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Agrement Certificate

15/5283

Product Sheet 4

IKO INSULATIONS

IKO ENERTHERM ALU CW INSULATION BOARD FOR PARTIAL FILL CAVITY WALLS

This Agrément Certificate Product Sheet⁽¹⁾ relates to IKO enertherm ALU CW Insulation Board for Partial Fill Cavity Walls, comprising a rigid polyisocyanurate (PIR) foam board with composite foil-facings. The product is for use as partial fill insulation in external cavity walls with masonry inner and outer leaves, in new domestic or non-domestic buildings, with height restriction in some cases. The product is installed during construction.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

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



KEY FACTORS ASSESSED

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

Water resistance — the product will resist water transfer across the cavity (see section 7).

Condensation — the product can contribute to limiting the risk of condensation (see section 8).

Behaviour in relation to fire — the Certificate holder has not declared a reaction to fire classification to BS EN 13501-1 : 2018 and its use is restricted in some cases (see section 9).

Durability — the product is durable, rot proof, water resistant and sufficiently stable to remain effective as an insulation for the life of the building in which it is incorporated (see section 12).

The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Second issue: 16 August 2022

Originally certificated on 4 March 2016

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.

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Regulations

In the opinion of the BBA, IKO enertherm ALU CW Insulation Board for Partial Fill Cavity Walls, 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: Comment:	B3(4)	Internal fire spread (structure) The product is restricted by this Requirement. See section 9.1 of this Certificate.
Requirement: Comment:	B4(1)	External fire spread The product is restricted in some cases by this Requirement. See sections 9.1 and 9.3 of this Certificate.
Requirement: Comment:	C2(a)	Resistance to moisture The product can contribute to satisfying this Requirement. See section 7.1 of this Certificate.
Requirement: Comment:	C2(b)	Resistance to moisture The product can contribute to satisfying this Requirement. See section 7.2 of this Certificate.
Requirement: Comment:	C2(c)	Resistance to moisture The product can contribute to satisfying this Requirement. See sections 8.1, 8.2 and 8.4 of this Certificate.
Requirement: Comment:	L1(a)(i)	Conservation of fuel and power The product can contribute to satisfying this Requirement. See sections 6.1 and 6.2 of this Certificate.
Regulation: Comment:	7(1)	Materials and Workmanship The product is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation: Comment:	7(2)	Materials and Workmanship The product is restricted by this Regulation. See sections 9.1 and 9.2 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)
Regulation:	26C	Target primary energy rates for new buildings (applicable to England only)
Comment:		The product can contribute to satisfying these Regulations. See sections 6.1 and 6.2 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: Comment:	8(1)	Durability, workmanship and fitness of materials The product is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation: Comment:	8(3)	Durability, workmanship and fitness of materials The product is restricted by this Regulation. See sections 9.1 and 9.4 of this Certificate.

