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### Agrément Certificate

15/5283

Product Sheet 5 Issue 1

## IKO INSULATIONS

### IKO ENERTHERM ALU INSULATION BOARD FOR TIMBER-FRAME DWELLINGS

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to IKO enertherm ALU Insulation Board for Timber-Frame Dwellings, comprising a composite foil-faced rigid polyisocyanurate (PIR) foam board. The product is for use as insulation in new build external cavity walls of conventional timber-frame dwellings, with a masonry outer leaf, with height restrictions. The product may be installed above damp-proof course (DPC) level, as an insulated sheathing, and in between studding, and as part of an insulated dry lining.

(1) Hereinafter referred to as 'Certificate'.

#### The assessment includes

##### Product factors:

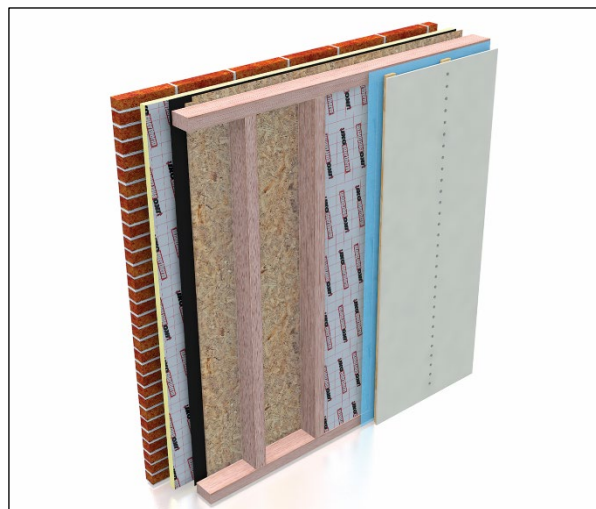
- compliance with Building Regulations
- compliance with additional regulatory or non-regulatory information where applicable
- evaluation against technical specifications
- assessment criteria and technical investigations
- uses and design considerations

##### Process factors:

- compliance with Scheme requirements
- installation, delivery, handling and storage
- production and quality controls
- maintenance and repair

##### Ongoing contractual Scheme elements†:

- regular assessment of production
- formal 3-yearly review



#### KEY FACTORS ASSESSED

- Section 1. Mechanical resistance and stability
- Section 2. Safety in case of fire
- Section 3. Hygiene, health and the environment
- Section 4. Safety and accessibility in use
- Section 5. Protection against noise
- Section 6. Energy economy and heat retention
- Section 7. Sustainable use of natural resources
- Section 8. Durability

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 issue: 26 June 2024

Hardy Giesler  
Chief Executive Officer

*This BBA Agrément Certificate is issued under the BBA's Inspection Body accreditation to ISO/IEC 17020. Sections marked with † are not issued under accreditation.*

*The BBA is a UKAS accredited Inspection Body (No. 4345), Certification Body (No. 0113) and Testing Laboratory (No. 0357).*

*Readers MUST check that this is the latest issue of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.*

*The Certificate should be read in full as it may be misleading to read clauses in isolation.*

*Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.*

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## SUMMARY OF ASSESSMENT AND COMPLIANCE

This section provides a summary of the assessment conclusions; readers should refer to the later sections of this Certificate for information about the assessments carried out.

### Compliance with Regulations

Having assessed the key factors, the opinion of the BBA is that IKO enertherm ALU Insulation Board for Timber-Frame Dwellings, 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 Building Regulations 2010 (England and Wales) (as amended)

|                     |                 |   |
|---------------------|-----------------|---|
| <b>Requirement:</b> | <b>B3(4)</b>    | <b>Internal fire spread (structure)</b>   |
| <b>Comment:</b>     |                 | The product can contribute to satisfying this Requirement. See Section 2 of this Certificate.   |
| <b>Requirement:</b> | <b>B4(1)</b>    | <b>External fire spread</b>   |
| <b>Comment:</b>     |                 | The product is restricted by this Requirement. See Section 2 of this Certificate.   |
| <b>Requirement:</b> | <b>C2(b)</b>    | <b>Resistance to moisture</b>   |
| <b>Comment:</b>     |                 | The product can contribute to satisfying this Requirement. See section 9 of this Certificate.   |
| <b>Requirement:</b> | <b>C2(c)</b>    | <b>Resistance to moisture</b>   |
| <b>Comment:</b>     |                 | The product can contribute to satisfying this Requirement. See section 3 of this Certificate.   |
| <b>Requirement:</b> | <b>L1(a)(i)</b> | <b>Conservation of fuel and power</b>   |
| <b>Comment:</b>     |                 | The product can contribute to satisfying this Requirement; however, compensating fabric measures may be required. See section 6 of this Certificate.          |
| <b>Regulation:</b>  | <b>7(1)</b>     | <b>Materials and workmanship</b>  |
| <b>Comment:</b>     |                 | The product is acceptable. See sections 8 and 9 of this Certificate.  |
| <b>Regulation:</b>  | <b>7(2)</b>     | <b>Materials and workmanship</b>  |
| <b>Comment:</b>     |                 | The product is restricted by this Regulation. See section 2 of this Certificate.  |
| <b>Regulation:</b>  | <b>25B</b>      | <b>Nearly zero-energy requirements for new buildings</b>  |
| <b>Regulation:</b>  | <b>26</b>       | <b>CO<sub>2</sub> emission rates for new buildings</b>  |
| <b>Regulation:</b>  | <b>26A</b>      | <b>Fabric energy efficiency rates for new dwellings (applicable to England only)</b>  |
| <b>Regulation:</b>  | <b>26A</b>      | <b>Primary energy efficiency rates for new buildings (applicable to Wales only)</b>   |
| <b>Regulation:</b>  | <b>26B</b>      | <b>Fabric performance values for new dwellings (applicable to Wales only)</b>   |
| <b>Regulation:</b>  | <b>26C</b>      | <b>Target primary energy rates for new buildings (applicable to England only)</b>   |
| <b>Regulation:</b>  | <b>26C</b>      | <b>Energy efficiency rating (applicable to Wales only)</b>  |
| <b>Comment:</b>     |                 | The product can contribute to satisfying these Regulations; however, compensating fabric/service measures may be required. See section 6 of this Certificate. |



