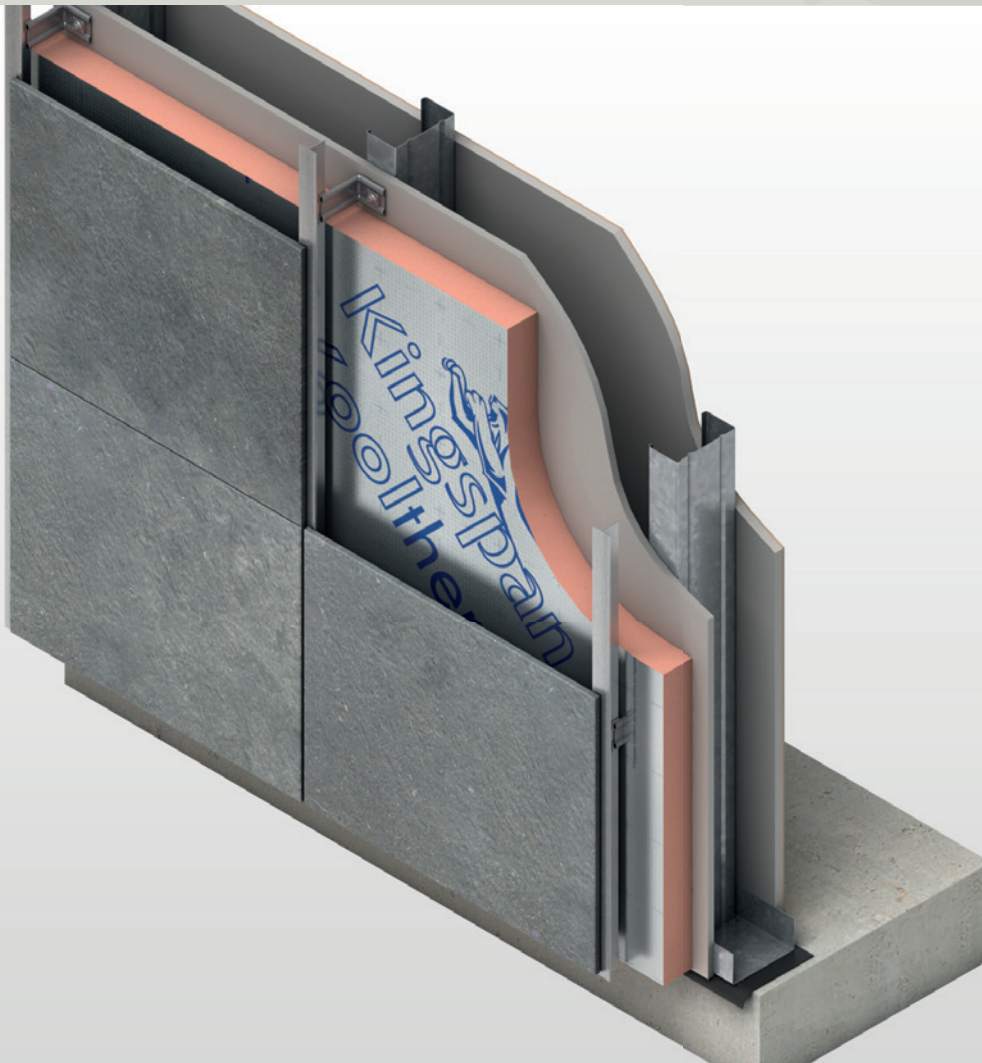




Kooltherm® K15 Rainscreen Board

INSULATION FOR USE BEHIND RAINSCREEN FAÇADES



- Premium performance rigid thermoset phenolic insulation – thermal conductivity as low as 0.020 W/m·K
- First insulation board for use in rainscreen cladding applications to achieve LABC Registered Detail status
- Successfully tested in differing façade systems to BS 8414-1: 2002 & BS 8414-2: 2005, in accordance with the performance criteria set out in BR 135
- Class 0 fire rating
- 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

Fibre-free
Core



Kingspan®

*Low Energy –
Low Carbon Buildings*

Typical Constructions & U-values

Assumptions

Rainscreen façade systems are proprietary, resulting in a wide variation of possible system build-ups, material combinations and mechanisms that are used to fix and support the external cladding to the wall structure.

