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**Agrément Certificate**

**16/5299**

Product Sheet 2 Issue 2

## KINGSPAN KOOLTHERM RANGE FOR FLOORS, WALLS AND PITCHED ROOFS

### KOOLTHERM K106

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Kooltherm K106, comprising a rigid phenolic (PF) foam board with an outer facing of vapour-open polypropylene fleece and a composite (perforated) foil on the inner facing, for use as full fill thermal insulation (with a 10 mm residual cavity) in new external masonry cavity walls up to 25 metres in height in domestic and non-domestic buildings; additional requirements apply for buildings above 12 metres in height and further restrictions may apply based on the reaction to fire performance.

(1) Hereinafter referred to as 'Certificate'.

#### The assessment includes

##### Product factors:

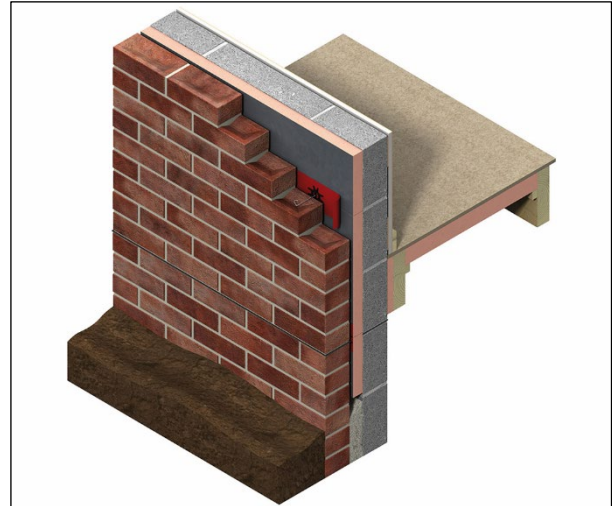
- compliance with Building Regulations
- compliance with additional regulatory or non-regulatory information where applicable
- evaluation against technical specifications
- assessment criteria and technical investigations
- uses and design considerations

##### 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 Second issue: 7 September 2023

Originally certified on 1 March 2016

Certificate amended on 6 February 2024 to remove reference to Regulation 8(3) for Scotland and amend section 2 accordingly.

*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.*

Hardy Giesler  
Chief Executive Officer

#### British Board of Agrément

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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 Kooltherm K106, 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>
Comment:		The product can contribute to satisfying this Requirement in some cases. See section 2 of this Certificate.
<b>Requirement:</b>	<b>B4(1)</b>	<b>External fire spread</b>
Comment:		The product is restricted by this Requirement in some cases. See section 2 of this Certificate.
<b>Requirement:</b>	<b>C2(a)</b>	<b>Resistance to moisture</b>
Comment:		The product can contribute to satisfying this Requirement. See section 3 of this Certificate.
<b>Requirement:</b>	<b>C2(b)</b>	<b>Resistance to moisture</b>
Comment:		The product can contribute to satisfying this Requirement. See section 3 of this Certificate.
<b>Requirement:</b>	<b>C2(c)</b>	<b>Resistance to moisture</b>
Comment:		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>
Comment:		The product can contribute to satisfying this Requirement See section 6 of this Certificate.
<b>Regulation:</b>	<b>7(1)</b>	<b>Materials and workmanship</b>
Comment:		This product is acceptable. See sections 8 and 9 of this Certificate
<b>Regulation:</b>	<b>7(2)</b>	<b>Materials and workmanship</b>
Comment:		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 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>
Comment:		This product can contribute to these Regulations; however, compensating fabric/services 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>
Comment:		The product is acceptable. See sections 8 and 9 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)(2)</sup> and 2.4.4 <sup>(1)(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 clauses 26.5 <sup>(1)</sup> and 2.6.6 <sup>(2)</sup> . See section 2 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 <sup>(1)(2)</sup> and 3.4.5 <sup>(1)(2)</sup> . See section 3 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 3 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)(2)</sup> , 3.15.4 <sup>(1)(2)</sup> and 3.15.5 <sup>(1)(2)</sup> . See section 3 of this Certificate.
Standard:	6.1(b)(c)(d)	Energy demand and carbon dioxide emissions
Comment:		The product can contribute to satisfying this Standard, with reference to clauses 6.1.1 <sup>(1)</sup> and 6.1.2 <sup>(2)</sup> . See section 6 of this Certificate.
Standard:	6.2	Building insulation envelope
Comment:		This product can contribute to satisfying this Standard with reference to clauses 6.2.1 <sup>(1)(2)</sup> , 6.2.3 <sup>(1)</sup> , 6.2.4 <sup>(2)</sup> , 6.2.8 <sup>(1)</sup> , 6.2.9 <sup>(2)</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 the 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)(2)</sup> , 7.1.7 <sup>(1)</sup> , 7.1.9 <sup>(2)</sup> and 7.1.10 <sup>(2)</sup> . See section 6 of this Certificate.
<b>Regulation:</b>	<b>12</b>	<b>Building standards - conversions</b>
Comment:		All comments made in relation to this product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 <sup>(1)(2)</sup> and Schedule 6 <sup>(1)(2)</sup> .

