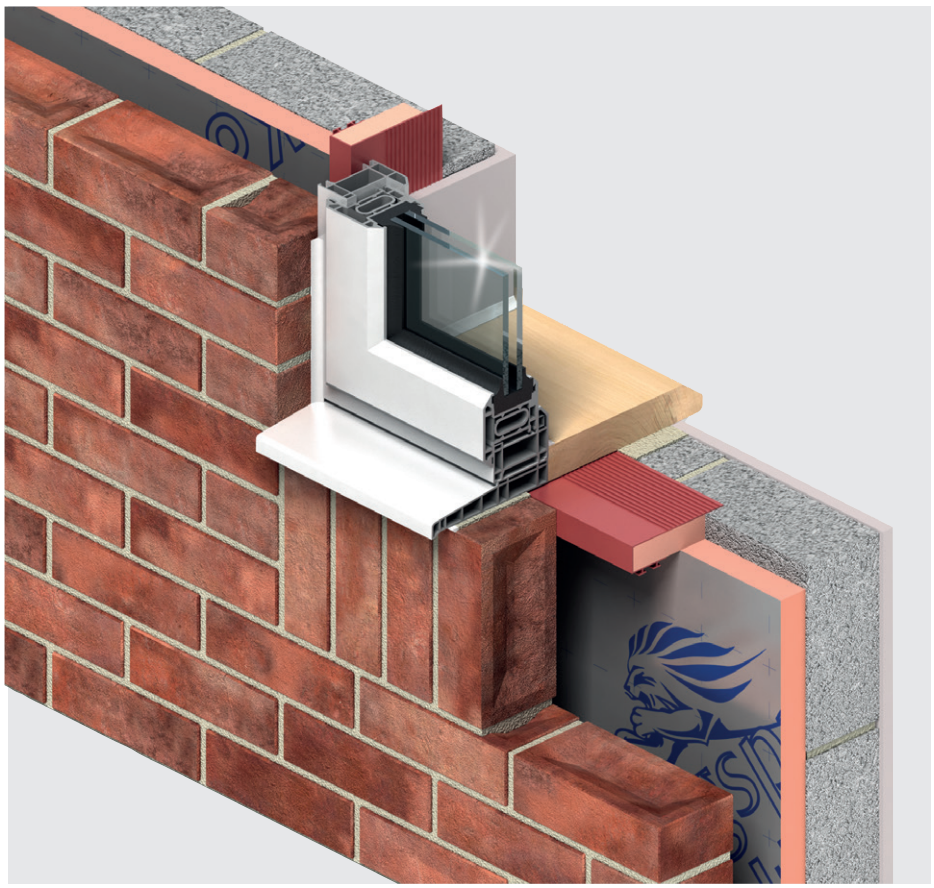
Sixth Issue | 06/2024

Kooltherm® Cavity Closer

Insulated cavity closers for closing cavities around masonry wall openings



- For use in England & Wales only
- 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

Fibre-free Core

Kingspan®

Design considerations

Introduction

Kingspan Kooltherm® Cavity Closer comprises a uPVC J-section with a premium performance fibre-free rigid thermoset phenolic insulation core.

Kingspan Kooltherm® Cavity Closer provides a simple and highly effective method for closing cavities around openings in masonry cavity wall constructions in England & Wales. For other construction types and constructions in Scotland, please contact the Kingspan Insulation Technical Service Department (see rear cover for details) for further advice.

Suitable for use in both new build and refurbishment, Kingspan Kooltherm® 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.

There are potential restrictions placed upon this product which vary dependant on building type, height, construction and location. For guidance regarding the routes to compliance for meeting the fire safety requirements of the Building Regulations / Standards, refer to the relevant links to Government websites at **www.kingspaninsulation.co.uk/fireregulations**.

Kingspan Kooltherm® Cavity Closer is a cavity closer. Current guidance to the Building Regulations should be considered with regard to the performance requirements for, and the provision of fire stops and cavity barriers.

