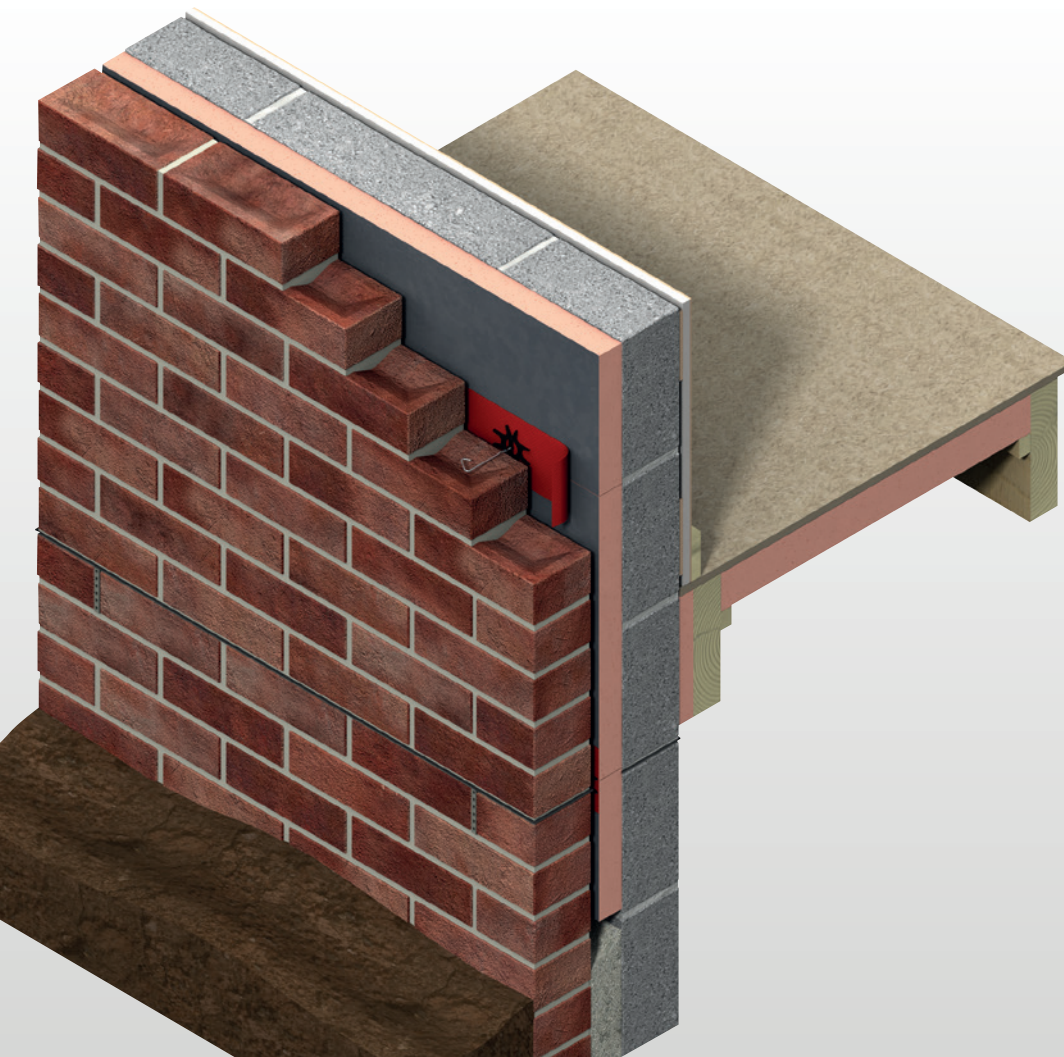




# Kooltherm® K106 Cavity Board

## CAVITY WALL INSULATION



- Premium performance rigid thermoset insulation – thermal conductivity of 0.018 W/m-K
- 10 mm cavity is maintained – resists moisture penetration
- The water-tight, vapour-open polypropylene fleece outer facing protects against moisture penetration
- Unaffected by air infiltration
- Easy to handle and install
- Non-deleterious material
- Manufactured with a blowing agent that has zero ODP and low GWP



Low Energy –  
Low Carbon Buildings

# Typical Constructions & U-values

## Assumptions

The U-values in the tables that follow have been calculated, under a management system certified to the BBA Scheme for Assessing the Competency of Persons to Undertake U-value and Condensation Risk Calculations, using the method detailed in BS EN ISO 6946: 2007 (Building components and building elements. Thermal resistance and thermal transmittance. Calculation method), and using the conventions set out in BR 443 (Conventions for U-value calculations). They are valid for the constructions shown in the details immediately above each table.

Unless stated otherwise, the internal wall finish is taken to be a 3 mm skim coated 12.5 mm plasterboard on dabs.

These U-values are valid for constructions with a 10 mm clear residual cavity between the outer surface of the insulation and the inner face of the outer masonry leaf.

*NB* When calculating U-values to BS / EN ISO 6946: 2007, the type of wall tie used may change the thickness of insulation required. For overall cavity widths  $\leq 125$  mm, calculations assume a stainless steel flexible tie with 2.5 ties per  $m^2$  and a cross-sectional area of 12.50  $mm^2$ .

*NB* For the purposes of these calculations the standard of workmanship has been assumed good, and therefore the correction factor for air gaps has been ignored.

*NB* The figures quoted are for guidance only. A detailed U-value calculation and a condensation risk analysis should be completed for each project.

