6.2.10 ⁽¹⁾ , 6.2.11 ⁽¹⁾⁽²⁾ , 6.2.12 ⁽²⁾ and 6.2.13 ⁽¹⁾⁽²⁾ of these Standards. See sections 5.1 and 5.2 of this Certificate.
Standard: 7.1(a)(b)	Statement of sustainability
Comment:	The products can contribute to meeting 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 products can contribute to a construction meeting a higher level of sustainability as defined in this Standard, with reference to clauses 7.1.4 ⁽¹⁾⁽²⁾ Aspects 1 ⁽¹⁾⁽²⁾ and 2 ⁽¹⁾ , 7.1.6 ⁽¹⁾⁽²⁾ Aspects 1 ⁽¹⁾⁽²⁾ and 2 ⁽¹⁾ and 7.1.7 ⁽¹⁾⁽²⁾ Aspect 1 ⁽¹⁾⁽²⁾ . See section 5.1 of this Certificate.
Regulation: 12	Building standards – conversions
Comment:	Comments made in relation to the products 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) 2000 (as amended)

Regulation: B2	Fitness of materials and workmanship
Comment:	The products are acceptable. See section 13 and the <i>Installation</i> part of this Certificate.
Regulation: B3(2)	Suitability of certain materials
Comment:	The products are acceptable. See section 12 of this Certificate.
Regulation: C5	Condensation
Comment:	Walls incorporating the products can satisfy this Regulation. See section 6.3 of this Certificate.
Regulation: E3(a)	Internal fire spread – Linings
Comment:	Xtratherm XT/TL Thermal Liner can meet this Regulation. See sections 7.4 and 7.5 of this Certificate.
Regulation: E4(1)	Internal fire spread – Structure
Comment:	Walls incorporating the products can satisfy this Regulation. See sections 7.1 and 7.2 of this Certificate.

Regulation:	E4(4)	Internal fire spread – Structure
Comment:	Walls incorporating the products must comply with this Regulation. See section 7.3 of this Certificate.	
Regulation:	F2(a)(i)	Conservation measures
Comment:	The products are acceptable. See sections 5.1 and 5.2 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: 2 Delivery and site handling (2.2 and 2.4) of this Certificate.

Non-regulatory Information

NHBC Standards 2011

NHBC accepts the use of Xtratherm Thin-R Timber Frame Board XT/TF and XT/TL Thermal Liner, when installed and used in accordance with this Certificate, in relation to *NHBC Standards, Chapter 6.2 External timber framed walls.*

General

This Certificate is a Confirmation of NSAI Certificate 03/0183 Detail Sheet 5, issued by NSAI Agrément to Xtratherm Ltd, Kells Road, Navan, Co Meath, Ireland.

Technical Specification

1 Description

- 1.1 Xtratherm Thin-R Timber Frame Board XT/TF and XT/TL Thermal Liner are rigid polyisocyanurate modified polyurethane boards, faced on both sides with a composite foil facing. In addition, the XT/TL Thermal Liner is bonded to 12.5 mm plasterboard (type 1) to BS EN 520 : 2004.
- 1.2 The products are either fixed between studding, or as an insulated dry lining or insulated sheathing facing the cavity.
- 1.3 The products are available with the nominal properties as shown in Table 1.

Table 1 Nominal characteristics

Characteristics (units)	Application		
	Between studs ⁽¹⁾	Lining ⁽¹⁾⁽²⁾	Sheathing
Length (mm)	2400	2400	1200
Width (mm)	1200	1200	600
Thickness (mm) ⁽¹⁾ (in 5 mm increments)	50 to 165	25 to 50	25 to 50
Core density (kg·m ⁻³)	32	32	32
Edge detail	plain	plain	plain
Compressive strength (kPa)	>140	>140	>140

(1) Other sizes and thicknesses available depending on quantity and lead time.

(2) Xtratherm XT/TL Thermal Liner insulation board consists of 12.5 mm plasterboard laminated to the above thicknesses of polyisocyanurate modified polyurethane insulation boards (see also BBA Certificate 04/4130).

