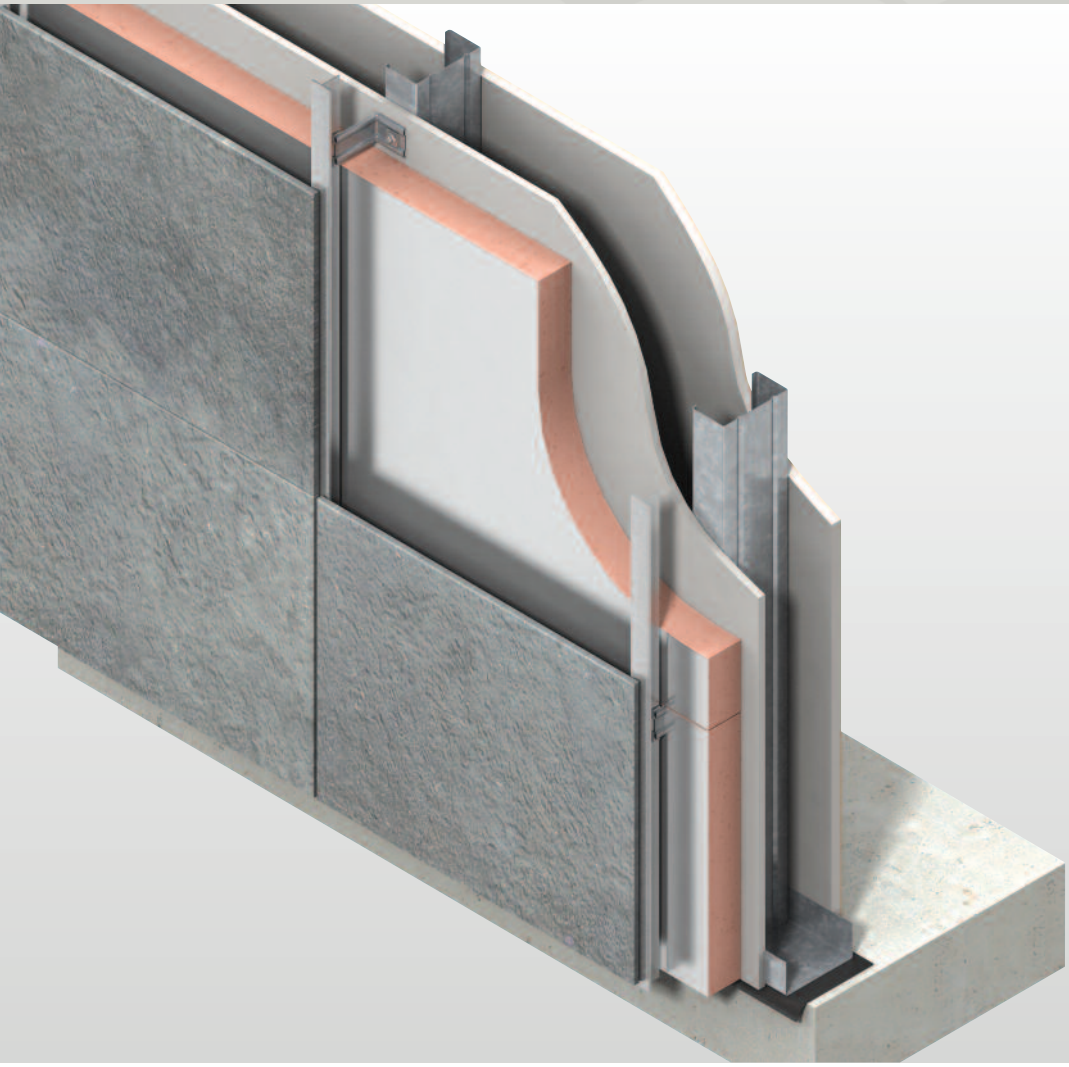
Cl/Sfb (27.9) Rn7 M2
Ninth Issue March 2011

Kooltherm® K15 Rainscreen Board

INSULATION FOR RAINSCREEN CLADDING SYSTEMS



- Premium performance rigid thermoset insulation – thermal conductivities as low as 0.020 W/m·K
- First insulation board for use in rainscreen cladding applications to achieve LABC System Approval
- Successfully tested to BS 8414: 2002, can meet the criteria within BR135 and is therefore acceptable for use above 18 metres
- Class 0 fire rating
- Class 0 fire rated insulation core
- Negligible smoke obscuration
- Unaffected by air infiltration
- Resistant to the passage of water vapour
- Easy to handle and install
- Ideal for new build and refurbishment
- Non–deleterious material
- Manufactured with a blowing agent that has zero ODP and low GWP

PREMIUM PERFORMANCE

Kingspan®

Low Energy – Low Carbon Buildings

Typical Constructions and U-values

Assumptions

Because rainscreen systems are proprietary and utilise different mechanisms for attaching cladding panels to the wall structure, it is advisable to contact the Kingspan Insulation Technical Service Department (see rear cover) for specific U–value calculations. All calculations are performed 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).

