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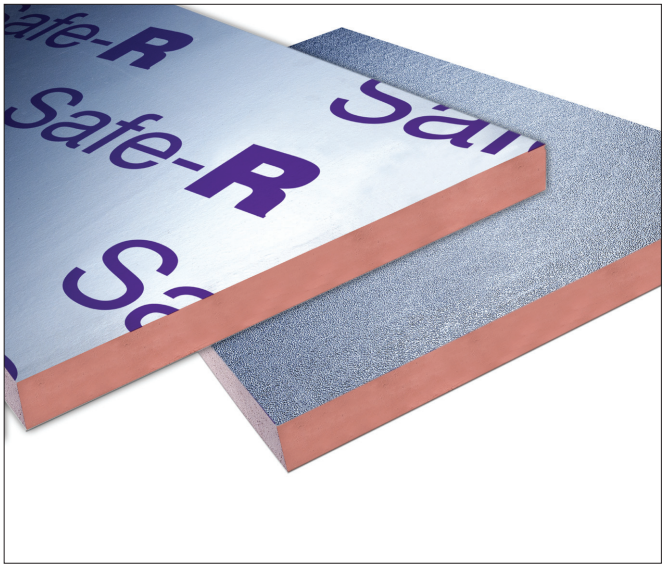
Agrément Certificate
10/4803
Product Sheet 4

XTRATHERM SAFE-R INSULATION

XTRATHERM SAFE-R FRAMING BOARD (SR/FB) AND SAFE-R RAINSCREEN BOARD (SR/RS)

This Agrément Certificate Product Sheet[1] relates to Xtratherm Safe-R Framing Board (SR/FB) and Safe-R Rainscreen Board (SR/RS) comprising phenolic foam boards with a composite foil-facing on both sides, for use as thermal insulation either between internal studding and against the external face of the sheathing board/steel studs or in conjunction with masonry, timber-frame or steel-frame substrates and weathertight ventilated cladding systems. The products are used in domestic and non-domestic buildings.

(1) Hereinafter referred to as 'Certificate'.



CERTIFICATION INCLUDES:

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

KEY FACTORS ASSESSED

Thermal performance — the products have a declared thermal conductivity (λ_D) of 0.021 $W \cdot m^{-1} \cdot K^{-1}$ or 0.020 $W \cdot m^{-1} \cdot K^{-1}$, depending on the thickness (see section 6).

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

Behaviour in relation to fire — the products are classified as B-s1, d0 in accordance with BS EN 13501-1 : 2007 and are restricted by the national Building Regulations (see section 8).

Durability — the products will have a life equivalent to that of the wall structure in which they are incorporated (see section 13).

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

On behalf of the British Board of Agrément

Date of Second issue: 18 November 2016

John Albon — Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

Originally certificated on 8 April 2013

Certificate amended on 20 May 2019 to include Regulation 7(2) for England and associated text.
Certificate amended on 2 October 2019 to update Building Regulations.
Certificate amended on 7 May 2020 to include new regulatory guidance for fire in Scotland and Wales.

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 MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.
Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