Fixings and supports penetrating the insulation through to the structure form point thermal bridges. The effect on the thermal performance of the overall façade system can be significant. Whilst the use of thermal isolators can assist in mitigating the impact of thermal bridging, the type and placement of fixings and supports can exacerbate heat flow through the façade assembly affecting the U-value.

For these reasons, it is advised that the Kingspan Insulation Technical Service Department is contacted for specific U-value calculations.

All calculations are undertaken using the method detailed in BS / I.S. EN ISO 6946: 2007 (Building components & building elements. Thermal resistance & thermal transmittance. Calculation method), and using the conventions set out in BR 443 (Conventions for U-value calculations).

Typical Constructions

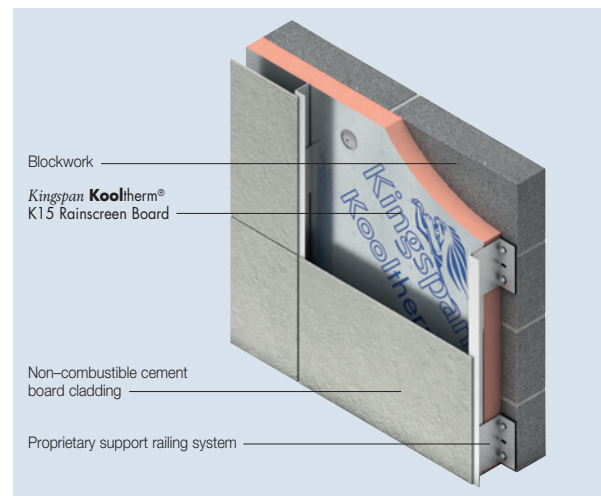


Figure 1: Cement Board & Masonry Blockwork.

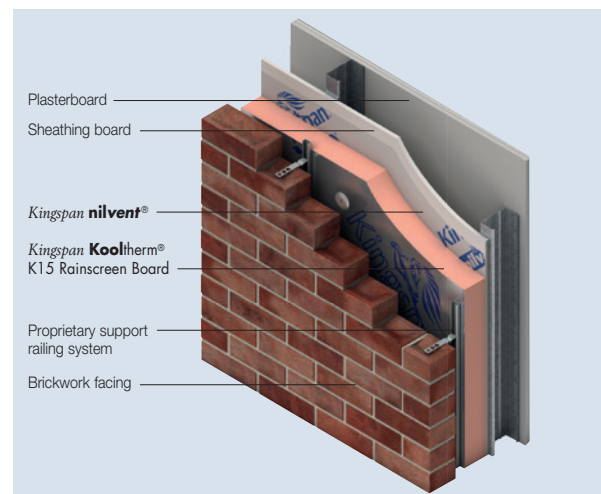


Figure 2: Brickwork Facing & Kingspan Kingframe® SFS.

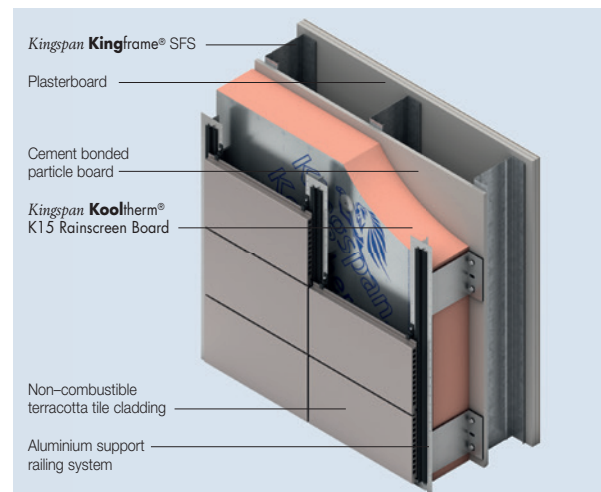


Figure 3: Terracotta Tile Cladding & SFS.

