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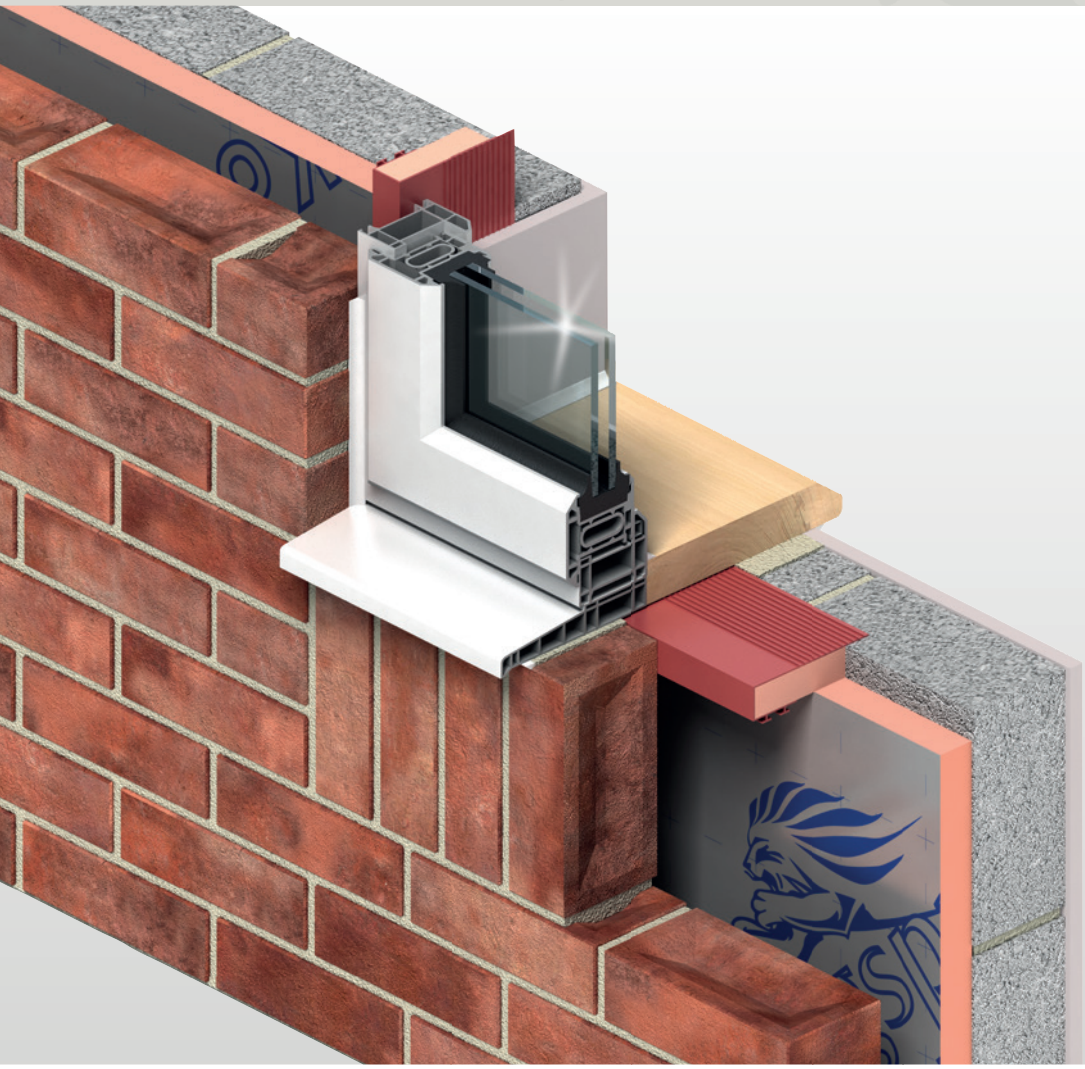
Kingspan Kooltherm® Cavity Closer & Kingspan Kooltherm® Cavity Closer PLUS

INSULATED CAVITY CLOSERS FOR CLOSING CAVITIES AROUND WALL OPENINGS



- Single sections fully filling cavities up to and including 150 mm achieve 30 minutes fire resistance
- Simplified SAP calculations – bespoke set of psi–values for jamb and sill details valid for a broad range of constructions
- Inhibited heat transfer – reduces thermal bridging, condensation risk and mould growth
- Weather resistant – forms an integral DPC
- Can be fitted with door / window frames as a combined unit
- Unaffected by air–infiltration
- Easy to handle and install
- Non–deleterious material
- Insulation core manufactured with a blowing agent that has zero ODP and low GWP

Fibre-free Core

Kingspan®

Low Energy – Low Carbon Buildings

Design Considerations

Introduction

Kingspan **Kool**therm® Cavity Closer comprises a uPVC J–section with a premium performance fibre–free rigid thermoset phenolic insulation core manufactured with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).

Kingspan **Kool**therm® Cavity Closer provides a simple and highly effective method for closing cavities around openings in masonry cavity, timber frame and steel frame system (SFS) wall constructions.

Suitable for use in both new build and refurbishment, *Kingspan* **Kool**therm® Cavity Closer is compatible with uPVC, timber, metal and composite window frames. The thermally efficient insulation core inhibits heat transfer and thus reduces thermal bridging, whilst the uPVC casing provides a damp proof barrier.

The proper use of *Kingspan* **Kool**therm® Cavity Closer can reduce the risk of condensation forming at reveals and thus unsightly mould growth, which can lead to the deterioration of plaster, paintwork and wallpaper – problems commonly associated with the use of traditional methods for the closing of cavities.

Kingspan **Kool**therm® Cavity Closer sections are manufactured in thirteen profile widths ranging from 50–150 mm. Jointing Clips extend the range further by enabling sections to be coupled back–to–back, in order to suit cavity widths of up to 300 mm.