#### The Building (Scotland) Regulations 2004 (as amended)

|                    |             |  |
|--------------------|-------------|--|
| <b>Regulation:</b> | <b>8(1)</b> | <b>Fitness and durability of materials and workmanship</b>                       |
| <b>Comment:</b>    |             | The product is acceptable. See sections 8 and 9 of this Certificate.             |
| <b>Regulation:</b> | <b>8(3)</b> | <b>Fitness and durability of materials and workmanship</b>                       |
| <b>Comment:</b>    |             | The product is restricted by this Regulation. See section 2 of this Certificate. |

|                    |           |  |
|--------------------|-----------|--|
| <b>Regulation:</b> | <b>9</b>  | <b>Building standards - construction</b>   |
| Standard:          | 2.4       | Cavities   |
| Comment:           |           | The product can contribute to satisfying this Standard, with reference to clauses 2.4.2 <sup>(1)</sup> , 2.4.4 <sup>(1)</sup> and 2.4.6 <sup>(2)</sup> . See section 2 of this Certificate.  |
| Standard:          | 2.6       | Spread to neighbouring buildings   |
| Comment:           |           | The product is restricted by this Standard, in some cases, with reference to clause 2.6.5 <sup>(1)</sup> . See section 2 of this Certificate.  |
| Standard:          | 3.10      | Precipitation  |
| Comment:           |           | The product can contribute to satisfying this Standard, with reference to clauses 3.10.1 <sup>(1)(2)</sup> and 3.10.3 <sup>(1)(2)</sup> . See section 9 of this Certificate.   |
| Standard:          | 3.15      | Condensation   |
| Comment:           |           | The product can contribute to satisfying this Standard, with reference to clauses 3.15.1 <sup>(1)</sup> , 3.15.4 <sup>(1)</sup> and 3.15.5 <sup>(1)</sup> . See section 3 of this Certificate.   |
| Standard:          | 6.1(b)(c) | Energy demand  |
| Comment:           |           | The product can contribute to satisfying this Standard, with reference to clause 6.1.1 <sup>(1)</sup> ; however, compensating fabric/service measures may be required. See section 6 of this Certificate.  |
| Standard:          | 6.2       | Building insulation envelope   |
| Comment:           |           | The product can contribute to satisfying this Standard with reference to clauses 6.2.1 <sup>(1)</sup> , 6.2.3 <sup>(1)</sup> , 6.2.6 <sup>(1)</sup> , 6.2.8 <sup>(1)</sup> , 6.2.9 <sup>(1)</sup> , 6.2.10 <sup>(1)</sup> and 6.2.12 <sup>(1)</sup> ; however, compensating fabric measures may be required. See section 6 of this Certificate.  |
| Standard:          | 7.1(a)(b) | Statement of sustainability  |
| Comment:           |           | The product can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting at least 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 <sup>(1)</sup> , 7.1.6 <sup>(1)</sup> and 7.1.7 <sup>(1)</sup> . See section 6 of this Certificate. |
| <b>Regulation:</b> | <b>12</b> | <b>Building standards - conversion</b>   |
| Comment:           |           | All comments given for the product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 <sup>(1)</sup> and Schedule 6 <sup>(1)</sup> .   |

(1) Technical Handbook (Domestic).



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

|                    |                        |  |
|--------------------|------------------------|--|
| <b>Regulation:</b> | <b>23(1)(a)(i)</b>     | <b>Fitness of materials and workmanship</b>  |
| Comment:           | <b>(iii)(b)(i)(ii)</b> | The product is acceptable. See sections 8 and 9 of this Certificate.                         |
| <b>Regulation:</b> | <b>23(2)</b>           | <b>Fitness of materials and workmanship</b>  |
| Comment:           |                        | The product is restricted by this Regulation. See section 2 of this Certificate.             |
| <b>Regulation:</b> | <b>28(b)</b>           | <b>Resistance to moisture and weather</b>  |
| Comment:           |                        | The product can contribute to satisfying this Regulation. See section 3 of this Certificate. |
| <b>Regulation:</b> | <b>29</b>              | <b>Condensation</b>  |
| Comment:           |                        | The product can contribute to satisfying this Regulation. See section 3 of this Certificate. |

|  |                            |   |
|--|----------------------------|---|
| <b>Regulation:</b><br>Comment:                       | <b>35(4)</b>               | <b>Internal fire spread — Structure</b><br>The product can contribute to satisfying this Regulation. See section 2 of this Certificate.   |
| <b>Regulation:</b><br>Comment:                       | <b>36(a)</b>               | <b>External fire spread</b><br>The product is restricted by this Regulation in some cases. See section 2 of this Certificate.   |
| <b>Regulation:</b><br>Comment:                       | <b>39(a)(i)</b>            | <b>Conservation measures</b><br>The product can contribute to satisfying this Regulation; however, compensating fabric measures may be required. See section 6 of this Certificate.   |
| <b>Regulation:</b><br><b>Regulation:</b><br>Comment: | <b>40(2)</b><br><b>43B</b> | <b>Target carbon dioxide emission rate</b><br><b>Nearly zero-energy requirements for new buildings</b><br>The product can contribute to satisfying these Regulations; however, compensating fabric/service measures may be required. See section 6 of this Certificate. |

## Additional Information

### NHBC Standards 2024

In the opinion of the BBA, IKO enertherm ALU Insulation Board for Timber-Frame Dwellings, 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 6.2 *External timber framed walls*.

## Fulfilment of Requirements

The BBA has judged IKO enertherm ALU Insulation Board for Timber-Frame Dwellings to be satisfactory for use as described in this Certificate. The product has been assessed for use as partial fill thermal insulation in external cavity walls of conventional timber-frame dwellings, with a masonry outer leaf, with height restrictions. The product may be installed as an insulated sheathing, and in between studding, and as part of an insulated dry lining.

## ASSESSMENT

### Product description and intended use

The Certificate holder provided the following description for the product under assessment. IKO enertherm ALU Insulation Board for Timber-Frame Dwellings comprises a rigid PIR foam board with composite foil-facings on both sides.

The product has the nominal characteristics given in Table 1.

*Table 1 Nominal characteristics*

| Characteristic (unit) | Value  |
|-----------------------|--|
| Length and width (mm) | 1200 x 600 and 1200 x 2400                   |
| Thickness (mm)        | 30 <sup>(1)</sup> to 200 (in 5mm increments) |
| Edge profile          | Square edge                                  |
| Foil-facings          | Printed composite foil-facings on both sides |

(1) Used as internal dry lining only.

## Ancillary Items

The Certificate holder recommends the following ancillary items for use with the product, but these materials have not been assessed by the BBA and are outside the scope of this Certificate:

- timber-frame cavity wall ties
- air and vapour control layer (AVCL)
- gypsum plasterboard internal lining board
- OSB3 sheathing board
- breather membrane.

## Application

The product is intended for use as insulation for timber-frame external cavity walls of dwellings with a masonry outer leaf and may be installed above DPC level:

- between the studs and as an external sheathing facing the cavity (with or without a 20 mm internal service gap behind the internal plasterboard)
- between the studs only (with or without a 20 mm internal service gap behind the internal plasterboard)
- between the studs and as part of an internal dry-lining (with a 20 mm internal service gap behind the internal plasterboard).

## Product assessment – key factors

The product was assessed for the following key factors, and the outcome of the assessment is shown below. Conclusions relating to the Building Regulations apply to the whole of the UK unless otherwise stated.

### 1 Mechanical resistance and stability

Not applicable.

### 2 Safety in case of fire

Data were assessed for the following characteristics.

