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Agrément Certificate

20/5836

Product Sheet 1

PAVATEX WOOD-FIBRE INSULATION FOR CLAD WALLS

ISOLAIR AND PAVATHERM-COMBI SHEATHING BOARDS

This Agrément Certificate Product Sheet ⁽¹⁾ relates to Isolair and Pavatherm-Combi Sheathing Boards, wood-fibre insulation boards for use as external thermal insulating sheathing boards on new and existing timber- or steel-frame walls or masonry walls, in domestic and non-domestic buildings. The products are used, with height restrictions, in conjunction with ventilated cladding systems.

(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 declared thermal conductivities (λ_D) of $0.041 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ and $0.044 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$, depending on the thickness range and density (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 have a classification of Class E for reaction to fire in accordance with BS EN 13501-1 : 2018 (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 First issue: 23 December 2020



Hardy Giesler
Chief Executive Officer

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, Isolair and Pavatherm-Combi Sheathing Boards, 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(4)	Internal fire spread (structure)
Comment:		The products are restricted by this Requirement. See sections 8.1 and 8.2 of this Certificate.
Requirement:	B4(1)	External fire spread
Comment:		The products are restricted by this Requirement. See sections 8.1 and 8.2 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		The products can contribute to satisfying this Requirement. See sections 7.1, 7.2 and 7.4 of this Certificate.
Requirement:	L1(a)(i)	Conservation of fuel and power
Comment:		The products can contribute to satisfying this Requirement, but compensating fabric and/or service measures may need to be taken. See sections 6.1 and 6.2 of this Certificate.
Regulation:	7(1)	Materials and workmanship
Comment:		The products are acceptable. See section 13 and the <i>Installation</i> part of this Certificate.
Regulation:	7(2)	Materials and workmanship
Comment:		The products are restricted by this Regulation. See section 8.1 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 performance values for new dwellings (applicable to Wales only)
Comment:		The products can contribute to satisfying these Regulations although compensating fabric and/or services measures may need to be taken. See sections 6.1 and 6.2 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 <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	2.4	Cavities
Standard:	2.6	Spread to neighbouring buildings
Comment:		The products are restricted by these Standards, with references to clauses 2.4.2 ⁽¹⁾⁽²⁾ , 2.4.4 ⁽¹⁾ , 2.4.6 ⁽²⁾ , 2.6.5 ⁽¹⁾ and 2.6.6 ⁽²⁾ . See sections 8.1 and 8.3 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, 7.2 and 7.5 of this Certificate.

Standard: Comment:	6.1(b)	Carbon dioxide emissions The products can contribute to satisfying this Standard, with reference to clauses, or parts of, 6.1.1 ⁽¹⁾ , 6.1.2 ⁽²⁾ , 6.1.3 ⁽¹⁾ , 6.1.4 ⁽¹⁾ , 6.1.6 ⁽¹⁾⁽²⁾ and 6.1.8 ⁽²⁾ , but compensating fabric and/or service measures may need to be taken. See sections 6.1 and 6.2 of this Certificate.
Standard: Comment:	6.2	Building insulation envelope The products can contribute to satisfying this Standard, with reference to clauses, or parts of, 6.2.1 ⁽¹⁾⁽²⁾ , 6.2.3 ⁽¹⁾ , 6.2.4 ⁽²⁾ , 6.2.5 ⁽²⁾ , 6.2.6 ⁽¹⁾ , 6.2.7 ⁽¹⁾ , 6.2.8 ⁽²⁾ , 6.2.9 ⁽¹⁾⁽²⁾ , 6.2.10 ⁽¹⁾ , 6.2.11 ⁽¹⁾⁽²⁾ , 6.2.12 ⁽²⁾ and 6.2.13 ⁽¹⁾⁽²⁾ , but compensating fabric and/or service measures may need to be taken. See sections 6.1 and 6.2 of this Certificate.
Standard: Comment:	7.1(a)(b)	Statement of sustainability 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. See section 6.1 of this Certificate.
Regulation: Comment:	12	Building standards applicable to conversions All comments given for these 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: Comment:	23	Fitness of materials and workmanship The products are acceptable. See section 13 and the <i>Installation</i> part of this Certificate.
Regulation: Comment:	29	Condensation The products can contribute to satisfying this Regulation. See sections 7.1 and 7.2 of this Certificate.
Regulation: Comment:	35(4)	Internal fire spread – Structure The products are restricted by this Regulation. See sections 8.1 and 8.2 of this Certificate.
Regulation: Comment:	36(a)	External fire spread The products are restricted by this Regulation. See sections 8.1 and 8.2 of this Certificate.
Regulation: Comment:	39(a)(i)	Conservation measures The products can contribute to satisfying this Regulation. See sections 6.1 and 6.2 of this Certificate.
Regulation: Comment:	40(2)	Target carbon dioxide emission rate The products can contribute to satisfying this Regulation. See sections 6.1 and 6.2 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 sections: 3 *Delivery and site handling* (3.4) and 15 *General* (15.3) of this Certificate.