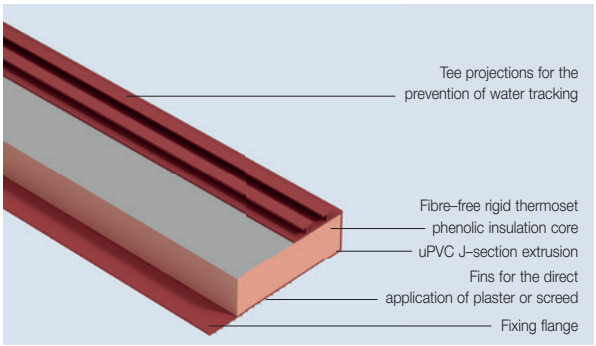


Figure 1 – *Kingspan* **Kool**therm® Cavity Closer

Figure 2 – *Kingspan* **Kool**therm® Cavity Closer **PLUS**

The casing incorporates tee projections along one plane length for the prevention of water tracking within the cavity, and fins along the widest plane length, which form an effective key for the direct application of plaster or screed.

Kingspan **Kool**therm® Cavity Closer **PLUS** is a pre–assembled frame comprising *Kingspan* **Kool**therm® Cavity Closer sections. Available in the same profile widths as *Kingspan* **Kool**therm® Cavity Closer, *Kingspan* **Kool**therm® Cavity Closer **PLUS** is fabricated off site to accurately match specified opening sizes.

Kingspan **Kool**therm® Cavity Closer **PLUS** can be used with the same types of window frames as *Kingspan* **Kool**therm® Cavity Closer using either an insulated lintel or a *Kingspan* **Kool**therm® Cavity Closer section at the head.

To maximise the efficiency and scope for variable design options, a complete line of accessories is also available. This document covers the use of *Kingspan* **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS** in masonry cavity wall constructions only.

Typical Design Detail

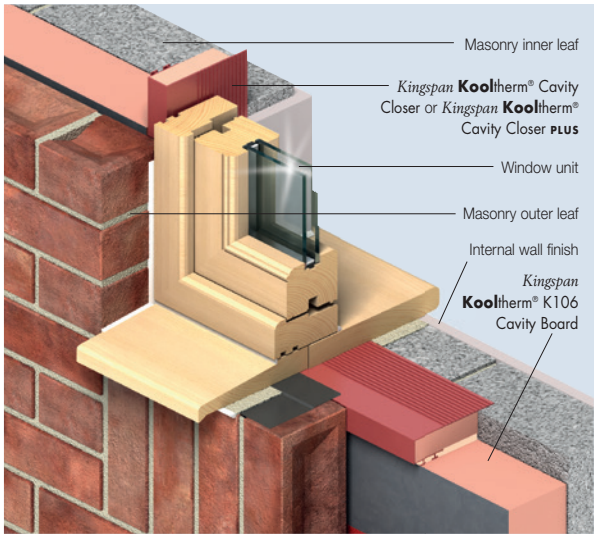


Figure 3 – *Kingspan* **Kool**therm® Cavity Closer in a Masonry Cavity Wall Construction with *Kingspan* **Kool**therm® K106 Cavity Board

Specification Clause

Kingspan Kooltherm® Cavity Closer should be described in specifications as:–

The insulated cavity closer shall be *Kingspan* **Kool**therm® Cavity Closer __*: comprising a one piece, rigid, J–section, u–PVC extrusion, with mortar fins for direct plaster / screed application, projecting fixing flange, and a premium performance fibre–free rigid thermoset phenolic insulation core. The insulation component of the product shall be manufactured with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP). The product shall be manufactured 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.

**Insert width of section.*

NBS Specifications

NBS users should refer to clause:
F30 180 (Standard and Intermediate)
F30 18 (Minor works)

Building Information Modelling (BIM)

Kingspan Insulation's BIM objects can be downloaded in Revit and in IFC formats. For more information please visit www.kingspaninsulation.co.uk/bim.

Linear Thermal Bridging

Basic Principles

Linear thermal bridging describes the heat loss / gain that occurs at junctions between elements e.g. where an external wall meets the ground floor, or at junctions around openings in the building fabric where the thermal insulation layer is discontinuous e.g. sills, jambs and lintels around the windows in a masonry cavity wall construction.

Interruptions within the insulation layer by materials with poorer insulating properties can result in a thermal bridge, which in turn can lead to problems of condensation and mould growth especially if there is a drop in surface temperature.

The heat flow at these junctions and opening locations, over and above that through the adjoining plane elements, is the linear thermal transmittance of the thermal bridge: measured in W/m·K; referred to as a 'psi-value'; and expressed as a 'ψ–value'.

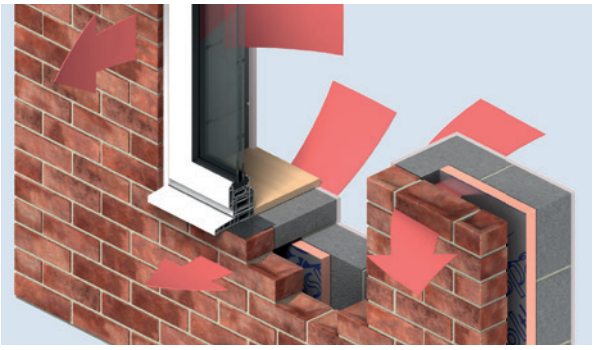


Figure 4 – Heat Loss Paths Around a Typical Window Opening in a Masonry Cavity Wall Construction

The lower the ψ–value, the better the performance. ψ–values are taken into account in the calculation methodologies e.g. the Standard Assessment Procedure (SAP), that are used to assess the operational CO_2 emissions and, where applicable, the fabric energy efficiency of buildings.

ψ–values can comprise either, or a combination of, approved, calculated or assumed values.

Reducing Linear Thermal Bridging

Detailing at junctions to minimise the effects of thermal bridging and the associated risk of condensation or mould growth is important and there are some simple design considerations that can be adopted to help mitigate the risks and to reduce heat losses.

At a window or door opening, the primary linear thermal bridge is the reveal. This can be reduced by insulating the reveal. The key factor is the thermal resistance (R–value) of the insulation layer. Reveals should be designed to accommodate 32.5 mm (min.) of *Kingspan* **Kool**therm® K118 Insulated Plasterboard.

Improved thermal performance can also be achieved by reducing the overlap between the external brickwork and the opening frame. Increasing the overlap between the frame and *Kingspan* **Kool**therm® Cavity Closer or *Kingspan* **Kool**therm® Cavity Closer **PLUS** maximises the benefits of using an insulated cavity closer by reducing the heat lost through the junction.