(1) Technical Handbook (Domestic).  
(2) Technical Handbook (Non-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(a)</b>	<b>Resistance to moisture and weather</b>
<b>Comment:</b>		The product can contribute to satisfying this Regulation. See section 3 of this Certificate.
<b>Regulation:</b>	<b>28(b)</b>	<b>Resistance to moisture and weather</b>
<b>Comment:</b>		The product can contribute to satisfying this Regulation. See section 3 of this Certificate.
<b>Regulation:</b>	<b>29</b>	<b>Condensation</b>
<b>Comment:</b>		The product can contribute to satisfying this Regulation. See section 3 of this Certificate.
<b>Regulation:</b>	<b>35(4)</b>	<b>Internal Fire spread – structure</b>
<b>Comment:</b>		The product can contribute to satisfying this Regulation. See section 2 of this Certificate.
<b>Regulation:</b>	<b>36(a)</b>	<b>External fire spread</b>
<b>Comment:</b>		The product is restricted by this Regulation in some cases. See section 2 of this Certificate.
<b>Regulation:</b>	<b>39(a)(i)</b>	<b>Conservation measures</b>
<b>Comment:</b>		The product can contribute to satisfying these Regulations. See section 6 of this Certificate.
<b>Regulation:</b>	<b>40(2)</b>	<b>Target carbon dioxide emission rate</b>
<b>Regulation:</b>	<b>43(b)</b>	<b>Nearly zero-energy requirements for new buildings</b>
<b>Comment:</b>		The product can contribute to satisfying these Regulations. See section 6 of this Certificate.

## Additional Information

### NHBC Standards 2023

In the opinion of the BBA, Kooltherm K106, 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*.

## Fulfilment of Requirements

The BBA has judged Kooltherm K106 to be satisfactory for use as described in this Certificate. The product has been assessed as full-fill thermal insulation (with a 10 mm residual cavity) in new external masonry cavity walls up to 25 metres in height in domestic and non-domestic buildings; additional requirements apply for buildings above 12 metres in height and further restrictions may apply based on the reaction to fire performance.

## ASSESSMENT

### Product description and intended use

The Certificate holder provided the following description for the product under assessment. Kooltherm K106 consists of closed-cell rigid phenolic (PF) foam boards with an outer facing of vapour–open polypropylene fleece and a composite (perforated) foil on the inner facing.

The product has the nominal characteristics given in Table 1.

*Table 1 Nominal characteristics*

Length (mm)	1200
Width (mm)	450
Thickness (mm)	40 to 115
Edge profile	Square

Application

The product is intended for use as full fill cavity wall insulation:

- in 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).

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:

- Cavity wall ties with insulation-retaining fixings to BS EN 845-1 : 2013.
- 100 mm wide self-adhesive breathable tape.

**Product assessment – key factors**

The product was assessed for the following key factors, and the outcomes of the assessments are 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 Certificate holder has declared a reaction to fire classification of F in accordance with BS EN 13501-1 : 2018.

*Table 2 Reaction to fire classification*

Product assessed	Assessment method	Requirement	Result
Kooltherm K106	System 4 of BS EN 13166 : 2012	Value achieved	F

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, Wales and Northern Ireland, the product must not be used on buildings with a storey 18 m or more above ground level and which contain one or more dwellings, an institution, a room for residential purposes (excluding any room in a hostel, hotel or boarding house in Wales and Northern Ireland only), student accommodation, care homes, sheltered housing, hospitals or dormitories in boarding schools and, additionally in Northern Ireland, nursing homes and places of lawful detention.

2.1.4 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 also unrestricted in terms of height, except for those constructions described in section 2.1.3.

2.1.5 In England, Wales and Northern Ireland, for constructions other than those described in sections 2.1.3 or 2.1.4, the product must not be used on buildings with a storey 18 m or more above ground level and, in England only, on residential buildings with a storey 11 m or more in height.

2.1.6 In Scotland, the product may be used without restriction on height or proximity to a relevant boundary, 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 must not be used on buildings with a storey 11 m or more above ground level or within 1 m of a boundary.

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.

### 3 Hygiene, health and the environment

Data were assessed for the following characteristics.

#### 3.1 Weathertightness

3.1.1 A rain penetration test was carried out and the results are given in Table 3.

<i>Table 3 Rain penetration test</i>			
Product assessed	Assessment method	Requirement	Result
40 mm Kooltherm phenolic foam (PF) board with a 10 mm residual cavity	BBA wet wall test method	No water transfer to inner skin	Pass

3.1.2 On the basis of the data assessed, constructions incorporating the product, and built in accordance with the Standards and requirements listed in section 9 of this Certificate, will resist the transfer of precipitation to the inner leaf and satisfy the requirements of the national Building Regulations.

#### 3.2 Effectiveness against rising damp

3.2.1 The product was tested for short term water absorption by partial immersion and the results are given in Table 4.

<i>Table 4 Short term water absorption by partial immersion</i>			
Product assessed	Assessment method	Requirement	Result
Kooltherm phenolic foam (PF) board	EN 1609 : 1997	$\leq 0.5 \text{ kgm}^{-2}$	Pass

3.2.2 The product may be used in situations where it bridges the damp proof course (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.

#### 3.3 Water vapour permeability

3.3.1 The product was tested for water vapour permeability and the results are given in Table 5.

*Table 5 Water vapour resistance/resistivity*

Material	Assessment method	Requirement	Result
PF insulation	BS EN 12086 : 2013	Value achieved	410 MN·s·g <sup>-1</sup> ·m <sup>-1</sup>
Composite foil facing			0.35 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
Kooltherm phenolic foam (PF) board	All	Thermal conductivity to BS EN 13166 : 2012	Declared value ( $\lambda_D$ )	0.019 W·m <sup>-1</sup> ·K <sup>-1</sup>

##### 6.2 Thermal performance

The emissivity of the facing is given in Table 7.