Additional Information

NHBC Standards 2020

In the opinion of the BBA, Isolair and Pavatherm-Combi Sheathing Boards, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapters 6.1 *External masonry walls*, 6.2 *External timber framed walls*, 6.9 *Curtain walling and cladding* and 6.10 *Light Steel Framing*. Current NHBC guidance precludes the use of façade systems not utilising a drained cavity.

CE marking

The Certificate holder has taken the responsibility of CE marking Isolair and Pavatherm-Combi Sheathing Boards in accordance with harmonised European Standard EN 13171 : 2012.

Technical Specification

1 Description

1.1 Isolair and Pavatherm-Combi Sheathing Boards are wood-fibre (WF) insulation boards.

1.2 The boards have the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

Characteristic (unit)	Pavatherm-Combi	Isolair	Isolair
Length (mm)	1780	1780 and 2480 ⁽¹⁾	1780
Width (mm)	560	750	560
Thickness (mm)	40 to 80 ⁽²⁾	30 to 80 ⁽²⁾	100 to 200 ⁽²⁾
Compressive strength at 10% deformation (CS(10/Y) kPa)	100	200	100
Edge detail	tongue-and-groove (all edges)		

(1) Other sizes, within this range, are available to order.

(2) Typically, increments of 20 mm, but different thicknesses within this range are available to order.

1.3 Ancillary items used with the products but outside the scope of this Certificate include the following (details may be obtained from the Certificate holder):

- tape — butyl rubber tape with laminated aluminium foil
- primer — for use on cut pieces/edges, prior to taping
- adhesive and dispensing gun
- appropriate fixings and washers for timber, steel frame and masonry
- rainscreen cladding panel and subframe
- breather membranes
- vapour control layer (vcl).

2 Manufacture

2.1 The boards are manufactured using conventional techniques for wood-fibre products.

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 the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by SGS (Certificate FR18/81842815).

3 Delivery and site handling

3.1 The product name and lot number are printed on at least one board per pallet/pack. Boards are delivered to site wrapped with cardboard to protect the edges. Each pack is labelled with the product name, board dimensions, product code, production lot numbers and BBA logo, incorporating the number of this Certificate.

3.2 Packs should be stored inside, off the ground, on a clean, dry, level surface and protected against moisture, mechanical damage and sources of ignition.

3.3 Contact with solvent-based wood preservatives, paint thinners and solvents should be avoided.

3.4 Dust masks should always be used to avoid inhalation of wood-dust.

3.5 Damaged, contaminated or wet boards must not be used.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Isolair and Pavatherm-Combi Sheathing Boards.