Regulation:	9	Building standards applicable to construction
Standard:	2.4	Cavities
Comment:		Use of the product is restricted by this Standard, with reference to clauses 2.4.2 ⁽¹⁾⁽²⁾ , 2.4.4 ⁽¹⁾ and 2.4.6 ⁽²⁾ . See section 9.1 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Comment:		The product is restricted by this Standard in some cases, with reference to clauses 2.6.5 ⁽¹⁾ and 2.6.6 ⁽²⁾ . See sections 9.1 and 9.5 of this Certificate.
Standard:	3.4	Moisture from the ground
Comment:		The product can contribute to satisfying this Standard, with reference to clauses 3.4.1 ⁽¹⁾⁽²⁾ and 3.4.5 ⁽¹⁾⁽²⁾ . See section 7.1 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The product can contribute to satisfying this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.3 ⁽¹⁾⁽²⁾ . See section 7.2 of this Certificate.
Standard:	3.15	Condensation
Comment:		The product 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 8.1, 8.2 and 8.5 of this Certificate.
Standard:	6.1(b)	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		The product can contribute to satisfying these Standards with reference to clauses, or parts of, 6.1.1 ⁽¹⁾ , 6.1.2 ⁽²⁾ , 6.1.6 ⁽¹⁾ , 6.2.1 ⁽¹⁾⁽²⁾ , 6.2.3 ⁽¹⁾ , 6.2.4 ⁽²⁾ , 6.2.5 ⁽²⁾ , 6.2.9 ⁽¹⁾ , 6.2.10 ⁽¹⁾ , 6.2.11 ⁽¹⁾⁽²⁾ and 6.2.13 ⁽²⁾ . See sections 6.1 and 6.2 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The product can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard. In addition, the product can contribute to a construction meeting a higher level of sustainability as defined in this Standard, with reference to clauses 7.1.4 ⁽¹⁾⁽²⁾ [Aspects 1 ⁽¹⁾⁽²⁾ and 2 ⁽¹⁾], 7.1.6 ⁽¹⁾⁽²⁾ [Aspects 1 ⁽¹⁾⁽²⁾ and 2 ⁽¹⁾] and 7.1.7 ⁽¹⁾⁽²⁾ [Aspect 1 ⁽¹⁾⁽²⁾]. See section 6.1 of this Certificate.
Regulation:	12	Building standards applicable to conversions
Comment:		Comments made in relation to the product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ .

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).



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

Regulation:	23(1)	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	23(2)	Fitness of materials and workmanship
Comment:		The product is restricted by this Regulation. See sections 9.1 and 9.2 of this Certificate.
Regulation:	28(a)	Resistance to moisture and weather
Comment:		The product can contribute to satisfying this Regulation. See section 7.1 of this Certificate.

Regulation: Comment:	28(b)	Resistance to moisture and weather The product can contribute to satisfying this Regulation. See section 7.2 of this Certificate.
Regulation: Comment:	29	Condensation The product can contribute to satisfying this Regulation. See sections 8.1 and 8.2 of this Certificate.
Regulation: Comment:	35(4)	Internal fire spread - structure The product is restricted by this Regulation in some cases. See section 9.1 of this Certificate.
Regulation: Comment:	36(a)	External fire spread The product is restricted by this Regulation in some cases. See sections 9.1 and 9.3 of this Certificate.
Regulation: Comment:	39(a)(i)	Conservation measures The product can contribute to satisfying this Regulation. See sections 6.1 and 6.2 of this Certificate.
Regulation: Comment:	40(2) 43B	Target carbon dioxide emission rate Nearly zero-energy requirements for new buildings The product can contribute to satisfying these Regulations. 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 section: **3 Delivery and site handling (3.4)** of this Certificate.

Additional Information

NHBC Standards 2022

In the opinion of the BBA, and subject to a 50 mm minimum residual cavity being maintained, IKO enertherm ALU CW Insulation Board for Partial Fill Cavity Walls, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 6.1 *External masonry walls*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 13165 : 2012.

Technical Specification

1 Description

IKO enertherm ALU CW Insulation Board for Partial Fill Cavity Walls comprises a rigid polyisocyanurate (PIR) board with composite foil-facings, with the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

Characteristic (unit)	Value
Length x width (mm)	1200 x 450
Thickness (mm)	30 to 160 (in 5 mm increments)
Edge profile	Straight edge
Foil-facings	Composite foil-facing both sides, printed on one side only

2 Manufacture

2.1 IKO enertherm ALU CW Insulation Board for Partial Fill Cavity Walls is manufactured by blending together polyol and MDI in a continuous foaming process aided by a blowing agent, and sandwiched between two aluminium foil-facings. After formation, the boards are left to cure and are cut to size.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The environmental management system of IKO Insulations UK Ltd has been assessed and registered as meeting the requirements of BS EN ISO 14001 : 2015 by Lucideon (Certificate 24884).

3 Delivery and site handling

3.1 The product is delivered to site in packs, wrapped in polythene, including a label with the Certificate holder's trade name, board dimensions, and the BBA logo incorporating the number of this Certificate.

