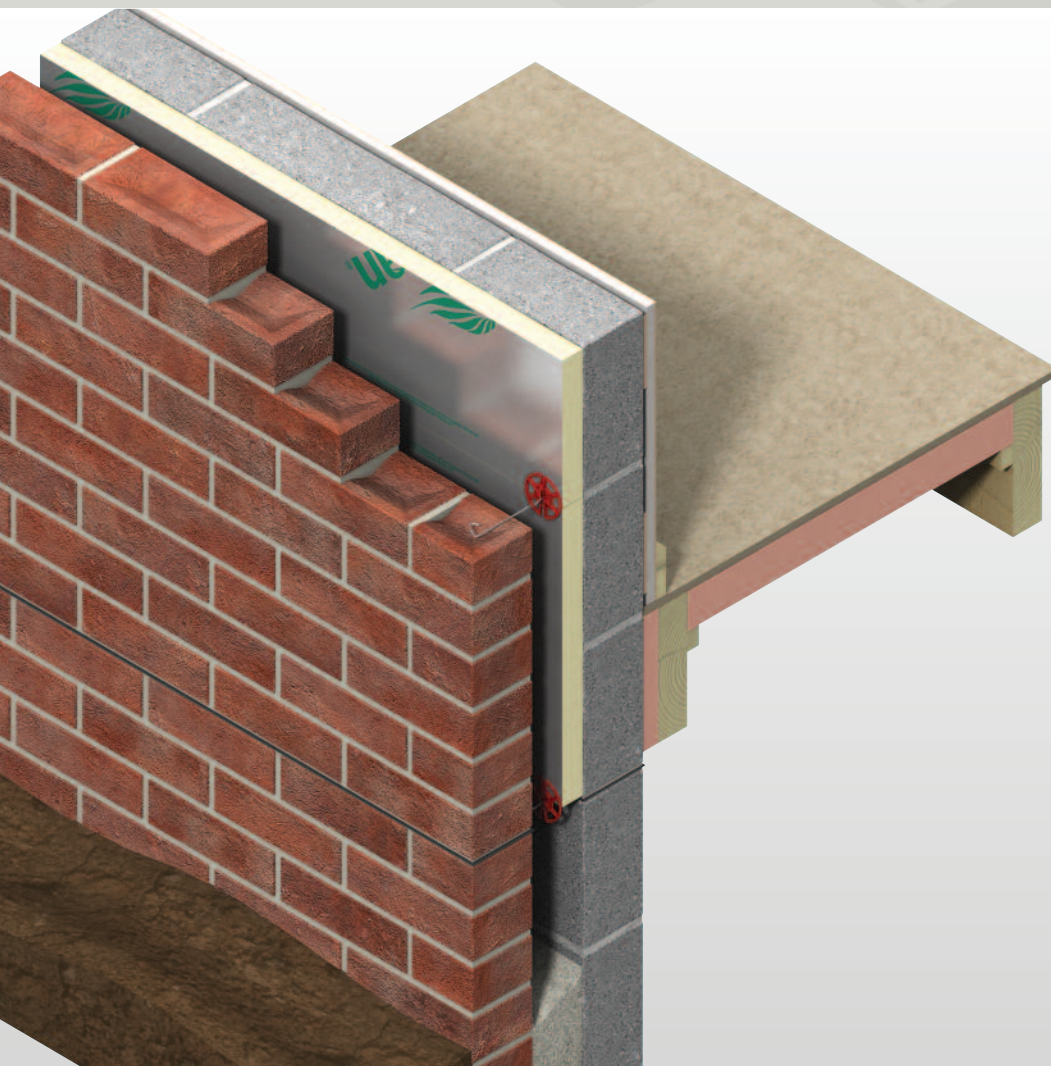




# Thermawall® TW50

## PARTIAL FILL CAVITY WALL INSULATION



- High performance rigid thermoset insulation – thermal conductivity 0.022 W/m-K
- Clear cavity is maintained – resists moisture penetration
- Low emissivity foil facings significantly increase the thermal resistance of the cavity
- Meets NHBC technical requirements when used with a 50 mm residual cavity
- 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 and 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 / I.S. EN ISO 6946: 2007 (Building components and building elements. Thermal resistance and thermal transmittance. Calculation method), and using the conventions set out in BR443 (Conventions for U-value calculations). They are valid for the constructions shown in the details immediately 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 both a 40 mm and 50 mm clear residual cavity between the outer surface of the insulation and the inner face of the outer masonry leaf. In a small number of circumstances the U-value is marked with a † or ††. In these cases the U-value shown is valid for a 50 mm cavity and constructions with a 40 mm cavity have a U-value 0.01 W/m<sup>2</sup>·K (annotated †) and 0.02 W/m<sup>2</sup>·K (annotated ††) better (lower) than those shown. The better (lower) U-value results from the wall tie specification, which changes for cavity widths > 150 mm.

*NB* When calculating U-values to BS / I.S. EN ISO 6946: 2007, the type of wall tie used may change the thickness of insulation required. For cavity widths ≤ 125 mm, calculations assume a stainless steel flexible tie with 2.5 ties per m<sup>2</sup> and a cross-sectional area of 12.50 mm<sup>2</sup>. For cavity widths > 125 mm, calculations assume a stainless steel flexible tie with 2.5 ties per m<sup>2</sup> and a cross-sectional area of 23.00 mm<sup>2</sup>. For cavity widths > 150 mm, calculations assume a stainless steel flexible tie with 2.5 ties per m<sup>2</sup> and a cross-sectional area of 80.00 mm<sup>2</sup>.