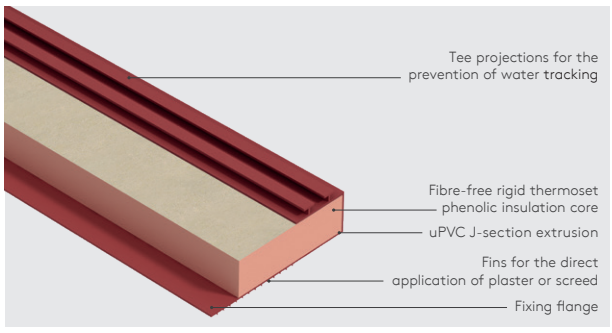


Figure 1: Kingspan Kooltherm® Cavity Closer

The proper use of Kingspan Kooltherm® 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 Kooltherm® 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.

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.

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 Kooltherm® Cavity Closer in masonry cavity wall constructions only.

Typical design detail

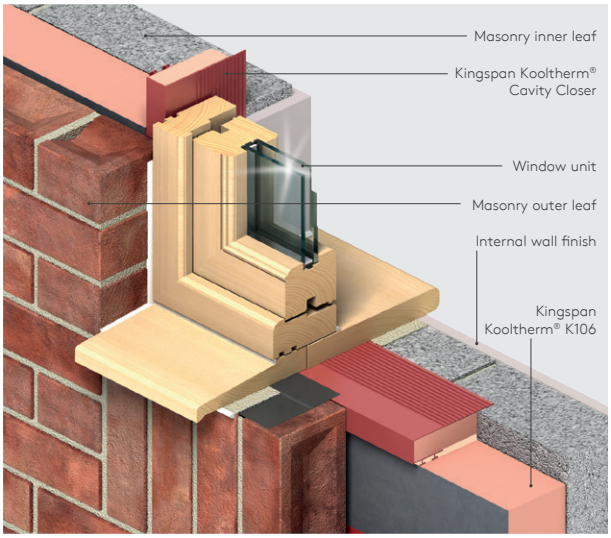


Figure 2: Kingspan Kooltherm® Cavity Closer in a masonry cavity wall construction with Kingspan Kooltherm® K106 Cavity Board

Design considerations

Specification clause

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

The insulated cavity closer shall be Kingspan Kooltherm® 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 product shall be manufactured under a management system certified to ISO 9001: 2015, ISO 14001: 2015; ISO 45001: 2018 and ISO 50001: 2018; by Kingspan Insulation Limited; and installed in accordance with the instructions issued by them.

*Insert width of section.

Product classifications

Uniclass UK

Pr_35_90_50_64 Plastics cavity closers

CAWS

F30/18 Cavity closers
F30/180 Cavity closers

Details also available at the **NBS Source**.

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/mK; referred to as a 'psi-value'; and expressed as a 'ψ-value'.

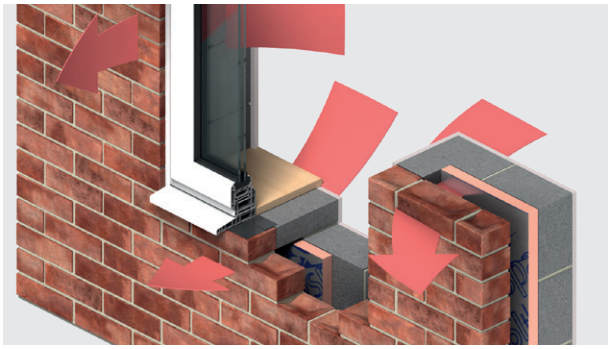


Figure 3: Heat loss paths around a typical window opening in a masonry cavity wall construction

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, primary energy or delivered energy rates.

ψ-values can comprise either, or a combination of, 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 37.5 mm (min.) of Kingspan Kooltherm® 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 Kooltherm® Cavity Closer maximises the benefits of using an insulated cavity closer by reducing the heat lost through the junction.

Design considerations

Construction details

A variety of constructions can be formed with the use of Kingspan Kooltherm® Cavity Closer to suit differing scenarios.

The details shown in Figures 4-9 illustrate the design flexibility of Kingspan Kooltherm® Cavity Closer.

For numerically modelled details, including indicative psi-values, of Kingspan Kooltherm® Cavity Closer installed with other Kingspan Insulation products, please visit **www.kingspaninsulation.co.uk/constructiondetails**.