#### 2.1 Reaction to fire

2.1.1 The product was tested for reaction to fire and the classification is given in Table 2.

*Table 2 Reaction to fire classification*

| Product assessed   | Assessment method    | Requirement    | Result           |
|--|----------------------|----------------|------------------|
| IKO enertherm ALU Insulation Board<br>for Timber-Frame Dwellings | BS EN 13501-1 : 2018 | Value achieved | F <sup>(1)</sup> |

(1) Report issued by warringtonfire: 22083H (16 February 2023). Copies are available from the Certificate holder on request.

2.1.2 On the basis of data assessed, the product will be restricted in use under the documents supporting the national Building Regulations, in some cases.

2.1.3 In England, the product must not be used on residential buildings with a storey 11 m or more in height or on other buildings with a storey 18 m or more in height.

2.1.4 In Wales and Northern Ireland, the product must not be used on buildings with a storey 18 m or more in height.

2.1.5 In Scotland, the product must not be used on buildings that have a storey 11 m or more in height, or within 1 m of a relevant boundary.

2.1.6 Where an insulation is used as a dry lining, it must be contained by a fire-resistant lining board manufactured in accordance with BS EN 520 : 2004, with joints fully sealed and supported by timber studs or battens. The permissible

areas of use will be defined by the documents supporting the national Building Regulations on the basis of the reaction to fire performance of the completed system, which is outside the scope of this Certificate.

2.1.7 Designers must 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.

## 2.2 Resistance to fire

2.2.1 The product was tested for resistance to fire and the result is given in Table 3.

**Table 3 Resistance to fire test of a loadbearing timber stud wall<sup>(1)</sup>**

| Product assessed <sup>(2)</sup>   | Assessment method  | Requirement    | Result   |
|---|--|----------------|--|
| IKO enertherm ALU Insulation Board for Timber-Frame Dwellings (see Table 4) | BS EN 1365-1 : 2012<br>Fire exposure from the inside, when subject to a total imposed load of 60 kN ie 10 kN load per timber stud <sup>(2)</sup> | Value achieved | 36 minutes for Loadbearing, Integrity, Insulation <sup>(1)</sup> |

(1) Report issued by warringtonfire: 523094/R Issue 1 (23 March 2023). Copies are available from the Certificate holder on request.

(2) The performance given is valid for increased thickness of the component materials but excludes any decrease in thickness.

2.2.2 The component layers of the timber frame incorporating the products, that were tested for fire resistance as given in Table 3 are listed in Table 4.

**Table 4 Timber-frame construction details (as tested for fire resistance)**

| Tested construction – IKO enertherm ALU Insulation as outer sheathing and between timber studs <sup>(1)</sup> |   |
|---|---|
| Component (from inside to outside)  | Description   |
| Plasterboard lining <sup>(1)</sup>  | 12.5 mm thick British Gypsum Type F, with joints taped and filled   |
| AVCL <sup>(1)</sup>   | Novia 1000 G VCL, with lapped and sealed joints   |
| Timber-frame <sup>(1)</sup>   | 140 x 38 mm timber studs (dry graded M1 C16) at 600 mm centres, with cross noggings, staggered between bays                     |
| Insulation between studs  | 120 mm thick <sup>(1)</sup> IKO enertherm ALU Insulation Board for Timber-Frame Dwellings, friction fitted between timber studs |
| OSB timber sheathing board <sup>(1)</sup>   | 9 mm thick SmartPLY OSB (Oriented Strand Board)   |
| Breather membrane <sup>(1)</sup>  | DuPont Tyvek Housewrap  |
| Outer sheathing insulation  | 50 mm thick IKO enertherm ALU Insulation Board for Timber-Frame Dwellings   |

(1) These components are outside the scope of this Certificate.

2.2.3 A resistance to fire extended application report<sup>(1)</sup> concluded that the expected performance of loadbearing timber stud wall systems (similar to the tested construction, but with the modifications listed below) should also satisfy the loadbearing, integrity and insulation criteria of BS EN 1365-1 : 2012 for a period of 30 minutes:

- insulation as outer sheathing and between studs (with 20 mm internal service gap behind plasterboard) — similar to the tested construction, but with 50 mm thick enertherm ALU as outer sheathing, an increase of up to 140 mm thick enertherm ALU between studs, and with additional 38 mm wide x 20mm deep timber battens between the AVCL and the plasterboard lining
- insulation between timber studs only — similar to the tested construction, with 120 mm thick enertherm ALU between timber studs only (no insulation as outer sheathing)
- insulation between timber studs only (with 20 mm internal service gap behind plasterboard) — similar to the tested construction, with an increase of up to 140 mm thick enertherm ALU between studs, and with additional 38 mm wide x 20 mm deep timber battens between the AVCL and the plasterboard lining (no insulation as outer sheathing)
- insulation between timber studs and as an internal dry-lining (with 20 mm internal service gap behind plasterboard) — similar to the tested construction, with an increase of up to 140 mm thick enertherm ALU between studs, and with 30 mm thick IKO enertherm ALU insulation on the internal face of the timber frame with an AVCL applied, and additional 38 mm wide x 20 mm deep timber battens between the AVCL and the plasterboard lining (no insulation as outer sheathing).

(1) warringtonfire fire resistance extended application assessment report 532935, issued 3 July 2023 (Issue 2 dated 13 December 2023).

2.2.4 The performance given in Table 3 relates only to the construction given in Table 4 and the modifications given in section 2.2.3. The performance of other constructions must be established in accordance with the documents supporting the national Building Regulations.

### 3 Hygiene, health and the environment

3.1.1 For the purposes of assessing the risk of interstitial condensation, the water vapour resistance/resistivity values may be taken as stated in Table 5.

*Table 5 Water vapour resistance/resistivity*

| Material             | Assessment method      | Requirement    | Result                                    |
|----------------------|------------------------|----------------|---|
| PIR insulation       | BS EN ISO 10456 : 2007 | Value achieved | 300 MN·s·g <sup>-1</sup> ·m <sup>-1</sup> |
| Composite foil facer | BS 5250 : 2021         |                | 1000 MN·s·g <sup>-1</sup>                 |

### 4 Safety and accessibility in use

Not applicable.

### 5 Protection against noise

Not applicable.

### 6 Energy economy and heat retention

Data were assessed for the following characteristics.

#### 6.1 Thermal conductivity

The product was tested for thermal conductivity and the results are given in Table 6.



**Table 6 Thermal conductivity**

| Product assessed  | Insulation thickness | Assessment method                          | Requirement                    | Result                                   |
|---|----------------------|--|--------------------------------|--|
| IKO enertherm ALU Insulation Board for Timber-Frame Dwellings | 30 to 200 mm         | Thermal conductivity to BS EN 13165 : 2012 | Declared value ( $\lambda_D$ ) | 0.022 W·m <sup>-1</sup> ·K <sup>-1</sup> |

## 6.2 Thermal performance

The foil facing was tested for emissivity and the result is given in Table 7.