*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, please consult the Kingspan Insulation Technical Service Department for assistance (see rear cover).

## 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 2010 Editions of Approved Documents L to the Building Regulations (England & Wales), the 2010 Editions of Technical Handbooks Section 6 (Scotland), the 2006 Editions of Technical Booklets F (Northern Ireland), or the 2008 Editions of Technical Guidance Documents L\* (Republic of Ireland).

\* Excluding Change of Use and Material Alterations.

Where an **♦** is shown, the combination of insulation products may result in an interstitial condensation risk and so the calculations have been excluded.

## 10 mm Polymer Rendered 100 mm Dense Block Outer

### Internal Finish – Fair Faced Blockwork

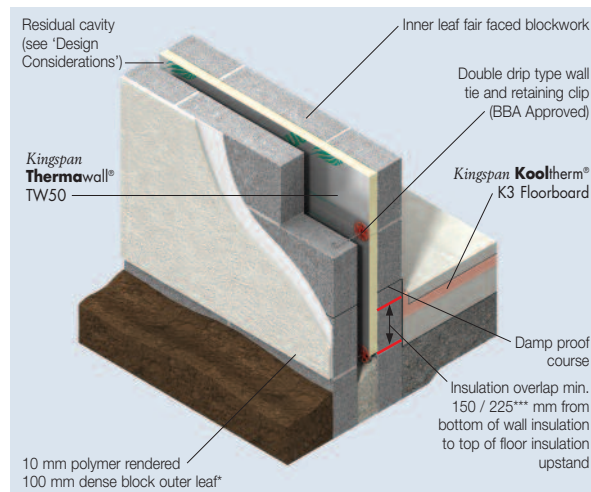


Figure 1

U-values (W/m <sup>2</sup> ·K) for Various Thicknesses of Kingspan Thermawall® TW50			
Insulant Thickness (mm)	Inner Leaf Fair Faced Blockwork Density and λ-value (W/m·K)		
	Dense (1.13)	Medium (0.51)	Lightweight (0.15)**
25	X	X	X
30	X	X	0.34
35	X	X	0.32
40	0.35	0.33	0.30
50	0.30	0.29	0.26
60	0.26	0.26	0.23
70	0.23	0.23	0.21
75	0.22	0.22	0.20
80	0.21	0.21	0.19
90	0.19	0.19	0.18
100	0.18	0.17	0.16
110	0.18††	0.18††	0.17††
120	0.17	0.17	0.16
125	0.16	0.16	0.15
130	0.16	0.16	0.15
140	0.15	0.15	0.14

\* Calculations assume dense block outer leaf of λ-value (1.13 W/m·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-values with a 40 mm cavity are 0.02 W/m<sup>2</sup>·K lower (better) than those shown.