Design Considerations

Environmental Impact

An Ecoprofile, certified by BRE Certification to the 2008 BRE Environmental Profiles Methodology, has been created for **Kingspan Kooltherm® K15 Rainscreen Board** produced at Kingspan Insulation's Pembridge and Castleblayney manufacturing facilities. The BRE has assigned the product a 2008 Green Guide Summary Rating of A+.



Environmental Profiles Scheme
Certificate Number ENP 500

Responsible Sourcing

Kingspan Kooltherm® K15 Rainscreen Board produced at Kingspan Insulation's Pembridge manufacturing is certified to BES 6001 (Framework Standard for the Responsible Sourcing of Construction Products) 'Excellent'.

NB The above information is correct at the time of writing. Confirm at the point of need by contacting Kingspan Insulation's Technical Service Department, 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 British operations at its Pembridge, Herefordshire and Selby, North Yorkshire manufacturing facilities is available at www.kingspaninsulation.co.uk/sustainabilityandresponsibility.

Specification Clause

Kingspan Kooltherm® K15 Rainscreen Board should be described in specifications as:-

The wall insulation shall be **Kingspan Kooltherm® K15 Rainscreen Board** ____ mm thick: comprising a premium performance rigid thermoset fibre-free phenolic 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 ISO 9001: 2008, ISO 14001: 2004, BS / I.S. OHSAS 18001: 2007 and ISO 50001; 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)



Fire Safety

For guidance regarding the routes to compliance for meeting the fire safety requirements of the Building Regulations / Standards, refer to the Kingspan Insulation Technical Bulletin 'Routes to Compliance: Facades & Fire Safety' at www.kingspaninsulation.co.uk/RisingHigh.

For those engaged in desktop studies or fire safety engineering, detailed fire test data for **Kingspan Kooltherm® K15 Rainscreen Board** may be obtained by contacting the Kingspan Insulation Technical Service Department at highrisetechnical@kingspan.com.

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. For specialist advice, including configuration and installation, refer to:

Aim Ltd
+ 44 (0) 1342 893 381
www.aimlimited.co.uk

Siderise
+44 (0) 1656 730 833
www.siderise.com

Tenmat
+44 (0) 161 872 2181
www.tenmat.com

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: 2011 (Code of practice for the control of condensation in buildings). The Kingspan Insulation Technical Service Department can provide this service.

Glazed Façade Systems

Contact the Kingspan Insulation Technical Service Department for advice regarding the use of **Kingspan Kooltherm® K15 Rainscreen Board** in glazed applications.

Lightning Protection

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

Sitework

Installation

- Since rainscreen façade systems are proprietary and use differing mechanisms to fix and support the external cladding to the wall structure, installation guidance should be sought from the system manufacturer or supplier.
- Nevertheless, in the absence of any other guidance the instructions set out below may be followed.
- Insulation boards should be installed break-bonded with board edges lightly butted and in such a manner to achieve a close fit between the board and substrate interface so as to avoid gaps behind or between the boards.
- Boards should be cut neatly around fixings and brackets, so as to avoid gaps. Where small gaps are unavoidable, fill gaps with fire rated expanding sealant.
- The number and type of mechanical fixings required to fix *Kingspan Kooltherm*® 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 3.13 fixings per m² are required to secure the insulation board to the wall structure.
- The requirement for additional fixings should be assessed in accordance with 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.
- Refer to the column on page 5 for recommended fixing patterns.
- Fixings at board edges must be located > 50 mm and < 150 mm from edges and corners of the board and not overlap board joints.
- The joints of *Kingspan Kooltherm*® K15 Rainscreen Board should always be taped using a 75 mm min. wide suitable self-adhesive aluminium foil tape.
- In the absence of other protection, exposed edges of *Kingspan Kooltherm*® 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, refer to:

Bostik Limited

+44 (0) 1785 272 727

www.bostik.co.uk

Venture Tape Europe

+44 (0) 1327 876 555

www.venturetape.com

Refer to:

Ejot UK Limited

+44 (0)1977 687 040

www.ejot.co.uk

Fixfast

+44 (0) 1732 882 387

www.fixfast.com

MAK Fasteners

+353 (0) 1 451 99 00

www.makfasteners.com

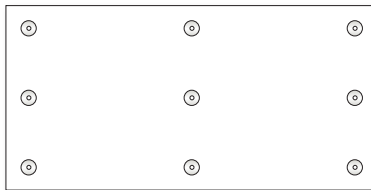
SFS Intec

+44 (0) 113 2085 500

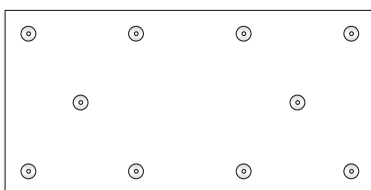
www.sfsintec.biz/uk

Recommended Fixing Patterns

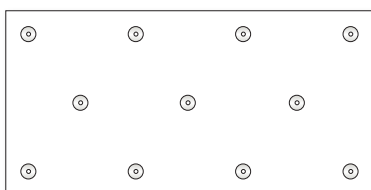
- The images below show recommended fixing patterns, the number of fixings used and the resulting fixing density (number of fixings per m²).



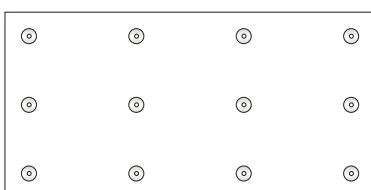
9 No. per board
(2.4 x 1.2 m board – 3.13 fixings / m²)



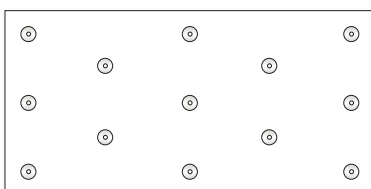
10 No. per board
(2.4 x 1.2 m board – 3.47 fixings / m²)



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



12 No. per board
(2.4 x 1.2 m board – 4.17 fixings / m²)



13 No. per board
(2.4 x 1.2 m board – 4.51 fixings / m²)

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 Kooltherm*[®] K15 Rainscreen Board is available through specialist insulation distributors and selected builders' merchants throughout the UK and Ireland.

Packaging & 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 & 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.

Product Details

The Facings

Kingspan Kooltherm[®] 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 Kooltherm*[®] K15 Rainscreen Board is a premium performance rigid thermoset fibre-free phenolic insulant manufactured with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).



Standards & Approvals

Kingspan Kooltherm[®] K15 Rainscreen Board 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 (Occupational Health & Safety Management Systems. Requirements) and SO 50001: 2011 (Energy Management Systems. Requirements with guidance for use).

The use of *Kingspan Kooltherm*[®] K15 Rainscreen Board, produced at Kingspan Insulation's Pembridge manufacturing facility, is covered by BBA Certificate 14/5134, and that produced at Kingspan Insulation's Castleblayney manufacturing facility by NSAI Agrément.



Certified as LABC Registered Detail EWWS165, *Kingspan Kooltherm*[®] K15 Rainscreen Board is the first insulation board to achieve LABC Registered Detail status as a thermal insulation layer in rainscreen cladding systems. An LABC Registered Detail can significantly reduce the time and costs associated with a construction project. Contact the Kingspan Insulation Technical Service Department for further information.



Standard Dimensions

Kingspan Kooltherm[®] 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.

Table 1: Standard Dimensions of *Kingspan Kooltherm*[®] K15 Rainscreen Board.

Compressive Strength

The compressive strength of *Kingspan Kooltherm*[®] 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 Kooltherm*[®] 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 Kooltherm*[®] K15 Rainscreen Board resist attack by mould and microbial growth, and do not provide any food value to vermin.

Thermal Properties

The λ -values and R-values detailed below are quoted in accordance with BS / I.S. EN 13166: 2016 (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 \geq 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 (m²·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
130	6.50
140	7.00
150	7.50

NB Kingspan Insulation's maximum available single insulation thickness is subject to alteration without notice. Contact the Kingspan Insulation Customer Service Department for current stock and non-stock sizes.

Table 2: Thermal Resistance of Differing Thicknesses of *Kingspan Kooltherm*[®] K15 Rainscreen Board.

Fire Performance

Kingspan Kooltherm[®] K15 Rainscreen Board is Class 0, as defined by the Building Regulations.