**Table 7 Emissivity of the facings**

| Material    | Assessment method                     | Requirement    | Result |
|-------------|---------------------------------------|----------------|--------|
| Foil facing | Aged emissivity to BS EN 15976 : 2011 | Declared value | 0.07   |

## 6.3 Conservation of fuel and power

6.3.1 The U value of a completed wall will depend on the insulation thickness, its structure and its internal finish. Example U values are given in Table 8.

**Table 8 Example U values — timber frame**

| U value<br>(W·m <sup>-2</sup> ·K <sup>-1</sup> ) | IKO enertherm ALU Insulation Board for Timber-Frame Dwellings<br>thickness (mm) |                                   |  |
|--|---|-----------------------------------|--|
|  | Between studs and<br>as external sheathing <sup>(1)</sup>                       | Between studs only <sup>(2)</sup> | Between studs and as internal dry<br>lining <sup>(3)</sup> |
| 0.13   | 120 <sup>(4)</sup> + 50 <sup>(4)</sup>  | — <sup>(6)</sup>                  | 120 <sup>(4)</sup> + 55                                    |
| 0.15   | 120 <sup>(4)</sup> + 50 <sup>(4)</sup>  | — <sup>(6)</sup>                  | 120 <sup>(4)</sup> + 35                                    |
| 0.17   | 120 <sup>(4)</sup> + 50 <sup>(4)</sup>  | — <sup>(6)</sup>                  | 120 <sup>(4)</sup> + 30                                    |
| 0.18   | 120 <sup>(4)</sup> + 50 <sup>(4)</sup>  | — <sup>(6)</sup>                  | 120 <sup>(4)</sup> + 30                                    |
| 0.21   | 120 <sup>(4)(5)</sup>   | 120 <sup>(4)</sup>                | 120 <sup>(4)(5)</sup>                                      |
| 0.26   | 120 <sup>(4)(5)</sup>   | 120 <sup>(4)</sup>                | 120 <sup>(4)(5)</sup>                                      |
| 0.28   | 120 <sup>(4)(5)</sup>   | 120 <sup>(4)</sup>                | 120 <sup>(4)(5)</sup>                                      |
| 0.30   | 120 <sup>(4)(5)</sup>   | 120 <sup>(4)</sup>                | 120 <sup>(4)(5)</sup>                                      |

- (1) Wall construction — 102.5 mm thick external brickwork ( $\lambda = 0.77 \text{ W·m}^{-1}\cdot\text{K}^{-1}$ ); 50 mm low e cavity; IKO enertherm ALU as external sheathing, where applicable; breather membrane; 11 mm OSB sheathing board ( $\lambda = 0.13 \text{ W·m}^{-1}\cdot\text{K}^{-1}$ ); IKO enertherm ALU bridged by timber-frame studs at 600 mm centres (15 %,  $\lambda = 0.13 \text{ W·m}^{-1}\cdot\text{K}^{-1}$ ), and a residual low e cavity; AVCL; 20 mm service cavity bridged by timber battens at 600 mm centres (6.3 %,  $\lambda = 0.13 \text{ W·m}^{-1}\cdot\text{K}^{-1}$ ); and 15 mm plasterboard ( $\lambda = 0.25 \text{ W·m}^{-1}\cdot\text{K}^{-1}$ ). Calculations based upon 4.4 stainless steel cavity wall ties per m<sup>2</sup> (6.6 mm<sup>2</sup> cross-sectional area,  $\lambda = 17 \text{ W·m}^{-1}\cdot\text{K}^{-1}$ ).
- (2) Wall construction — 102.5 mm thick external brickwork ( $\lambda = 0.77 \text{ W·m}^{-1}\cdot\text{K}^{-1}$ ); 50 mm clear cavity; breather membrane; 11 mm OSB sheathing board ( $\lambda = 0.13 \text{ W·m}^{-1}\cdot\text{K}^{-1}$ ); IKO enertherm ALU bridged by timber-frame studs at 600 mm centres (15 %,  $\lambda = 0.13 \text{ W·m}^{-1}\cdot\text{K}^{-1}$ ), and a residual low e cavity; AVCL; 20 mm service cavity bridged by timber battens at 600 mm centres (6.3 %,  $\lambda = 0.13 \text{ W·m}^{-1}\cdot\text{K}^{-1}$ ); and 15 mm plasterboard ( $\lambda = 0.25 \text{ W·m}^{-1}\cdot\text{K}^{-1}$ ).
- (3) Wall construction — 102.5 mm thick external brickwork ( $\lambda = 0.77 \text{ W·m}^{-1}\cdot\text{K}^{-1}$ ); 50 mm clear cavity; breather membrane; 11 mm OSB sheathing board ( $\lambda = 0.13 \text{ W·m}^{-1}\cdot\text{K}^{-1}$ ); IKO enertherm ALU bridged by timber-frame studs at 600 mm centres (15 %,  $\lambda = 0.13 \text{ W·m}^{-1}\cdot\text{K}^{-1}$ ), and a residual low e cavity; IKO enertherm ALU as internal lining, where applicable; AVCL; 20 mm service cavity bridged by timber battens at 600 mm centres (6.3 %,  $\lambda = 0.13 \text{ W·m}^{-1}\cdot\text{K}^{-1}$ ); and 15 mm plasterboard ( $\lambda = 0.25 \text{ W·m}^{-1}\cdot\text{K}^{-1}$ ). Calculations based upon 4.4 stainless steel fixings per m<sup>2</sup> (6.6 mm<sup>2</sup> cross-sectional area,  $\lambda = 17 \text{ W·m}^{-1}\cdot\text{K}^{-1}$ ).
- (4) Minimum allowed thickness of the product for this application. See section 2 of this Certificate.
- (5) Wall construction achieves the design U value with the use of IKO enertherm ALU between studs only.
- (6) See section 6.3.3.

6.3.2 The product can contribute towards a construction satisfying the national Building Regulations in respect of energy economy and heat retention.

6.3.3 For improved energy or carbon savings, designers must consider appropriate fabric/service measures.



## 7 Sustainable use of natural resources

Not applicable.

## 8 Durability

8.1 The potential mechanisms for degradation and the known performance characteristics of the materials in the product were assessed.

8.2 Specific test data were assessed, as given in Table 9.

*Table 9 Results of durability tests*

| Product assessed  | Assessment method   | Requirement    | Declared level/value |
|---|---|----------------|----------------------|
| IKO enertherm ALU Insulation Board for Timber-Frame Dwellings | Dimensional stability to BS EN 1604 : 1997 (70°C and 90-100% RH for 48 hours) | Declared value | DS(70,90)3           |
|   | Dimensional stability to BS EN 1604 : 1997 (-20°C for 48 hours)               |                | DS(-20,-)1           |

### 8.2 Service life

Under normal service conditions, the product will have a life equivalent to the structure in which it is incorporated, provided it is designed, installed and maintained in accordance with this Certificate and the Certificate holder's instructions.

## PROCESS ASSESSMENT

Information provided by the Certificate holder was assessed for the following factors:

## 9 Design, installation, workmanship and maintenance

### 9.1 Design

9.1.1 The design process was assessed by the BBA, and the following requirements apply in order to satisfy the performance assessed in this Certificate.