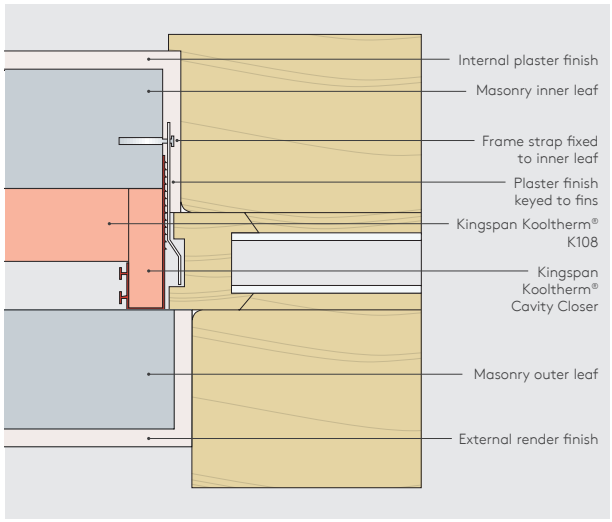


Figure 4: Jamb detail incorporating Kingspan Kooltherm® Cavity Closer at a check reveal

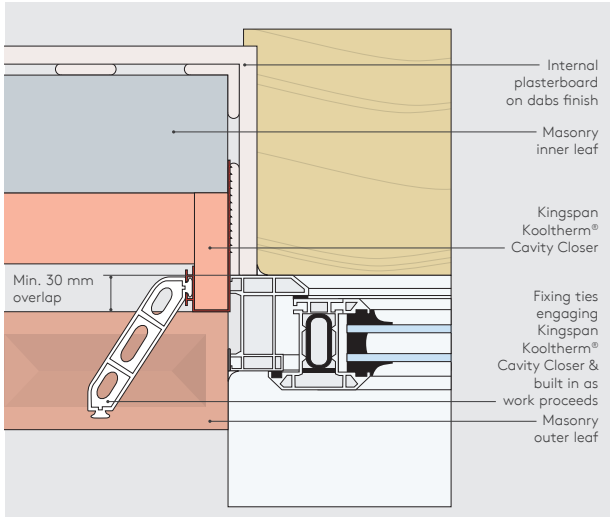


Figure 5: Jamb detail incorporating Kingspan Kooltherm® Cavity Closer at a normal reveal

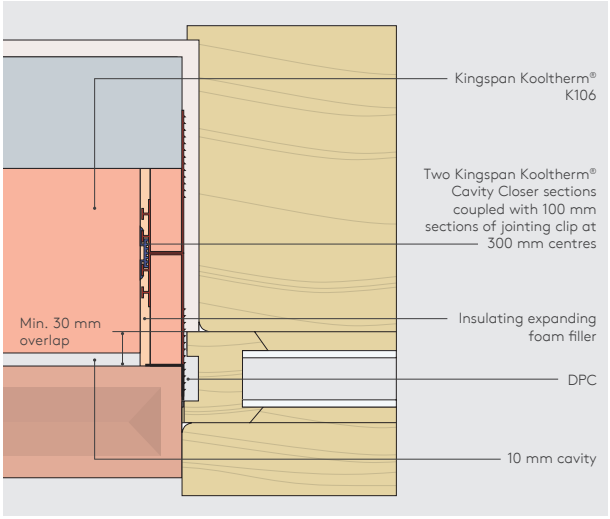


Figure 6: Jamb detail incorporating two Kingspan Kooltherm® Cavity Closer sections coupled 'back-to-back' with a jointing clip

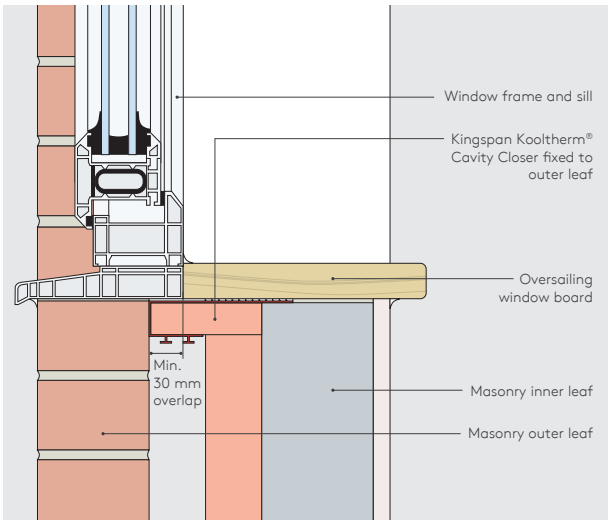


Figure 7: Sill detail incorporating Kingspan Kooltherm® Cavity Closer at a normal reveal