## Leaf\* / 100 mm Block Inner Leaf

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

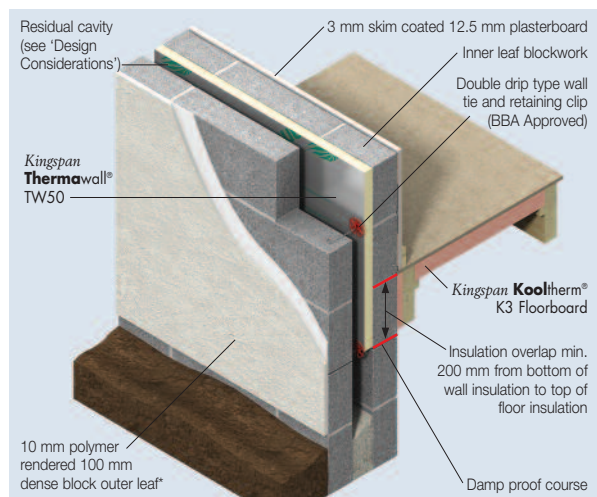


Figure 2

U-values (W/m <sup>2</sup> ·K) for Various Thicknesses of Kingspan Thermawall® TW50				
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)**
20	X	X	X	0.35
25	X	X	0.35	0.33
30	X	X	0.32	0.30
35	0.35	0.34	0.30	0.28
40	0.32	0.31	0.28	0.27
50	0.28	0.27	0.25	0.24
60	0.25	0.24	0.22	0.21
70	0.22	0.22	0.20	0.20
75	0.21	0.21	0.19	0.19
80	0.20	0.20	0.19	0.18
90	0.19	0.18	0.17	0.17
100	0.17	0.17	0.16	0.15
110	0.17 <sup>†</sup>	0.17 <sup>†</sup>	0.16 <sup>†</sup>	0.16 <sup>††</sup>
120	0.16	0.16	0.15	0.15
125	0.16	0.16	0.15	0.14
130	0.15	0.15	0.14	0.14

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

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

† U-values with a 40 mm cavity are 0.01 W/m·K lower (better) than those shown.

†† U-values with a 40 mm cavity are 0.02 W/m·K lower (better) than those shown.

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

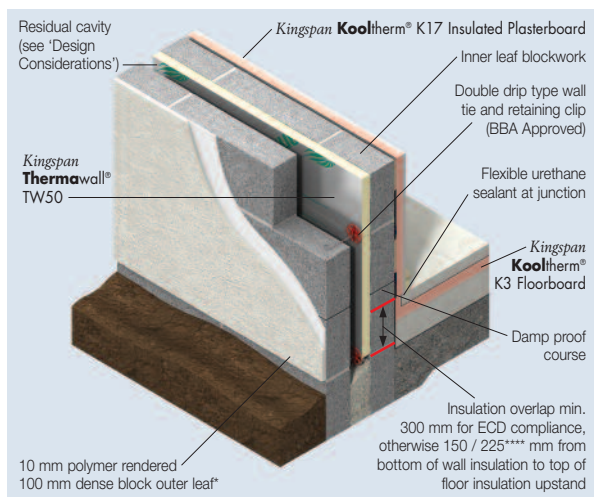


Figure 3

U-values (W/m <sup>2</sup> ·K) for Various Product Thicknesses of Kingspan Kooltherm® K17 Insulated Plasterboard** and Thicknesses of Kingspan Thermawall® TW50				
Thickness of Kingspan Thermawall® TW50 (mm)	Inner Leaf Blockwork Density and λ-value (W/m·K)			
	Dense (1.13)	Medium (0.51)	Light weight (0.15)***	Aerated (0.11)***
<b>37.5 mm Kingspan Kooltherm® K17 Insulated Plasterboard**</b>				
20	🔹	🔹	🔹	🔹
25	0.28	0.27	0.24	0.23
30	0.26	0.25	0.23	0.22
40	0.23	0.23	0.21	0.20
50	0.21	0.21	0.19	0.19
60	0.19	0.19	0.18	0.17
70	0.18	0.17	0.16	0.16
75	0.17	0.17	0.16	0.15
80	0.16	0.16	0.15	0.15
90	0.15	0.15	0.14	0.14
<b>62.5 mm Kingspan Kooltherm® K17 Insulated Plasterboard**</b>				
45	🔹	🔹	🔹	🔹
50	0.17	0.16	0.15	0.15
60	0.15	0.15	0.14	0.14

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

\*\* Product thickness = insulant thickness + 12.5 mm plasterboard.