Design Considerations

Construction Details

Approved / Accredited Construction Details (ACDs)

A set of standardised construction details, known as 'Approved / Accredited Construction Details' (ACDs) provide one method to assist the construction industry in achieving the performance standards required to demonstrate compliance with the energy efficiency requirements of the Building Regulations / Standards. They facilitate the 'designing out' of thermal bridges, whilst enabling an 'approved ψ–value' to be assigned to each junction within the building at both design and as–built stages.

A number of ACDs have been published by the Department for Communities & Local Government (DCLG) and the Scottish Government (Riaghaltas na h– Alba). Whilst the more recent ACDs are comprehensive, in that there is a ψ–value specific to a particular construction type, the earlier ACDs are much more generic.

If the 2015 ACDs published by the Scottish Government are adopted in Scotland, a check reveal is required. The Scottish details include a requirement for the reveal to be insulated to achieve a thermal resistance no less than 0.82 m^2·K/W.

If the ACDs published by DCLG are adopted in England & Wales, a minimum thermal resistance path of 0.45 m^2·K/W through the cavity closer and a minimum overlap of 30 mm between the window frame and the cavity closer is required. *Kingspan* **Kool**therm® Cavity Closer will exceed the thermal resistance path of 0.45 m^2·K/W.

Numerically Modelled Details

Kingspan Insulation had a number of permutations of details incorporating *Kingspan* **Kool**therm® Cavity Closer modelled and a set of ψ–values calculated for them by BRE Scotland. These calculated ψ–values are considerably better than those approximated for the ACDs published by DCLG and will facilitate compliance with the energy efficiency requirements of the Building Regulations.

The permutations with the greatest door / window frame depths and greatest overlaps between the frame and *Kingspan* **Kool**therm® Cavity Closer, result in the lowest ψ–values.

Overlap (mm)	ψ–value (W/m·K)
30	0.270
50	0.018
75	0.012
100	0.007

Table 1 – Calculated ψ–values circulated for Jamb & Sill Details incorporating *Kingspan* **Kool**therm® Cavity Closer

To assist designers engaged in assessing the energy and emissions performance of buildings, the ψ–values shown in Table 1 can be used for both jamb and sill details, within the broad range of constructions shown in Figure 5, based upon the level of overlap that occurs between the window or door frame and the cavity.

For the full set of calculated ψ–values regarding the full range of frame depths and U–values, please visit www.kingspaninsulation.co.uk/psidetails.

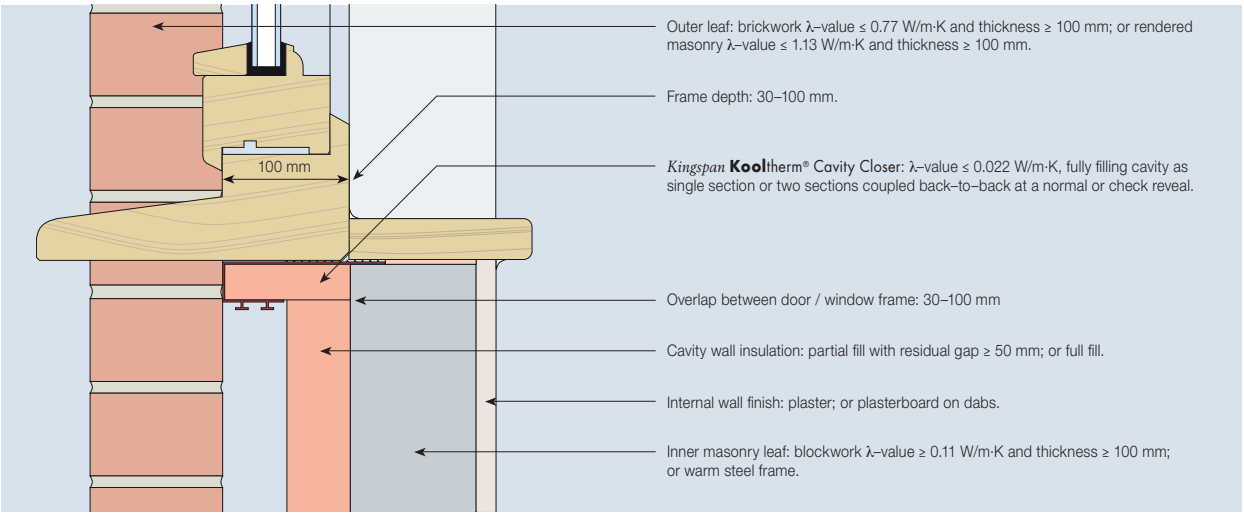


Figure 5 – Wall Construction Variations & Restrictions for which the ψ–values Calculated for Jamb & Sill Details Incorporating *Kingspan* **Kool**therm® Cavity Closer are Valid

Typical Details

A variety of constructions can be formed with the use of *Kingspan* **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS** to suit differing scenarios. The details shown in Figures 6–14 illustrate the design flexibility of *Kingspan* **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS**.

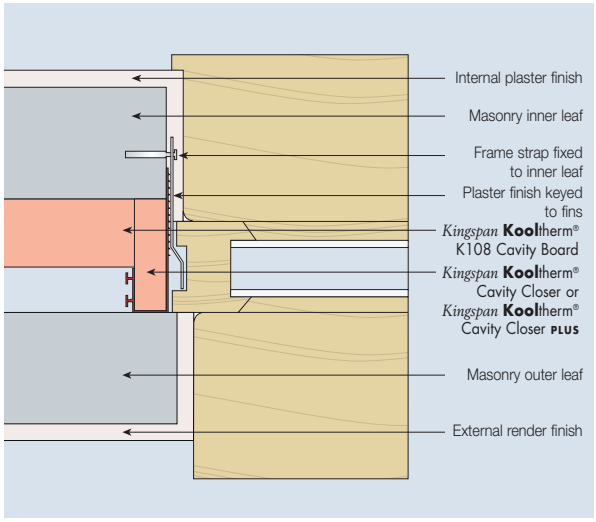


Figure 6 – Jamb Detail Incorporating *Kingspan* **Kool**therm® Cavity Closer at a Check Reveal