Design considerations

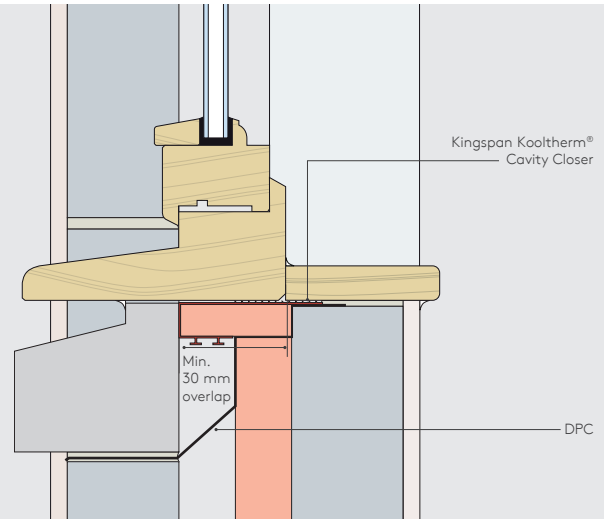


Figure 8: Sill detail incorporating Kingspan Kooltherm® Cavity Closer

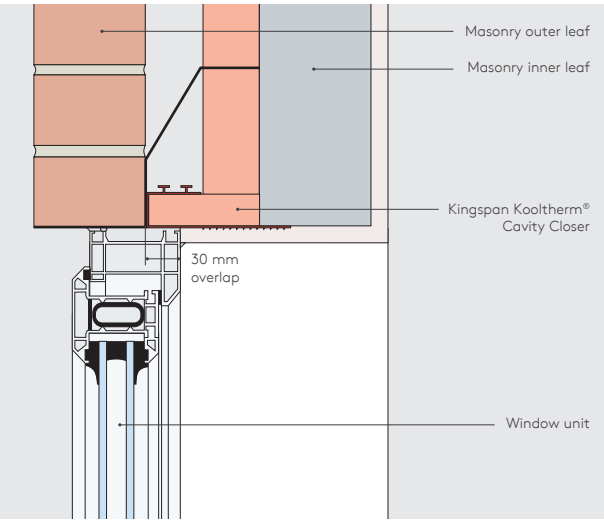


Figure 9: Head detail incorporating Kingspan Kooltherm® Cavity Closer

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 Kooltherm® Cavity Closer should be fixed with their flange against the inner leaf as shown.