*NB* If your construction is different from those specified, and / or to gain a comprehensive U-value calculation along with a condensation risk analysis of your project, seek assistance from the Kingspan Insulation Technical Service Department.



## 10 mm Polymer Rendered 100 mm Dense Block Outer

### Internal Finish – Fair Faced Blockwork

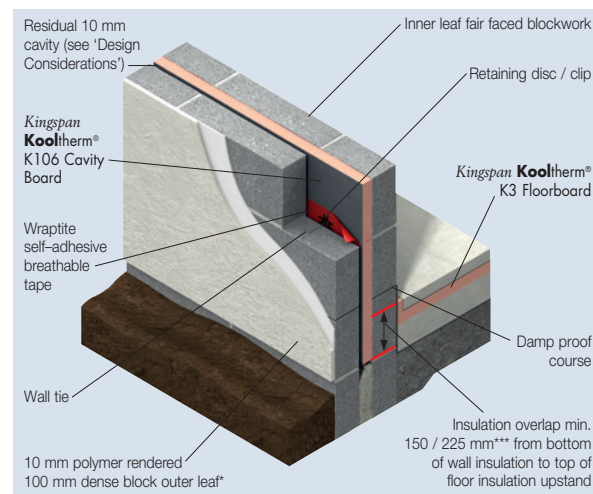


Figure 1

U-values ( $W/m^2 \cdot K$ ) for Various Thicknesses of Kingspan Kooltherm® K106 Cavity Board

Insulant Thickness (mm)	Inner Leaf Fair Faced Blockwork Density and $\lambda$ -value ( $W/m \cdot K$ )		
	Dense (1.13)	Medium (0.51)	Lightweight (0.15)**
40	X	0.34	0.30
50	0.30	0.29	0.26
55	0.27	0.27	0.24
60	0.26	0.25	0.23
65	0.24	0.23	0.21
70	0.22	0.22	0.20
75	0.21	0.21	0.19
80	0.20	0.19	0.18
90	0.18	0.18	0.17
100	0.16	0.15	0.15
110	0.15	0.16	0.14
115	0.14	0.14	0.13

\* Calculations assume dense block outer leaf of  $\lambda$ -value (1.13  $W/m \cdot K$ ).

\*\* A 6.6% thermal bridging factor has been assumed for the effect of mortar joints.

\*\*\* 150 mm applies to the UK and 225 mm to the Republic of Ireland.

## U-value Table Key

Where an **X** is shown, the U-value is higher than the worst of the maximum new build area weighted average U-values allowed by the:

- 2013 editions of Approved Documents L for England;
- 2014 editions of Approved Documents L for Wales;
- 2015 editions of Technical Handbooks Section 6 for Scotland;
- 2011 editions of Technical Guidance Document L for the Republic of Ireland (Dwellings);
- 2008 editions of Technical Guidance Document L for the Republic of Ireland (Buildings other than Dwellings); and
- 2012 editions of Technical Booklet F1 & F2 for Northern Ireland.

## Leaf\* / 100 mm Block Inner Leaf

### Internal Finish – 3 mm Skim Coated 12.5 mm Plasterboard

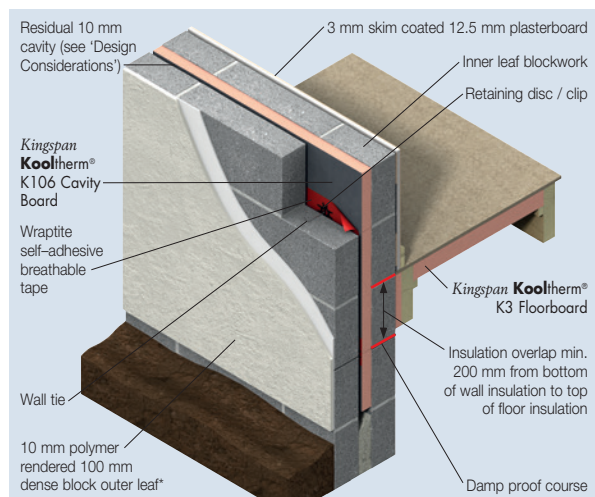


Figure 2

U-values (W/m <sup>2</sup> ·K) for Various Thicknesses of Kingspan Kooltherm® K106 Cavity Board				
Insulant Thickness (mm)	Inner Leaf Blockwork Density and λ-value (W/m·K)			
	Dense (1.13)	Medium (0.51)	Lightweight (0.15)**	Aerated (0.11)**
40	0.33	0.32	0.29	0.27
50	0.28	0.27	0.25	0.24
55	0.26	0.25	0.23	0.22
60	0.24	0.24	0.22	0.21
65	0.23	0.22	0.20	0.20
70	0.21	0.21	0.19	0.19
75	0.20	0.20	0.18	0.18
80	0.19	0.19	0.18	0.17
90	0.17	0.17	0.16	0.16
100	0.16	0.15	0.15	0.14
110	0.14	0.14	0.14	0.13
115	0.14	0.14	0.13	0.13

\* Calculations assume dense block outer leaf of λ-value (1.13 W/m·K).

\*\* A 6.6% thermal bridging factor has assumed for the effect of mortar joints.