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Regulations

In the opinion of the BBA, Xtratherm Safe-R Framing Board (SR/FB) and Safe-R Rainscreen Board (SR/RS), 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 products are restricted by this Requirement. See section 8.1 of this Certificate.
Requirement:	B4(1)	External fire spread
Comment:		The products are restricted by this Requirement. See sections 8.1 to 8.6 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		The products 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 products can contribute to satisfying this Requirement. See section 6 of this Certificate.
RRegulation:	7(1)	Materials and Workmanship
Comment:		The products are acceptable. See section 13 and the *Installation* part of this Certificate.
Regulation:	7(2)	Materials and Workmanship
Comment:		The products are restricted in some cases by this Regulation. See section 8.1 of this Certificate.
Regulation:	26	CO_2 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 performance values for new dwellings (applicable to Wales only)
Comment:		The products 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 products are acceptable. See section 13 and the *Installation* part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	2.4	Cavities
Comment:		The products are restricted by this Standard with respect to clauses 2.4.2[(1)(2)], 2.4.4[(1)] and 2.4.6[(2)]. See section 8.1 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Comment:		The products are restricted by this Standard with respect to clauses 2.6.5[(1)] and 2.6.6[(2)]. See sections 8.1 to 8.4 and 8.6 of this Certificate.
Standard:	2.7	Spread on external walls
Comment:		The products are restricted by these Standards with respect to clauses 2.4.2[(1)(2)], 2.4.4[(1)], 2.4.6[(2)], 2.6.4[(1)(2)], 2.6.5[(1)], 2.6.6[(2)] and 2.7.1[(2)]. See sections 8.1, 8.4 and 8.6 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 7.1 and 7.6 of this Certificate.
Standard:	6.1(b)	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		The products can contribute to satisfying clauses, or parts of clauses, 6.1.1[(1)], 6.1.3[(2)], 6.1.5[(2)], 6.1.6[(1)], 6.2.1[(1)], 6.2.3[(1)], 6.2.4[(1)], 6.2.5[(1)(2)] and 6.2.10[(2)] of these Standards. See section 6 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The products 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 products can contribute to a construction meeting a higher level of sustainability as defined in this Standard, with reference to clauses 7.1.4[(1)(2)] [Aspects 1[(1)(2)] and 2[(1)]], 7.1.6[(1)(2)] [Aspects 1[(1)(2)] and 2[(1)]] and 7.1.7[(1)(2)] [Aspect 1[(1)(2)]]. See section 6.1 of this Certificate.
Regulation:	12	Building standards applicable to conversions
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) 2012 (as amended)

Regulation:	23	Fitness of materials and workmanship
Comment:		The products are acceptable. See section 13 and the *Installation* part of this Certificate.
Regulation:	29	Condensation
Comment:		The products can contribute to satisfying this Regulation. See section 7.1 of this Certificate.
Regulation:	35(4)	Internal fire spread — Structure
Comment:		The products are restricted by this Regulation. See section 8.1 of this Certificate.
Regulation:	36(a)	External fire spread
Comment:		The products are restricted by this Regulation. See sections 8.1 to 8.4 and 8.6 of this Certificate.

Regulation:	39(a)(i)	Conservation measures
Regulation:	40(2)	Target carbon dioxide emission rate
Comment:		The products are acceptable. 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* (3.3) of this Certificate.

Additional Information

NHBC Standards 2016

NHBC accepts the use of Xtratherm Safe-R Framing Board (SR/FB) and Safe-R Rainscreen Board (SR/RS), provided they are installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapters 6.2 *External timber framed walls*, 6.9 *Curtain walling and cladding* and 6.10 *Light steel framed walls*. Current NHBC guidance precludes the use of façade systems not using a drained cavity.

CE marking

The Certificate holder has taken the responsibility of CE marking the products, in accordance with harmonised European Standard BS EN 13166 : 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 Xtratherm Safe-R Framing Board (SR/FB) and Safe-R Rainscreen Board (SR/RS) are rigid phenolic boards, faced on both sides with a composite foil, and manufactured in accordance with BS EN 13166 : 2012. The boards have the nominal characteristics shown in Table 1.

Table 1 Nominal characteristics

Length (mm)	2400
Width (mm)	1200
Thickness (mm)	50 to 120 in 5 mm increments
Minimum compressive strength* (kPa)	100
Edge profile	Straight

1.2 The boards are fixed between timber/steel studding and against the external face of the sheathing board/steel studs, or against the external face of masonry substrates, in conjunction with masonry or weathertight rainscreen cladding(1), using appropriate joint detailing and maintaining a cavity to ensure drainage.

(1) Rainscreen cladding systems are proprietary, and utilise various mechanisms for attaching cladding panels to the wall structure. Site work guidance should be sought from the system manufacturers.

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

- rainscreen cladding
- rainscreen cladding and insulation fasteners/fixings
- vapour control layer (VCL) and plasterboard in accordance with BS EN 520 : 2004
- breather membrane.