*Table 7 Emissivity of the facing*

Product assessed	Assessment method	Requirement	Result
Polypropylene fleece outer facing	Aged emissivity to BS EN ISO 6946 : 2017	Declared value	0.9

##### 6.3 Conservation of fuel and power

6.3.1 Example U-values are given in Table 8.

Table 8 Example U Values– full fill insulation (10 mm residual cavity)<sup>(1)</sup>

U value (W·m <sup>-2</sup> ·K <sup>-1</sup> )	Kooltherm K106 insulation thickness (mm)	
	100 mm dense block with 13 mm dense plaster <sup>(2)</sup>	100 mm AAC block plasterboard on dabs <sup>(3)</sup>
0.13	– <sup>(4)</sup>	– <sup>(4)</sup>
0.15	115	100
0.17	100	85
0.18	95	80
0.21	80	65
0.26	65	50
0.28	60	45
0.30	55	40

(1) The U value calculations are based on the following:

- wall ties: stainless steel ( $\lambda = 17 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ ), 2.5 per m<sup>2</sup>, 12.5 mm<sup>2</sup> cross-section
- 102 mm brick ( $\lambda = 0.77 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ )
- 10 mm clear cavity ( $R = 0.15 \text{ m}^2\cdot\text{K}\cdot\text{W}^{-1}$ )

(2) 100 mm dense block ( $\lambda = 1.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ ) bridged by mortar (6.6%,  $\lambda = 0.88 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ ) and 13 mm dense plaster ( $\lambda = 0.57 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ )

(3) 100 mm AAC block ( $\lambda = 0.12 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ ) bridged by mortar (6.6%,  $\lambda = 0.88 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ ) and 12.5 mm plasterboard ( $\lambda = 0.25 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ ) on 15 mm dabs (20%,  $\lambda = 0.43 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ ).

(4) See section 6.3.4.

6.3.2 The U value of a completed wall will depend on the insulation thickness, its structure and its internal finish.

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

6.3.4 For improved energy or carbon savings, designers must consider appropriate compensating fabric/services 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 this product were assessed.

8.2 The product was tested for dimensional stability and the results are given in Table 9.

Table 9 Dimensional stability

Product assessed	Assessment method	Requirement	Result
Kooltherm phenolic foam (PF) board	Dimensional stability to BS EN 1604 : 1997 (70°C and 90-100% RH for 48 hours)	Length, width and thickness $\leq 1.5$ % change	Pass

### 8.3 Service life

Under normal service conditions, the product will have a life at least 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.



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 masonry cavity walls must be designed and constructed in accordance with the relevant recommendations of:

- BS 5250 : 2021
- BS 8000-3 : 2001
- BS EN 845-1 : 2013
- 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 2023*, specifiers must observe the requirements of that document.

9.1.4 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 : 2005, BS EN 1996-2 : 2006 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 product to ensure the provision of appropriate:

- cavity trays and DPCs
- cavity barriers and fire stopping
- 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 The following design conditions must be ensured:

- The insulation to be fronted by a cavity 10 mm thick
- The insulation thickness remains constant where possible. Should any change in vertical thickness occur, a horizontal damp-proof cavity tray should separate each thickness change.

9.1.7 Where the walls of a building are between 12 and 25 m high, the following requirements also apply (see also Section 2 of this Certificate):

- 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.
- The area to be insulated must not be in an infill panel in a framed structure.
- The Certificate holder, in association with the architect, must carry out a detailed programme of assessment of the project, including an examination of the quality of installation as work progresses. Above average site supervision is recommended during installation.

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

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

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

9.1.11 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.

9.1.12 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**

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

9.1.14 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**

9.1.15 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 9.1.12 of this Certificate.

9.1.16 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 9.1.12 of this Certificate.

9.1.17 An external render coat or other suitable finish must be applied in locations where such application would be normal practice; care must 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.

9.2.3 The internal leaf must be constructed ahead of the outer leaf so that any mortar protruding into the cavity space from the back of the internal leaf can be cleaned off before installing the product. Boards should be placed such that the foil is towards the inner leaf and the fleece faces the exterior/exposed leaf. Boards must not be pushed into a completed cavity.

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

9.2.5 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 raked out to provide adequate drainage of water from the tray.

9.2.6 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 butt jointed
- all horizontal and vertical board joints, board edges and abutting junction interfaces should be sealed with a minimum 100 mm wide self-adhesive breathable tape
- 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 product 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 contained within the wall cavity and has suitable durability, maintenance is not required.

## 10 Manufacture

10.1 The production processes for the product 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.

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 polythene-wrapped packs. Each pack contains a label bearing the manufacturer's name, board dimensions and the BBA logo incorporating the number of this Certificate.

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

11.2.1 Ideally, boards should be stored inside a building. If, however, outside storage cannot be avoided, then the boards should be stacked clear of the ground and covered with an opaque polythene sheet or weatherproof tarpaulin.

11.2.2 The product must be protected from rain, snow and prolonged exposure to sunlight. Boards that have been allowed to get wet or that are damaged must not be used.

11.2.3 Nothing should be stored on top of the boards and care must be exercised to avoid crushing the edges or corners. If damaged, the product must be discarded.

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

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.

### CLP Regulations

The Certificate holder has taken the responsibility of classifying and labelling the product under the *GB CLP Regulation* and *CLP Regulation (EC) No 1272/2008 - classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

### UKCA marking

The Certificate holder has taken the responsibility of UKCA marking the product in accordance with Designated Standard EN 13166 : 2012

### CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard EN 13166 : 2012.

### Management Systems Certification for production

The management system of the manufacturer has been assessed and registered as meeting the requirements of ISO 9001 : 2015 by CIBSE Certification Limited (Certificate number 0001QMS-0).