9.1.2 External timber-framed cavity walls must be designed and constructed in accordance with the relevant recommendations of:

- BS 5250 : 2021
- BS 8000-3 : 2022
- BS EN 351-1 : 2023
- BS EN 845-1 : 2013
- 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.

9.1.3 As with other forms of cavity wall insulation, where buildings need to comply with the *NHBC Standards 2024*, specifiers must observe the requirements of that document.

9.1.4 Timber-frame cavity wall ties with insulation-retaining fixings and, if required, any additional ties to BS EN 845-1 : 2013 must be used for structural stability in accordance with BS EN 1996-1-1 : 2022, BS EN 1996-2 : 2006, BS EN 1996-1-2 : 2005 and BS EN 1996-3 : 2006, and their UK National Annexes.

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

- cavity trays and damp proof courses (DPCs)
- 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.

9.1.6 Provided that external masonry cavity walls are designed and constructed to incorporate the precautions in this Certificate to prevent moisture penetration, the products will resist the transfer of precipitation to the inner leaf.

9.1.7 Window and door opening reveals must be constructed incorporating a cavity barrier/closer/DPC, as required.

9.1.8 It is essential that proper care and attention is given to maintaining the integrity/continuity of the AVCL.

9.1.9 Services can be incorporated in the void between the timber studs. Suitable isolation methods, such as conduit or capping, must be used to ensure cables do not come into contact with the insulation. Electrical cables that are likely to come into contact with the insulation are required to be protected by a suitable conduit or PVC-U trunking.

9.1.10 As with other insulation products, it may be necessary in some cases to de-rate electrical cables buried in insulation. BS 7671 : 2018 recommends that where wiring is completely surrounded by insulation it may need to be de-rated to as low as half its free air-current-carrying capacity. Guidance must be sought from a qualified electrician.

9.1.11 It is recommended that services which penetrate the dry lining (eg light switches, power outlets) are kept to a minimum to limit damage to the AVCL. In addition, to preserve the fire resistance of the wall, any penetrations must be enclosed in appropriate fire rated sealant, plasterboard, stone mineral wool or a suitably tested proprietary fire-rated system.

9.1.12 The guidance given in the documents supporting the national Building Regulations must be followed when the system is installed in close proximity to certain pipes and/or heat-producing appliances.

9.1.13 Calculations of the thermal transmittance (U value) of a wall must be carried out in accordance with BS EN ISO 6946 : 2017 and BRE Report BR 443 : 2019.

9.1.14 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.

### **Interstitial condensation**

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

9.1.16 The product requires the use of an AVCL with a minimum  $S_d$  value of 50 m, behind the internal finish.

9.1.17 When used as insulated sheathing, the joints between the boards must not be taped.

9.1.18 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.

### **Surface condensation**

9.1.19 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 the guidance referred to in section 9.1.14 of this Certificate.

9.1.20 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 9.1.14 of this Certificate.

9.1.21 When used on the outside of a timber- or steel-frame, 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<sup>(1)</sup>]. 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 slabs), or by using the data from the respective manufacturers. Allowances may need to be made for the quality of the building operatives and the degree of site supervision or control available, or the limitations in respect of exposure of the proposed buildings as set out in Table 10 which must also be observed.

(1) The NHBC requirement for a residual cavity width is increased to 75 mm in areas of very severe exposure where the outer leaf is fair-faced masonry.

*Table 10 Maximum allowable exposure index  $E^{(1)}$*

| Construction   | Maximum allowable exposure index <sup>(1)</sup> |
|--|---|
| All external masonry walls protected by: rendering (to BS EN 13914-1 : 2016), tile/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 weather struck                                 | 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.

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

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

## 9.2 Installation

9.2.1 Installation instructions provided by the Certificate holder were assessed and judged to be appropriate and adequate.

9.2.2 Installation must be carried out in accordance with this Certificate and the Certificate holder's instructions. A summary of instructions and guidance is provided in Annex A of this Certificate.

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

9.2.4 The timber- or steel-frame must be constructed ahead of the outer leaf, as the boards are fastened to the cavity face of the frame. It is essential that the spacing of the wall ties/clips allows the long edge of each board to be secured at a minimum of three points.

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

9.2.6 It is essential to have a tight fit between the boards and the adjoining studs and other timbers, and all gaps must be filled with expanding urethane sealant.

9.2.7 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 of the masonry outer leaf are raked out, to provide adequate drainage of water from the tray.

9.2.8 When used on the outside of a timber-frame with a masonry outer leaf, 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
- the DPC at ground level does not project into the cavity, as it can form a trap for mortar bridging
- raked or recessed mortar joints are avoided in very severe exposure areas.

### 9.3 Workmanship

Practicability of installation was assessed by the BBA, on the basis of the Certificate holder's information. To achieve the performance described in this Certificate, installation of the products must be carried out by a competent general builder, or a contractor, experienced with this type of product.

### 9.4 Maintenance and repair

As the product is confined within the wall cavity and has suitable durability, maintenance is not required.

## 10 Manufacture

10.1 The production processes for the products have been assessed, and provide assurance that the quality controls are satisfactory according to the following factors:

10.1.1 The manufacturer has provided documented information on the materials, processes, testing and control factors.

10.1.2 The quality control operated over batches of incoming materials has been assessed and deemed appropriate and adequate.

10.1.3 The quality control procedures and product testing to be undertaken have been assessed and deemed appropriate and adequate .

10.1.4 The process for management of non-conformities has been assessed and deemed appropriate and adequate an audit of each production location was undertaken, and it was confirmed that the production process was in accordance with the documented process, and that equipment has been properly tested and calibrated.

10.1.5 An audit of each production location was undertaken, and it was confirmed that the production process was in accordance with the documented process, and that equipment has been properly tested and calibrated.

† 10.2 The BBA has undertaken to review 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.

## **11 Delivery and site handling**

11.1 The Certificate holder stated that the product is delivered to site in packaging bearing the product name, the Certificate holder's name, batch number and the BBA logo incorporating the number of this Certificate .

11.2 Delivery and site handing must be performed in accordance with the Certificate holder's instructions and this Certificate, including:

11.2.1 The product must be protected from prolonged exposure to sunlight, and must be stored under cover or protected with opaque polythene sheeting. Where possible, packs should be stored inside. If stored outside, the products must be stacked flat, and raised above ground level to avoid contact with ground moisture.

11.2.2 Care must be taken when handling the boards to avoid crushing the edges or corners.

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

11.2.4 If damaged or wet, the product must not be used.

Supporting information in this Annex is relevant to the product but has not formed part of the material assessed for the 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.

### UKCA marking

The Certificate holder has taken the responsibility of UKCA marking the product in accordance with Designated Standard EN 13165 : 2012.

### Additional information on installation

#### Procedure

A.1 The product may be cut using a fine-toothed saw, but care must be taken in handling to prevent damage, particularly at edges. Damaged boards must be used; small areas of damaged faces may be repaired with self-adhesive aluminium foil-tape.