\*\*\* 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.

# Typical Constructions and U-values

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

### Internal Finish – Fair Faced Blockwork

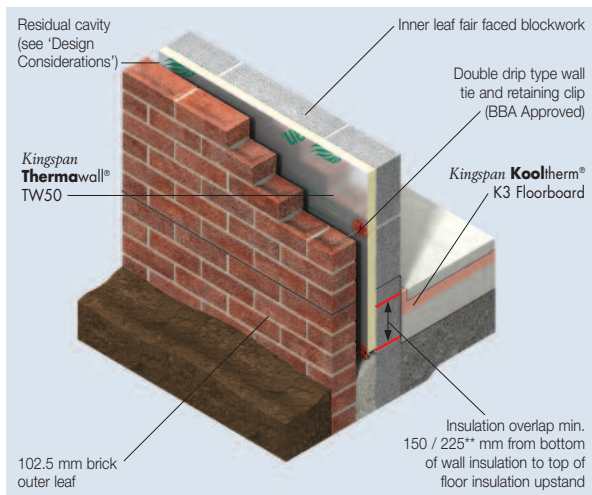


Figure 4

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

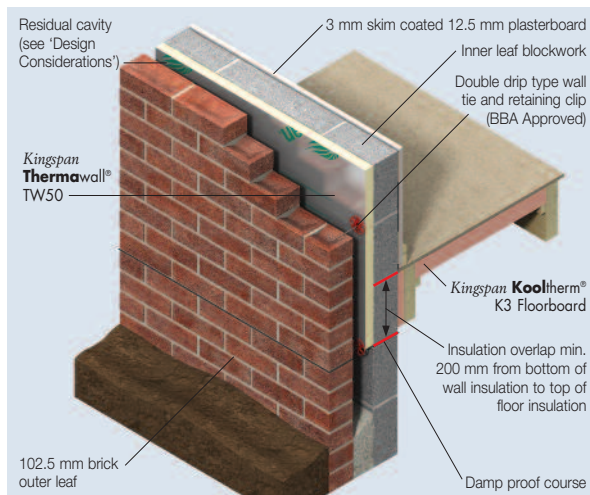


Figure 5

U-values (W/m <sup>2</sup> ·K) for Various Thicknesses of Kingspan Thermawall® TW50			
Insulant Thickness (mm)	Inner Leaf Fair Faced Blockwork Density and λ-value (W/m·K)		
	Dense (1.13)	Medium (0.51)	Lightweight (0.15)*
25	X	X	X
30	X	X	0.35
35	X	X	0.32
40	X	0.34	0.30
45	0.35	0.31	0.28
50	0.30	0.29	0.26
60	0.27	0.26	0.24
70	0.24	0.23	0.21
75	0.23	0.22	0.20
80	0.21	0.21	0.19
90	0.20	0.19	0.18
100	0.18	0.18	0.17
110	0.18 <sup>†</sup>	0.18 <sup>††</sup>	0.17 <sup>††</sup>
120	0.17	0.17	0.16
125	0.16	0.16	0.15
130	0.16	0.16	0.15
140	0.15	0.15	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 with a 40 mm cavity are 0.01 W/m·K lower (better) than those shown.

†† U-values with a 40 mm cavity are 0.02 W/m·K lower (better) than those shown.