2 Delivery and site handling

2.1 Xtratherm Thin-R Timber Frame Board XT/TF is delivered to site in polythene shrink-wrapped packs, and the XT/TL Thermal Liner delivered to site in shrink-wrapped polythene on pallets containing a label bearing the manufacturer's trade name, product description, and the BBA identification mark incorporating the number of this Certificate.

2.2 The pallets should be mechanically unloaded and each XT/TL Thermal Liner board removed individually.

2.3 Care must be taken to avoid damaging corners and edges.

2.4 The products must be protected from prolonged exposure to sunlight and should be stored either under cover or protected with opaque polythene sheeting. Where possible, packs should be stored inside on a flat, dry level surface in a well ventilated area. If stored outside, the products should be stacked flat and raised above ground level, and not in contact with ground moisture and must be protected from rain and snow.

2.5 The products must not be exposed to open flame or other ignition sources nor allowed to come into contact with solvents or bitumen products.

2.6 The XT/TL Thermal Liner can be easily trimmed on site using a fine-toothed saw.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Xtratherm Thin-R Timber Frame Board XT/TF and XT/TL Thermal Liner.

Design Considerations

3 General

3.1 Xtratherm Thin-R Timber Frame Board XT/TF and XT/TL Thermal Liner are suitable for use as insulation and effective in reducing the U value (thermal transmittance) of external walls of timber-frame dwellings. It is essential that such walls are designed and constructed to incorporate the normal precautions against moisture ingress, including a breather membrane over the timber sheathing.

3.2 New buildings subject to the national Building Regulations should be designed in accordance with the relevant recommendations of BS EN 1995-1-1 : 2004 and BS EN 351-1 : 2007.

3.3 Constructions incorporating a masonry outer leaf (includes masonry units and natural stone blocks) should be in accordance with BS 5628-3 : 2006, BS EN 1996-1-1 : 2005 and BS EN 1996-2 : 2006. The designed residual cavity width should be 50 mm.

3.4 It is recommended that services which penetrate the dry lining, eg, light switches, power outlets, are kept to a minimum to limit damage to vapour checks. In addition, any penetrations should be either enclosed in plasterboard, stone mineral wool or suitably tested proprietary fire-rated systems in order to preserve the fire resistance of the wall.

3.5 Xtratherm sheathing and lining applications should be used with a frame which also contains mineral fibre insulation between the studs.

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

3.7 Xtratherm XT/TF, when used as insulated sheathing, will not contribute to the structural performance of the timber frame.

4 Practicability of installation

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

5 Thermal performance

5.1 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) *Conventions for U-value calculations* using the declared thermal conductivity ($\lambda_{90/90}$ value) of $0.022 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ and an emissivity value of 0.05 for the foil facer. 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. 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 products can contribute to a wall achieving typical design U values referred to in those supporting documents.

Table 2 U values

Stud Size (mm)	Xtratherm between studs only ⁽¹⁾ (mm) ⁽³⁾	Mineral wool ⁽²⁾ between studs (mm) ⁽³⁾	Xtratherm Lining ⁽¹⁾ (mm) ⁽³⁾	Xtratherm Sheathing ⁽¹⁾ (mm) ⁽³⁾	U values ($\text{W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$)
89	60	—	—	—	0.35
140	70	—	—	—	0.30
140	100	—	—	—	0.25
89	—	89	25	—	0.28
89	—	89	30	—	0.27
140	—	140	25	—	0.22
89	—	89	—	35	0.23
89	—	89	—	50	0.19

(1) Typical timber-frame construction comprising 102 mm brick leaf, 50 mm unventilated air cavity, 13 mm sheathing board, 15% timber studs, 12.5 mm plasterboard and 3 mm plaster.

(2) Mineral wool has not been assessed, as part of this assessment ($\lambda = 0.040 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$).

(3) Nearest available thickness.

5.2 The products can maintain, or contribute to maintaining, continuity of thermal insulation at junctions between elements and openings. For Accredited Construction Details the corresponding psi values in BRE Information Paper IP1/06 *Assessing the effects of thermal bridging at junctions and around openings*, 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). See also SAP 2009 Appendix K and the *iSBEM User Manual* for new-build

Scotland — Accredited Construction Details (Scotland)

Northern Ireland — Accredited Construction Details (version 1.0).