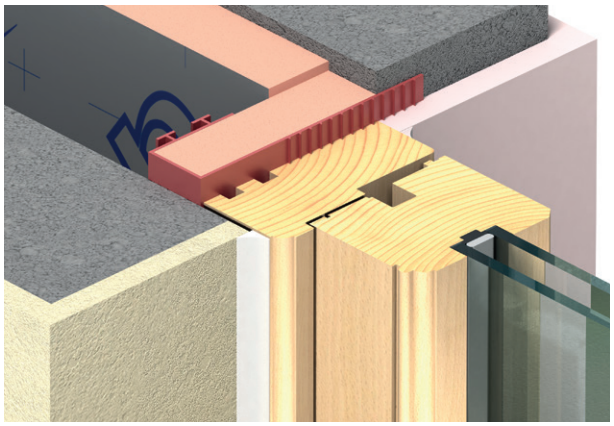


Figure 10: Kingspan Kooltherm® Cavity Closer at a check reveal

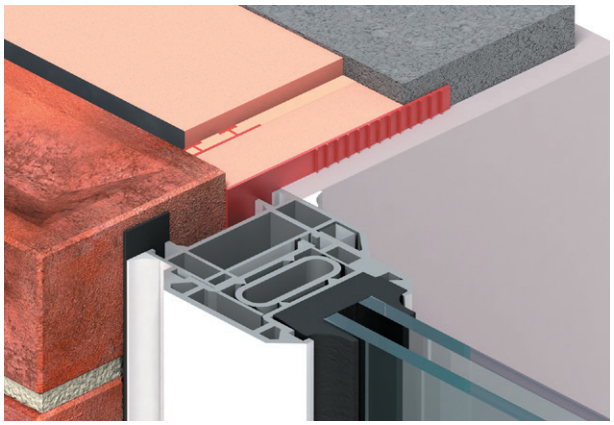


Figure 11: Kingspan Kooltherm® Cavity Closer at a normal reveal

Basic installation principles for new walls

- Kingspan Kooltherm® Cavity Closer can be built-in as work proceeds.
- Kingspan Kooltherm® 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 Kooltherm® Cavity Closer should fit tightly into the cavity opening and no gaps should be left between the closer and either wall leaf.

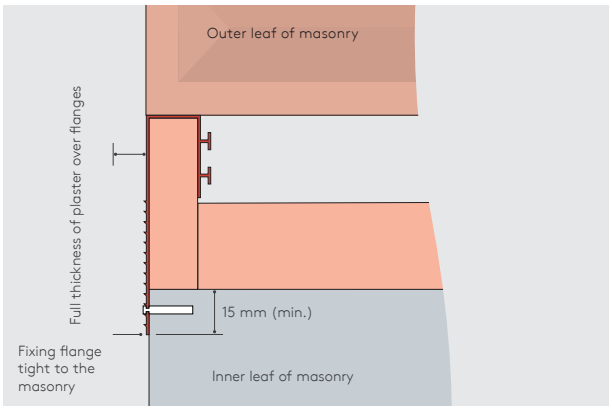


Figure 12: Basic installation principles

- 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 Kooltherm® Cavity Closer section can be used at the head where a separate lintel is used for each leaf.

Sitework

Installation as individual sections

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

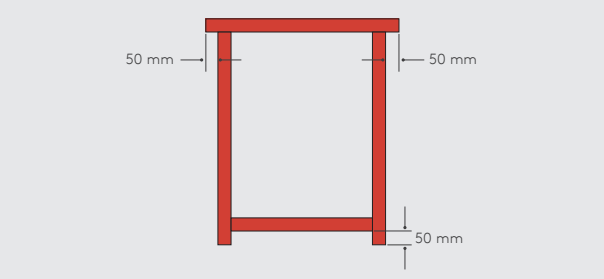


Figure 13: Kingspan Kooltherm® Cavity Closer sill, jamb & head sections

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
  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 Kooltherm® 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 Kooltherm® Cavity Closer section.

Use of butt joints

- Kingspan Kooltherm® 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 Kooltherm® Cavity Closer is built in on its own.
- The use of adhesive aluminium foil around a joint will prevent water tracking.

Sitework

General

Cutting

- Cutting should be carried out using a fine toothed saw in such a manner that cross-sectional cuts are square.

Finishing

- Plaster or floor screed is applied directly to Kingspan Kooltherm® Cavity Closer 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 Kooltherm® Cavity Closer and then scored as a key for the next coat of plaster.

Drylining

- The dabs for drylining readily key into the Kingspan Kooltherm® Cavity Closer.

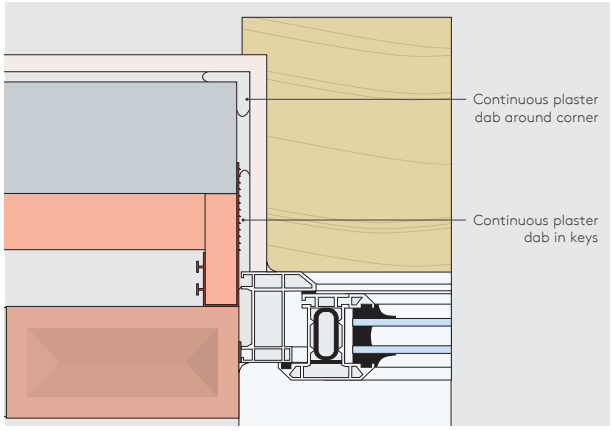


Figure 14: Kingspan Kooltherm® Cavity Closer with continuous plaster dab in fins

Fixing oversailing window boards

- Window boards should be fixed in the conventional manner.
- Direct fixing to Kingspan Kooltherm® Cavity Closer is insufficient. Where an embedded tiled inner sill or threshold is required, the Kingspan Kooltherm® Cavity Closer 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 Kooltherm® Cavity Closer is non-loadbearing and should not be used to support window or door frames, nor used in place of normal cavity wall ties.