Typical Constructions

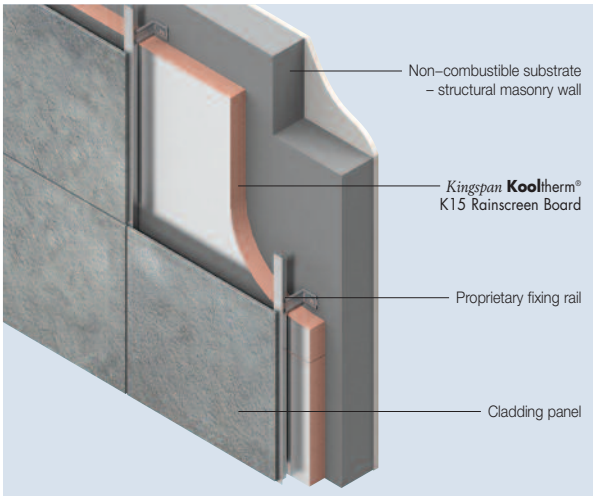


Figure 1 – Insulated Rainscreen Cladding Systems (non–proprietary external finish)

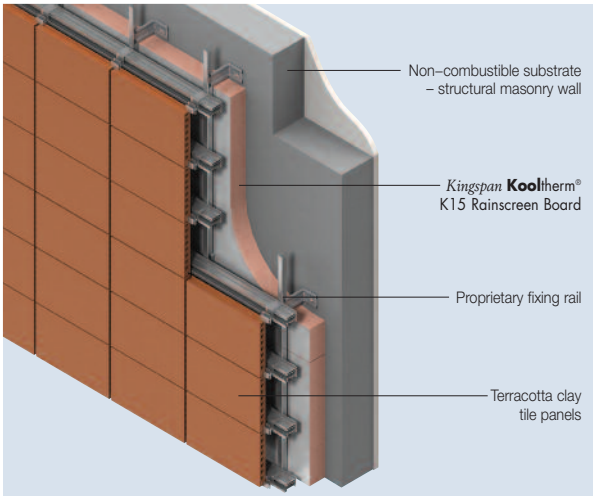


Figure 2 – Insulated Rainscreen Cladding Systems (terracotta clay tile external finish)

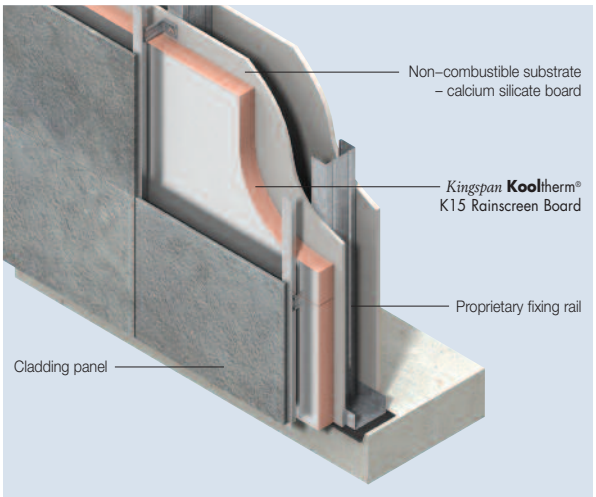


Figure 3 – Insulated Rainscreen Cladding Systems on Steel Frame

Design Considerations

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* **Kool**therm® K15 Rainscreen Board produced at Kingspan Insulation's Pembridge manufacturing facility. The BRE has assigned the product a 2008 Green Guide Summary Rating of A+.

Environmental Profiles Scheme
Certificate Number ENP 410

Responsible Sourcing

Kingspan **Kool**therm® K15 Rainscreen Board produced at Kingspan Insulation's Pembridge and Castleblayney manufacturing facilities is manufactured under a management system certified to BS / I.S. EN ISO 14001: 2004. The principle polymer component of the product produced at these facilities are also manufactured under a management system certified to BS EN ISO 14001: 2004.

NB The above information is correct at the time of writing. Please confirm 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.

Specification Clause

Kingspan **Kool**therm® K15 Rainscreen Board should be described in specifications as:–

The wall insulation shall be *Kingspan* **Kool**therm® K15 Rainscreen Board ____ mm thick: comprising a premium 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); 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):
H92 776 (Standard and Intermediate)

Cold Bridging

The use of a neoprene / plastic gasket, between the 'helping hand' bracket and the structure, will help to mitigate the effects of cold bridging. Please contact the Kingspan Insulation Technical Service Department (see rear cover) for further information.