### Additional information on installation

Installation must be in accordance with the Certificate holder's instructions and this Certificate. A summary of the procedure is provided below:

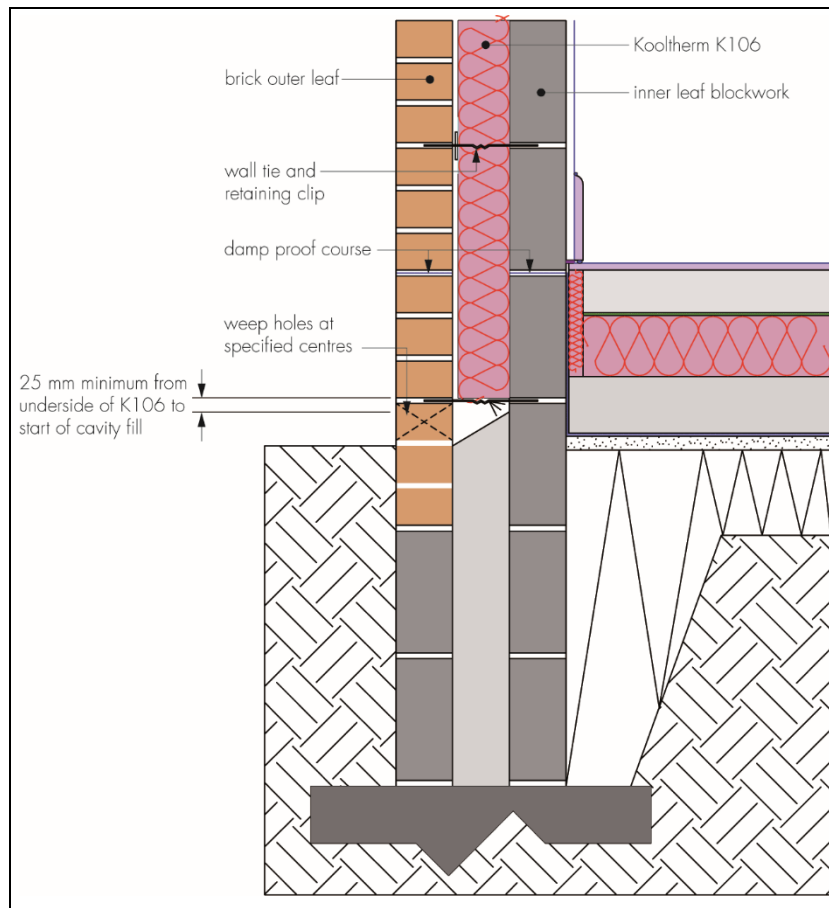
A.1 The Certificate holder will provide on-site demonstrations on request, to ensure correct installation from the outset.

A.2 Adequate supervision of the installation must be maintained, and the Certificate holder must have right of access to site to ensure correct installation.

#### **Procedure**

A.3 A section of the internal leaf is built in the conventional manner, 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 at least 150 mm below the DPC level (or 200 mm for suspended timber floors), to provide some edge insulation for the floor (see Figure 1).