Design Considerations

4 Use

4.1 Isolair and Pavatherm-Combi Sheathing Boards are satisfactory for use as external thermal insulating sheathing boards over external timber- or steel-frame, or masonry (where masonry includes clay and calcium silicate bricks, concrete blocks, and natural and reconstituted stone blocks) in new and existing domestic and non-domestic buildings. The boards may be used in conjunction with a dry lining system and are effective in reducing the thermal transmittance (U value) of external walls, with the height restrictions described in section 8 of this Certificate. It is essential that such walls are designed and constructed to incorporate the normal precautions against moisture ingress, including the recommendations in this Certificate.

4.2 Certain rainscreen systems, such as those with open joints, may require the addition of a breather membrane incorporated into the system. The requirement for a breather 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 walls 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 elements and junctions
- 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 should be structurally sound, and should have been designed and constructed in accordance with the following Standards and, where appropriate, their UK National Annexes:

- BS 8000-3 : 2020
- BS EN 351-1 : 2007
- BS EN 845-1 : 2013
- BS EN 1993-1-2 : 2005 and its UK National Annex
- BS EN 1993-1-3 : 2006 and its UK National Annex
- BS EN 1995-1-1 : 2004 and its UK National Annex

- BS EN 1996-1-1 : 2005 and its UK National Annex
- BS EN 1996-1-2 : 2005 and its UK National Annex
- BS EN 1996-2 : 2006 and its UK National Annex
- BS EN 1996-3 : 2006 and its UK National Annex.

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

4.6 For timber frame constructions, installation must not be carried out until the moisture content of the frame is less than 20%.

4.7 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.

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

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 : 2017, BRE Report BR 443 : 2006, BRE Digest DG 465 and BS EN ISO 10211 : 2017 (where relevant) using the thermal conductivity (λ_D) of the products shown in Table 2.

Table 2 Declared thermal conductivities of the products

Product	Thickness (mm)	Declared thermal conductivity ($W \cdot m^{-1} \cdot K^{-1}$)
Pavatherm-Combi	40 – 80	0.041
Isolair	30 – 80	0.044
	100 – 200	0.041

6.2 The U value of a completed wall construction will depend on the insulation thickness, number and type of fixings, the rainscreen support systems, the insulating value of the substrate and its internal finish. Calculated U values for example constructions are given in Tables 3 and 4. For improved thermal/carbon emissions performance, the designer should consider additional fabric and/or services measures.

Table 3 Isolair insulation

U value requirement (W·m ⁻² ·K ⁻¹)	Isolair insulation thickness mm		
	215 mm solid masonry wall ⁽¹⁾	Timber-clad 140 mm Timber-frame wall ⁽⁴⁾	150 mm steel-frame system ⁽⁵⁾
0.18	– ⁽²⁾	– ⁽³⁾	140 mm
0.19	– ⁽²⁾	– ⁽³⁾	120 mm
0.25	160 mm	30 mm	80 mm
0.26	160 mm	30 mm	80 mm
0.27	140 mm	30 mm	80 mm
0.28	140 mm	30 mm	60 mm
0.30	140 mm	30 mm	52 mm
0.35	120 mm	30 mm	30 mm

- (1) 15 mm cladding board, 50 mm ventilated cavity, Isolair insulation fixed with steel fixings ($\lambda = 50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 5 per m² with a 6 mm diameter into a 215 mm solid brick wall ($\lambda = 0.56 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) with a 13 mm internal plaster finish ($\lambda = 0.57 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$).
- (2) Additional internal insulation required to achieve these U values.
- (3) Pavatherm-Combi could be used to meet this requirement (see Table 4).
- (4) 15 mm cladding board, 50 mm ventilated cavity, Isolair insulation fixed with steel fixings ($\lambda = 50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 5 per m² with a 4.8 mm diameter into a 140 mm deep timber-frame (15% timber bridged) ($\lambda = 0.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) filled with additional insulation ($\lambda = 0.038 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 12 mm OSB internal sheathing board ($\lambda = 0.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 25 mm service cavity created by 25 mm timber battens with a 12.5 mm plasterboard internal finish ($\lambda = 0.25 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$).
- (5) 15 mm cladding board, 50 mm ventilated cavity, Isolair insulation fixed with steel fixings ($\lambda = 50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 5 per m² with a 4.8 mm diameter into a 150 mm light-steel-frame system (0.3% bridge) ($\lambda = 50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) filled with additional insulation ($\lambda = 0.038 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 12 mm OSB internal sheathing board ($\lambda = 0.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 25 mm service cavity created by 25 mm timber battens with a 12.5 mm plasterboard internal finish ($\lambda = 0.25 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$).