### Internal Finish – Kingspan Kooltherm® K17 Insulated Plasterboard

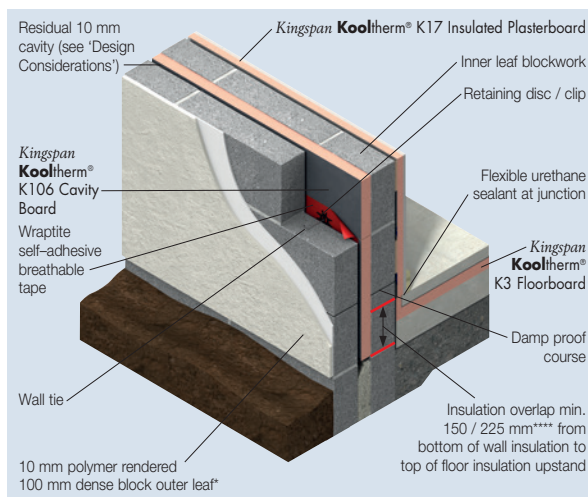


Figure 3

U-values (W/m <sup>2</sup> ·K) for Various Product Thicknesses of Kingspan Kooltherm® K17 Insulated Plasterboard** and Thicknesses of Kingspan Kooltherm® K106 Cavity Board				
Thickness of Kingspan Kooltherm® K106 Cavity Board (mm)	Inner Leaf Blockwork Density and λ-value (W/m·K)			
	Dense (1.13)	Medium (0.51)	Lightweight (0.15)***	Aerated (0.11)***
<b>37.5 mm Kingspan Kooltherm® K17 Insulated Plasterboard**</b>				
40	0.24	0.23	0.21	0.21
50	0.21	0.21	0.19	0.19
55	0.20	0.20	0.18	0.18
60	0.19	0.19	0.17	0.17
65	0.18	0.18	0.17	0.16
70	0.17	0.17	0.16	0.15
75	0.16	0.16	0.15	0.15
80	0.16	0.15	0.15	0.14
90	0.14	0.14	0.13	0.13
<b>62.5 mm Kingspan Kooltherm® K17 Insulated Plasterboard**</b>				
50	0.17	0.16	0.15	0.15
60	0.15	0.15	0.14	0.14
70	0.14	0.14	0.13	0.13

\* Calculations assume dense block outer leaf of λ-value (1.13 W/m·K).

\*\* Thickness shown = insulant thickness + 12.5 mm plasterboard.

\*\*\* A 6.6% thermal bridging factor has assumed for the effect of mortar joints.

\*\*\*\* 150 mm applies to the UK and 225 mm to the Republic of Ireland.

# Typical Constructions & U-values

## 102.5 mm Brick Outer Leaf / 100 mm Block Inner Leaf

### Internal Finish – Fair Faced Blockwork

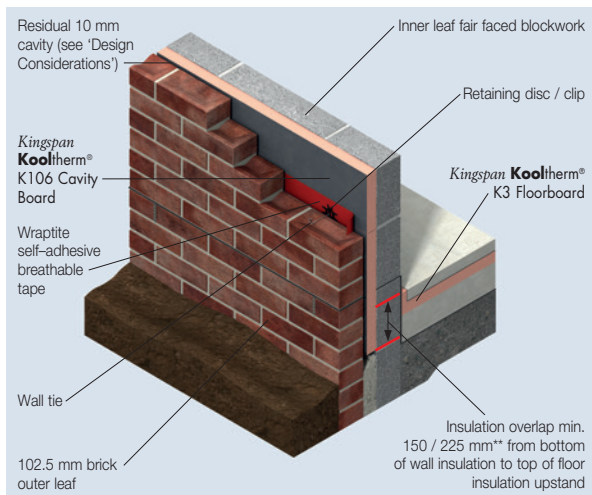


Figure 4

### Internal Finish – 3 mm Skim Coated 12.5 mm Plasterboard

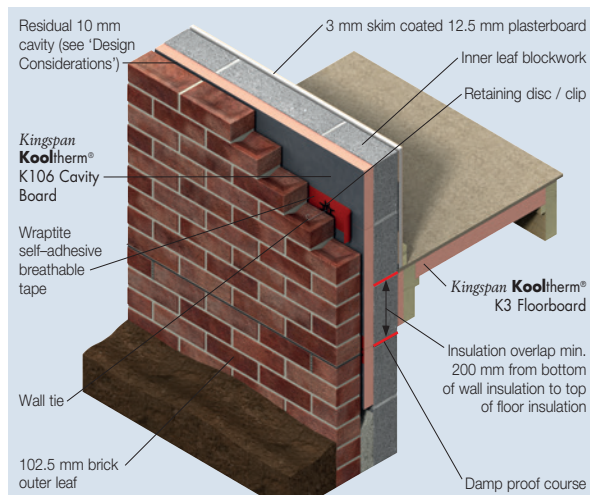


Figure 5

U-values (W/m <sup>2</sup> ·K) for Various Thicknesses of Kingspan Kooltherm® K106 Cavity Board			
Insulant Thickness (mm)	Inner Leaf Fair Faced Blockwork Density and λ-value (W/m·K)		
	Dense (1.13)	Medium (0.51)	Lightweight (0.15)*
40	X	0.35	0.31
50	0.30	0.29	0.26
55	0.28	0.27	0.25
60	0.26	0.25	0.23
65	0.24	0.23	0.22
70	0.23	0.22	0.20
75	0.21	0.21	0.19
80	0.20	0.20	0.18
90	0.18	0.18	0.17
100	0.16	0.16	0.15
110	0.15	0.15	0.14
115	0.14	0.14	0.14

\* A 6.6% thermal bridging factor has assumed for the effect of mortar joints.

\*\* 150 mm applies to the UK and 225 mm to the Republic of Ireland.

