

Insulation

Great Britain & Ireland

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AlphaCore® Pad

Premium performance insulation
for structural ceilings (soffits)



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Introduction

- Premium performance microporous silica-based insulation – thermal conductivity of 0.020 W/mK
- A2-s1,d0 Euroclass
- Ideal for new build and refurbishment



Useful links

Website

[Kingspan AlphaCore® Pad webpage](#)

Handling advice

[Kingspan AlphaCore® Pad handling advice \(PDF\)](#)

[Kingspan AlphaCore® Pad handling advice \(video\)](#)

Certification

[Kingspan AlphaCore® Pad European Technical Assessment](#)

[Kingspan AlphaCore® Pad Certificate of Constancy of Performance](#)

Declaration of Performance (DoP)

[Kingspan AlphaCore® Pad Declaration of Performance \(CPR\)](#)

Safety information

[Kingspan AlphaCore® Pad product safety information](#)

Product details

The product

Kingspan AlphaCore® Pad consists of a water-repellent, microporous silica-based core, which is sewn into glass fibre fabric.

Standards & approvals

Kingspan AlphaCore® Pad 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).

The use of the Kingspan AlphaCore® Pad is covered by ETA Certificate No. ETA-22/0736.

Standard dimensions

Kingspan AlphaCore® Pad is available in the following standard size(s):

Nominal dimension		Availability
Length	(mm)	1000
Width	(mm)	600
Insulant thickness	(mm)	20 – 50 mm

Compressive strength

The average compressive strength of Kingspan AlphaCore® Pad exceeds 75 kPa at 10% compression when tested to EN 826: 2013 (Thermal insulating products for building applications. Determination of compression behaviour).

Water absorption

Kingspan AlphaCore® Pad achieves a water absorption (long term partial immersion) of $W_{lp} \leq 0.95 \text{ kg/m}^2$ when tested to EN 12087: 2013 (Thermal insulating products for building applications. Determination of long term water absorption by immersion).

Thermal properties

The λ -values and R-values detailed below are quoted in accordance with BS EN 12667: 2001 (Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods Products of high and medium thermal resistance).

Thermal conductivity

Kingspan AlphaCore® Pad achieves a thermal conductivity (λ -value) of 0.020 W/mK.

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 ($\text{m}^2\text{K/W}$).

Insulant thickness (mm)	Thermal resistance ($\text{m}^2\text{K/W}$)
20	1.00
25	1.25
30	1.50
40	2.00
50	2.50

NB Kingspan Insulation's maximum available single insulation thickness is subject to alteration without notice. Refer to local distributor or Kingspan Insulation price list for current stock and non-stock sizes.

Fire performance

Kingspan AlphaCore® Pad achieves European Classification (Euroclass) A2-s1,d0 when classified to EN 13501-1: 2018 (Fire classification of construction products and building elements - Classification using data from reaction to fire tests).

Kingspan AlphaCore® Pad is assessed under Assessment and Verification of Constancy of Performance (AVCP) System 1 for Reaction to Fire.

Certificate of Constancy of Performance

0800-CPR-23-1570-4

Further fire test data for Kingspan AlphaCore® Pad may be obtained by contacting the Kingspan Insulation Technical Service Department at technical@kingspaninsulation.co.uk (for GB) or technical@kingspaninsulation.ie (for Ireland).

NB Using more than the recommended maximum length per m^2 of Compego Tape could invalidate the fire performance of Kingspan AlphaCore® Pad (please refer to 'Taping' section on page 7).

Typical constructions

Assumptions

The U-values for Figure 1 have been calculated using the method detailed in BS EN ISO 6946: 2017 (Building components and building elements. Thermal resistance and thermal transmittance. Calculation methods), and using the conventions set out in BR 443 (Conventions for U-value calculations). They are valid for the construction shown in Figure 1.

These examples are based on the use of Kingspan AlphaCore® Pad mechanically fixed directly to the soffit of a 200 mm concrete deck using metal fixings, with a cross sectional area of 25.97 mm, a thermal conductivity of 50 W/mK and 3.82 fixings per m² across the 6 mm soffit lining board.

NB When calculating U-values to BS EN ISO 6946: 2017, the type of fixing used may change the thickness of insulation required. Please contact the Kingspan Insulation Technical Service Department (see rear cover for details) for a comprehensive U-value calculation, which will take account of the correction factor specific to the fixing.