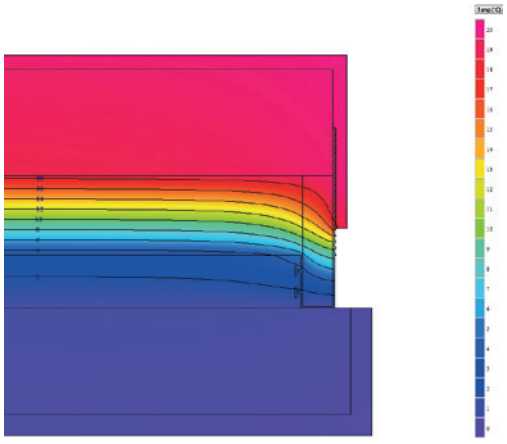


Figure 7 – Temperatures & Heat Flows from Numerical Modelling of Jamb Detail shown in Figure 6

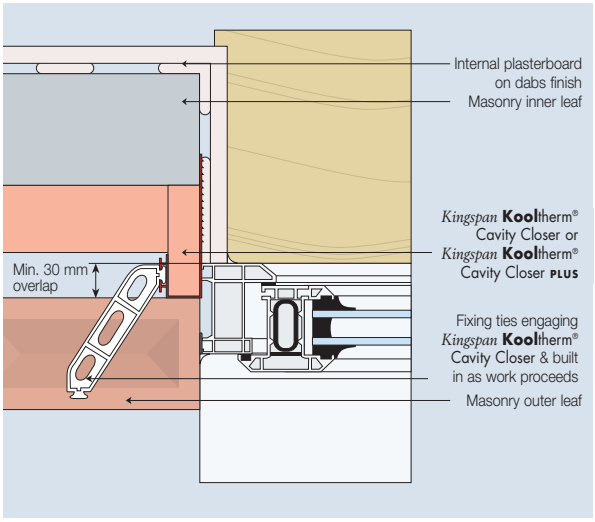


Figure 8 – Jamb Detail Incorporating *Kingspan* **Kool**therm® Cavity Closer at a Normal Reveal

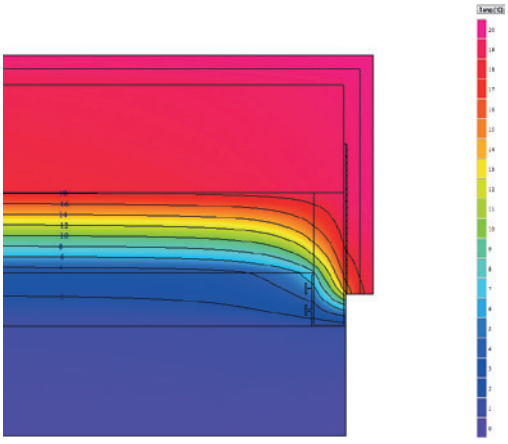


Figure 9 – Temperatures & Heat Flows from Numerical Modelling of Jamb Detail shown in Figure 8

Design Considerations

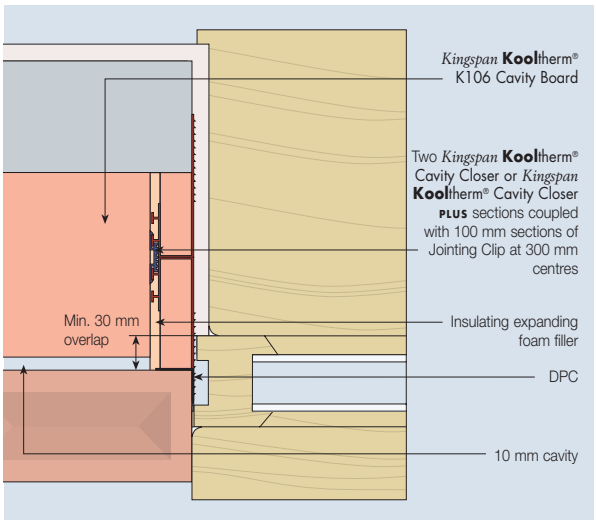


Figure 10 – Jamb Detail Incorporating Two *Kingspan* **Kool**therm® Cavity Closer Sections Coupled 'Back–to–Back' with a Jointing Clip

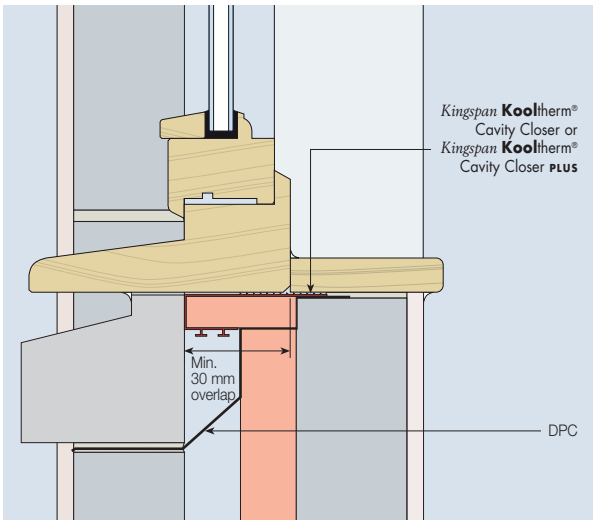


Figure 12 – Sill Detail Incorporating *Kingspan* **Kool**therm® Cavity Closer

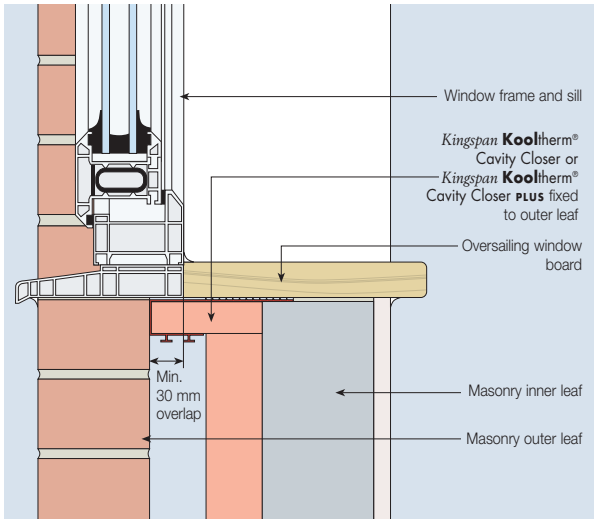


Figure 11 – Sill Detail Incorporating *Kingspan* **Kool**therm® Cavity Closer at a Normal Reveal