Table 4 Pavatherm-Combi insulation

U value requirement (W·m ⁻² ·K ⁻¹)	Pavatherm-Combi insulation thickness mm		
	215 mm solid masonry wall ⁽¹⁾	Timber-clad 140 mm timber-frame wall ⁽³⁾	150 mm steel-frame system ⁽⁵⁾
0.18	– ⁽²⁾	80 mm	– ⁽²⁾
0.19	– ⁽²⁾	80 mm	– ⁽²⁾
0.25	– ⁽²⁾	40 mm	80 mm
0.26	– ⁽²⁾	40 mm	80 mm
0.27	– ⁽²⁾	40 mm	60 mm
0.28	– ⁽²⁾	40 mm	60 mm
0.30	– ⁽²⁾	– ⁽⁴⁾	60 mm
0.35	– ⁽²⁾	– ⁽⁴⁾	40 mm

- (1) 15 mm cladding board, 50 mm ventilated cavity, Pavatherm-Combi insulation fixed with steel fixings ($\lambda = 50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 5 per m² with a 6 mm diameter into a 215 mm solid brick wall ($\lambda = 0.56 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) with a 13 mm internal plaster finish ($\lambda = 0.57 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$).
- (2) Does not achieve this U-value. Isolair insulation could be used to meet this requirement (see Table 3).
- (3) 15 mm cladding board, 50 mm ventilated cavity, Pavatherm-Combi insulation fixed with steel fixings ($\lambda = 50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 5 per m² with a 4.8 mm diameter into a 140 mm deep timber-frame (15% timber bridged) ($\lambda = 0.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) filled with additional insulation ($\lambda = 0.038 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 12 mm OSB internal sheathing board ($\lambda = 0.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 25 mm service cavity created by 25 mm timber battens with a 12.5 mm plasterboard internal finish ($\lambda = 0.25 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$).
- (4) No Pavatherm-Combi insulation is required.
- (5) 15 mm cladding board, 50 mm ventilated cavity, Pavatherm-Combi insulation fixed with steel fixings ($\lambda = 50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 5 per m² with a 4.8 mm diameter into a 150 mm light-steel-frame system (0.3% bridge) ($\lambda = 50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) filled with additional insulation ($\lambda = 0.038 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 12 mm OSB internal sheathing board ($\lambda = 0.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 25 mm service cavity created by 25 mm timber battens with a 12.5 mm plasterboard internal finish ($\lambda = 0.25 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$).

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 For the purpose of calculations, the water vapour diffusion resistance factor (μ) of the Isolair and Pavatherm-Combi Sheathing Boards may be taken as 3.

7.3 A vapour control layer (vcl) should be used in all constructions, should the condensation risk analysis show this is necessary.

Surface condensation



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



7.5 In Scotland, walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $1.2 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ at any point 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 products have a Class E classification⁽¹⁾ for reaction to fire in accordance with BS EN 13501-1 : 2018.

(1) KIWA classification reports for reaction to fire test: 0110-L-20/4, 0110-L-20/7 & 0111-L-20/4 (all issued 11 May 2020) and 0112-L-20/4 & 0112-L-20/7 (both issued 5 June 2020). Copies are available from the Certificate holder.