2 Manufacture

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

2.2 As part of the assessment and ongoing surveillance of products 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 Xtratherm UK Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 and BS EN ISO 14001 : 2004 by BRE Certification Ltd (Certificates 718 and EMS 718 respectively).

3 Delivery and site handling

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

3.2 The products 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, the products should be under cover, or protected by opaque polythene sheeting.

3.3 Where large volumes are stored, particularly indoors, flammable materials and ignition sources/naked flames should not be permitted in the vicinity.

3.4 Contact with solvents should be avoided, and damaged or wet boards should be discarded.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Xtratherm Safe-R Framing Board (SR/FB) and Safe-R Rainscreen Board (SR/RS).

Design Considerations

4 Use

4.1 Xtratherm Safe-R Framing Board (SR/FB) and Safe-R Rainscreen Board (SR/RS) are effective in reducing the U value (thermal transmittance) of external walls of timber-frame, steel-frame or masonry buildings. It is essential that such walls are designed and constructed to incorporate the normal precautions against moisture ingress, including the use of a breather membrane over the timber sheathing in framing board applications.

4.2 Certain rainscreen systems, such as those with open joints, may require the addition of a breather membrane incorporated into their system. The requirement of a membrane is determined by the system designer and is outside the scope of this Certificate.

4.3 Care must also be taken in the overall design and construction of elements incorporating the products to ensure appropriate:

- sheathing or bracing for frame elements. The products must not be relied on to provide any structural contribution, eg racking strength
- fire resistance, for both elements and junctions
- cavity barriers and fire dampers
- continuity of insulation to minimise thermal bridging
- resistance to the ingress of precipitation and moisture from the ground.

4.4 The wall and sub-frame must be structurally sound and designed and constructed in accordance with:

- BS 8000-3 : 2001
- BS EN 351-1 : 2007
- BS EN 1993-1-3 : 2006
- BS EN 1995-1-1 : 2004
- BS EN 1996-1-1 : 2005
- BS EN 1996-1-2 : 2005
- BS EN 1996-2 : 2006
- BS EN 1996-3 : 2006.

4.5 The designer should select a construction appropriate to the local wind-driven rain index to BS EN 1996-2 : 2006, paying due regard to the design detailing, workmanship and materials to be used.

4.6 The air gap between the face of the insulation and the back of the rainscreen panels should be of sufficient width to allow any water passing the joints to run down the back of the rainscreen panels and be discharged externally without wetting the insulation or the backing wall. The minimum width for air gaps required by NHBC is:

- 50 mm for panels with open joints
- 38 mm for panels with baffled or labyrinth (rebated) joints.

4.7 Installation should not be carried out until the moisture content of the timber frame (where applicable) is less than 20%.

4.8 The construction should be made weathertight as soon as is practically possible to ensure maximum protection of the product.

5 Practicability of installation

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

6 Thermal performance

6.1 Calculations of the thermal transmittance (U value) should be carried out in accordance with BS EN ISO 6946 : 2007 and BRE Report 443 : 2006 *Conventions for U-value calculations* using the thermal conductivity* (λ_D) shown in Table 2.

Table 2 Declared thermal conductivity value

Insulation thickness (mm)	Thermal conductivity ($W \cdot m^{-1} \cdot K^{-1}$)
50 to 99	0.021
100 to 120	0.020

6.2 The U value of a completed wall construction will depend on the insulation thickness, number and type of fixings, the insulating value of the substrate and its internal finish. Calculated U values for example constructions are given in Table 3.