U-values (W/m <sup>2</sup> ·K) for Various Thicknesses of Kingspan Kooltherm® K106 Cavity Board				
Insulant Thickness (mm)	Inner Leaf Blockwork Density and λ-value (W/m·K)			
	Dense (1.13)	Medium (0.51)	Lightweight (0.15)*	Aerated (0.11)*
40	0.34	0.32	0.29	0.28
50	0.28	0.28	0.25	0.24
55	0.26	0.26	0.23	0.22
60	0.24	0.24	0.22	0.21
65	0.23	0.22	0.21	0.20
70	0.22	0.21	0.20	0.19
75	0.20	0.20	0.19	0.18
80	0.19	0.19	0.18	0.17
90	0.17	0.17	0.16	0.16
100	0.16	0.16	0.15	0.14
110	0.15	0.14	0.14	0.13
115	0.14	0.14	0.13	0.13

\* A 6.6% thermal bridging factor has been assumed for the effect of mortar joints.



## Linear Thermal Bridging at Wall to Floor Junctions

### Internal Finish – Kingspan Kooltherm® K17 Insulated Plasterboard

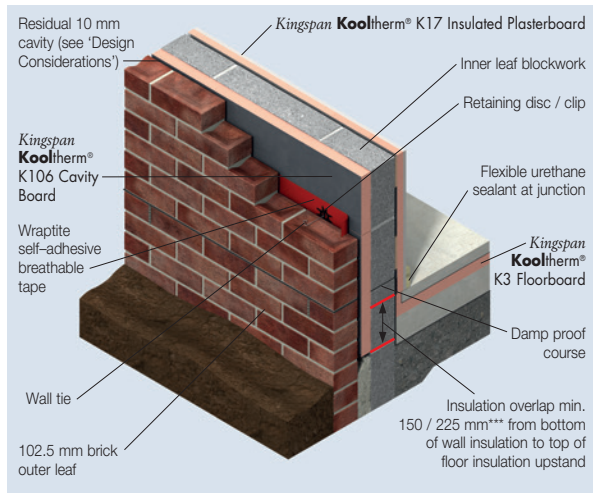


Figure 6

U-values (W/m<sup>2</sup>·K) for Various Product Thicknesses of Kingspan Kooltherm® K17 Insulated Plasterboard\* and Thicknesses of Kingspan Kooltherm® K106 Cavity Board

Thickness of Kingspan Kooltherm® K106 Cavity Board (mm)	Inner Leaf Blockwork Density and λ-value (W/m·K)			
	Dense (1.13)	Medium (0.51)	Lightweight (0.15)**	Aerated (0.11)**
<b>37.5 mm Kingspan Kooltherm® K17 Insulated Plasterboard*</b>				
40	0.24	0.24	0.22	0.21
50	0.21	0.21	0.19	0.19
55	0.20	0.20	0.18	0.18
60	0.19	0.19	0.17	0.17
65	0.18	0.18	0.17	0.16
70	0.17	0.17	0.16	0.15
75	0.16	0.16	0.15	0.15
80	0.16	0.15	0.15	0.14
85	0.15	0.15	0.14	0.14
90	0.14	0.14	0.14	0.13
<b>62.5 mm Kingspan Kooltherm® K17 Insulated Plasterboard*</b>				
50	0.17	0.16	0.15	0.15
60	0.15	0.15	0.14	0.14
70	0.14	0.14	0.13	0.13

\* Thickness shown = insulant thickness + 12.5 mm plasterboard.

\*\* A 6.6% thermal bridging factor has assumed for the effect of mortar joints.

\*\*\* 150 mm applies to the UK and 225 mm to the Republic of Ireland.

Linear thermal bridging describes the heat loss at junctions between elements, where the geometry of the junction means that a building's primary insulation layer is not continuous or is reduced. This heat loss is represented by the junction's psi ( $\psi$ ) value. The  $\psi$ -values of all the linear thermal bridges in a building are used in whole building carbon dioxide emissions calculation software.

In a standard cavity wall-to-ground floor junction the linear thermal bridge is the inner leaf of the masonry. This linear thermal bridge can be reduced by increasing the distance that the heat has to travel through the inner leaf of the masonry. This can be achieved by means of overlapping the cavity wall insulation and the floor insulation. The key factor is the distance between the bottom of the cavity wall insulation and the top of the floor insulation (including any perimeter insulation upstand).

Accredited Construction Details (England & Wales / Scotland / Northern Ireland) and Acceptable Construction Details (Republic of Ireland), collectively referred to here as ACDs, feature masonry cavity wall / floor junction constructions with a  $\psi$ -value of 0.16 W/m·K, where the distance between the top of the perimeter floor insulation upstand and the bottom of the partial fill cavity wall insulation is a minimum of 150 / 225\* mm for a concrete floor (see Figures 1 & 4) and 200 mm for a suspended timber floor (see Figures 2 & 5).

Adhering to these constructions, entitles a designer to use a default  $\psi$ -value in whole building carbon dioxide emissions calculation software.

To aid in limiting thermal bridging and uncontrolled air-leakage via junctions in cavity wall constructions, Kingspan Insulation has had a number of the junctions incorporating Kingspan Kooltherm® K106 Cavity Board modelled and  $\psi$ -values calculated for them – many of which are significantly better than the approved  $\psi$ -values given in column 1 of Table K1 of SAP for the ACDs that comprise both full and partial fill cavity wall constructions.