#### **Insulation between timber studs**

A.2 The product should be cut to fit tightly between the timber studding and positioned against the inner face of sheathing board. Any gaps should be filled with expanding insulation foam. The insulation should be held in place by timber battens to the warm side of the insulation.

A.3 A sealed polyethylene AVCL with a minimum thickness of 0.125 mm (500 gauge) with lapped and sealed joints is placed over the stud face before applying the internal finish.

#### **Insulation as outer sheathing**

A.4 The insulation boards should be installed on the outside of the OSB board sheathing, closely butted with joints staggered and restrained using galvanized clout nails or screws. A breather membrane is installed between the sheathing insulation and the OSB sheathing board.

A.5 It is essential that nails locate the studs; this can be achieved by either using a plumb line from the top of the studs or by marking the stud positions on the boards (or substrate timber sheathing) as the boards are being offered into position. 7Ties securing the external leaf are fixed through the insulation board to the studs and the sheathing is held in place by the retaining discs on the wall ties.

#### **Insulation as dry lining**

A.6 Insulation boards should be butted tightly against each other to prevent gaps. An AVCL should be placed on the warm side of the wall insulation (between the plasterboard lining and the timber frame). However, where a foil-faced lining board is used, taping the joints with aluminium foil/reinforced tape provides an effective AVCL and air permeability barrier, and a separate AVCL may be omitted. To achieve an adequate bond, the boards should be thoroughly clean and free from any contamination. The insulation is sealed at all service penetrations.

A.7 The insulation boards are temporarily fixed to the inner face of the timber studding, ensuring that the insulation makes contact or overlaps with ceiling and floor insulation.

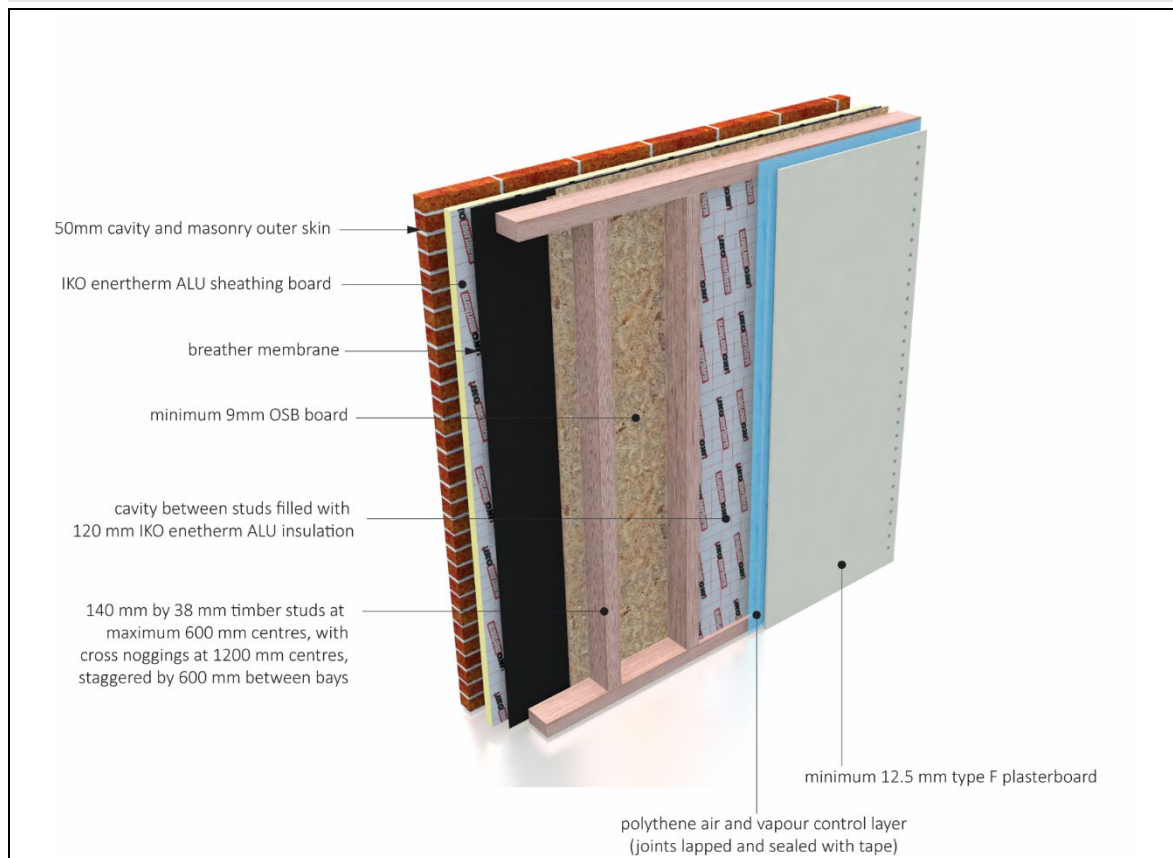
A.8 The plasterboard is fixed over the dry lining insulation boards onto the timber frame and (if applicable timber battens) and secured with drywall screws and finished as normal.

### Internal finishing

A.9 Jointing and finishing of the plasterboard lining are carried out in the appropriate manner in accordance with BS EN 13914-2 : 2016 applying plasterer's joint tape to all joints. A finishing skim coat of plaster should be applied to complete the installation.