8.2 In England, Wales and Northern Ireland, the products are not classified as 'non-combustible' or 'of limited combustibility' and may be used on buildings with no storey 18 m or more above the ground and 1 metre or more from a boundary.



8.3 In Scotland, the products are not classified as 'non-combustible' and may be used on buildings more than 1 m from a boundary. The products should not be used on any building with a storey more than 11 m above the ground, or on any entertainment or assembly building with a total storey area more than 500 m², or on any hospital or residential care building with a total storey area more than 200 m².

8.4 For resistance to fire, the performance of a wall incorporating the products must be determined by tests from a suitably accredited laboratory and is outside the scope of this Certificate.

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

9 Strength and stability

9.1 The wall and sub-frame to which the products are fixed, or which it is installed between, should be structurally sound and constructed in accordance with section 4.4 of this Certificate. However, when designing the wall for strength, stability and racking, no contribution from the insulation should be assumed.

9.2 Wind loads should be calculated by a suitably competent and experienced individual in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex. The higher-pressure coefficients applicable to corners of buildings should be used.

9.3 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 competent individual. Care is required around window and door openings to ensure that the structure is capable of sustaining the additional weight of reveal/frame details.

9.4 The cladding must be fixed to the frame or masonry substrate and must be designed by a suitably qualified and experienced individual in accordance with relevant Standards and Requirements (see section 4.4).

10 Water resistance

10.1 External walls should be in good condition and must resist the ingress of rain.

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

10.3 The products should be kept dry until the cladding is applied.

10.4 To resist the passage of moisture from the ground, adequate damp proof courses and membranes must be provided in accordance with conventional good practice. The insulation must not be used in situations where it bridges the damp-proof course in walls.

10.5 Weather resistance is provided by the external cladding system (outside the scope of this Certificate).

11 Proximity of flues and appliances

Detailed guidance can be found in the documents supporting the national Building Regulations for the provisions that are applicable when the products are installed in close proximity to certain flue pipes and/or heat-producing appliances.

12 Maintenance

As the products are confined between the wall and the cladding and have suitable durability (see section 13) and, provided the integrity of the cladding is maintained throughout the life of the system, maintenance is not required.

13 Durability



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

14 Reuse and recyclability

The products comprise wood-fibre which can be recycled.

Installation

15 General

15.1 Installation of Isolair and Pavatherm-Combi Sheathing Boards should be in accordance with this Certificate, the Certificate holder's instructions, and current good building practice.

15.2 The products can be cut using a fine-toothed saw or a circular jig saw with a serrated, non-toothed blade, with effective extraction. Care must be taken to prevent damage, particularly to edges. Damaged boards should not be used.

15.3 When cutting the products, an appropriate mask should always be used to avoid inhalation of wood-dust.

15.4 Cavity barriers should be provided as required by the documents supporting the national Building Regulations.

15.5 It is important to ensure a tight fit between boards. Boards are arranged using the tongue-and-groove connection, to ensure a tight fit at all times. Where necessary, trimming (which must be accurate) is undertaken, to achieve close-butted joints and continuity of insulation.

15.6 The boards are fixed against the external face of the frame or against the external face of masonry substrates, in conjunction with masonry cladding or weathertight rainscreen cladding⁽¹⁾, 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 manufacturer.

16 Procedure

Fitting boards

16.1 The first row of boards is installed with the tongue uppermost. Subsequent rows are fixed, ensuring that the tongue is fully engaged and fixed within the first row. Boards should be installed with a minimum 200 mm staggered fixing pattern.

16.2 Fixings should be installed as per Certificate holder instructions, including the type, head size, length and number per square metre.