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 that 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

Further information on the applicable notional and area weighted average limiting U-values is available in the relevant geographical documentation:

- Approved Documents L to the Building Regulations for England
- Approved Documents L to the Building Regulations for Wales
- Technical Handbooks Section 6 to the Building Standards for Scotland
- Technical Guidance Document L (Dwellings) and Technical Guidance Document L (Buildings other than Dwellings) to the Building Regulations for the Republic of Ireland
- Technical Booklets F1 & F2 to the Building Regulations for Northern Ireland.

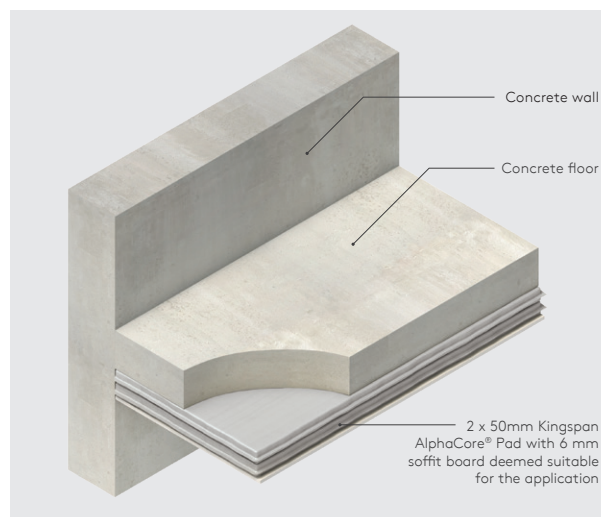


Figure 1

Product thickness* (mm)	U-values (W/m ² K)
50 + 40	0.24
50 + 50	0.22
40 + 40 + 30	0.20
40 + 40 + 40	0.19
50 + 40 + 40	0.17
50 + 50 + 40	0.16
50 + 50 + 50	0.15

NB Calculations assume Kingspan AlphaCore® Pad is mechanically fixed with a metal screw fixing.

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

Design considerations

Heat loss and linear thermal bridging

Basic principles

Linear thermal bridging describes the additional heat losses or gains that occur at junctions between elements e.g. where a cavity wall meets the ground or intermediate floor, or at junctions around openings in the building fabric where the thermal insulation layer is discontinuous e.g. sills, jambs and lintels.

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 internal surface 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. This heat flow is measured in W/mK and is referred to as a 'psi-value'. It is expressed as a ' ψ -value'.

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 CO₂ 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 and assumed values.

Approved details, such as the Acceptable Construction Details (Republic of Ireland), can uplift performance to provide a clear starting point towards achieving compliance, but can be limited in scope and applicability. The greatest opportunity for mitigating the impact of linear thermal bridges can come from following accurately 'modelled' details that take into account the following design considerations.

Reducing linear thermal bridging

For soffit constructions, supporting beams and columns interrupting the insulation layer can represent significant thermal bridges, which can adversely affect the thermal performance of the floor if not suitably handled.

Thermally, the best approach is to fully box around beams with appropriate insulation to limit these losses. For further advice on reducing linear and point thermal bridging, please contact Kingspan Insulation's Technical Service Department (see rear cover for details).

Responsible sourcing

Kingspan AlphaCore® Pad produced at Kingspan Insulation's Pembridge, Herefordshire manufacturing facility is manufactured under a management system certified to ISO 14001: 2015 (Environmental management systems).

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

Sustainability & responsibility

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

A report covering the sustainability and responsibility of Kingspan Insulation Ltd's British operations at its Pembridge, Herefordshire and Selby, North Yorkshire manufacturing facilities is available upon request from literature@kingspaninsulation.co.uk.



For further information on thermal bridging, click here to take a look at our website.

Design considerations

Specification clause

Kingspan AlphaCore® Pad should be described in specifications as:-

The soffit insulation shall be Kingspan AlphaCore® Pad _____ mm thick: comprising a water-repellent, microporous silica-based core sewn into glass fibre fabric. The product shall have a thermal conductivity of 0.020 W/mK. The product shall be manufactured under a management system certified to ISO 9001: 2015, ISO 14001: 2015, ISO 37301: 2021, ISO 45001: 2018 and ISO 50001: 2018; by Kingspan Insulation Limited; and installed in accordance with the instructions issued by them.

Product classifications

Uniclass UK

Pr_25_71_70_78 Silica-based insulation boards

CAWS

P10/185 Soffit insulation

H92_775 Thermal insulation

H92_776 Thermal insulation

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

Fire safety

For guidance regarding the routes to compliance for meeting the fire safety requirements of the Building Regulations / Standards, refer to **www.kingspaninsulation.co.uk/fireregulations** (for GB) or contact technical services at **technical@kingspaninsulation.ie** (for Ireland).