Figure 1 First row of boards at DPC level

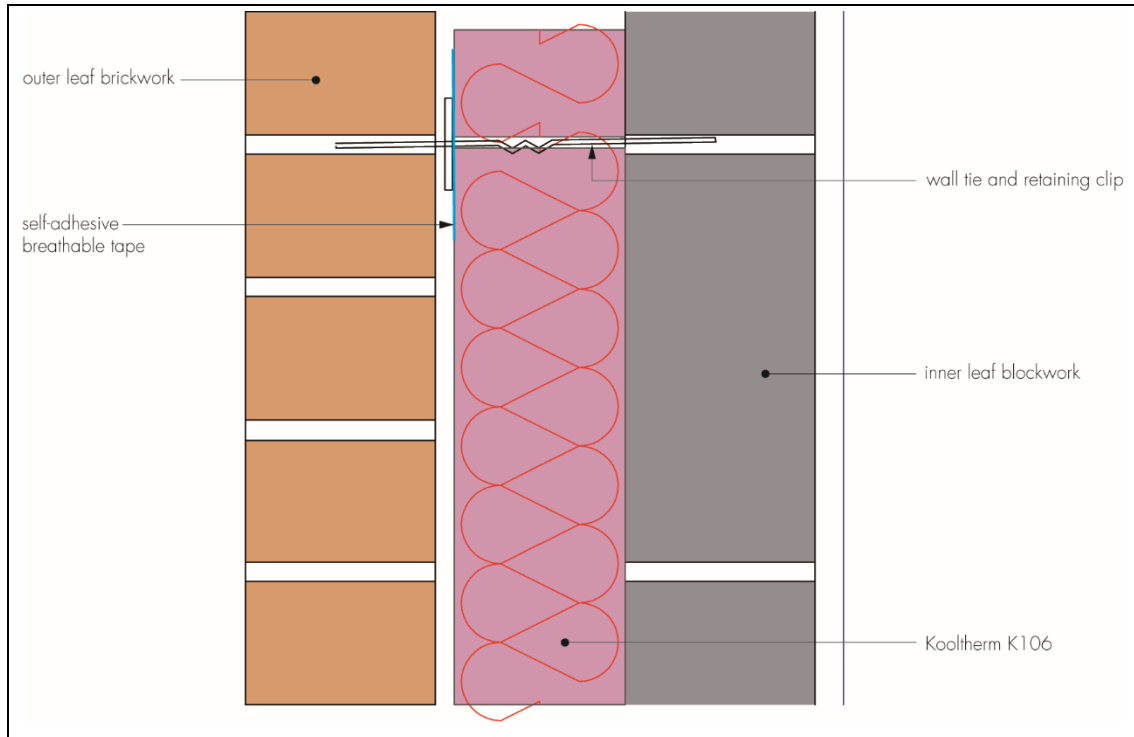


A.4 The internal leaf is then built up to a course above the next row of wall ties, which are placed at a vertical spacing of 450 mm and not more than 900 mm horizontally (see BS EN 1996-1-2 : 2005). Excess mortar should be cleaned from the cavity face of the internal leaf.

A.5 Boards are placed between the upper and lower wall ties, behind the retaining clips, to form a closely butt-jointed run. It is essential that all wall ties slope downwards towards the external leaf, with the drip positioned in the centre of the boards pointing downwards to shed water away from the internal leaf (see Figure 2). Wall ties must not be placed at centres exceeding 900 mm<sup>(1)</sup> to ensure that each board is secured at a minimum of three points. It is also important that the first row of boards is not in contact with the ground, with a gap of at least 25 mm between the bottom edge of the insulation and the cavity fill.

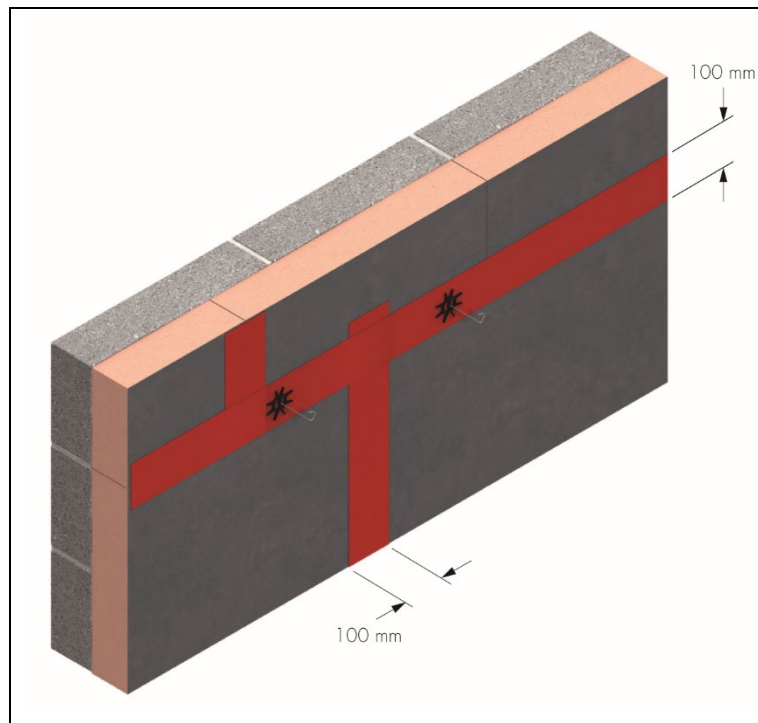
(1) Where buildings need to comply with *NHBC Standards 2023*, the spacing should be no more than 600 mm.

**Figure 2** Wall tie drips positioned in centre of boards



A.6 A self-adhesive breathable tape, no less than 100 mm wide, should be applied in a smooth and wrinkle-free manner and should extend no less than 50 mm to all horizontal and vertical board joints, board edges and abutting junction interfaces (see Figure 3). If necessary, additional layers of tape may be applied. The seal must be maintained at protrusion locations, eg wall ties.

**Figure 3** Self-adhesive breathable tape applied to boards



A.7 To ensure successful adhesion, all surfaces to receive the tape must be clean, dry and free from grease, dust, dirt and all other foreign matter prior to application. A gentle pressure may also be exerted during application.

A.8 The external leaf is built up to the same level as the boards, maintaining a 10 mm residual cavity in order to aid installation and accommodate mortar squeeze.

A.9 Successive sections of wall, incorporating wall ties, are constructed and the boards installed as work proceeds up to the required height.