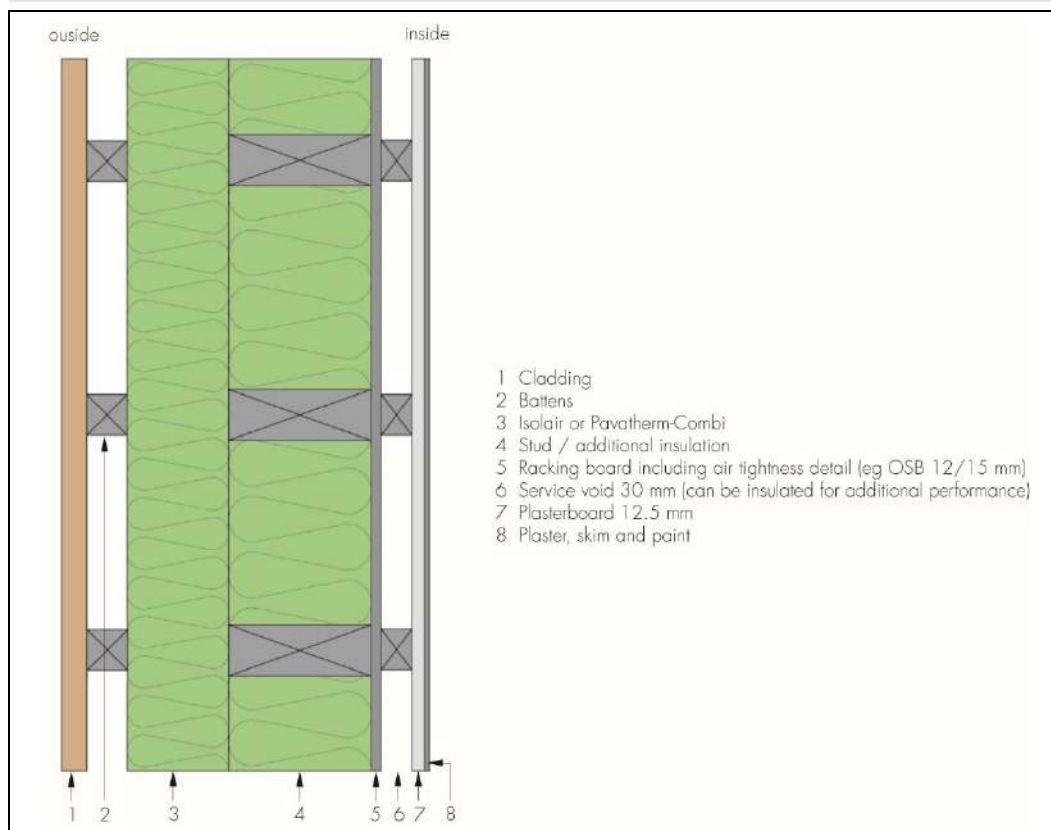
16.3 All openings, corners and penetrations should be primed and taped to ensure the integrity of the layer.

16.4 Vertical expansion joints must be provided for wall elevations more than 18 m long. The expansion joint may be created by fitting the insulation to the frame and cutting a 5 mm wide groove through the board on the centre line of a stud. The groove may then be sealed to form a sealed air gap.

16.5 Final fixing of the boards must be through the battens. Movement joints should also be included to match any movement joints in the underlying structure.

16.6 Typical application of the products onto a timber frame is shown in Figure 1.

Figure 1 Plan view of a typical installation showing Isolair or Pavatherm-Combi insulation boards on a timber frame



17 Repair

Damaged boards must be replaced before the installation of cladding.

Technical Investigations

18 Tests

Results of tests were assessed, to determine:

- dimensional stability under specified temperature and humidity
- shear strength
- cohesive strength
- water vapour resistance
- thermal conductivity
- compressive strength
- flexural strength
- water absorption
- water penetration
- density
- dimensional accuracy and flatness
- reaction to fire.

19 Investigations

19.1 Existing data on durability and properties in relation to fire were evaluated.

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

19.3 A series of U value calculations was carried out.

19.4 A condensation risk analysis was carried out.

19.5 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

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