Fire stop & cavity barrier strategy

Current guidance to the Building Regulations / Standards should be considered with regard to the performance requirements for, and the provision of fire stops and cavity barriers.

Water vapour control / condensation

Consideration should be given to the risk of condensation, when designing thermal elements.

A condensation risk analysis should be carried out following the procedures set out in BS 5250: 2021 (Management of moisture in buildings. Code of practice). The Kingspan Insulation Technical Service Department can provide this service.

Sitework

Fixing directly to concrete soffits

- Insulation boards should be installed break-bonded, with joints lightly butted.
- The number of mechanical fixings required to fix Kingspan AlphaCore® Pad will vary with the geographical location of the building, the local topography, the height and width of the soffit concerned, and the soffit construction.
- Kingspan AlphaCore® Pad layer(s) can be installed with a minimum of 2 temporary fixings to hold in place.
- A minimum of 11 mechanical fixings, with a minimum head diameter of 25 mm, are required for the final lining board layer, i.e. 6 mm calcium silicate board, to secure the insulation boards to the soffit (please refer to opposite fixing diagram for recommended fixing pattern).
- Where the insulation boards may be subject to external wind pressure, the requirement for additional fixings should be assessed in accordance with BS EN 1991-1-4: 2005 + A1: 2010 (Eurocode 1. Actions on Structures - General Actions - Wind Actions) / I.S. EN 1991-1-4: 2005 (Eurocode 1: Actions on structures - Part 1-4: General actions - Wind actions).
- The fixings should be evenly distributed over the whole area of the board, and must offer a minimum 40 mm penetration into a solid substrate.
- Fixings at board edges must be located > 50 mm and < 150 mm from edges and corners of the board and not overlap board joints.

Refer to:

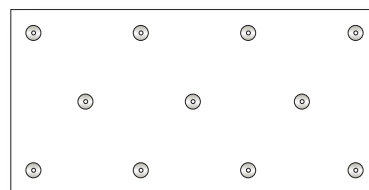
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www.ejot.co.uk

Fixfast +44 (0) 1732 882 387
www.fixfast.com

SFS Intec +44 (0) 3300 555 888
www.uk.sfs.com

Recommended fixing patterns

- The image below shows the recommended fixing pattern, the number of fixings used and the resulting fixing density (number of fixings per m²).
- The lining board fixing pattern shown is suitable for continuous flat (even) decks only. For non-continuous decks please contact the Kingspan Insulation Technical Service Department (see rear cover) for further guidance.



11 No. per board
(2.4 x 1.2 m board - 3.82 fixings / m²)

- Where multiple layers of Kingspan AlphaCore® Pad are required, the layers should be fixed at staggered joints where possible.

Sitework

General

Cutting

- It is recommended that a separate work station is set up away from the wall structure to allow for accurate cutting and taping of the insulation boards.
- Kingspan AlphaCore® Pad can be cut to the desired dimensions using ordinary box cutters for insulating materials. It is recommended to use blades with small or no serrations to prevent dust formation.
- When cutting, make sure the board is on a non-slip, cut-resistant underlayment. Use a suitable guide in order to make a straight cut.
- Ensure accurate trimming to achieve close butting joints and continuity of insulation.
- Always cut and tape as you go (see 'Taping' section below).
- Never cut more than two edges of any one board.

Taping

- Maximum two edges of a single board should be cut and taped.
- Cut edges can easily be taped using a suitable self adhesive breathable tape. The recommended tape to be used with Kingspan AlphaCore® Pad is Pro Clima's 'Compego' tape. Please contact sales@kingspaninsulation.co.uk or sales@kingspaninsulation.ie to place an order.
- A maximum 4.2 m length of tape should be used per 1 m² of any cut board. Please be aware that using more than the recommended maximum length per m² could invalidate the fire performance of Kingspan AlphaCore® Pad.
- Make sure that tape is applied in a smooth and wrinkle-free manner, and along with the fabric, overlaps sufficiently (at least 20 mm per side).
- Avoid continuous runs of tape when installing cut boards alongside each other.
- It is recommended to use mineral wool around any gaps in sections which have been cut for pipes, windows etc., or small sections where board cannot be fitted.

NB Please contact the Kingspan Insulation Technical Service Department (see rear cover) for further information and design service.