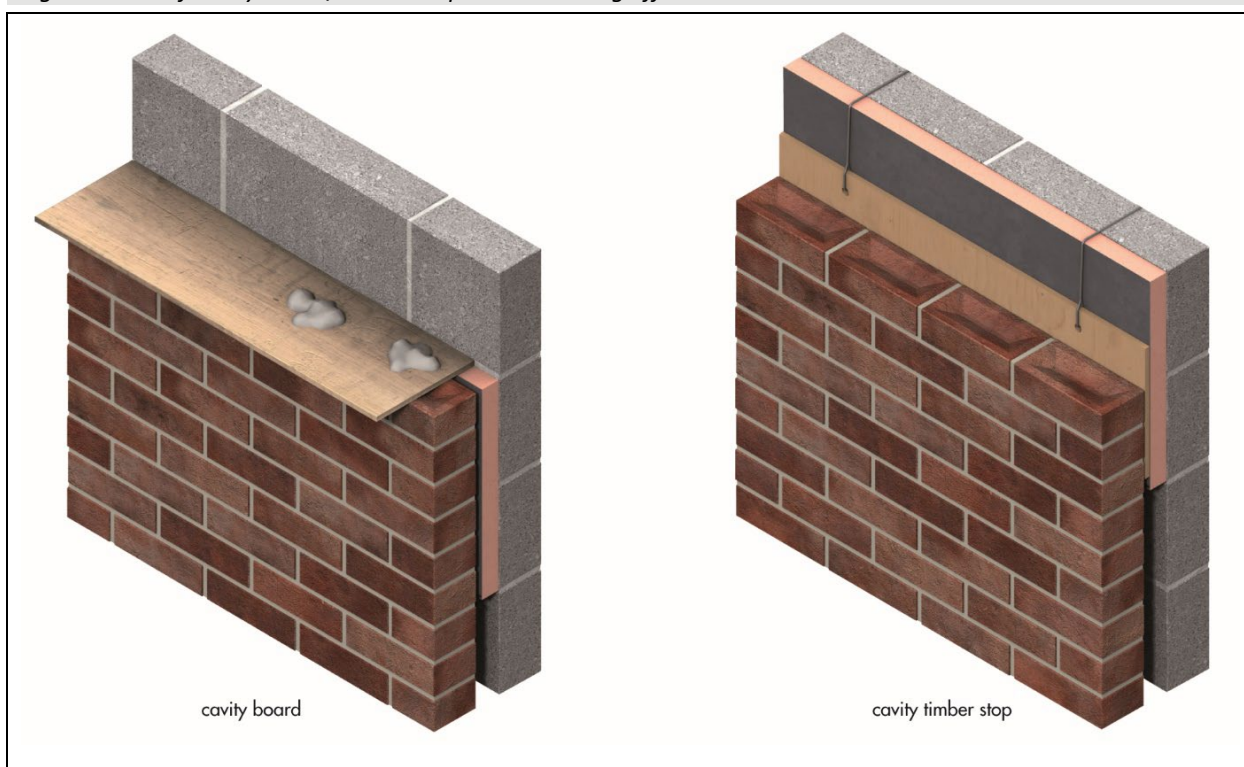
A.10 Additional ties may be required to satisfy the structural requirements of BS EN 845-1 : 2013, BS EN 1996-1-1 : 2005, BS EN 1996-2 : 2006 and BS EN 1996-3 : 2006 to ensure adequate retention of boards or cut pieces.

A.11 All boards should be butted with vertical joints staggered. Insulation boards and wall ties should be staggered as construction proceeds and carried up to the highest level of wall, except where protected by a cavity tray.

### Mortar droppings

A.12 After each section of the wall 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 section. Use of a cavity board and cavity timber stop is recommended to protect installed board edges and help keep the cavity clean as the following leaf is built (see Figure 4).

*Figure 4 Use of cavity board/timber stop when cleaning off excess mortar*



A.13 The boards 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.

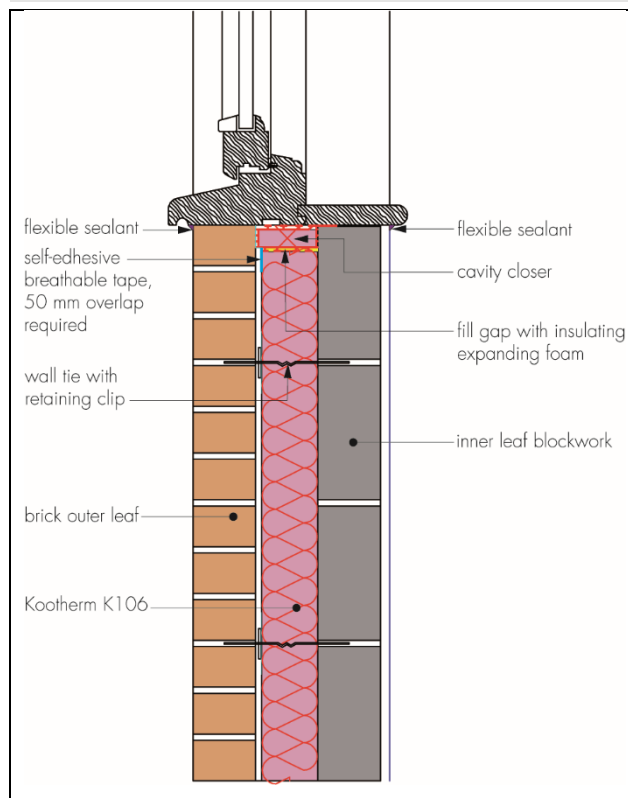
### Wall openings

A.14 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 stop-ends and be adequately drained.

A.15 Proprietary cavity barriers/closers must be correctly installed at window and door reveals (see Figure 5).