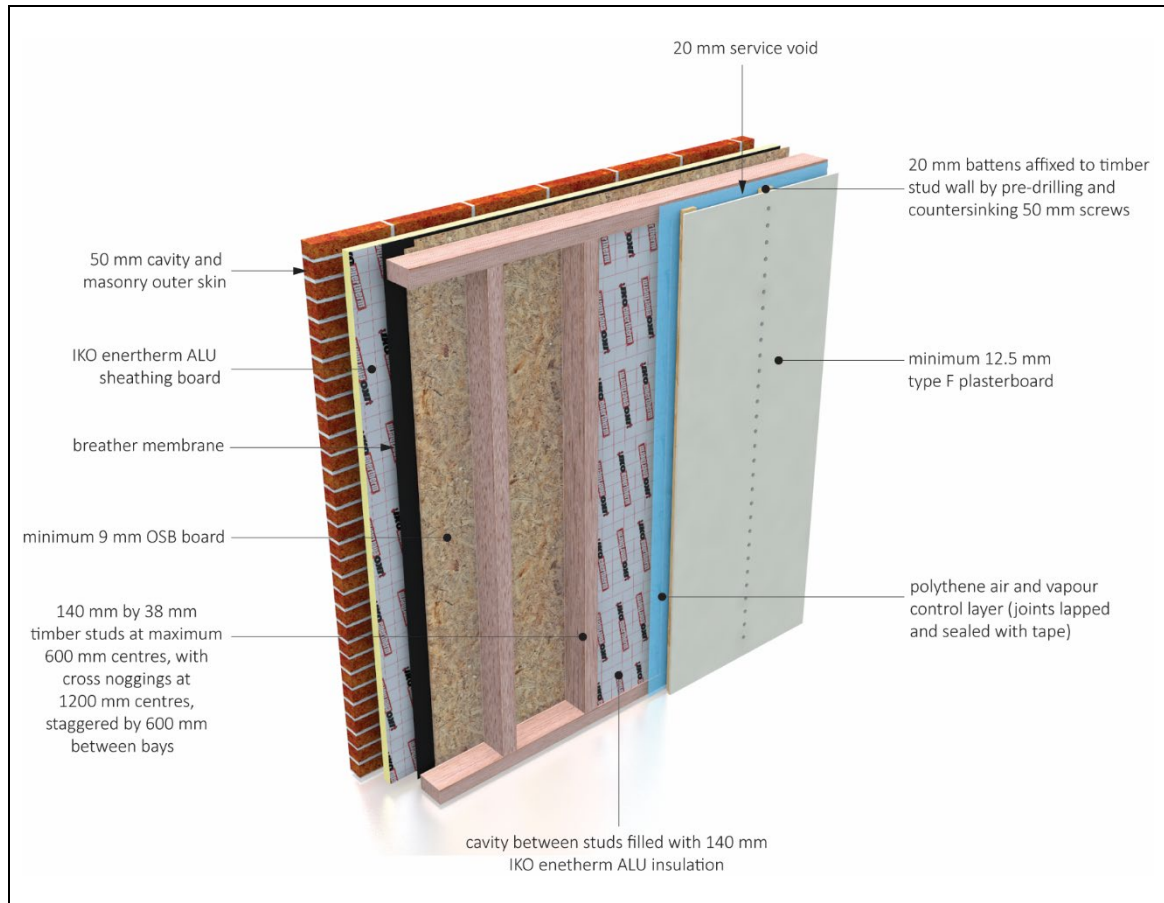
A.10 Typical installation details are given in Figures 1 to 5.