Handling & storage

- Carry boards upright by two edges.
- Care should be taken when handling the product.
- Keep boards in their protective box until needed.
- 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.

NB Please visit the **Kingspan Insulation website** to download the Handling Advice and further guidance on cutting, taping, handling and storage.

Daily working practice

- Protect boards from inclement weather at the completion of each day's work, or whenever work is interrupted for extended periods of time.

Availability

- Kingspan AlphaCore® Pad is available through specialist insulation distributors and selected builders' merchants throughout Great Britain and Ireland.

Health & safety

- A Safety Information Data Sheet for this product is available from the Kingspan Insulation website: www.kingspaninsulation.co.uk/safety or www.kingspaninsulation.ie/safety.
- Kingspan Insulation advises installers to use personal protective equipment. Please refer to the Safety Information Data Sheet for further details.

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

Product awareness training and guidance

- Build your team's knowledge with on-site visits, training and support from one of our experienced Product Technicians.
- Presentations include product overview, suitable applications, handling advice, sitework and detailing advice.

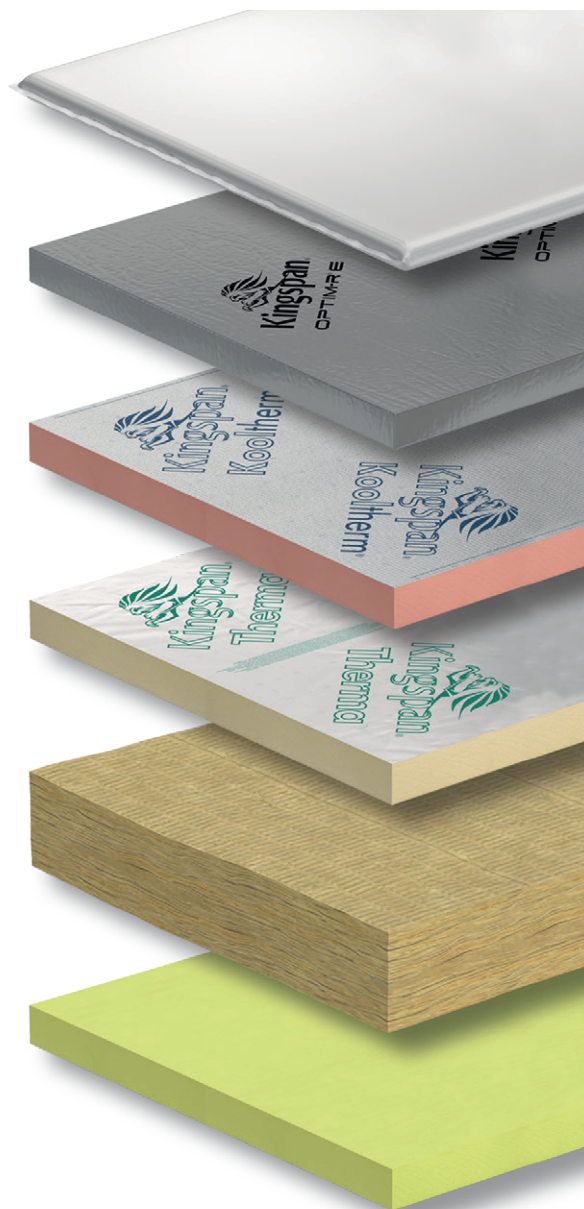
Contact technicaladvice@kingspaninsulation.co.uk, or technical@kingspaninsulation.ie for more information.