3.2 The product must be protected from prolonged exposure to sunlight, and should be stored under cover or protected with opaque polythene sheeting. Where possible, packs should be stored inside. If stored outside, the product should be stacked flat, and raised above ground level and not in contact with ground moisture.

3.3 The product is light and easy to handle and care should be exercised to avoid crushing the edges or corners. If damaged the product should be discarded.

3.4 The product must not be exposed to open flame or other ignition sources, or to solvents or other chemicals.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on IKO enertherm ALU CW Insulation Board for Partial Fill Cavity Walls.

Design Considerations

4 Use

4.1 IKO enertherm ALU CW Insulation Board for Partial Fill Cavity Walls is satisfactory for use as partial fill cavity wall insulation and is effective in reducing the thermal transmittance (U value) of external cavity walls with masonry inner and outer leaves (where masonry includes clay and calcium silicate bricks, concrete blocks, and natural and reconstituted stone blocks). The product is for use in new domestic and non-domestic buildings with height restriction in some cases. Where use of the product is not restricted by its reaction to fire classification (see section 9) additional requirements apply above 25 m. It is essential that walls are designed and constructed to incorporate the precautions in this Certificate to prevent moisture penetration.

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

- BS EN 1996-1-1 : 2005, BS EN 1996-1-2 : 2005, BS EN 1996-2 : 2006 and BS EN 1996-3 : 2006, and their UK National Annexes
- BS EN 845-1 : 2013 and BS 8000-3 : 2001.

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

4.4 As with other forms of cavity wall insulation, where buildings need to comply with *NHBC Standards 2022*, specifiers should observe the requirements of that document.

4.5 Cavity wall ties with insulation-retaining fixings and, if required, any additional ties to BS EN 845-1 : 2013 should be used for structural stability in accordance with BS EN 1996-1-1 : 2005, BS EN 1996-2 : 2006 and BS EN 1996-3 : 2006, and their UK National Annexes.

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

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

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

4.8 For optimum thermal performance, the boards must be installed with the correct orientation of their unprinted foil-facings. See section 13.2.

Buildings up to and including 25 metres high (see also section 9 of this Certificate)

4.9 The residual cavity width to be maintained during construction is 50 mm. This may reduce to 25 mm in isolated areas due to individual construction features (a minimum of 50 mm residual cavity width is required by the NHBC). This may be achieved by designing a cavity width which takes into account the dimensional tolerances of the components which make up the wall (by reference to the British Standards relating to the bricks, blocks and boards, or by using the data from the respective manufacturers). Allowances may need to be made for the quality of building operatives and the degree of site supervision or control available. The limitations in respect of exposure of the proposed building as set out in Table 2 must also be observed.

Table 2 Maximum allowable exposure index E⁽¹⁾

Construction	Maximum allowable exposure index E ⁽¹⁾
All external masonry walls protected by: rendering (to BS EN 13914-1 : 2016), tile hanging, slate hanging, or timber, plastic or metal weatherboarding or cladding	No restriction
One or more external masonry walls constructed from facing clay brickwork or natural stone, the porosity of which exceeds 20% by volume. Mortar joints must be flush pointed or weatherstruck	100
One or more external masonry walls constructed from calcium silicate bricks, concrete blocks, reconstituted stone, or natural stone, the porosity of which is less than 20% by volume, or any material with raked mortar joints	88

(1) To BS 5618 : 1985.

4.10 From ground level, the maximum height of continuous cavity walls must not exceed 12 metres; above 12 metres the maximum height of continuous cavity walls must not exceed 7 metres. In both cases, breaks should be in the form of continuous horizontal cavity trays and weepholes discharging to the outside.

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

Buildings over 25 metres in height (see section 9 of this Certificate)

4.12 The width of the residual clear cavity to be achieved is to be in excess of 50 mm, and the following requirements apply in addition to those stated in 4.9 to 4.11:

- the specifier must take extra care when detailing to ensure that the introduction of the insulation does not affect the weather resistance of the wall. Above average site supervision is recommended during installation of the product
- where, for structural reasons, the cavity width is reduced, eg by the intrusion of ring beams, a minimum residual cavity width of 25 mm must be maintained and extra care must be taken with fixings and weatherproofing, eg the inclusion of cavity trays with weepholes.