U-values (W/m <sup>2</sup> ·K) for Various Thicknesses of Kingspan Thermawall® TW50				
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)*
20	X	X	X	X
25	X	X	0.35	0.33
30	X	X	0.33	0.31
35	0.35	0.34	0.30	0.29
40	0.33	0.32	0.28	0.27
50	0.28	0.28	0.25	0.24
60	0.25	0.25	0.22	0.22
70	0.23	0.22	0.20	0.20
75	0.22	0.21	0.20	0.19
80	0.20	0.20	0.19	0.18
90	0.19	0.18	0.17	0.17
100	0.17	0.17	0.16	0.16
110	0.18 <sup>††</sup>	0.17 <sup>†</sup>	0.16 <sup>†</sup>	0.16 <sup>†</sup>
120	0.16	0.16	0.15	0.15
125	0.16	0.16	0.15	0.14
130	0.15	0.15	0.14	0.14

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

† U-values with a 40 mm cavity are 0.01 W/m·K lower (better) than those shown.

†† U-values with a 40 mm cavity are 0.02 W/m·K lower (better) than those shown.

## Linear Thermal Bridging at Wall to Floor Junctions

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

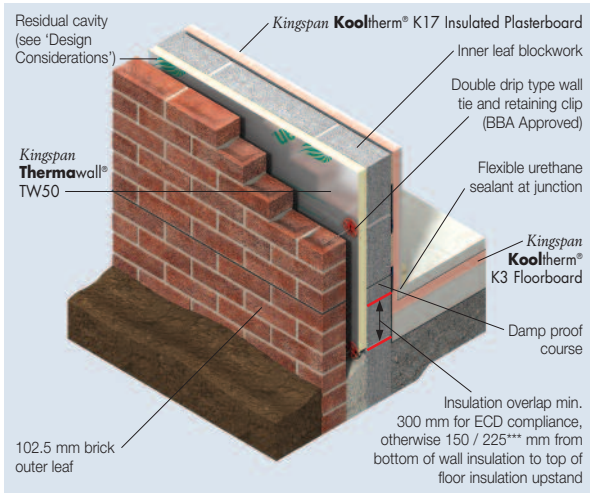


Figure 6

#### U-values (W/m<sup>2</sup>·K) for Various Product Thicknesses of Kingspan **Kooltherm**® K17 Insulated Plasterboard\* and Thicknesses of Kingspan **Thermawall**® TW50

Thickness of Kingspan <b>Thermawall</b> ® TW50 (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 <b>Kooltherm</b>® K17 Insulated Plasterboard*</b>				
20				
25	0.28	0.27	0.25	0.24
30	0.26	0.26	0.23	0.23
40	0.24	0.23	0.21	0.20
50	0.21	0.21	0.19	0.19
60	0.19	0.19	0.18	0.17
70	0.18	0.17	0.16	0.16
75	0.17	0.17	0.16	0.15
80	0.16	0.16	0.15	0.15
90	0.15	0.15	0.14	0.14
<b>62.5 mm Kingspan <b>Kooltherm</b>® K17 Insulated Plasterboard**</b>				
45				
50	0.17	0.16	0.15	0.15
60	0.15	0.15	0.14	0.14

\* Product thickness = 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 masonry. This linear thermal bridge can be reduced by increasing the distance that the heat has to travel through the inner leaf of masonry. This can be achieved by means of overlapping the partial fill 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.

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

# Design Considerations

This linear thermal bridge can be further reduced by isolating the inner leaf of masonry from the internal conditioned space. This can be achieved by lining the inner leaf of masonry with insulation, which is installed so that there is continuity between it and the floor insulation.

Enhanced Construction Details (ECDs) improve on the performance offered by ACDs. ECDs were developed in order to meet the needs of building designers who wish to exceed the performance standards required by Building Regulations / Standards with particular emphasis on the Code for Sustainable Homes. ECDs feature masonry cavity wall / floor junction constructions with  $\psi$ -values as low as 0.029 W/m<sup>2</sup>·K, where the partial fill cavity wall is additionally lined with a layer of insulated plasterboard (see Figures 3 & 6), and the distance between the top of the perimeter floor insulation upstand and the bottom of the partial fill cavity wall insulation is increased to 300 mm for both concrete and suspended timber floor constructions.

## 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**<sup>®</sup> Cavity Closer or **Kingspan Kooltherm**<sup>®</sup> 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).