Table 3 Example U values(1)

U value ($W \cdot m^{-2} \cdot K^{-1}$)	Insulation thickness installed against the sheathing board (mm)	Insulation thickness between 140 mm deep timber studs (mm)(2)	Insulation thickness between 90 mm deep steel studs (mm)(3)
0.10	120	90	–(4)
0.12	120	–(4)	90
0.19	50	70	–(4)
0.22	50	–(4)	70

(1) Construction, external to internal, comprises:
- Insulation against 9 mm thick OSB (orientated strand board) sheathing for the timber-frame construction (λ = 0.13 $W \cdot m^{-1} \cdot K^{-1}$), or 9 mm thick magnesium silicate board for the steel-frame construction (λ = 0.090 $W \cdot m^{-1} \cdot K^{-1}$)
- 15% timber fraction for timber frame, or 0.4% steel fraction for steel frame (with 44 mm flanges). Remaining space will be a low emissivity cavity
- 15 mm thick plasterboard (λ = 0.25 $W \cdot m^{-1} \cdot K^{-1}$).

(2) Calculations based upon 5.2 galvanized steel fixings per m^2 (8.8 mm^2 cross-sectional area, λ = 50 $W \cdot m^{-1} \cdot K^{-1}$).
(3) Calculations based upon 2.8 galvanized steel fixings per m^2 (15.9 mm^2 cross-sectional area, λ = 50 $W \cdot m^{-1} \cdot K^{-1}$).
(4) For improved thermal/carbon emission performance, additional batten/insulation thicknesses should be considered.

Junctions

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

7 Condensation risk

Interstitial condensation

7.1 Walls will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2011, Annexes D and G.

7.2 The insulation core vapour resistivity may be taken as 171 $MN \cdot s \cdot g^{-1} \cdot m^{-1}$, with a resistance value of 4.71 $MN \cdot s \cdot g^{-1}$ for each individual foil-facing.

7.3 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 internal wall leaf.

7.4 A VCL should be used in steel and timber constructions should the condensation risk analysis show this is necessary.

Surface condensation

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

7.6 Walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 1.2 $W \cdot m^{-2} \cdot K^{-1}$ at any point, and the junctions with other elements are designed in accordance with the guidance referred to in BS 5250 : 2011, Annex G. Further guidance may be obtained from BRE Report 262 : 2002 *Thermal insulation : avoiding risks* and section 6.3 of this Certificate.

8 Behaviour in relation to fire

8.1 The products have a B-s1, d0 reaction to fire classification to BS EN 13501-1: 2007[1].

(1) Bre Global, Test report number 276656. Dated 15/05/2012.

8.2 When tested to BS 8414-1 : 2002 or BS 8414-2 : 2005, the specific cladding constructions (including the product described in the test reports referred to in Table 4 of this Certificate) met the criteria given in BRE Report BR 135 : 2013 *Fire performance of external thermal insulation for walls of multistorey buildings*.

Table 4 Indicative construction summaries

Test report number (date)	Wall construction					
	Lining	Substrate	Sheathing	Xtratherm insulation thickness (mm)	Ventilated cavity (mm)	Cladding
280114 (01/10/2012)	N/A	Brickwork	N/A	60	50	6 mm magnesium silicate board
298343 (09/12/2016)	2 x 12.5 mm plasterboard	100 mm steel frame Rockwool ProRox SL920 100 mm mineral wool	Cement particle board	120	50	Marley Eternit façade board (charcoal grey)

8.3 The constructions in Table 4 are summaries only; fuller details are given in the individual reports (available from the Certificate holder). Users must satisfy themselves that a construction intended for a particular site is fully described by one of the specific test reports. Other combinations of materials must be the subject of a separate full-scale fire test to establish their specific use.

8.4 The constructions described in section 8.3 and referred to in Table 4 are not subject to any restrictions of height or boundary except for those described in section 8.5.

8.5 In England and Wales, the products should not be used on buildings with a storey 18 m or more above ground level and contain one or more dwellings, an institution, a room for residential purposes (excluding any room in a hostel, hotel or boarding house), student accommodation, care homes, sheltered housing, hospitals or dormitories in boarding schools.

8.6 In England, Wales and Northern Ireland, the use of the products is unrestricted in terms of proximity to a boundary and for constructions not covered by sections 8.2 to 8.4 (see also section 8.5), is restricted to buildings with no floor more than 18 m above the ground.