For example, the approved  $\psi$ -value for an ACD comprising a corner junction in an external wall is 0.09 W/m·K. If the specification for the junction is confirmed as having been adhered to onsite, as defined in the ACD, the  $\psi$ -value of 0.09 W/m·K would apply. If not confirmed, the lesser 'default  $\psi$ -value' for that junction as given in column 2 of Table K1 of SAP would instead apply, which, in this instance, would be 0.18 W/m·K.

\*150 mm applies to the UK and 225 mm to the Republic of Ireland.

# Design Considerations

The Kingspan Insulation details, including both the calculated  $\psi$ -values and the practical guidance on how to achieve good thermal continuity and air-tightness levels are, on the other hand, much more specific to the construction. For example, the  $\psi$ -values for a corner junction in an external wall with a 100 mm cavity containing 90 mm of **Kingspan Kooltherm® K106 Cavity Board**, range from 0.05 W/m·K if dense blockwork, having a thermal conductivity ( $\lambda$ -value) of 1.13 W/m·K, is used, to 0.03 W/m·K if lightweight blockwork, having a thermal conductivity ( $\lambda$ -value) of 0.11 W/m·K, is used.

For further advice please contact the Kingspan Insulation Technical Service Department (see rear cover for details).

## Linear Thermal Bridging at Openings

Prevention of thermal bridging should be considered when designing sills, jambs and lintels. An insulated cavity closer e.g. **Kingspan Kooltherm® Cavity Closer** or **Kingspan Kooltherm® Cavity Closer PLUS** is available from Kingspan Insulation. Please refer to the literature for these products for further information. This literature is available from the Kingspan Insulation Marketing Department or via the Kingspan Insulation website (see rear cover for details).

## Responsible Sourcing

**Kingspan Kooltherm® K106 Cavity Board** produced at Kingspan Insulation's Pembridge manufacturing facility is certified to BES 6001 (Framework Standard for the Responsible Sourcing of Construction Products) 'Excellent'.

NB The above information is correct at the time of writing. Confirm that this is still the case at the point of need by contacting Kingspan Insulation's Technical Services Department, (see rear cover), from which a copy of Kingspan Insulation's BES 6001 certificate can be obtained.



## Sustainability & Responsibility

Kingspan Insulation has a long-term commitment to sustainability and responsibility: as a manufacturer and supplier of insulation products; as an employer; as a substantial landholder; and as a key member of its neighbouring communities.

A report covering the sustainability and responsibility of Kingspan Insulation Ltd's British operations is available at: [www.kingspaninsulation.co.uk/sustainabilityandresponsibility](http://www.kingspaninsulation.co.uk/sustainabilityandresponsibility).

## Specification Clause

*Kingspan Kooltherm*® K106 Cavity Board should be described in specifications as:-

The cavity wall insulation shall be *Kingspan Kooltherm*® K106 Cavity Board \_\_\_\_ mm thick: comprising a premium performance rigid thermoset fibre-free phenolic insulation core, faced on one side with a low emissivity composite foil, and faced on the other side with a water-tight, vapour-open polypropylene fleece. The product shall be manufactured: with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP); under a management system certified to ISO 9001: 2008, ISO 14001: 2004, BS OHSAS 18001: 2007 and ISO 50001: 2011; by Kingspan Insulation Limited; and installed in accordance with the instructions issued by them.

## NBS Specifications

NBS users should refer to clause(s):  
F30 155 (Standard and Intermediate)  
F30 12 (Minor works)



## Design Standards

BS EN 845-1: 2013 (Specification for ancillary components of masonry. Wall ties, tension straps, hangers and brackets), BS EN 1996-1-1: 2005 (Eurocode 6. Design of masonry structures. General rules for reinforced and unreinforced masonry structures), BS EN 1996-2: 2006 (Eurocode 6. Design of masonry structures. Design considerations, selection of materials and execution of masonry), BS EN 1996-3: 2006 (Eurocode 6. Design of masonry structures. Simplified calculation methods for unreinforced masonry structures) and PD 6697: 2010 (Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2) should be consulted regarding the construction of insulated cavity walls.

## Residual Cavity Width

A 10 mm residual cavity width is recommended between the insulation and the outer leaf for wall heights up to 25 metres. For further details please refer to current BBA Certificate 16/5299.

The NHBC accepts the use of *Kingspan Kooltherm*® K106 Cavity Board with a 10 mm residual cavity, except for fair-faced masonry applications in areas of very severe exposure.

## Wall Ties

Wall ties should have a retaining clip / disc for securing the insulant to the masonry plane. Ideally they should be BBA / NSAI approved and conform to BS EN 845-1: 2013 (Specification for ancillary components of masonry. Wall ties, tension straps, hangers and brackets), BS EN 1996-1-1: 2005 (Eurocode 6. Design of masonry structures. General rules for reinforced and unreinforced masonry structures), BS EN 1996-2: 2006 (Eurocode 6. Design of masonry structures. Design considerations, selection of materials and execution of masonry), BS EN 1996-3: 2006 (Eurocode 6. Design of masonry structures. Simplified calculation methods for unreinforced masonry structures) and PD 6697: 2010 (Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2).

## Lightning Protection

Building designers should give consideration to the requirements of BS EN 62305: 2011 (Protection against lightning).