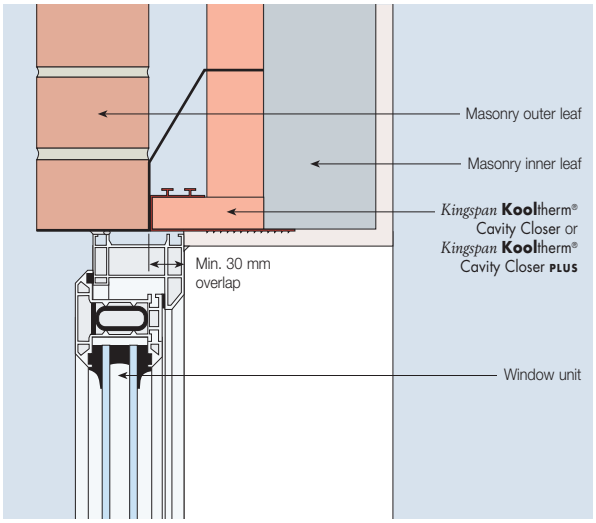


Figure 13 – Head Detail Incorporating *Kingspan* **Kool**therm® Cavity Closer

Sitework

Selecting a Section

- The width of cavity to be closed will decide the size of section, or combination of sections to be used.
- *Kingspan* **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS** should be fixed with their flange against the inner leaf as shown.

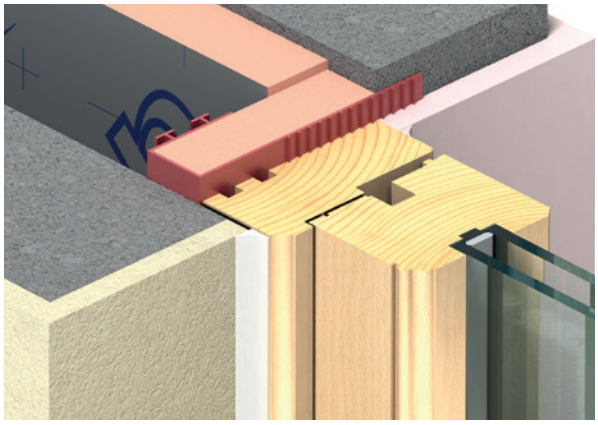


Figure 14 – *Kingspan* **Kool**therm® Cavity Closer at a Check Reveal

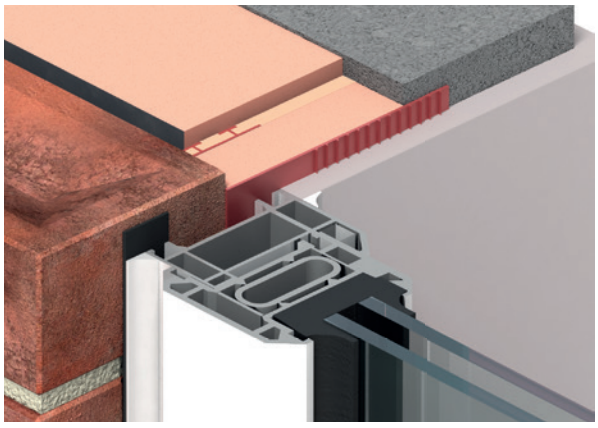


Figure 15 – *Kingspan* **Kool**therm® Cavity Closer at a Normal Reveal

Basic Installation Principles for New Walls

- *Kingspan* **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS** can be built–in as work proceeds.
- *Kingspan* **Kool**therm® Cavity Closer fixing ties slot into the cavity side of the profile and key into the mortar bed of the outer masonry skin.

  NB Fixing ties can not be used when two sections are joined back to back.

- The fixing flange should always overlap the masonry by 15 mm (min.), be tight to the masonry and securely fixed with a suitable masonry fixing to the masonry through the holes provided in the fixing flange.
- *Kingspan* **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS** should fit tightly into the cavity opening and no gaps should be left between the closer and either wall leaf.

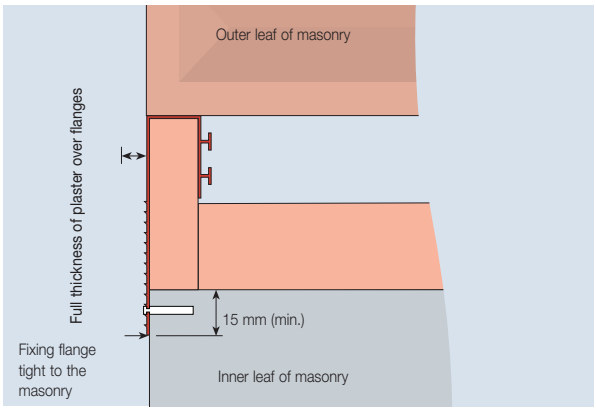


Figure 16 – Basic Installation Principles

- An appropriate lintel and damp proof course is incorporated at the head.
- Where an insulated lintel is used a head closer section will not be required and the jamb sections of closer will butt up against the lintel. If required, a *Kingspan* **Kool**therm® Cavity Closer section can be used at the head where a separate lintel is used for each leaf.

Installation Options

- There are two basic options for the installation of *Kingspan* **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS**:

  1 install sill, jambs and head closer sections individually as the wall is constructed; or

  2 install *Kingspan* **Kool**therm® Cavity Closer **PLUS** then construct the wall around the frame.

Sitework

Installation as Individual Sections

- For the sill, cut *Kingspan* **Kool**therm® Cavity Closer precisely to the frame width.
- For the jambs, the sections should overhang the bottom of the sill *Kingspan* **Kool**therm® Cavity Closer by 50 mm.
- Cut off the fixing flange as necessary to allow fitting of *Kingspan* **Kool**therm® Cavity Closer into the cavity below the frame. If used at the head of the frame, cut *Kingspan* **Kool**therm® Cavity Closer to extend 50 mm beyond each vertical jamb section.
- The *Kingspan* **Kool**therm® Cavity Closer sections are built in as the wall is constructed.