8.7 In Scotland, for constructions not covered by sections 8.2 to 8.4, the products should not be used 1 m or less from the boundary or in a building with a floor more than 11 m about the ground.

8.8 Designers should refer to the relevant national Building Regulations and guidance for the details conditions of use, particularly in respect of requirements for substrate fire performance, cavity closers and barriers, fire stopping of penetrations and combustibility limitations for other materials and components used in the overall wall construction.

8.9 The fire resistance results given in Table 5 were obtained when tested to BS EN 1365-1 : 1999, Report 276656 (dated 15 May 2012).

Table 5 Results of fire resistance, to BS EN 1365-1 : 1999

Lining	Wall construction				Results (minutes)			
	Frame	Sheathing	Insulation	External wall	Integrity	Insulation	Loadbearing	Direction
12.5 mm plasterboard	90 mm steel frame	9 mm magnesium board and 50 mm phenolic	70 mm phenolic	Steel stud wall	101	101	101	Inside to out

8.10 All materials described in Tables 4 and 5 are outside the scope of this Certificate.

9 Strength and stability

9.1 Though the product will not be exposed to wind, it will experience substrate movement and therefore each installation should be designed to withstand, without damage or permanent deformation, the pressures imposed by wind forces.

9.2 The wall and sub-frame to which the products are fixed, or which they are installed between, should be structurally sound and constructed in accordance with section 4.3 of this Certificate; however, when designing the wall for strength, stability and racking, no contribution from the insulation should be assumed.

9.3 Wind loads should be calculated in accordance with BS EN 1991-1-4 : 2005. The higher pressure coefficients applicable to corners of buildings should be used.

9.4 The products may be capable of transmitting their self-weight to the structure. The adequacy of fixing to the structural frame or substrate for specific installations is outside the scope of this Certificate and must be verified by a suitably experienced and qualified individual. Particular care is required around window and door openings to ensure that the structure is capable of sustaining the additional weight of reveal/frame details.

10 Resistance to moisture

10.1 External masonry walls should be in good condition and must resist the ingress of rain when the construction is in accordance with BS EN 1996-1-1 : 2005, BS EN 1996-2 : 2006 and BS EN 1996-3 : 2006.

10.2 Care must be taken to ensure that the types of façades and wall finishes, and the design and detailing around openings, are suitable for the anticipated exposure conditions and, if necessary, resist the movement of the frame.

10.3 The product should be kept dry before the cladding is applied.

10.4 To resist the passage of moisture from the ground, adequate damp-proof courses (dpc) and membranes must be provided, in accordance with conventional practice.

10.5 The boards must not be used in situations where they bridge the dpc in walls. Dampness from the ground will then not pass through to the inner leaf, provided the cavity wall is detailed in accordance with the requirements and provisions of the national Building Regulations.

11 Proximity of flues and appliances

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

England and Wales — Approved Document J

Scotland — Mandatory Standard 3.19, clauses 3.19.1[(1)(2)] to 3.19.4[(1)(2)] and 3.19.8[(1)(2)]

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

Northern Ireland — Technical Booklet L.

12 Maintenance

As the products are confined behind the wall lining and have suitable durability (see section 13), maintenance is not required.

13 Durability

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

Installation

14 General

14.1 Installation of the products should be in accordance with the Certificate holder's instructions and current good building practice.

14.2 The product can be cut using a fine-toothed saw or sharp knife but care must be taken to prevent damage, particularly to edges.

14.3 Cavity barriers should be provided at the junction of the external wall and roof space.

14.4 It is important to ensure a tight fit between boards. Trimming must be accurate, to achieve closely-butted joints and continuity of insulation.