## Environmental Impact & Responsible Sourcing

### Green Guide Rating

An Ecoprofile, certified by BRE Certification to the 2008 BRE Environmental Profiles Methodology, has been created for **Kingspan Thermawall**<sup>®</sup> TW50 produced at Kingspan Insulation's British manufacturing facilities. The BRE has assigned the product a 2008 Green Guide Summary Rating of A+.



Environmental Profiles Scheme  
Certificate Number ENP 409

### Responsible Sourcing

**Kingspan Thermawall**<sup>®</sup> TW50 is manufactured under a management system certified to BS / I.S. EN ISO 14001: 2004. The principle polymer components of the product are also manufactured under management systems certified to ISO 14001: 2004.

*NB The above information is correct at the time of writing. Please confirm at the point of need by contacting Kingspan Insulation's Technical Services Department (see rear cover), from which copies of Kingspan Insulation and its suppliers' ISO 14001 certificates can be obtained along with confirmation of Kingspan Insulation's products' Green Guide ratings.*

## 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 Thermawall*® TW50 should be described in specifications as:-

The cavity wall insulation shall be *Kingspan Thermawall*® TW50 \_\_\_\_ mm thick: comprising a high performance rigid thermoset insulation core faced on both sides with a low emissivity composite foil facing. The product shall be manufactured: with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP); in accordance with the requirements of BS 4841-1; under a management system certified to BS / I.S. EN ISO 9001: 2008, BS / I.S. EN ISO 14001: 2004 and BS / I.S. OHSAS 18001: 2007; by Kingspan Insulation Limited; and installed in accordance with the instructions issued by them.

## NBS Specifications

Details also available in NBS Plus.  
NBS users should refer to clause(s):  
F30 155 (Standard and Intermediate)  
F30 12 (Minor works).



## Design Standards

BS / I.S. EN 1996-1-1:2005 (Eurocode 6. Design of masonry structures. Common rules for reinforced and unreinforced masonry structures), BS 5628-1: 2005 (Code of practice for use of masonry. Structural use of unreinforced masonry) and BS 5628-2: 2005 (Code of practice for use of masonry. Structural use of reinforced and prestressed masonry) should be consulted regarding the construction of insulated cavity walls.

## Residual Cavity Width

### UK

A minimum 25 mm residual cavity width is recommended between the insulation and the outer leaf for wall heights up to 12 metres. A minimum 50 mm residual cavity width is recommended for wall heights greater than 12 metres and up to and including 25 metres. For further details please refer to current BBA Certificate 94/2992.

The NHBC and / or Zurich Building Insurance Technical Standards normally require a minimum 50 mm residual cavity width in areas of severe exposure to wind driven rain (exposure zone 3) and a minimum 75 mm residual cavity width in areas of very severe exposure to wind driven rain (exposure zone 4), where nominal standards of tolerance and workmanship are accepted. The NHBC and/or Zurich Building Insurance Technical Standards are able to accept a 50 mm residual cavity width for *Kingspan Thermawall*® TW50 in all exposure zones including areas of very severe exposure to wind driven rain (exposure zone 4) where the outer leaf is fair faced masonry with tool flush joints.

### Ireland

A minimum 40 mm residual cavity width is recommended for all wall heights. For further details please refer to current NSAI Agrément Certificate 03/0196.

## Wall Ties

Wall ties should have a retaining clip for securing the insulant to the masonry plane and be of a double drip type. Ideally they should be BBA / NSAI approved and conform to BS / I.S. EN 845-1: 2003 (Specification for ancillary components for masonry. Ties, tension straps, hangers and brackets). In severe / very severe exposure zones, only stainless steel or copper alloy wall ties should be used as referred to in BS 5628-3: 2001 (Code of practice for use of masonry. Materials and components, design and workmanship).

## Lightning Protection

Building designers should give consideration to the requirements of BS / I.S. EN 62305: 2006 (Protection against lightning).

# Sitework

## Fixing details

- *Kingspan Thermawall*® TW50 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 and be of the double drip type, installed drip downward.
- 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 below the top surface of the ground floor perimeter insulation upstand (see 'Linear Thermal Bridging at the 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 the 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 5628-3: 2001 and / or to ensure adequate retention of boards or cut pieces.
- 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 250 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 7 & 8 or refer to BBA Certificate 94/2992 or NSAI Agrément Certificate 03/0196).