5 Practicability of installation

The product is designed to be installed by a competent general builder, or a contractor, experienced with this type of product.

6 Thermal performance



6.1 Calculations of the thermal transmittance (U value) of specific external wall constructions should be carried out in accordance with BS EN ISO 6946 : 2017 and BRE Report BR 443 : 2019, using the declared thermal conductivity value (λ_D) of $0.022 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ for the insulation, and an aged emissivity (ϵ_D) (to BS EN 15976 : 2011) of 0.05 for the unprinted foil-facing.

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

Table 3 Example U values — partial fill insulation (50 mm residual cavity)

U value ($\text{W}\cdot\text{m}^{-2}\text{K}^{-1}$)	Insulation thickness (mm)	
	13 mm dense plaster, 100 mm dense block ⁽¹⁾	Plasterboard on dabs, 100 mm AAC block ⁽²⁾
0.17	110	90
0.18	100	80
0.20	90	70
0.21	80	70
0.22	75	70
0.23	70	60
0.25	70	50
0.26	60	50
0.27	60	40
0.28	60	40
0.30	50	40
0.35	40	30

(1) 102.5 mm brick ($\lambda = 0.77 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 50 mm clear low e cavity, insulation, 100 mm dense block ($\lambda = 1.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) bridged by mortar (6.7%, $\lambda = 0.88 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 13 mm plaster ($\lambda = 0.57 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$).

(2) 102.5 mm brick ($\lambda = 0.77 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 50 mm clear low e cavity, insulation, 100 mm AAC block ($\lambda = 0.12 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) bridged by mortar (6.7%, $\lambda = 0.88 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 15 mm air cavity bridged by adhesive (20%, $\lambda = 0.43 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) 12.5 mm plasterboard ($\lambda = 0.25 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$).

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 Water resistance



7.1 The product may be used in situations where it bridges the dpc in walls; dampness from the ground will not pass through to the inner leaf provided the wall is detailed in accordance with the requirements and provisions of the national Building Regulations.

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

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

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

7.4 Window and door opening reveals should be constructed incorporating a cavity barrier/closer/dpc, as required.

8 Condensation

Interstitial condensation



8.1 Walls will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2021 and the relevant guidance.

8.2 The foil-facings have a water vapour resistance of $1000 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}$ and the insulation core has a water vapour resistivity of approximately $300 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}\cdot\text{m}^{-1}$.

8.3 If the product is to be used in the external wall 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.

Surface condensation



8.4 In England and Wales, 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 section 6.3 of this Certificate.



8.5 For buildings in Scotland, wall constructions will be acceptable 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 : 2021. Further guidance may be obtained from BRE Report BR 262 : 2002 and section 6.3 of this Certificate.

9 Behaviour in relation to fire



9.1 The Certificate holder has not declared a reaction to fire classification for the product to BS EN 13501-1 : 2018.



9.2 In England, Wales and Northern Ireland, the product should not be used on buildings with a storey 18 m or more above ground level that contains: 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 or dormitories in boarding schools, and additionally in Northern Ireland, nursing homes and places of lawful detention.

9.3 In England, Wales and Northern Ireland, the product is unrestricted in terms of proximity to a boundary and, for constructions comprising two leaves of brick or concrete each at least 75 mm thick, and with cavities closed around openings and at the top of the wall (with cavity barriers in Northern Ireland), is unrestricted in terms of height, other than those described in section 9.2. For other constructions, the product should not be used in buildings with a floor more than 18m above the ground.



9.4 In Scotland the product should not be used on buildings that have a storey 11 m or more above ground level and contain; a dwelling, a building used as a place of assembly, or as a place of entertainment or recreation, a hospital, a residential care building or sheltered housing complex or a shared multi-occupancy residential building.