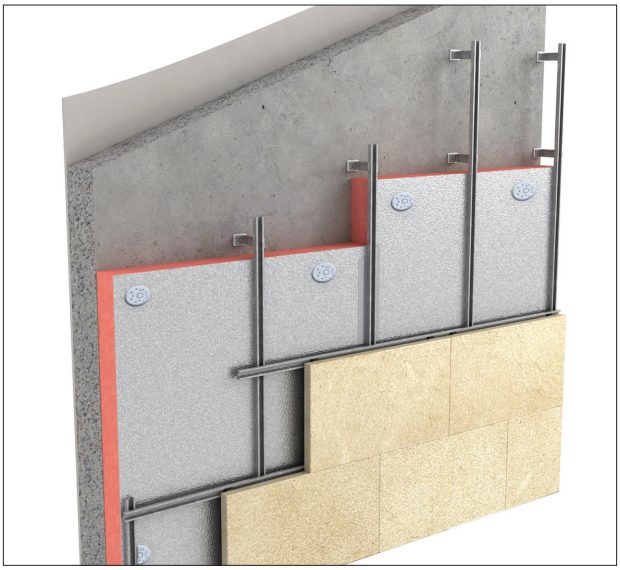
15 Procedure

Masonry walls

15.1 The products are installed fully restrained against the wall in a brick bond pattern with suitable proprietary insulation fasteners[(1)] (see Figure 1).

(1) Outside the scope of this Certificate.

Figure 1 Example installation



Between studs and on the external face of sheathing/studs — external to internal

15.2 The products are fixed to the outside of the sheathing board (when installed) or to the outside face of steel studs, using suitable proprietary insulation fasteners[1].

(1) Outside the scope of this Certificate.

15.3 Rainscreen cladding tape should be applied to the external joints of insulation boards to provide a weathertight finish.

15.4 The products should be cut to fit tightly between the timber/steel studding, and positioned against the inner face of the sheathing board or level with the external face of steel studs. Any gaps should be filled with expanding insulation foam. In timber-frame constructions, the products should be held in place by nails or timber battens to the warm side of the insulation.

15.5 The void created by the space between the inner surface of the products and the dry lining can be utilised as an insulated service duct. It is recommended that services which penetrate the VCL (eg light switches, power outlets) are kept to a minimum to limit damage to the VCL. In addition, any penetrations should be adequately sealed to preserve the integrity of the VCL.

15.6 A sealed polyethythene VCL with lapped and sealed joints is placed over the stud face before applying the internal finish.

Technical Investigations

16 Tests

Tests were carried out on the products in accordance with BS EN 13166 : 2012 to determine:

- dimensional stability
- compressive strength
- thermal conductivity
- tensile strength
- bending strength.

17 Investigations

17.1 An examination was made of test data relating to:

- dimensions
- λ values.

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

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

17.4 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

Bibliography

BS 5250 : 2011 *Code of practice for control of condensation in buildings inner and outer leaves) by filling with urea-formaldehyde (UF) foam systems*

BS 8000-3 : 2001 *Workmanship on building sites — Code of practice for masonry*

BS 8414-1 : 2002 *Fire performance of external cladding systems —Test methods for non-loadbearing external cladding systems applied to the face of a building*
BS 8414-2 : 2005 *Fire performance of external cladding systems — Test method for non-loadbearing external cladding systems fixed to and supported by a structural steel frame*

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 1365-1 : 2012 *Fire resistance tests for loadbearing elements — Walls*

BS EN 1991-1-4 : 2005 *Eurocode 1: Actions on structures — General actions — Wind actions*

BS EN 1993-1-3 : 2006 *Eurocode 3: Design of steel structures — General rules — Supplementary rules for cold-formed members and sheeting*

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

BS EN 1996-1-1 : 2005 Eurocode 6: *Design of masonry structures — General rules for reinforced and unreinforced masonry structures*
BS EN 1996-1-2 : 2005 *Eurocode 6: Design of masonry structures — General rules — Structural fire design*
BS EN 1996-2 : 2006 *Eurocode 6: Design of masonry structures — Design considerations, selection of materials and execution of masonry*
BS EN 1996-3 : 2006 *Eurocode 6: Design of masonry structures — Simplified calculation methods for unreinforced masonry structures*

BS EN 13166 : 2012 *Thermal insulation products for buildings — Factory made phenolic foam (PF) products — Specification*

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

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 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.

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