# Sitework

## Fixing Details

- *Kingspan Kooltherm*<sup>®</sup> K106 Cavity Board is normally held in position by the wall ties used to tie the two skins of masonry together.
- Wall ties should include a retaining disc / clip of a thickness no greater than 10 mm. For advice on the specification of retaining discs / clips, please refer to:

Ancon Building Products +44 (0) 1142 755 224  
[www.ancon.co.uk](http://www.ancon.co.uk)

- For a solid concrete ground floor the first row of wall ties are installed in the inner leaf at 600 mm horizontal centres a minimum of one course of blockwork below the damp proof course, or 150 mm (for the UK) and 225 mm (for Ireland) below the top surface of the ground floor perimeter insulation upstand (see 'Linear Thermal Bridging at Wall to Floor Junctions' above), whichever is the lower.
- For a suspended timber floor the first row of wall ties are installed in the inner leaf at 600 mm horizontal centres a minimum of 200 mm below the top surface of the ground floor perimeter insulation upstand (see 'Linear Thermal Bridging at Wall to Floor Junctions' above).
- Continue constructing the inner leaf up to the next wall tie course (450 mm above the first – usually 2 block courses).
- The next course of wall ties is positioned at the usual 900 mm horizontal centres in the UK and 750 mm horizontal centres in Ireland.
- The next course of blockwork is installed to secure the ties.
- The first row of insulation boards should now be installed between the two rows of wall ties, ensuring each insulation board is retained tight against the inner leaf and joints are lightly butted.
- Each board should be secured at a minimum of three points. Additional ties may also be required to satisfy the structural requirements of BS EN 845-1: 2013, BS EN 1996-1-1: 2005, BS EN 1996-2: 2006, BS EN 1996-3: 2006, PD 6697: 2010 and / or to ensure adequate retention of boards or cut pieces.
- Wraptite, a self-adhesive breathable tape, no less than 100 mm wide, should be applied to all horizontal and vertical joints, board edges and abutting junction interfaces e.g. *Kingspan Kooltherm*<sup>®</sup> Cavity Closer. For advice on Wraptite tape, please refer to:

A. Proctor Group Ltd. +44 (0) 1250 872 261  
[www.proctorgroup.com](http://www.proctorgroup.com)

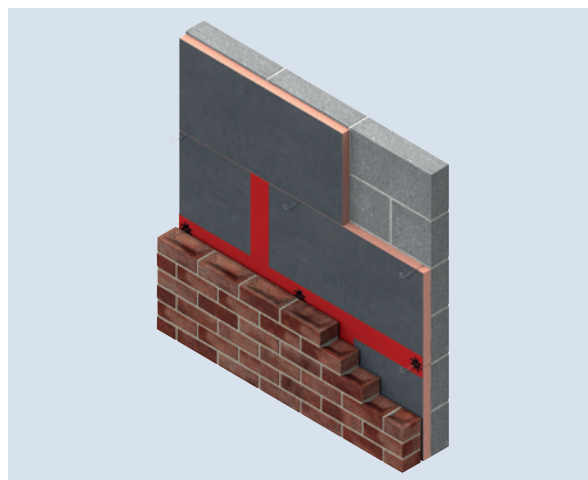


Figure 7 – Wraptite Self-adhesive Breathable Tape Should Be Applied

- The tape should be applied in a smooth and wrinkle-free manner and should extend no less than 50 mm either side of joints, board edges and abutting junction interfaces. If necessary, additional layers of tape may be applied. The seal must be maintained at protrusion locations e.g. wall ties.
- To ensure successful adhesion, all surfaces to receive tape should be made 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.
- The outer leaf is then built up to the level of the top of the boards and the process is repeated.
- When insulating a gable, insulation boards should be continued 200 mm beyond the height of the top storey ceiling and a cavity tray installed above the insulation.

## Excess Mortar

- After raising each section of inner leaf, before installation of the insulation board, excess mortar should be removed and mortar droppings cleaned from exposed edges of the installed insulation boards.
- Use of a cavity batten or cavity board is recommended to protect board edges and maintain a clear cavity (see Figures 8 & 9) or refer to BBA Certificate 16/5299.



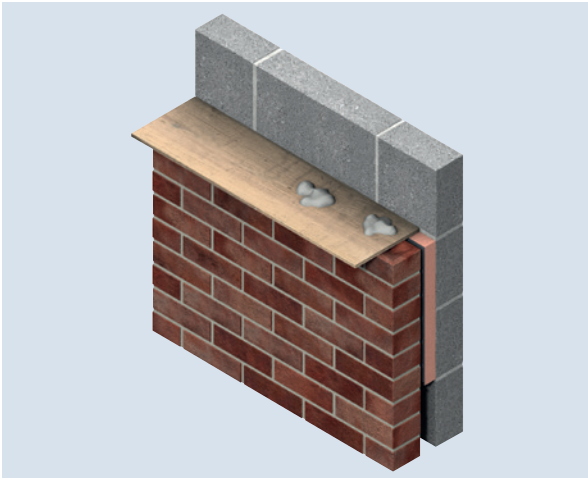


Figure 8 – Use of a Cavity Board to Protect the Cavity and Insulation Board Top Edge

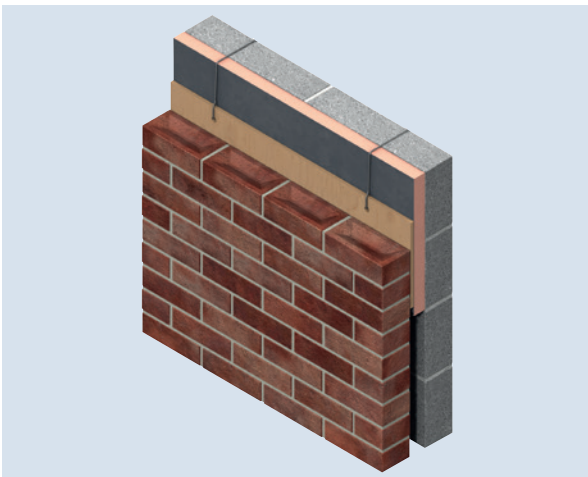


Figure 9 – Use of a Cavity Batten to Protect the Cavity

## General

### Cutting

- Cutting should be carried out either by using a fine toothed saw, or by scoring with a sharp knife, snapping the board over a straight edge and then cutting the facing on the other side.
- Ensure accurate trimming to achieve close butting joints and continuity of insulation.