About Kingspan Insulation

Products & solutions

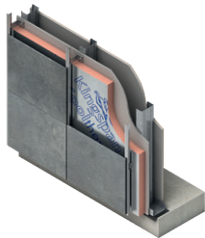
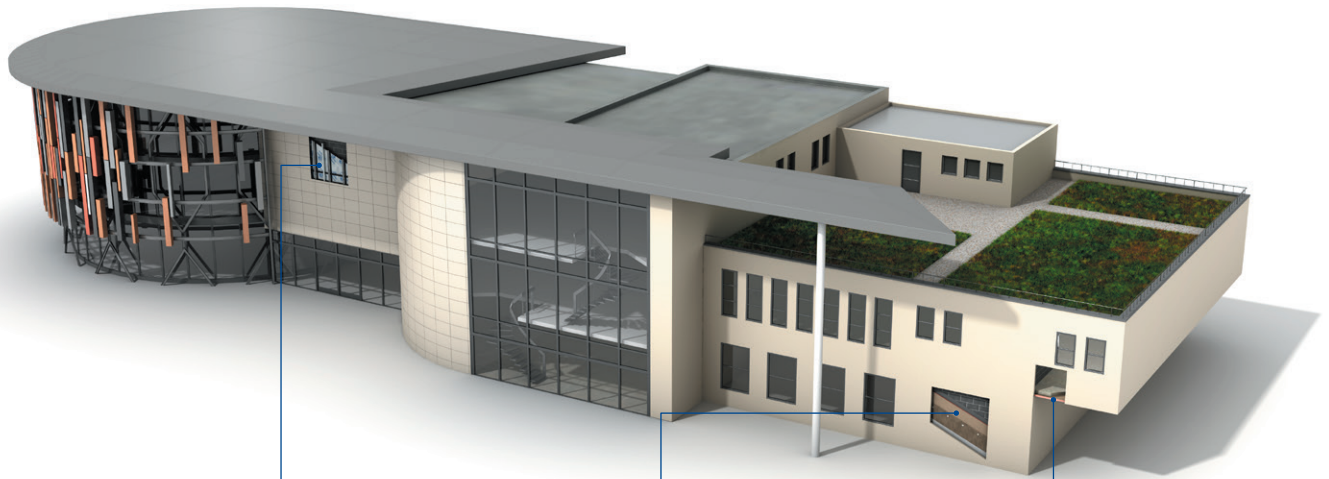
Rigid insulation products for building fabric applications, including roofs, walls and floors.

- Kingspan AlphaCore® – microporous silica-based insulation.
- Kingspan OPTIM-R® – vacuum insulation panel (VIP) systems.
- Kingspan Kooltherm® – phenolic insulation.
- Kingspan Therma™ – PIR insulation.
- K-Roc® – rock mineral fibre insulation.
- Kingspan GreenGuard® – extruded polystyrene insulation (XPS).
- Kingspan TEK® – structural insulated panels (SIPs).
- Cavity closers – PVC-U extrusions with an insulation core.
- Membranes – for pitched roofs and walls.

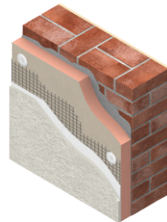


About Kingspan Insulation

Solutions available for roofs, walls and floors of commercial buildings, from schools to retail.



Insulation for use behind rainscreen or masonry façade systems



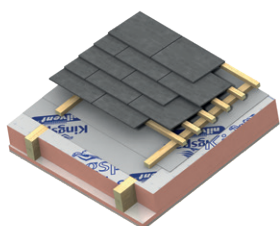
External insulation for masonry walls



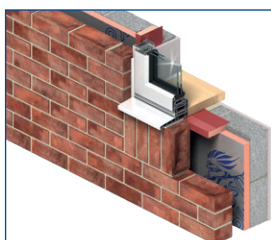
Insulation for structural ceilings (soffits)

About Kingspan Insulation

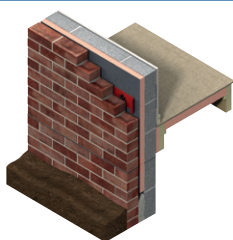
From new housing developments to refurbishing your home, we offer a number of different solutions for roof, wall and floor applications.