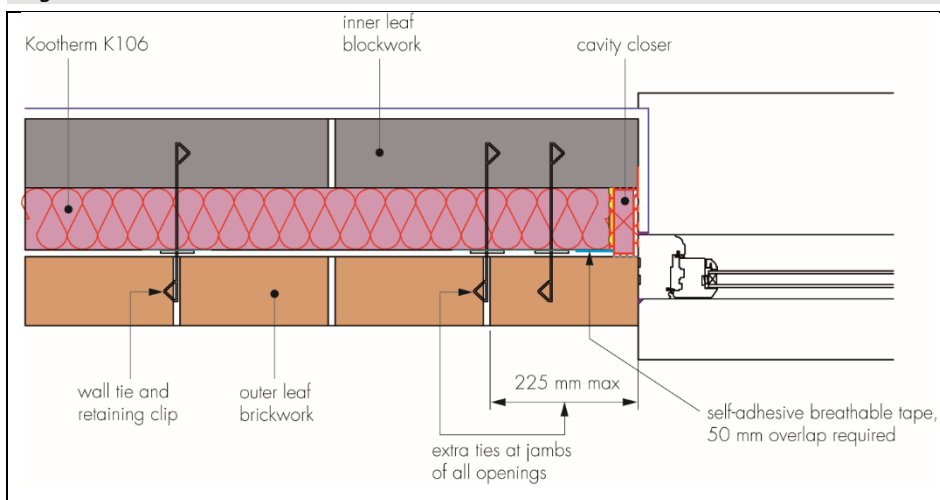


Figure 5 Reveal details – cavity closer



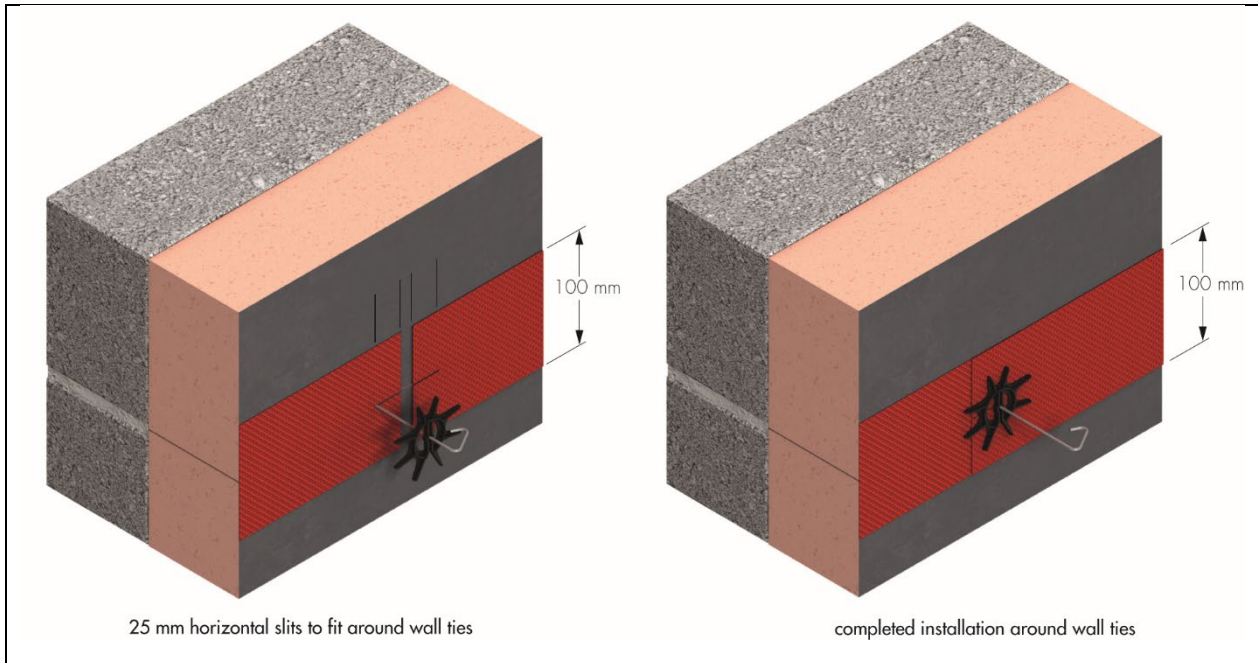
A.16 Additional wall ties at 300 mm vertical centres of all openings are recommended in BS EN 1996-1-1 : 2005 and BS EN 1996-1-2 : 2005. For this product, this would involve piercing the boards and may introduce an unacceptable risk of water penetration. Therefore, it is recommended that an additional wall tie is included within 225 mm of the opening on each board course level to satisfy the structural requirements of the wall (see Figure 6).

Figure 6 Reveal detail with double ties



A.17 If, however, the additional wall ties as recommended in BS EN 1996-1-1 : 2005 and BS EN 1996-1-2 : 2005 are used, the self-adhesive breather tape can be used to create a seal around the wall tie penetrations. A vertical slit can be cut in the tape wherever the board has been penetrated by the extra wall ties around the jamb openings. The tape can then be slid over the wall tie in order to make good the penetration so that a weathertight seal is formed. The tape can also be applied by making a minimum 25 mm horizontal slit at either end of two separate pieces of tape. The two pieces can then be applied by overlapping them by at least 50 mm (see Figure 7).