### Daily Working Practice

- At the completion of each day's work, or whenever work is interrupted for extended periods of time, board edges and joints should be protected from inclement weather.

### Availability

- Kingspan **Kooltherm**® K106 Cavity Board is available through specialist insulation distributors and selected builders' merchants throughout UK and Ireland.

### Packaging and Storage

- The polyethylene packaging of Kingspan Insulation products, which is recyclable, should not be considered adequate for outdoor protection.
- 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. Boards that have been allowed to get wet should not be used.

### Health and Safety

- Kingspan Insulation products are chemically inert and safe to use.
- A Safety Information Data Sheet for this product is available from the Kingspan Insulation website [www.kingspaninsulation.co.uk/safety](http://www.kingspaninsulation.co.uk/safety) or [www.kingspaninsulation.ie/safety](http://www.kingspaninsulation.ie/safety).

*Please note that the reflective surfaces on this product are designed to enhance its thermal performance. As such, they will reflect light as well as heat, including ultraviolet light. Therefore, if this product is being installed during very bright or sunny weather, it is advisable to wear UV protective sunglasses or goggles, and if the skin is exposed for a significant period of time, to protect the bare skin with a UV block sun cream.*

*The reflective facings used on this product can be slippery when wet. Therefore, it is recommended that any excess material should be contained to avoid a slip hazard.*

*Warning – do not stand on or otherwise support your weight on this product unless it is fully supported by a load bearing surface.*

# Product Details

## The Facings

The outer facing of *Kingspan Kooltherm*® K106 Cavity Board is a water-tight, vapour-open polypropylene fleece. The inner facing is a low emissivity composite foil, autohesively bonded to the insulation core during manufacture.

## The Core

The core of *Kingspan Kooltherm*® K106 Cavity Board is a premium performance rigid thermoset fibre-free phenolic insulant manufactured with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).



## Standards & Approvals

*Kingspan Kooltherm*® K106 Cavity Board is manufactured to the highest standards under a management system certified to ISO 9001: 2008 (Quality Management Systems. Requirements), ISO 14001: 2004 (Environmental Management Systems. Requirements), BS OHSAS 18001: 2007 (Occupational Health & Safety Management Systems. Requirements) and BS EN ISO 50001: 2011 (Energy Management Systems. Requirements with guidance for use).

The use of *Kingspan Kooltherm*® K106 Cavity Board is covered by BBA Certificate 16/5299.



## Standard Dimensions

*Kingspan Kooltherm*® K106 Cavity Board is available in the following standard size(s):

Nominal Dimension	Availability
Length (m)	1.2
Width (m)	0.45
Insulant Thickness (mm)	Refer to local distributor or Kingspan Insulation price list for current stock and non-stock sizes.

## Compressive Strength

The compressive strength of *Kingspan Kooltherm*® K106 Cavity Board typically exceeds 100 kPa at 10% compression, when tested to BS / I.S. EN 826: 1996 (Thermal insulating products for building applications. Determination of compression behaviour).

## Durability

If correctly installed, *Kingspan Kooltherm*® K106 Cavity Board can have an indefinite life. Its durability depends on the supporting structure and the conditions of its use.

## Resistance to Solvents, Fungi & Rodents

The insulation core is resistant to short-term contact with petrol and with most dilute acids, alkalis and mineral oils. However, it is recommended that any spills be cleaned off fully before the boards are installed. Ensure that safe methods of cleaning are used, as recommended by suppliers of the spilt liquid. The insulation core is not resistant to some solvent-based adhesive systems, particularly those containing methyl ethyl ketone. Adhesives containing such solvents should not be used in association with this product. Damaged boards or boards that have been in contact with harsh solvents or acids should not be used.

The insulation core and facings used in the manufacture of *Kingspan Kooltherm*® K106 Cavity Board resist attack by mould and microbial growth and do not provide any food value to vermin.

## Fire Performance

*Kingspan Kooltherm*® K106 Cavity Board will not prejudice the fire resistance properties of a wall in which it is installed. It is unlikely to become ignited within the cavity. If fire does penetrate into an unventilated cavity, the amount of air present will be insufficient to support combustion, and flame spread will be minimal.

Further details of the fire performance of Kingspan Insulation products may be obtained from the Kingspan Insulation Technical Services Department (see rear cover).

# Kingspan Insulation

## Thermal Properties

The  $\lambda$ -values and R-values detailed below are quoted in accordance with BS EN 13166: 2012 + A1: 2015 (Thermal insulation products for buildings. Factory made phenolic foam (PF) products. Specification).

### Thermal Conductivity

The boards achieve a thermal conductivity ( $\lambda$ -value) of 0.018 W/m·K.