*Figure 1 Insulation as outer sheathing and between studs*

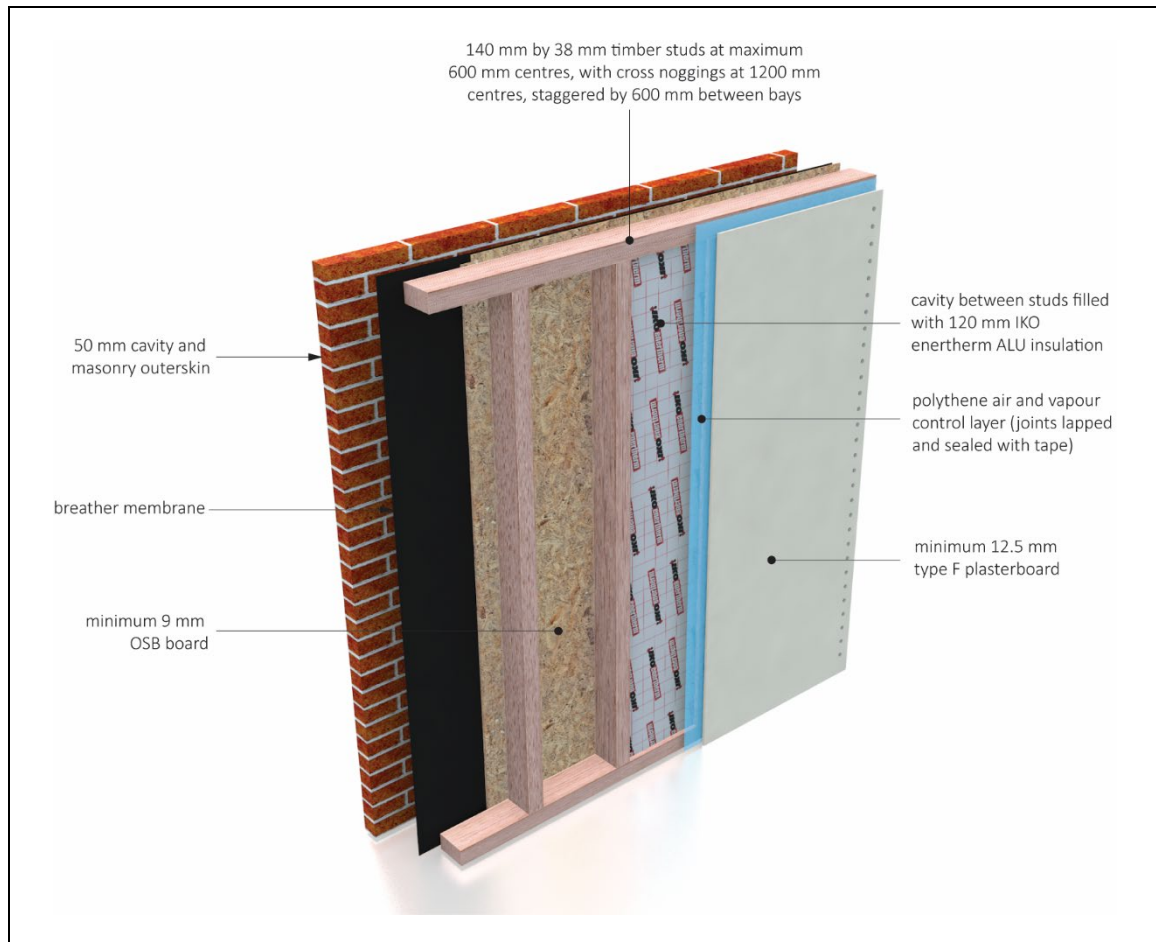




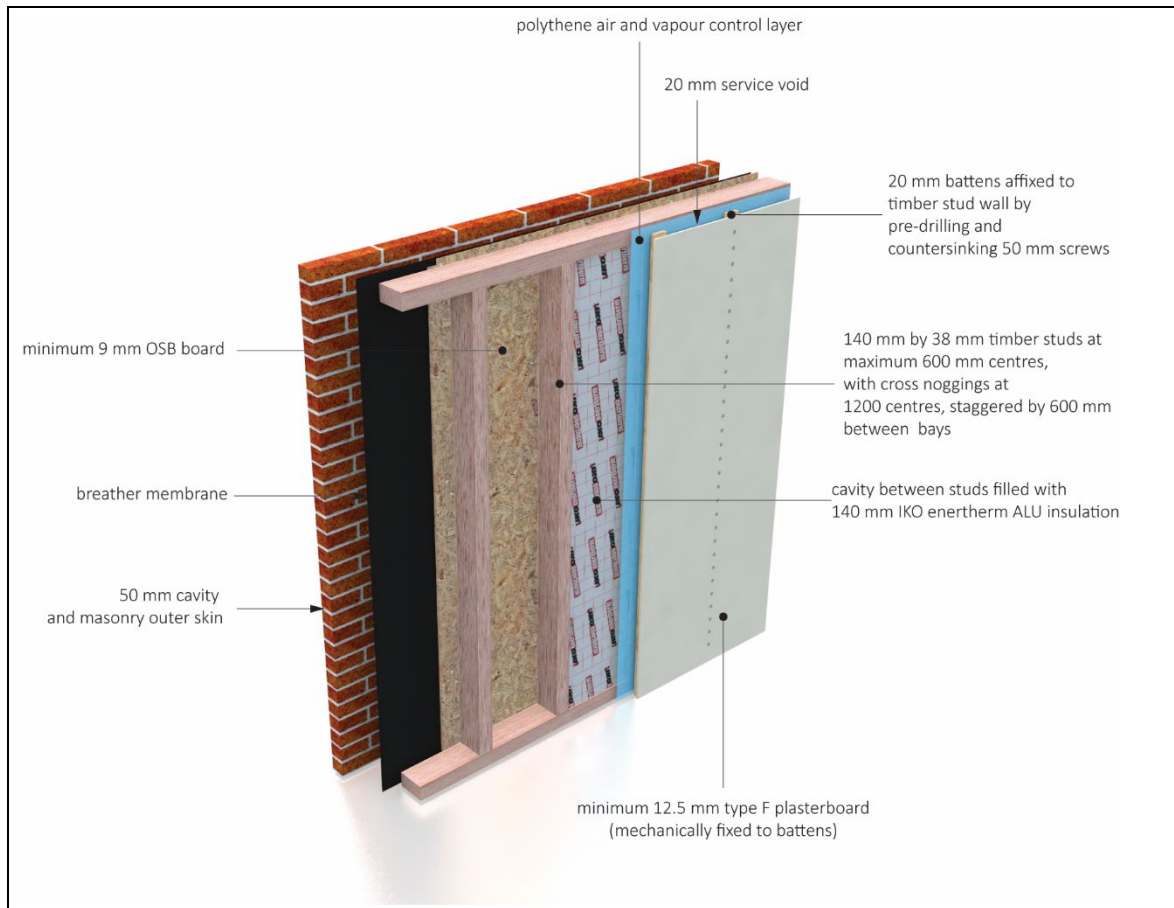
**Figure 2** *Insulation as outer sheathing and between studs (with 20 mm service void behind the plasterboard)*



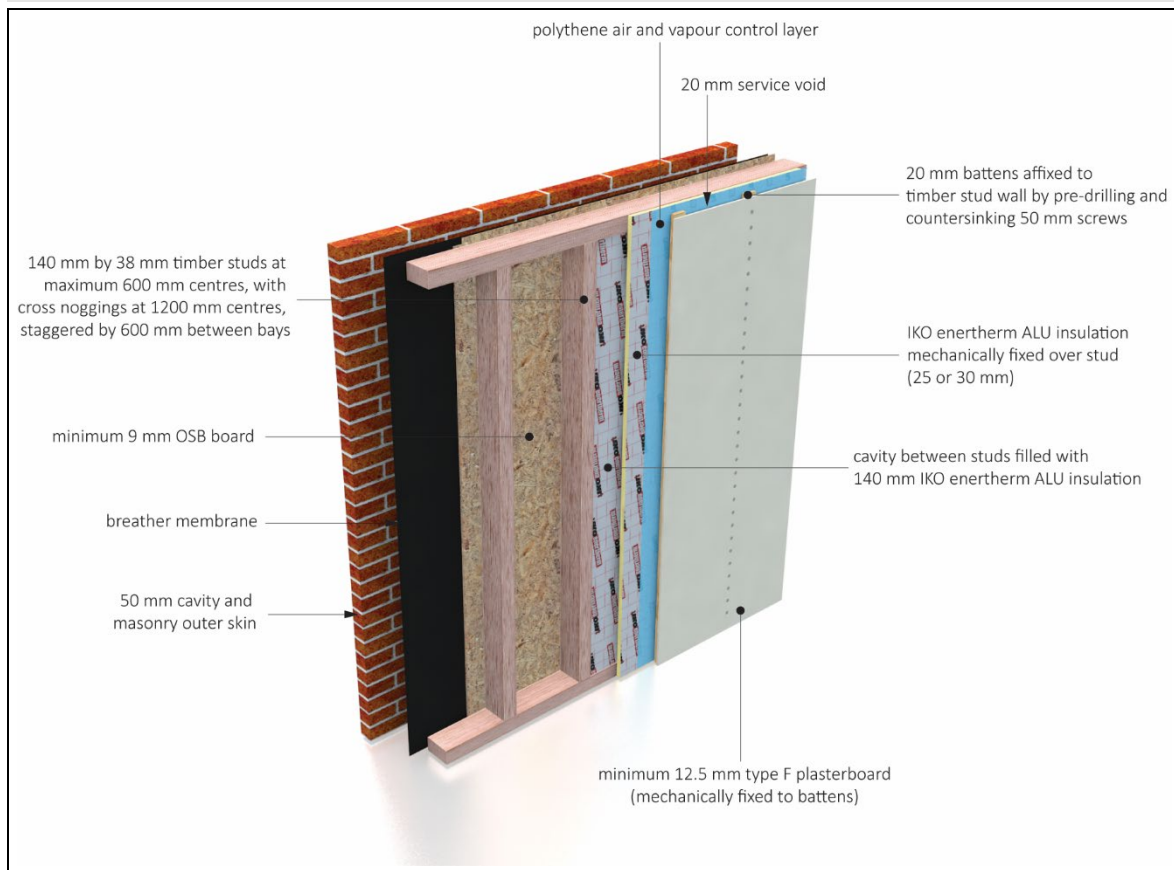
**Figure 3** *Insulation between studs only*



**Figure 4** *Insulation between studs (with a 20 mm service void behind the plasterboard)*



**Figure 5** *Insulation between studs and as a dry-lining (with a 20mm service void behind the plasterboard)*



## Bibliography

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- 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 7671 : 2018 + A1 : 2020 *Requirements for electrical installations — IET Wiring Regulations – Seventeenth Edition*
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- BS EN 1604 : 1997 *Thermal insulating products for building applications — Determination of dimensional stability under specified temperature and humidity conditions*
- BS EN 1995-1-1 : 2004 + A2 : 2014 *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*
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- NA to BS EN 1996-2 : 2006 UK National Annex to *Eurocode 6 : Design of masonry structures — Design considerations, selection of materials and execution of masonry*
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- NA + A1 : 2014 to BS EN 1996-3 : 2006 UK National Annex to *Eurocode 6 — Design of masonry structures — Simplified calculation methods for unreinforced masonry structures*
- 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*
- BS EN 15976 : 2011 *Flexible sheets for waterproofing — Determination of emissivity*

BS EN ISO 6946 : 2017 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*

BS EN ISO 10456 : 2007 *Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values*

## Conditions of Certificate

### Conditions

1 This Certificate:

- relates only to the product 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.

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.

3 This Certificate will be displayed on the BBA website, and the Certificate Holder is entitled to use the Certificate and Certificate logo, provided that the product 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.

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

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 or any other product
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product
- actual installations of the product, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to UKCA marking and CE marking.

6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product which is contained or referred to in this Certificate is the minimum required to be met when the product 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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