9.5 In Scotland, the product may be used without restriction on height or proximity to a relevant boundary, other than buildings described in section 9.4, provided it is installed in a cavity that is between two leaves of masonry at least 75 mm thick, and which has a cavity barrier around all openings in the wall and at the top of the wall head. For other constructions, the product should not be used on buildings with a storey at a height of 11 m or more above the ground or within 1 m of a boundary.

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

10 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 system is installed in close proximity to certain flue pipes and/or heat-producing appliances.

11 Maintenance

As the product is confined within the wall cavity and has suitable durability (see section 12), maintenance is not required.

12 Durability



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

Installation

13 General

13.1 It is recommended that the inner leaf be constructed ahead of the outer leaf, as the boards are fastened to the cavity face of the inner leaf. It is essential that the spacing of wall ties/clips allows one long edge of each board to be secured at a minimum of two points.

13.2 The product has printed logos applied to the foil-facing on one side only. To ensure optimum thermal performance, the boards must be installed with the unprinted foil-face always facing the cavity side.

13.3 Vertical joints in the boards must be staggered and all joints tightly butted. Where penetrations occur in the cavity, the boards should be carefully cut to fit.

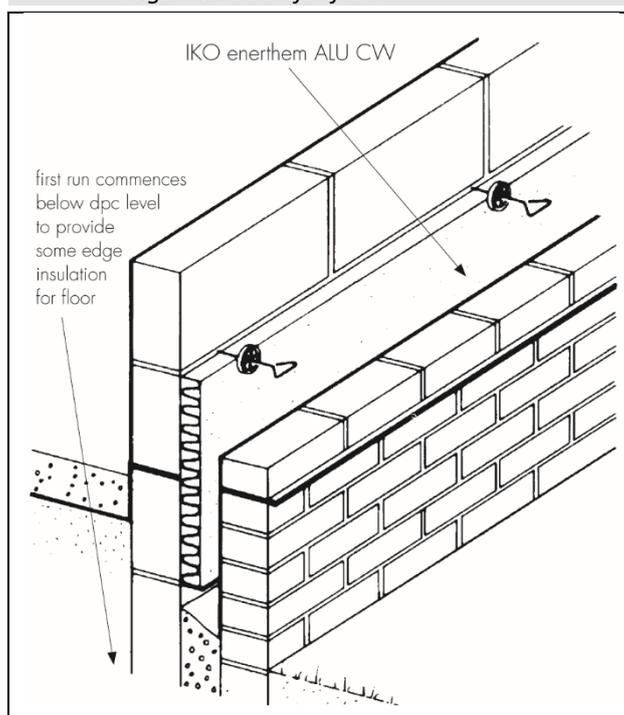
13.4 If installation of the boards is terminated below the highest level of the wall, the top edge of the insulation must be protected by a cavity tray and alternate perpend joints raked out to provide adequate drainage of water from the tray.

13.5 Where required, door and window reveals should incorporate a suitable cavity barrier/closer. It is recommended that BBA-approved cavity closers are used.

14 Procedure

14.1 A section of the inner leaf is built, with the first row of wall ties, at approximately 600 mm horizontal spacing, where the insulation is to begin. The wall ties should not be placed directly on the dpc. The first run of boards should commence below the dpc level to provide some edge insulation for the floor (see Figure 1).

Figure 1 Insulation installed below dpc level to provide edge insulation for floor