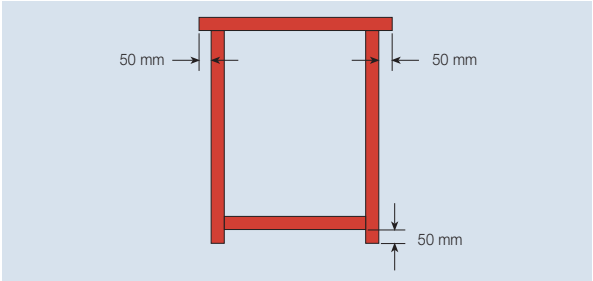


Figure 17 – *Kingspan* **Kool**therm® Cavity Closer Sill, Jamb & Head Sections

Installation of *Kingspan* **Kool**therm® Cavity Closer **PLUS**

- *Kingspan* **Kool**therm® Cavity Closer **PLUS** comprises sections of *Kingspan* **Kool**therm® Cavity Closer factory pre–formed into a frame and is designed specifically to reduce the labour and time involved in installing individual sections.
- When the wall reaches sill level the pre–formed frame is seated in the cavity and propped vertical.
- The wall is built around the jamb sections. *Kingspan* **Kool**therm® Cavity Closer fixing ties are clipped into the section and bedded into the mortar joints.
- When the wall has been completed and the mortar set, the timber bracing is removed and the closer sections are fixed to the masonry through the holes provided in the fixing flange.

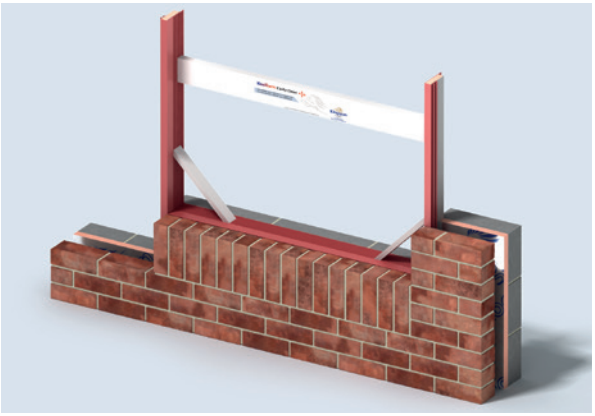


Figure 18 – *Kingspan* **Kool**therm® Cavity Closer **PLUS** Installed as the Wall is Built

Window Frame Fixing

- When fixing the window follow the frame fixing procedure:
  1. offer up frame;
  2. wedge frame in position;
  3. secure frame in position to masonry; and
  4. seal frame internally and externally, using compressible sealing tape where necessary.

Use in Window / Door Replacement and Refurbishment Procedure

- Cut out and clear away any masonry that closes the cavity.
- *Kingspan* **Kool**therm® Cavity Closer must be secured in position with wedges and fixings through the fixing flange to ensure no movement.
- Offer up the window / door frame, secure to the masonry and use standard flange clips to fix the frame to the *Kingspan* **Kool**therm® Cavity Closer section.

Use of Butt Joints

- *Kingspan* **Kool**therm® Cavity Closer sections can be butt jointed but should be limited to not more than one joint per frame side.
- To facilitate alignment, machine–cut ends should be butted in a preference to those cut on site.
- A joint strip will enable abutting sections to be connected and aligned when *Kingspan* **Kool**therm® Cavity Closer is built in on its own.
- The use of adhesive aluminium foil around a joint will prevent water tracking.

General

Cutting

- Cutting should be carried out using a fine toothed saw.

Finishing

- Plaster or floor screed is applied directly to *Kingspan* **Kool**therm® Cavity Closer or *Kingspan* **Kool**therm® Cavity Closer **PLUS** as the section provides an effective key.
- Where it is used in conjunction with a floor screed at a door threshold, the screed should be of sufficient thickness (65 mm minimum) or reinforced to prevent cracking.

Plastering

- Note that the first coat of plaster should be pricked up into the keys on the *Kingspan* **Kool**therm® Cavity Closer and then scored as a key for the next coat of plaster.

Dry–lining

- The dabs for dry lining readily key into the *Kingspan* **Kool**therm® Cavity Closer or *Kingspan* **Kool**therm® Cavity Closer **PLUS** section.

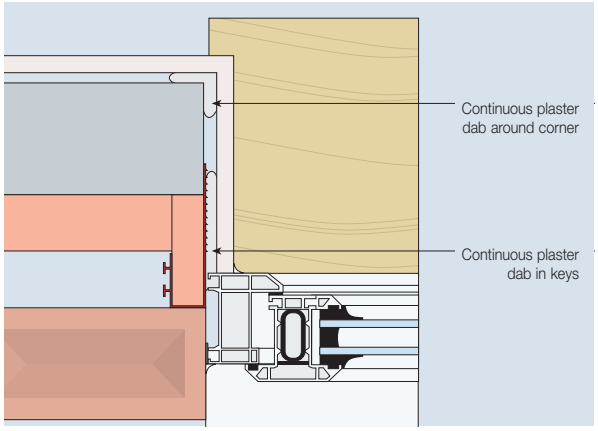


Figure 19 – *Kingspan* **Kool**therm® Cavity Closer with Continuous Plaster Dab in Fins

Fixing Oversailing Window Boards

- Window boards should be fixed in the conventional manner.
- Direct fixing to *Kingspan* **Kool**therm® Cavity Closer or *Kingspan* **Kool**therm® Cavity Closer **PLUS** is insufficient. Where an embedded tiled inner sill or threshold is required, the *Kingspan* **Kool**therm® Cavity Closer or *Kingspan* **Kool**therm® Cavity Closer **PLUS** profile provides a key for cement bedding.

Completion

- On completion, the frame is sealed to the surrounding masonry and internal plaster in accordance with normal practice.

Limitations of Use

- *Kingspan* **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS** are non–loadbearing and should not be used to support window or door frames, nor used in place of normal cavity wall ties.

Availability

- *Kingspan* **Kool**therm® Cavity Closer is available through specialist insulation distributors and selected builders' merchants throughout the UK.
- *Kingspan* **Kool**therm® Cavity Closer **PLUS** is made to order and delivered direct to site.