6 Condensation risk

Surface condensation



6.1 Walls will limit the risk of surface condensation adequately 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 floors, roofs and openings are designed in accordance with *Limiting thermal bridging and air leakage: Robust construction details for dwellings and similar buildings* TSO 2002, BRE Information Paper IP1/06 or section 5.2 of this Certificate.



6.2 For buildings in Scotland, constructions will be acceptable where the thermal transmittance (U value) of the wall does not exceed $1.2 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ at any point and openings and junctions with other elements comply with the guidance given in BS 5250 : 2002, section 8 or section 5.2 of this Certificate. Additional information can be found in BRE Report (BR 262 : 2002) *Thermal insulation: avoiding risks*.

Interstitial condensation



6.3 Walls incorporating the products will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2002 (section 8 and Annex D).

6.4 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 $7000 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}$ for each individual foil facing.

6.5 If the products are 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 wall.

Insulated lining

6.6 XT/TF boards used in the insulated dry lining application can provide a significant resistance to water vapour transmission when all joints between boards are taped with 3M Aluminium Foil/Reinforced Tape 1430.

Insulated Sheathing

6.7 The joints between the Xtratherm XT/TF boards when used as insulated sheathing, must not be taped.

7 Behaviour in relation to fire



7.1 A fire-resistance test was carried out in accordance with BS 476-21 : 1987 on a load bearing, timber stud wall system. An assessment considered the likely fire resistance of four systems (constructions described in section 7.2) as if they had been tested to 476-21 : 1987. The main points of the assessment highlighted the following:

- all four 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 this, a qualified structural engineer can utilise the BS 476-21 : 1987 fire-resistance test report and the 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
- openings for doors and windows should be framed out and any exposed timber covered with at least one layer of plasterboard (see also section 3.4).

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

7.2 The four systems are:

System 1 — Xtratherm sheathing⁽¹⁾

Construction of internal to external leaf comprising:

- Type 1 plasterboard 12.5 mm thick
- polythene vapour control layer (joints lapped and sealed with tape)
- 140 mm by 38 mm timber studs at maximum 600 mm centres, with cross noggings at 1200 mm centres, staggered by 600 mm between bays
- cavity between studs filled with 140 mm glass or stone mineral wool insulation
- OSB board 9 mm thick
- breather membrane
- Xtratherm XT/TF sheathing board 50 mm thick
- residual cavity 50 mm
- masonry 102 mm thick.

System 2 – Xtratherm lining and service void⁽¹⁾

Construction of internal to external leaf comprising:

- Type 1 plasterboard 12.5 mm thick
- battens 50 mm by 25 mm
- polythene vapour control layer (joints lapped and sealed with tape)⁽²⁾
- Xtratherm XT/TF insulation 40 mm thick
- 140 mm by 38 mm timber studs at maximum 600 mm centres, with cross noggings at 1200 mm centres, staggered by 600 mm between bays
- cavity between studs filled with 140 mm glass or stone mineral wool insulation
- OSB board 9 mm thick
- breather membrane
- residual cavity 50 mm
- masonry 102 mm thick

System 3 – Over studs (as insulated dry lining)⁽¹⁾

Construction of internal to external leaf comprising:

- Xtratherm Thermal Liner XT/TL (MF)⁽³⁾ 30 mm thick, foil-faced PIR insulation bonded to 12.5 mm thick Type 1 Plasterboard)
- polythene vapour control layer (joints lapped and sealed with tape)
- 140 mm by 38 mm timber studs at maximum 600 mm centres, with cross noggings at 1200 mm centres, staggered by 600 mm between bays
- cavity between studs filled with 140 mm glass or stone mineral wool insulation
- OSB board 9 mm thick
- breather membrane
- residual cavity 50 mm
- masonry 102 mm thick

System 4 – Xtratherm between studs only⁽¹⁾

Construction of internal to external leaf comprising:

- Type 1 plasterboard 12.5 mm thick
- polythene vapour control layer (joints lapped and sealed with tape)
- 140 mm by 38 mm timber studs at maximum 600 mm centres, with cross noggings at 1200 mm centres, staggered by 600 mm between bays
- cavity between studs filled with 80/90 mm Xtratherm XT/TF insulation
- OSB board 9 mm thick
- breather membrane
- residual cavity 50 mm
- masonry 102 mm thick.