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: 2002 (Code of practice for the control of condensation in buildings). The Kingspan Insulation Technical Service Department (see rear cover) can provide this service.

Fire Stops

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

Glazed Curtain Walling Systems

Kingspan **Kool**therm® K15 Rainscreen Board should not be used directly behind glazed curtain walls.

Please contact the Kingspan Insulation Technical Service Department (see rear cover for details) for advice regarding the suitability of *Kingspan* **Kool**therm® K15 Rainscreen Board in other glazed applications.

Lightning Protection

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

Sitework

Installation

- Because rainscreen cladding systems are proprietary and utilise different mechanisms for attaching cladding panels to the wall structure, installation guidance should be sought from the system manufacturer.
- However, in the absence of any other guidance the instructions laid out below may be followed.
- Insulation boards should be installed break–bonded with board edges lightly butted.
- Boards should be cut neatly around fixings and brackets, so as to avoid gaps.
- The number and type of mechanical fixings required to fix *Kingspan* **Kool**therm® K15 Rainscreen Board will vary with the geographical location of the building, the local topography, the height and width of the wall concerned, the wall structure, and the type of mechanism being used to attach the cladding system.
- A minimum of 9 fixings are required to secure the insulation board to the wall structure.
- The requirement for additional fixings should be assessed in accordance with BS 6399–2: 1997 (Loadings for buildings. Code of practice for wind loads) or BS / I.S. EN 1991–1.4: 2005 (National Annex to Eurocode 1. Actions on structures, General Actions, Wind Actions).
- The fixings should be evenly distributed over the whole area of the board.
- Please refer to the column opposite for recommended fixing patterns.
- Fasteners 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:

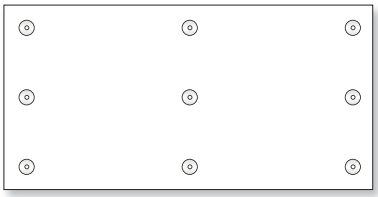
Ejot UK Limited www.ejot.co.uk	+44 (0)1977 687 040
MAK Fasteners www.makfasteners.com	+353 (0) 1 451 99 00
SFS Intec www.sfsintec.biz/uk	+44 (0) 113 2085 500
Tech Fasteners www.techfasteners.ie	+353 (0) 1 457 33 00

- The joints of *Kingspan* **Kool**therm® K15 Rainscreen Board should always be taped using a 75 mm min. wide self–adhesive aluminium foil rainscreen cladding tape.
- In the absence of other protection, exposed edges of *Kingspan* **Kool**therm® K15 Rainscreen Board should be protected by a suitable self–adhesive aluminium foil tape, with a 50 mm min. wide overlap onto the insulation board face.
- For advice on the specification of self–adhesive aluminium foil tape and application guidelines, please refer to:

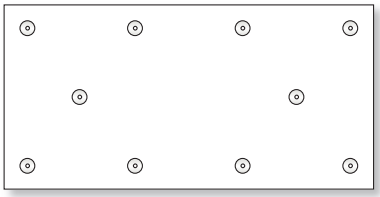
Bostik Limited www.bostik.co.uk	+44 (0) 1785 272 727
Venture TapeEurope www.venturetape.com	+44 (0) 1327 876 555

Recommended Fixing Patterns

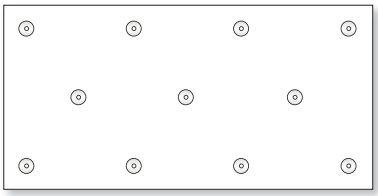
- The images below show recommended fixing patterns, the number of fixings used and the resulting fixing density (number of fixings per m^2).



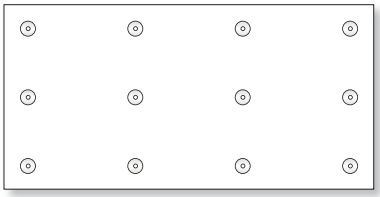
9 No. per board
(2.4 x 1.2 m board – 3.12 fixings / m^2)



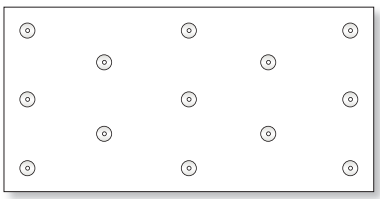
10 No. per board
(2.4 x 1.2 m board – 3.47 fixings / m^2)



11 No. per board
(2.4 x 1.2 m board – 3.82 fixings / m^2)



12 No. per board
(2.4 x 1.2 m board – 4.17 fixings / m^2)



13 No. per board
(2.4 x 1.2 m board – 4.51 fixings / m^2)

Product Details

Fire Stopping

- Fire stopping systems are proprietary. Please contact the Kingspan Insulation Technical Service Department (see rear cover for details) for advice regarding the fire stopping strategy for your construction.