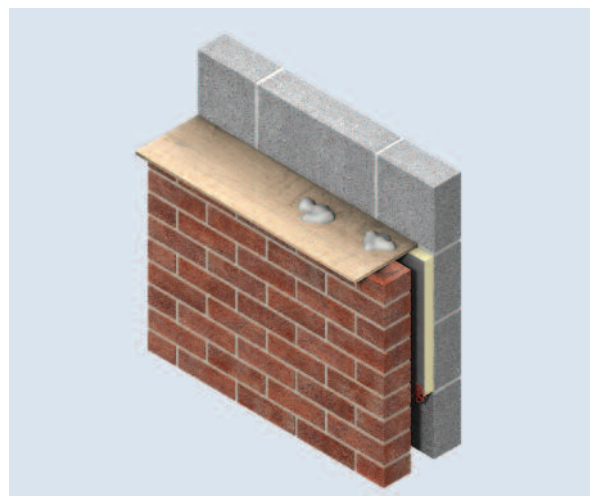


Figure 7 – Use of a Cavity Board to Protect the Cavity and Insulation Board Top Edge

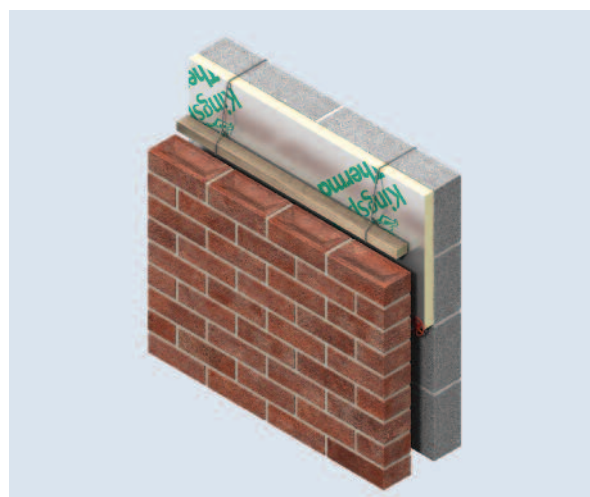


Figure 8 – Use of a Cavity Batten to Protect the Cavity



## 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 Thermawall® TW50** is available through specialist insulation distributors and selected builders' merchants throughout the 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

**Kingspan Thermawall® TW50** is faced on both sides with a low emissivity composite foil, autohesively bonded to the insulation core during manufacture. This reflective, low emissivity surface improves the thermal resistance of any unventilated cavity adjacent to the board.

## The Core

The core of **Kingspan Thermawall® TW50** is manufactured with **Nilflam®** technology, a high performance rigid thermoset polyisocyanurate (PIR) insulant manufactured with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).



## Standards and Approvals

**Kingspan Thermawall® TW50** is manufactured to the highest standards in accordance with the requirements of BS 4841-1: 2006 (Rigid Polyurethane (PUR) and Polyisocyanurate (PIR) products for building end-use applications. Specification for laminated insulation boards with auto-adhesively or separately bonded facings).

**Kingspan Thermawall® TW50** is also manufactured under a management system certified to BS / I.S. EN ISO 9001: 2008 (Quality management systems. Requirements), BS / I.S. EN ISO 14001: 2004 (Environmental Management Systems. Requirements) and BS / I.S. OHSAS 18001: 2007 (Health and Safety Management Systems. Requirements).

The use of **Kingspan Thermawall® TW50** produced at Kingspan Insulation's Pembridge and Selby manufacturing facilities is covered by BBA Certificate 94/2992, and that produced at Kingspan Insulation's Castleblayney manufacturing facility by NSAI Agrément Certificate 03/0196.



## Standard Dimensions

**Kingspan Thermawall® TW50** 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.

# Product Details

## Compressive Strength

The compressive strength of *Kingspan Thermawall*® TW50 typically exceeds 125 kPa at 10% compression, when tested to BS / I.S. EN 826: 1996 (Thermal insulating products for building applications. Determination of compression behaviour).