Packaging

- According to quantity, *Kingspan* **Kool**therm® Cavity Closer sections are supplied in polythene packs, which are recyclable.
- *Kingspan* **Kool**therm® Cavity Closer **PLUS** is supplied without packaging.

Storage

- Care must be taken when storing to prevent distortion of the sections and *Kingspan* **Kool**therm® Cavity Closer **PLUS** must be stored propped vertical.
- *Kingspan* **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS** should not be exposed to excessive heat.
- The packaging of *Kingspan* **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS** should not be considered adequate for outdoor protection.
- Ideally, sections should be stored inside a building. If, however, outdoor storage cannot be avoided, then the sections should be stacked clear of the ground and covered with a polythene sheet or weatherproof tarpaulin. Sections where the insulation core has 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.

Product Details

Product Description

Kingspan **Kool**therm® Cavity Closer is a cavity closer J–section comprising a uPVC extrusion with a premium performance fibre–free rigid thermoset phenolic insulation core manufactured with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).

Sections are manufactured in thirteen profile widths ranging from 50–150 mm and are available as standard in 2.4 m lengths. Jointing Clips extend the range further by enabling sections to be coupled back–to–back, in order to suit cavity widths of up to 300 mm.

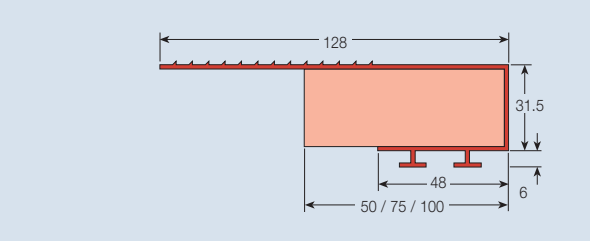
The casing incorporates tee projections along one plane length for the prevention of water tracking within the cavity, and fins along the widest plane length, which form an effective key for the direct application of plaster or screed.

Kingspan **Kool**therm® Cavity Closer **PLUS** is a pre–assembled frame, comprising *Kingspan* **Kool**therm® Cavity Closer sections, fabricated off site, to accurately match specified opening sizes. *Kingspan* **Kool**therm® Cavity Closer **PLUS** is available in the same profile widths as *Kingspan* **Kool**therm® Cavity Closer and is made to order.

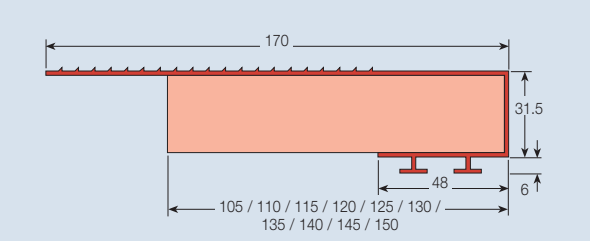
Kingspan **Kool**therm® Cavity Closer is available from specialist insulation diistributors and selected builders merchants throughout Great Britain. *Kingspan* **Kool**therm® Cavity Closer **PLUS** is available from specialist fabrication suppliers.

Standard Dimensions

Kingspan **Kool**therm® Cavity Closer 50, 75 & 100.



Kingspan **Kool**therm® Cavity Closer 105, 110, 115, 120, 125, 130, 135, 140, 145 & 150.



Standards & Approvals

Kingspan **Kool**therm® Cavity Closer 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 (Health and Safety Management Systems. Requirements) and ISO 50001: 2011 (Energy Management Systems. Requirements with guidance for use).

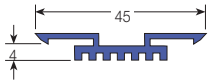
Accessories

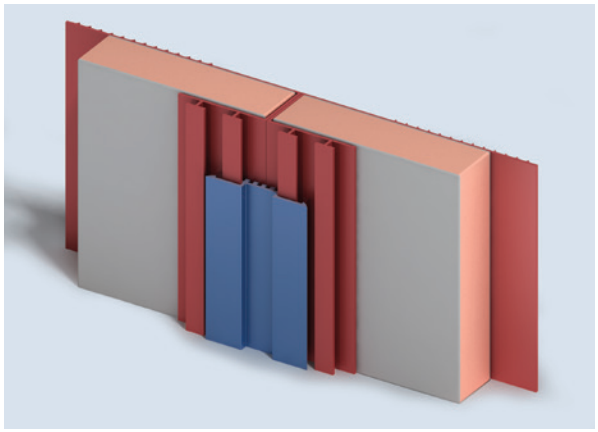
Kingspan **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS** are complemented by a full range of accessories to maximise the efficiency and scope for variable design options. Clip sections are supplied in 1 metre lengths and are colour coded.

Jointing Clip

This connects two *Kingspan* **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS** sections for use in cavities greater than 150 mm wide. The clip should be installed in 100 mm lengths at 300 mm centres.

Colour: blue

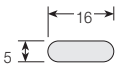


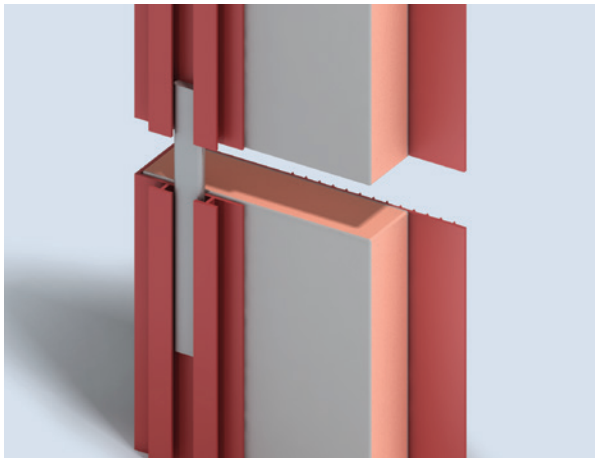


Jointing Strip

This connects two *Kingspan* **Kool**therm® Cavity Closer sections, aligning them in a butt joint. The strip allows for opening sizes in excess of 2.4 m, and for the reduction of wastage through the use of off–cuts. Limited to one butt joint per side of the opening.