Availability

- Kingspan Kooltherm® Cavity Closer is available through specialist insulation distributors and selected builders' merchants throughout the UK.

Packaging

- According to quantity, Kingspan Kooltherm® Cavity Closer sections are supplied in polythene packs, which are recyclable.

Storage

- Care must be taken when storing to prevent distortion of the sections.
- Kingspan Kooltherm® Cavity Closer should not be exposed to excessive heat.
- The packaging of Kingspan Kooltherm® Cavity Closer 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 Kooltherm® Cavity Closer is a cavity closer J-section comprising a uPVC extrusion with a premium performance fibre-free rigid thermoset phenolic insulation core.

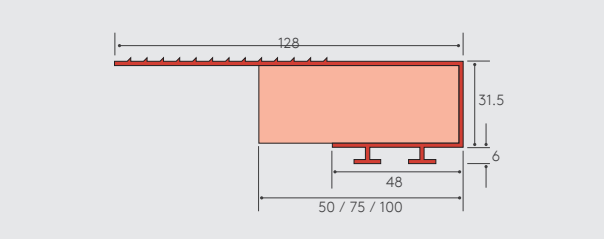
Sections are manufactured in thirteen profile widths ranging from 50-150 mm and are available as standard in 2.4 m lengths. Jointing Clips extend the range further by enabling sections to be coupled back-to-back, in order to suit cavity widths of up to 300 mm.

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.

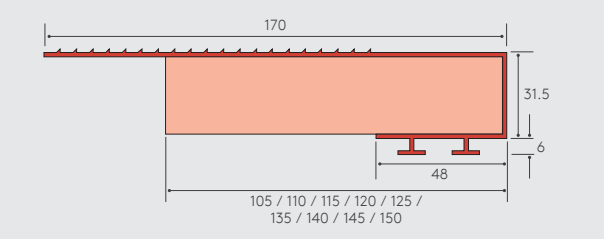
Kingspan Kooltherm® Cavity Closer is available from specialist insulation diistributors and selected builders merchants.

Standard dimensions

Kingspan Kooltherm® Cavity Closer 50, 75 & 100.



Kingspan Kooltherm® Cavity Closer 105, 110, 115, 120, 125, 135, 140, 145 & 150.



Standards & approvals

Kingspan Kooltherm® Cavity Closer is manufactured under a management system certified to ISO 9001: 2015 (Quality management systems), ISO 14001: 2015 (Environmental management systems), ISO 37301: 2021 (Compliance management systems), ISO 45001: 2018 (Occupational health and safety management systems) and ISO 50001: 2018 (Energy management systems).

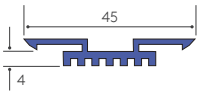
Accessories

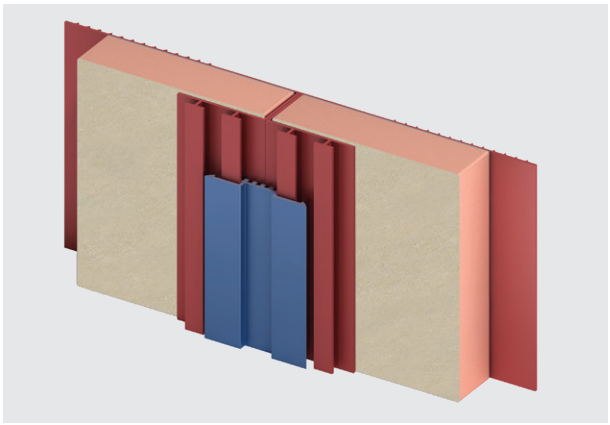
Kingspan Kooltherm® Cavity Closer is complemented by a full range of accessories to maximise the efficiency and scope for variable design options. Clip sections are supplied in 1 metre lengths and are colour coded.