(1) Fixings.

- plasterboard: Systems 1, 2 and 4 – 50 mm by 3.5 mm drywall screws at nominal 150 mm centres
- thermal liner: System 3 – 85 mm by 4.1 mm drywall screws at nominal 150 mm centres to a fixing depth of 40 mm
- OSB: System 1 – 25 mm by 3.5 mm cross-head screws at nominal 600 mm centres
- OSB: Systems 2, 3 and 4 – 50 mm by 3.5 mm cross-head screws at nominal 600 centres
- Xtratherm sheathing insulation: System 1 – clips on wall ties (minimum of three ties per square metre)
- timber battens: System 2 – 4.1 mm cross head screws at nominal 300 mm centres to a fixing depth of 40 mm into the studs.

(2) Alternatively cover joints Xtratherm insulation with aluminium foil tape.

(3) Mechanically fixed.

7.3 Cavity barriers must be provided to comply with:

England and Wales – Approved Document B, Volume 1, Section 6, and Volume 2, Section 9

Scotland – Mandatory Standard 2.4, clauses 2.4.1⁽¹⁾⁽²⁾, 2.4.2⁽¹⁾⁽²⁾, 2.4.7⁽¹⁾ and 2.4.9⁽²⁾

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

Northern Ireland – Technical Booklet E, paragraphs 3.35 to 3.38.

7.4 With regard to the national Building Regulations, XT/TL Thermal Liner can be used in all situations requiring a Class O/‘low risk’ surface.



7.5 Xtratherm XT/TF has a Class 1 rating surface spread of flame when tested to BS 476-7 : 1997.

8 Proximity of flues and appliances

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

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

Scotland — Mandatory Standard 3.19, clauses 3.19.1⁽¹⁾⁽²⁾ to 3.19.9⁽¹⁾⁽²⁾

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

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

9 Weathertightness

9.1 Constructions incorporating the products and built in accordance with section 3.3 will resist the transfer of precipitation to the inner leaf and satisfy the national Building Regulations:

England and Wales — Requirement C2(b)(c)

Scotland — Mandatory Standard 3.10, clause 3.10.5⁽¹⁾⁽²⁾

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

Northern Ireland — Regulation C4.

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

- wall ties and fixings 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
- 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 weepholes, must be provided.

10 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 it is recommended 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.

11 Infestation

Use of the products does not in itself promote infestation. The creation of voids within the structure, ie gaps between the wall lining and the boards 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.

12 Maintenance



As the insulation component of the products is confined behind the wall lining and they have suitable durability (see section 13), maintenance is not required. However, minor damage to the plasterboard component of the XT/TL Thermal Liner can be repaired in accordance with the Certificate holders instructions.

13 Durability



The products are rot proof, stable and durable and will have a life equivalent to that of the wall structure in which they are incorporated.

Installation

14 General

14.1 Installation of Xtratherm Thin-R Timber Frame Board XT/TF and XT/TL Thermal Liner must be in accordance with the relevant clauses of BS 5268-2 : 2002 and the Certificate holder's instructions.

14.2 The products are light to handle, and cut easily but care must be taken to prevent damage, particularly at edges.

14.3 In all applications, a sealed polythene vapour control layer with a minimum thickness of 125 µm (500 gauge) and lapped and sealed joints is placed over the stud face. To satisfy the requirements of *NHBC Standards 2011*, a vapour control layer of a type specified in their Standards must be used, and placed on the warm side of the wall insulation.

Between studs

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

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

14.6 A sealed polythene vapour control layer with a minimum thickness of 125 µm (500 gauge) and lapped and sealed joints is placed over the stud face before applying the internal finish.