Insulation for tiled or slated pitched warm roof spaces



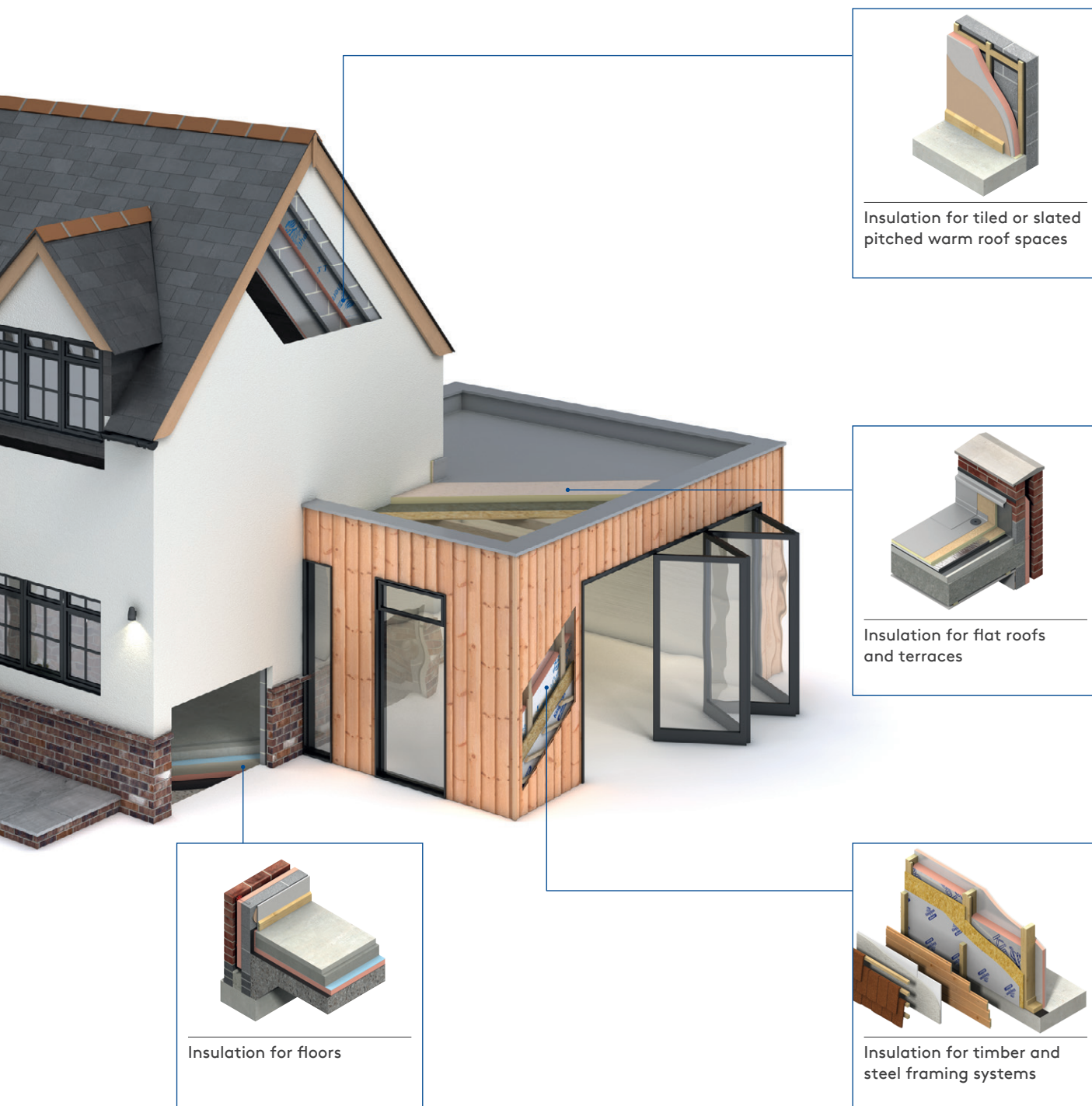
Insulated extrusions for closing wall cavities at openings



Full and partial fill cavity wall insulation



About Kingspan Insulation



About 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 leading manufacturer of rigid insulation products and insulated systems for building fabric and building services applications.

Our GB head office is located in Pembridge, in the heart of rural Herefordshire. Our northern hub is near Selby in North Yorkshire. We also have a site in Castleblayney, Ireland. All three sites are accredited to the independent compliance standard ISO 37301: 2021.



Services

Our support services provide fast and accurate advice no matter what your role is. Visit our website to access the following services.

- U-value calculations – free, quick and easy U-value calculations with our U-value Calculator.
- Help and advice on your projects, including stockists, how to guides, regulatory guidance and e-learning.
- Dedicated Specification and Sales teams to support projects.
- Building Information Modelling (BIM) – download BIM objects for our products.
- Tapered roofing service – Kingspan Insulation's tapered roofing systems come with a supporting design service to ensure the most cost-effective solution for a roof is identified.



- CPDs – Kingspan Insulation offers a number of free CPD seminars for architects and specifiers covering a wide range of industry topics. CPDs can be booked or a range of courses can be found online.
- Product awareness training – build your team's knowledge with on-site training and support with one of our experienced product technicians who cover the full range of Kingspan products and applications, from flooring to roofing and everything in-between with both internal and external wall insulations.





Planet Passionate is our group wide global sustainability programme.

Our Planet Passionate programme aims to have a positive impact on three big global challenges: climate change, circularity and protection of our natural world.



Scan for our latest progress report to learn more about our targets, partnerships and global commitments.



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Visit our free online U-value calculator.
Offering free, quick and easy calculations
for wall, floor and roof constructions.

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