Colour: grey

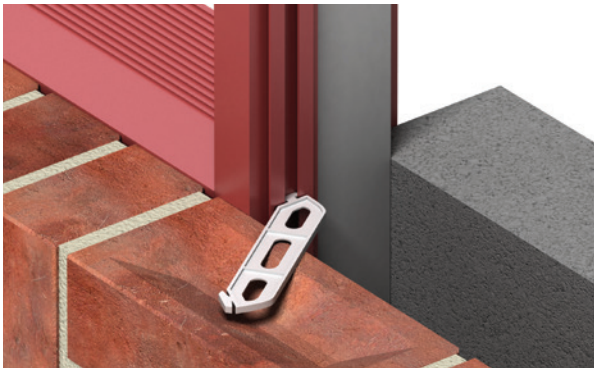




Optional Fixing Tie

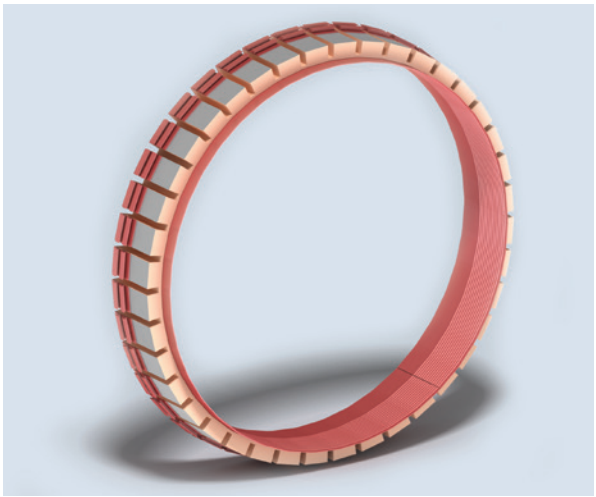
The tie is an optional / additional fixing and is particularly useful when using *Kingspan* **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS** to form openings. They can not be used when two sections are joined back to back. The tie is designed with different angled ends which slot securely between the tee flanges at the “back” of the *Kingspan* **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS** section and keys fully into the mortar bed joint of the outer masonry skin. They are moulded PVC–U supplied in packs of 150.

Colour: white



Curved Sections

Kingspan **Kool**therm® Cavity Closer can be factory formed to any specified radius for bullseye windows, curved heads, etc.



Product Details

Environmental Impact

An Ecoprofile, certified by BRE Certification to the 2008 BRE Environmental Profiles Methodology, has been created for the insulation strips, produced at Kingspan Insulation's Pembridge manufacturing facility and used in *Kingspan* **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS**. The BRE has assigned the insulation strips a 2008 Green Guide Summary Rating of A+.

Environmental Profiles Scheme
Certificate Number ENP 500

Responsible Sourcing

Kingspan **Kool**therm® Cavity Closer produced at Kingspan Insulation's Selby manufacturing facility is certified to BES 6001 (Framework Standard for the Responsible Sourcing of Construction Products) 'Excellent'.

BES 6001
Responsible Sourcing
www.greenbooklive.com

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 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 operations at its Pembridge, Herefordshire and Selby, North Yorkshire manufacturing facilities is available at www.kingspaninsulation.co.uk/sustainabilityandresponsibility.

Thermal Properties

Thermal Conductivity

The thermal conductivity (λ–value) of the fibre–free rigid thermoset insulation core of *Kingspan* **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS** is 0.021 W/m·K.

Durability

If correctly applied, *Kingspan* **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS** have an indefinite life. Their durability depends on the supporting structure and the conditions of its use.

Resistance to Solvents, Fungi & Rodents

Kingspan **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS** are 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 products are installed. Ensure that safe methods of cleaning are used, as recommended by suppliers of the spilt liquid.

Kingspan **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS** are not resistant to some solvent–based adhesive systems, particularly those containing methyl ethyl ketone, esters and aromatic hydrocarbons (e.g. toluene, xylene, benzene). Adhesives containing such solvents should not be used in association with these products. Damaged product or product that has been in contact with harsh solvents or acids should not be used.

The insulation core and u–PVC J–section extrusion used in the manufacture of *Kingspan* **Kool**therm® Cavity Closer and *Kingspan* **Kool**therm® Cavity Closer **PLUS** resist attack by mould and microbial growth and do not provide any food value to vermin.

Fire Performance

Kingspan **Kool**therm® Cavity Closer, when subjected to the British Standard fire test specified in Table 1, has achieved the result shown.

Test	Result
Fire resistance test utilising the general principles of BS 476 Part 20: 1987 (Fire tests on building materials and structures. Method for determination of the fire resistance of elements of construction (general principles).	A single section of 150 mm *Kingspan* **Kool**therm® Cavity Closer installed in a 150 mm wide cavity, with a uPVC window frame overlapping the cavity by 30 mm and with a 12.5 mm plasterboard finish on the reveal achieved 30 minutes integrity and insulation performance.

Table 2: Fire Test Data for *Kingspan* **Kool**therm® Cavity Closer.

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

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* **Kool**Duct® Pre–Insulated Ducting
- *Kingspan* **nilvent**® Breathable Membranes
- *Kingspan* **TEK**® Building System

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 commonly used insulation materials.
- Provides high levels of thermal efficiency with minimal thickness.
- Over 90% (by weight) recyclable.

Kingspan **Kool**therm® **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 0.022–0.028 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 **Styr**ozone® 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:

Tel: +44 (0) 1544 388 601
Fax: +44 (0) 1544 388 888
email: customerservice@kingspaninsulation.co.uk

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:

Tel: +44 (0) 1544 387 384
Fax: +44 (0) 1544 387 484
email: literature@kingspaninsulation.co.uk
www.kingspaninsulation.co.uk/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:

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

Technical Advice / Design

Kingspan Insulation supports all of its products with a comprehensive Technical Advisory Service. Calculations can be carried out to provide U–values, condensation / dew point risk, required insulation thicknesses etc…

U–value calculations can also be carried out on the Kingspan Insulation U–value Calculator, available for free online at www.uvalue-calculator.co.uk or downloaded as an App.

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.

BBA CERTIFICATE CS/1004-2
U Value Competency Scheme

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

Tel: +44 (0) 1544 387 382
Fax: +44 (0) 1544 387 482
email: technical@kingspaninsulation.co.uk

General Enquiries

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

Tel: +44 (0) 1544 388 601
Fax: +44 (0) 1544 388 888
email: info@kingspaninsulation.co.uk

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)

Kingspan®

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