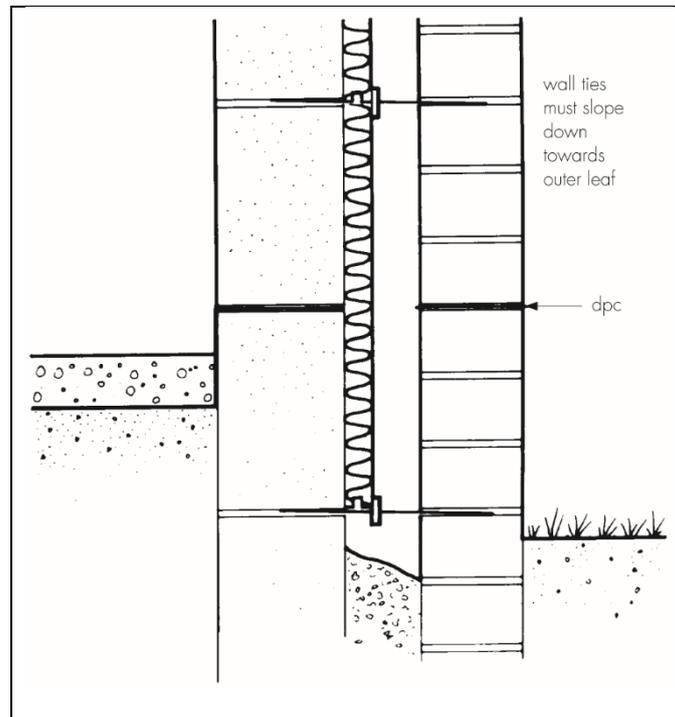


14.2 The leading leaf is then built up to the required height, with wall ties placed at a vertical spacing of 450 mm, ensuring the drip of the tie is located halfway across the residual cavity width. Excess mortar should be cleaned from the cavity face of the leading leaf, and the boards placed on the wall ties behind the retaining clips, to form a closely jointed run.

14.3 The second row of wall ties is fitted to retain the tops of the boards. It is essential that all wall ties slope downwards towards the outer leaf (see Figure 2) and are placed at centres not exceeding 900 mm⁽¹⁾, to ensure that each board is secured at a minimum of three points. It is also important that the first row of insulation boards is not in contact with the ground.

(1) Where buildings need to comply with *NHBC Standards 2022*, the spacing should be no more than 600 mm.

Figure 2 Installation of wall ties



14.4 Additional wall ties may be required to satisfy the structural requirements of BS EN 845-1 : 2013, BS EN 1996-1-1 : 2005, BS EN 1996-2 : 2006 and BS EN 1996-3 : 2006 to ensure adequate retention of boards or cut pieces.

14.5 The other leaf is built up to the level of the top of the boards.

14.6 All boards should be close-butted together, with vertical joints staggered. Insulation boards and wall ties should be staggered as construction proceeds and carried up to the highest level of the wall, except where protected by a cavity tray.

Mortar droppings

14.7 After each section of the leading leaf is built, excess mortar should be removed from the cavity face and mortar droppings cleaned from exposed edges of the installed board, before installation of the next run of boards. Use of a cavity board or a cavity batten will protect the installed board edges and help to keep the cavity clean as the following leaf is built (see Figures 3 and 4).

Figure 3 Use of cavity batten

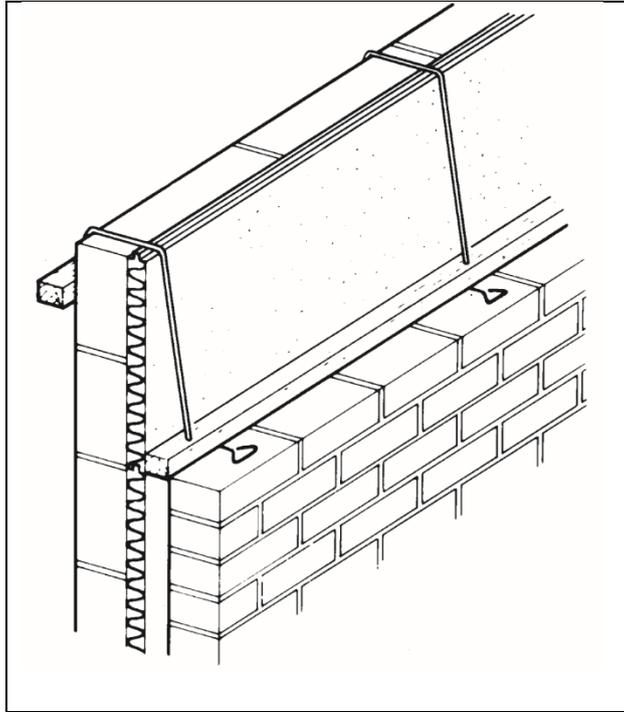
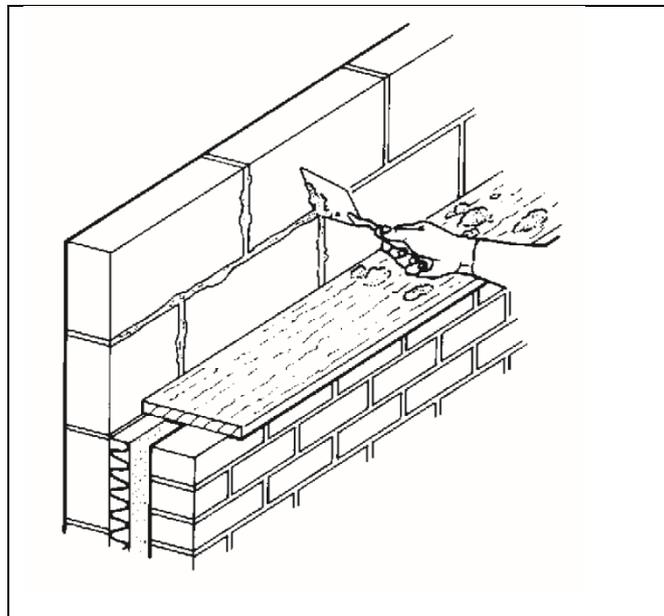