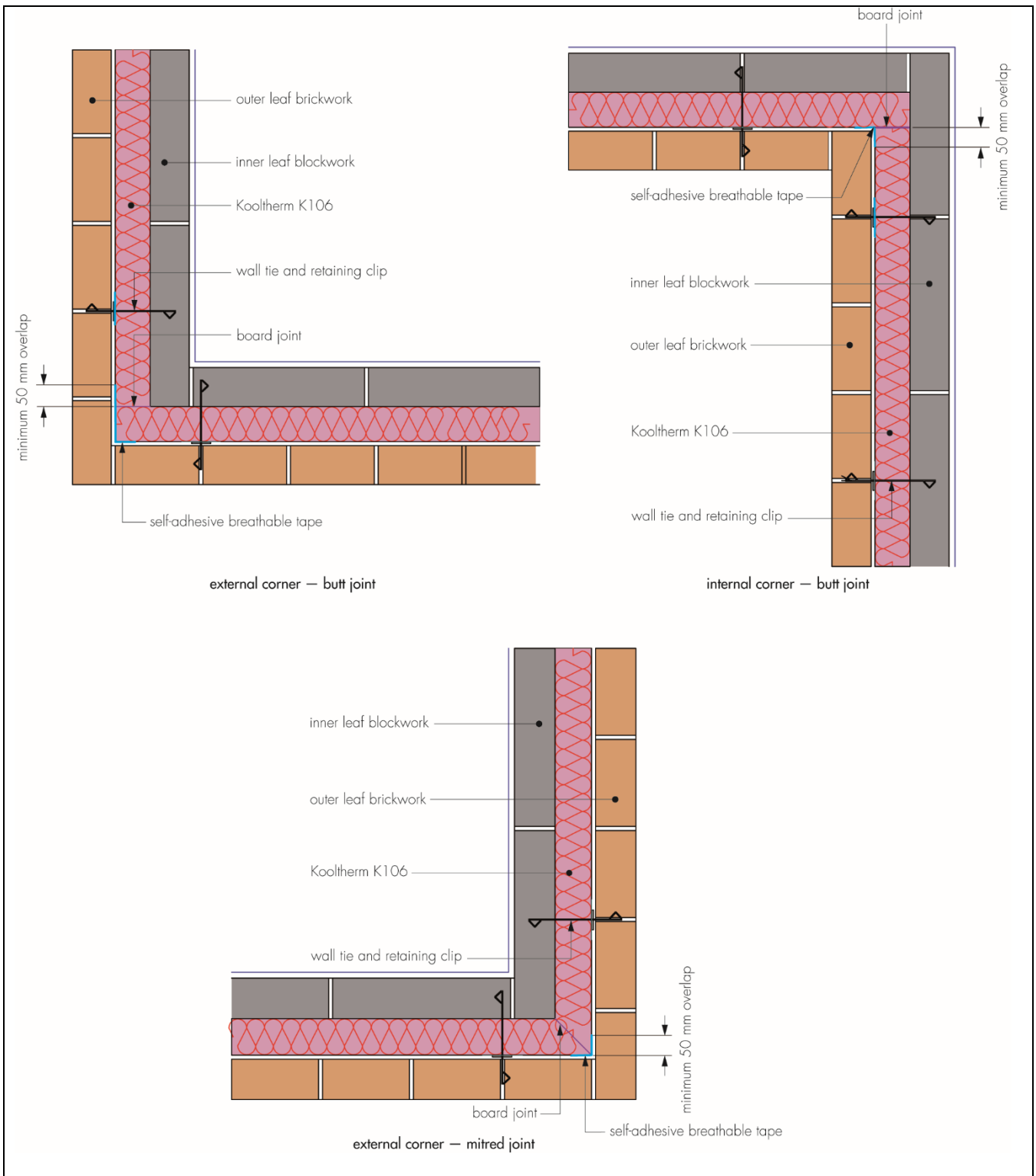
Figure 7 Self-adhesive breathable tape applied around wall tie penetrations



### Corners

A.18 Corner details are formed by cutting the boards squarely and closely butt-jointing, or by cutting board ends at a 45° angle to create a mitred joint, so that all board interfaces are uninterrupted. All corner details incorporate a 100 mm wide self-adhesive breathable tape, as a vertical DPC, so that a minimum 50 mm overlap beyond the board ends (at all courses) is achieved, as shown in Figure 8.

Figure 8 Corner details



**Protection**

A.19 Exposed areas of board should always be covered at the end of a day's work or in driving rain.

A.20 All building involving the product, particularly interrupted work, must conform to BS EN 1996-2 : 2006.

## Bibliography

BRE Report 262 : 2002 *Thermal insulation : avoiding risk*

BRE Report 443 : 2019 *Conventions for U-value calculations*

BS 5250 : 2021 *Management of moisture in buildings — Code of practice*

BS 8000-3 : 2020 *Workmanship on construction sites – Masonry – Code of practice for masonry*

BS EN 845-1 : 2013 + A1 : 2016 *Specification for ancillary components for masonry — Wall ties, tension straps, hangers and brackets*

BS EN 1604 : 1997 *Thermal insulating products for building applications — Determination of dimensional stability under specified temperature and humidity conditions*

BS EN 1996-1-1 : 2005 + A1 : 2012 *Eurocode 6 Design of masonry structures — General rules for reinforced and unreinforced masonry structures*

NA to BS EN 1996-1-1 : 2005 + A1 : 2012 *UK National Annex to Eurocode 6 — Design of masonry structures — General rules for reinforced and unreinforced masonry structures*

BS EN 1996-1-2 : 2005 *Eurocode 6. Design of masonry structures — General rules — Structural fire design*

NA to BS EN 1996-1-2 : 2005 *UK National Annex to Eurocode 6 — Design of masonry structures — General rules — Structural fire design*

BS EN 1996-2 : 2006 *Eurocode 6 — Design of masonry structures — Design considerations, selection of materials and execution of masonry*

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*

BS EN 1996-3 : 2006 *Eurocode 6 — Design of masonry structures — Simplified calculation methods for unreinforced masonry structures*

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BS EN 12086 : 2013 *Thermal insulating products for building applications — Determination of water vapour transmission properties*

BS EN 13166 : 2012 + A2 : 2016 *Thermal insulation products for buildings — Factory made phenolic foam (PF) products — Specification*

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

ISO 9001 : 2015 *Quality management systems — Requirements*

EN 1609 : 1997 *Thermal insulating products for building applications — Determination of dimensional short term water absorption by partial immersion*

EN 13501-1 : 2007 + A1 : 2009 *Fire Classification of construction products and building elements. Classification using test data from reaction to fire tests.*

### 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.