## Water Vapour Resistance

Adjusted for the effect of board joints, the product typically achieves a resistance far greater than 100 MN-s/g, when tested in accordance with BS EN 12086: 1997 / I.S. EN 12086: 1998 (Thermal insulating products for building applications. Determination of water vapour transmission properties).

## Durability

If correctly installed, *Kingspan Thermawall*® TW50 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 spill 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 Thermawall*® TW50 resist attack by mould and microbial growth and do not provide any food value to vermin.

## Fire Performance

*Kingspan Thermawall*® TW50, is Class 1, as defined by BS 476-7: 1997 (Fire tests on building materials and structures. Method of test to determine the classification of the surface spread of flame of products).

*Kingspan Thermawall*® TW50 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 on the fire performance of Kingspan Insulation products may be obtained from the Kingspan Insulation Technical Service Department (see rear cover).

## Thermal Properties

The  $\lambda$ -values and R-values detailed below are quoted in accordance with BS / I.S. EN 13165: 2008 (Thermal insulation products for buildings – Factory made rigid polyurethane foam (PUR) products – Specification).

### Thermal Conductivity

The boards achieve a thermal conductivity ( $\lambda$ -value) of 0.022 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)
20	0.90
25	1.10
30	1.35
35	1.55
40	1.80
45	2.00
50	2.25
60	2.70
70	3.15
75	3.40
80	3.60
90	4.05
100	4.50
110	5.00
120	5.45
125	5.65
130	5.90
140	6.35

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

# Kingspan Insulation

## Company Details

Kingspan Insulation Ltd is part of the Kingspan Group plc., one of Europe's leading construction product manufacturers. The Kingspan Group was formed in the late 1960s and is a publicly quoted group of companies headquartered in Kingscourt, County Cavan, Ireland.

Kingspan Insulation Ltd is a market leading manufacturer of premium and high performance rigid insulation products and insulated systems for building fabric and building services applications.

## Products & Applications

Kingspan Insulation Ltd has a vast product range. Kingspan Insulation Ltd products are suitable for both new build and refurbishment in a variety of applications within both domestic and non-domestic buildings.

### Insulation for:

- Pitched Roofs
- Flat Roofs
- Green Roofs
- Cavity Walls
- Solid Walls
- Timber and Steel Framing
- Insulated Cladding Systems
- Insulated Render Systems
- Floors
- Soffits
- Ductwork

### Further Solutions:

- Insulated Dry-Lining
- Tapered Roofing Systems
- Cavity Closers
- **Kingspan KoolDuct**® Pre-Insulated Ducting
- **Kingspan nilventi**® Breathable Membranes
- **Kingspan TEK**® Building System

## Insulation Product Benefits

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

- With a thermal conductivity of 0.020–0.023 W/m·K these are the most thermally efficient insulation products commonly used.
- The thinnest commonly used insulation products for any specific U-value.
- Rigid thermoset insulation core is Class 0, as defined by the Building Regulations in England, Wales & Ireland, and Low Risk, as defined by the Building Standards in Scotland.
- Rigid thermoset insulation core achieves the best possible rating of < 5% smoke obscuration when tested to BS 5111: Part 1: 1974.
- 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**

- Their closed cell structure resists both moisture and water vapour ingress – a problem which can be associated with open cell materials such as mineral fibre and which can result in reduced thermal performance.
- Unaffected by air infiltration – a problem that can be experienced with mineral fibre and which can reduce thermal performance.
- Safe and easy to install – non-fibrous.
- 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.

Available as a complete Design Manual or as individual product brochures, Kingspan Insulation technical literature is an essential specification tool. 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.kingspaninsulation.co.uk/literature	
Ireland	- Tel:	+353 (0) 42 979 5000
	- Fax:	+353 (0) 42 975 4299
	- email:	info@kingspaninsulation.ie
	- 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:

UK	- Tel:	+44 (0) 1544 387 383
	- Fax:	+44 (0) 1544 387 483
	- email:	tapered@kingspaninsulation.co.uk
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:

UK	- Tel:	+44 (0) 1544 387 382
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Ireland	- Tel:	+353 (0) 42 975 4297
	- Fax:	+353 (0) 42 975 4296
	- email:	technical@kingspaninsulation.ie

## General Enquiries

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

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