Over studs (as insulated dry lining)

14.7 Mineral wool insulation should be cut to fit snugly between the timber studding.

14.8 The full depth of the stud should be filled with insulation.

14.9 The XT/TF product is temporarily fixed to the inner face of the timber studding ensuring that the insulation makes contact or over laps with ceiling and floor insulation.

14.10 The line of the timber studs is marked on the product to allow fixing of plasterboard.

14.11 The products are butted tightly against each other to prevent gaps. Taping the joints with 3M Aluminium Foil/Reinforced Tape 1430, provides an effective vapour control layer and an air permeability barrier. To achieve an adequate bond, the boards should be thoroughly clean and free from any contamination.

14.12 The insulation is sealed at all service penetrations.

14.13 Plasterboard is fixed over the product and secured with conventional nails or screws to the appropriate length, and finished as normal. The fixing of Xtratherm XT/TL Thermal Liner (MF)⁽¹⁾ board should be in accordance, with BBA Certificate 04/4130 and the Certificate holder's installation literature.

(1) Mechanically fixed.

Xtratherm lining and service void

14.14 The procedure starts in the same manner as for over studs application (see sections 14.7 to 14.9).

14.15 The line of the timber studs is marked on the XT/TF product to allow fixing of counter battens.

14.16 The products should be butted tightly against each other to prevent gaps. Taping the joints with 3M Aluminium Foil/Reinforced Tape 1430, provides an effective vapour control layer and an air permeability barrier. To achieve an adequate bond, the boards should be thoroughly clean and free from any contamination.

14.17 Insulation is to be sealed at all service penetrations.

14.18 The counter batten should be fixed through the insulation to the timber studding, along the top and bottom of each board and around all openings (eg doors and windows).

14.19 Plasterboard is fixed to counter battens and secured with conventional nails or screws to the appropriate length, and finish as normal.

Overstuds (or sheathing)

14.20 The procedure starts in the same manner as stated for over studs application (see sections 14.7 and 14.8).

14.21 Xtratherm XT/TF sheathing boards are fixed outside the breather membrane on the external surface and temporarily fixed with large-headed clout nails.

14.22 The products are closely butted and joints are staggered.

14.23 The outer face of the products must not be taped (boards are marked with same reference).

14.24 Ties securing the external leaf are fixed through the products to the studs and the sheathing is held in place by the retaining discs on the wall ties.

14.25 Internal finishes are applied as normal.

15 Investigations

An assessment was made of the results of test data on Xtratherm Thin-R Timber Frame Board XT/TF and XT/TL Thermal Liner relating to:

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

Bibliography

- BS 476-7 : 1997 *Fire tests on building materials and structures — Method of test to determine the classification of the surface spread of flame of products*
- BS 476-21 : 1987 *Fire tests on building materials and structures — Methods for determination of the fire resistance of loadbearing elements of construction*
- BS 5250 : 2002 *Code of practice for control of condensation in buildings*
- BS 7671 : 2008 *Requirements for electrical installations. IEE Wiring Regulations. Seventeenth Edition*
- BS 5268-2 : 2002 *Structural use of timber — Code of practice for permissible stress design, materials and workmanship*
- BS 5268-3 : 2006 *Structural use of timber — Code of practice for trussed rafter roofs*
- BS EN 351-1 : 2007 *Durability of wood and wood-based products — Preservative-treated solid wood — Classification of preservative penetration and retention*
- BS EN 520 : 2004 *Gypsum plasterboards — Definitions, requirements and test methods*
- BS EN 1995-1-1 : 2004 *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*
- BS EN 1996-1-1 : 2005 *Eurocode 6 : Design of masonry structures — General rules for reinforced and unreinforced masonry structures*
- BS EN 1996-2 : 2006 *Eurocode 6 : Design of masonry structures — Design considerations, selection of materials and execution of masonry*
- BS EN ISO 6946 : 2007 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*

16 Conditions

16.1 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.

16.2 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.

16.3 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
- remain covered by a valid Irish Agrément
- are reviewed by the BBA as and when it considers appropriate.

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

16.5 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
- individual 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.

16.6 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.