Figure 4 Use of cavity board



Wall openings

14.8 Where openings such as doors and windows are in close proximity, it is recommended that a continuous lintel or cavity tray is used. Individual lintels or cavity trays should have stopends and be adequately drained. Insulation boards should be cut to butt tightly against the cavity barrier/closer/dpc.

Cut pieces

14.9 The product can be cut, using a sharp knife or fine-toothed saw, to fit openings, eg around windows, doors and airbricks. It is essential that cut pieces completely fill the spaces for which they are intended and are adequately secured.

Protection

14.10 Exposed areas of insulation boards should always be covered at the end of a day's work or during rainfall.

14.11 All building involving the product, particularly interrupted work, must conform to BS EN 1996-2 : 2006, Sections 3.2 *Acceptance, handling and storage of materials* and 3.6 *Curing and protective procedures during execution*.

Technical Investigations

15 Tests

Results of tests were assessed to determine:

- thermal conductivity
- dimensional accuracy
- water vapour resistance
- emissivity.

16 Investigations

16.1 Data on durability and properties in relation to fire were evaluated.

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

16.3 A series of U value calculations were carried out.

16.4 A condensation risk analysis was carried out.

16.5 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

- BRE Report BR 262 : 2002 *Thermal insulation: avoiding risks*
- BRE Report BR 443 : 2019 *Conventions for U-value calculations*
- BS 5250 : 2021 *Management of moisture in buildings. Code of practice*
- BS 5618 : 1985 *Code of practice for thermal insulation of cavity walls (with masonry or concrete inner and outer leaves) by filling with urea-formaldehyde (UF) foam systems*
- BS 8000-3 : 2001 *Workmanship on building sites — Code of practice for masonry*
- BS EN 845-1 : 2013 *Specification for ancillary components for masonry — Wall ties, tension straps, hangers and brackets*
- BS EN 1996-1-1 : 2005 *Eurocode 6 : Design of masonry structures — General rules for reinforced and unreinforced masonry structures*
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- BS EN 1996-1-2 : 2005 *Eurocode 6 : Design of masonry structures — General rules — Structural fire design*
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- BS EN 13165 : 2012 + A2 : 2016 *Thermal insulation products for buildings — Factory made rigid polyurethane foam (PU) products — Specification*
- BS EN 13501-1 : 2018 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*
- BS EN 13914-1 : 2016 *Design, preparation and application of external rendering and internal plastering — External rendering*
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- BS EN ISO 6946 : 2017 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*
- BS EN ISO 14001 : 2015 *Environmental Management systems — Requirements with guidance for use*

17 Conditions

17.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
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- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

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

17.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

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- 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.

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