Jointing clip

This connects two Kingspan Kooltherm® Cavity Closer 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



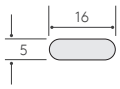


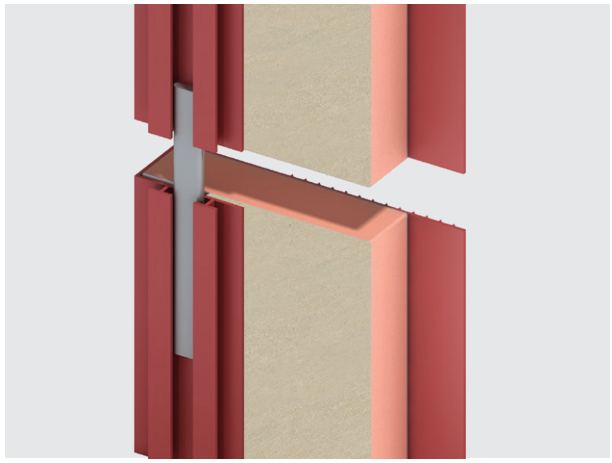
Product details

Jointing strip

This connects two Kingspan Kooltherm® 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





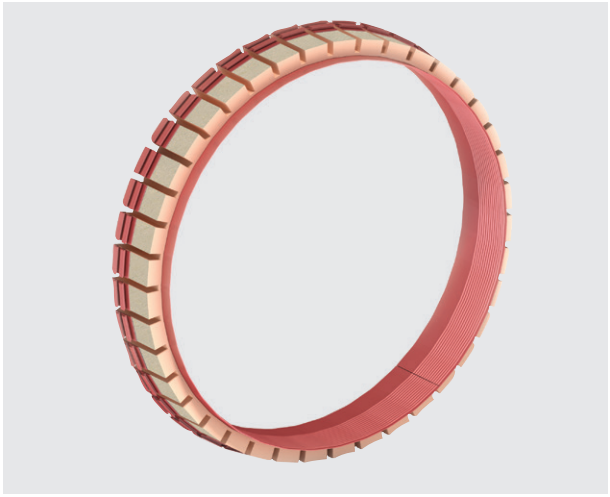
Optional fixing tie

The tie is an optional / additional fixing and is particularly useful when using Kingspan Kooltherm® Cavity Closer 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 Kooltherm® Cavity Closer 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 Kooltherm® Cavity Closer can be factory formed to any specified radius for bullseye windows, curved heads, etc.



Responsible sourcing

Kingspan Kooltherm® Cavity Closer produced at Kingspan Insulation's Selby, North Yorkshire manufacturing facility is manufactured under a management system certified to ISO 14001: 2015.

NB The above information is correct at the time of writing. Please confirm at the point of need by visiting the link to the **Kingspan Insulation website**, from which copies of Kingspan Insulation's certificates can be downloaded.

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 upon request from **literature@kingspaninsulation.co.uk**.

Product details

Thermal properties

Thermal conductivity

The thermal conductivity (λ-value) of the fibre-free rigid thermoset insulation core of Kingspan Kooltherm® Cavity Closer is 0.022 W/mK.

Durability

If correctly applied, Kingspan Kooltherm® Cavity Closer has an indefinite life. Its durability depends on the supporting structure and the conditions of its use.

Resistance to solvents, fungi & rodents

Kingspan Kooltherm® Cavity Closer 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 products are installed. Ensure that safe methods of cleaning are used, as recommended by suppliers of the spilt liquid.

Kingspan Kooltherm® Cavity Closer is 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 Kooltherm® Cavity Closer resist attack by mould and microbial growth and do not provide any food value to vermin.

Fire performance

There are potential restrictions placed upon this product which vary dependant on building type, height, construction and location. For guidance regarding the routes to compliance for meeting the fire safety requirements of the Building Regulations / Standards, refer to the relevant links to Government websites at **www.kingspaninsulation.co.uk/fireregulations**.

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

Contact details

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For individual department contact details please visit
www.kingspaninsulation.co.uk/contact

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Kingspan®