### Thermal Resistance

Thermal resistance (R-value) varies with thickness and is calculated by dividing the thickness of the board (expressed in metres) by its thermal conductivity. The resulting number is rounded down to the nearest 0.05 (m<sup>2</sup>·K/W).

Insulant Thickness (mm)	Thermal Resistance (m <sup>2</sup> ·K/W)
40	2.20
45	2.50
50	2.75
55	3.05
60	3.30
70	3.85
75	4.15
80	4.40
90	5.00
100	5.55
110	6.10
115	6.35
120	6.65

Refer to local distributor or Kingspan Insulation price list for current stock and non-stock sizes.

## Insulation Product Benefits

### Kingspan **OPTIM-R**® Vacuum Insulation Panel (VIP) Products

- With an aged design value thermal conductivity of 0.007 W/m·K, these products provide an insulating performance that is up to five times better than other commonly available insulation materials.
- Provides high levels of thermal efficiency with minimal thickness.
- Over 90% (by weight) recyclable.

### Kingspan **Kooliherm**® K-range Products

- With a thermal conductivity of 0.018–0.023 W/m·K these are the most thermally efficient insulation products commonly used.
- The thinnest commonly used insulation products for any specific U-value.
- Each product achieves the required fire performance for its intended application.
- Manufactured with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).

### Kingspan **Therma**™ Range Products

- With a thermal conductivity of 0.022–0.027 W/m·K these are amongst the more thermally efficient insulation products commonly used.
- Each product achieves the required fire performance for its intended application.
- Manufactured with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).

### Kingspan **Styrozone**® Range Products

- Rigid extruded polystyrene insulation (XPS) has the necessary compressive strength to make it the product of choice for specialist applications such as heavy duty flooring, car park decks and inverted roofing.
- Each product achieves the required fire performance for its intended application.
- Manufactured with a blowing agent that has zero Ozone Depletion Potential (ODP).

### All Products

- Unaffected by air infiltration – a problem that can be experienced with mineral fibre and which can reduce thermal performance.
- Safe and easy to install.
- If installed correctly, can provide reliable long term thermal performance over the lifetime of the building.

# Contact Details

## Customer Service

For quotations, order placement and details of despatches please contact the Kingspan Insulation Customer Service Department on the numbers below:

UK	- Tel:	+44 (0) 1544 388 601
	- Fax:	+44 (0) 1544 388 888
	- email:	customerservice@kingspaninsulation.co.uk
Ireland	- Tel:	+353 (0) 42 979 5000
	- Fax:	+353 (0) 42 975 4299
	- email:	info@kingspaninsulation.ie

## Literature & Samples

Kingspan Insulation produces a comprehensive range of technical literature for specifiers, contractors, stockists and end users. The literature contains clear 'user friendly' advice on typical design; design considerations; thermal properties; sitework and product data.

For copies please contact the Kingspan Insulation Marketing Department, or visit the Kingspan Insulation website, using the details below:

UK	- Tel:	+44 (0) 1544 387 384
	- Fax:	+44 (0) 1544 387 484
	- email:	literature@kingspaninsulation.co.uk
	- www:	www.kingspaninsulation.co.uk/literature
Ireland	- Tel:	+353 (0) 42 979 5000
	- Fax:	+353 (0) 42 975 4299
	- email:	info@kingspaninsulation.ie
	- www:	www.kingspaninsulation.ie/literature

## Tapered Roofing

For technical guidance, quotations, order placement and details of despatches please contact the Kingspan Insulation Tapered Roofing Department on the numbers below:

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Ireland	- Tel:	+353 (0) 42 975 4297
	- Fax:	+353 (0) 42 975 4296
	- email:	tapered@kingspaninsulation.ie

## Technical Advice / Design

Kingspan Insulation supports all of its products with a comprehensive Technical Advisory Service for specifiers, stockists and contractors.

This includes a computer-aided service designed to give fast, accurate technical advice. Simply phone the Kingspan Insulation Technical Service Department with your project specification. Calculations can be carried out to provide U-values, condensation / dew point risk, required insulation thicknesses etc... Thereafter any number of permutations can be provided to help you achieve your desired targets.

The Kingspan Insulation Technical Service Department can also give general application advice and advice on design detailing and fixing etc... Site surveys are also undertaken as appropriate.

The Kingspan Insulation British Technical Service Department operates under a management system certified to the BBA Scheme for Assessing the Competency of Persons to Undertake U-value and Condensation Risk Calculations.



Please contact the Kingspan Insulation Technical Service Department on the numbers below:

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	- Fax:	+353 (0) 42 975 4296
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## General Enquiries

For all other enquiries contact Kingspan Insulation on the numbers below:

UK	- Tel:	+44 (0) 1544 388 601
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	- email:	info@kingspaninsulation.ie

*Kingspan Insulation Ltd. reserves the right to amend product specifications without prior notice. Product thicknesses shown in this document should not be taken as being available ex-stock and reference should be made to the current Kingspan Insulation price-list or advice sought from Kingspan Insulation's Customer Service Department (see above left). The information, technical details and fixing instructions etc. included in this literature are given in good faith and apply to uses described. Recommendations for use should be verified for suitability and compliance with actual requirements, specifications and any applicable laws and regulations. For other applications or conditions of use, Kingspan Insulation offers a Technical Advisory Service (see above), the advice of which should be sought for uses of Kingspan Insulation products that are not specifically described herein. Please check that your copy of this literature is current by contacting the Kingspan Insulation Marketing Department (see left).*

Kingspan Insulation Ltd is a member of:  
The National Insulation Association (NIA)



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