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* **Kool**therm® K15 Rainscreen Board 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 or 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.

The Facings

Kingspan **Kool**therm® K15 Rainscreen Board is faced on both sides with a low emissivity composite foil, autohesively bonded to the insulation core during manufacture.

The Core

The core of *Kingspan* **Kool**therm® K15 Rainscreen Board is a premium performance rigid thermoset modified resin insulant manufactured with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).

zero o.d.p

Standards and Approvals

Kingspan **Kool**therm® K15 Rainscreen Board is manufactured to the highest standards 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* **Kool**therm® K15 Rainscreen Board, produced at Kingspan Insulation's Pembridge manufacturing facility, is covered by BBA Certificate 08/4582, and that produced at Kingspan Insulation's Castleblayney manufacturing facility by NSAI Agrément Certificate 08/0321.

NSAI Agrément

BBA APPROVAL INSPECTION TESTING CERTIFICATION CERTIFICATE No 08/4582

Kingspan **Kool**therm® K15 Rainscreen Board is the first insulation board to achieve an LABC System Approval as a thermal insulation layer in rainscreen cladding systems. An LABC System Approval can significantly reduce the time and costs associated with a construction project. Please contact the Kingspan Insulation Technical Service Department (see rear cover) for further information.

type approval LABC

Certificate No. 452–7–7194

Standard Dimensions

Kingspan **Kool**therm® K15 Rainscreen Board is available in the following standard size(s):

Nominal Dimension		Availability
Length	(m)	2.4
Width	(m)	1.2
Insulant Thickness	(mm)	Refer to local distributor or Kingspan Insulation price list for current stock and non–stock sizes.

Compressive Strength

The compressive strength of *Kingspan* **Kool**therm® K15 Rainscreen Board typically exceeds 100 kPa at 10% compression, when tested to BS / I.S. EN 826: 1996 (Thermal insulating products for building applications. Determination of compression behaviour).

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* **Kool**therm® K15 Rainscreen Board can have an indefinite life. Its durability depends on the supporting structure and the conditions of its use.

Resistance to Solvents, Fungi & Rodents

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

The insulation core and facings used in the manufacture of *Kingspan* **Kool**therm® K15 Rainscreen Board resist attack by mould and microbial growth, and do not provide any food value to vermin.

Fire Performance

Kingspan **Kool**therm® K15 Rainscreen Board, and its rigid thermoset insulation core, are Class 0, as defined by the Building Regulations.

The rigid thermoset insulation core of *Kingspan* **Kool**therm® K15 Rainscreen Board, when subjected to the British Standard fire test specified in the table below, has achieved the result shown.

Test	Result
BS 5111–1: 1974 (Smoke Obscuration)	< 5% (Negligible smoke obscuration)

Kingspan **Kool**therm® K15 Rainscreen Board in the construction specified in the table below, when subjected to the British Standard fire test BS 8414: 2002 (Fire performance of external cladding systems. Test methods for non–load bearing external cladding systems applied to the face of a building), has achieved the result shown.

Construction	Result
6 mm non–combustible cladding fixed to an aluminium railing system at 600 mm centres, 40 mm ventilated cavity, 60 mm *Kingspan* **Kool**therm® K15 Rainscreen Board mechanically fixed to non–combustible substrate.	The tested product meets the criteria stated within BRE 135 (Fire performance of external thermal insulation for walls of multi storey buildings) and is therefore acceptable for use above 18 metres in accordance with the Building Regulations / Standards.

NB Fire stopping was provided by a ventilated rainscreen barrier system, comprising nominal 2.5 mm thick graphite–based intumescent strip bonded to nominal 0.6 mm thick galvanized steel sheet, and positioned 0.5 m and 4 m above the fire chamber on both the main face and the wing face.

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

Thermal Properties

The λ–values and R–values detailed below are quoted in accordance with BS / I.S. EN 13166: 2008 (Thermal insulation products for buildings – Factory made products of phenolic foam (PF) – Specification).

Thermal Conductivity

The boards achieve a thermal conductivity (λ–value) of:
0.023 W/m·K (insulant thickness 15–24 mm);
0.021 W/m·K (insulant thickness 25–44 mm); and
0.020 W/m·K (insulant thickness ≥ 45 mm).

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^2·K/W).

Insulant Thickness (mm)	Thermal Resistance (m^2·K/W)
25	1.15
30	1.40
40	1.90
50	2.50
60	3.00
70	3.50
75	3.75
80	4.00
90	4.50
100	5.00
110	5.50
120	6.00
125	6.25
130	6.50
140	7.00

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

Insulation Product Benefits

Kingspan **Kool**therm® 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 **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

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

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

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