Kingspan Kooltherm[®] K15 Rainscreen Board, in the constructions specified in Table 3, has been successfully tested to BS 8414-1: 2002 (Fire performance of external cladding systems. Test methods for non-loadbearing external cladding systems applied to the face of a building) and BS 8414-2: 2005 (Fire performance of external cladding systems. Test method for non-loadbearing external cladding systems fixed to and supported by a structural steel frame), in accordance with the performance criteria set out in BR 135 (Fire performance of external thermal insulation for walls of multi-storey buildings).

Build-up	Description
BS 8414-1: 2002	
Cement board cladding & masonry blockwork	60 mm <i>Kingspan Kooltherm</i> [®] K15 Rainscreen Board fixed to 100 mm blockwork substrate, 6 mm non-combustible cement board cladding fixed to an aluminium vertical support railing system at 600 mm centres.
BS 8414-2: 2005	
Stofix ventilated brick slip cladding & SFS	Two layers of 12.5 mm plasterboard fixed to 100 mm SFS, two layers of 60 mm <i>Kingspan Kooltherm</i> [®] K15 Rainscreen Board fixed to 12 mm cement particle sheathing board, Stofix ventilated brick cladding system on horizontal rails secured to a Stofix vertical railing system using Stofix right angle brackets.
CAREA [®] Acantha grooved panel cladding & SFS	Two layers of 12.5 mm plasterboard mechanically fixed to 150 mm SFS, 140 mm <i>Kingspan Kooltherm</i> [®] K15 Rainscreen Board fixed to a 12 mm cement based calcium sheathing board, CAREA [®] Acantha grooved panel cladding fixed to a horizontal support railing system on helping hand brackets.
Gebrik insulated brick cladding system on <i>Kingspan Kingframe</i> [®] SFS	Two layers of 12.5 mm plasterboard fixed to 150 mm <i>Kingspan Kingframe</i> [®] SFS filled with rock mineral fibre, 120 mm <i>Kingspan Kooltherm</i> [®] K15 Rainscreen Board fixed to a 12 mm sheathing board, 60 mm Gebrik cladding panels comprising 43 mm rigid polyurethane foam behind 17 mm brick slips fixed to the inner sheathing board.
ArGeTon terracotta tile cladding & SFS	Two layers of 12.5 mm plasterboard fixed to 150 mm SFS, 80 mm <i>Kingspan Kooltherm</i> [®] K15 Rainscreen Board fixed to a 12 mm cement based calcium sheathing board, ArGeTon 30 mm non-combustible terracotta tile cladding fixed to an aluminium vertical support railing system on helping hand brackets.
	Two layers of 12.5 mm plasterboard fixed to 150 mm SFS, 140 mm <i>Kingspan Kooltherm</i> [®] K15 Rainscreen Board fixed to a 12 mm cement based calcium sheathing board, ArGeTon 30 mm non-combustible terracotta tile cladding fixed to a steel vertical support railing system on helping hand brackets.
	Two layers of 12.5 mm plasterboard fixed to 150 mm SFS, 140 mm <i>Kingspan Kooltherm</i> [®] K15 Rainscreen Board fixed to a 12 mm cement bonded particle board, ArGeTon 30 mm non-combustible terracotta tile cladding fixed to an aluminium vertical support railing system on helping hand brackets.

Table 3: Façade System Build-ups Incorporating *Kingspan Kooltherm*[®] K15 Rainscreen Board Tested to BS 8414-1: 2002 & BS 8414-2: 2005.

Full details of the tested façade system build-ups, as well as examples of project specific build-ups that have successfully undergone a desktop study assessment, can be found in the Kingspan Insulation Technical Bulletin 'Routes to Compliance: Façades & Fire Safety' at: www.kingspaninsulation.co.uk/RisingHigh.

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:	www.kingspaninsulation.co.uk/literature
Ireland	- Tel:	+353 (0) 42 979 5000
	- Fax:	+353 (0) 42 975 4299
	- email:	info@kingspaninsulation.ie
	- www:	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. reserves the right to amend product specifications without prior notice. Product thicknesses shown in this document should not be taken as being available ex-stock and reference should be made to the current Kingspan Insulation price-list or advice sought from Kingspan Insulation's Customer Service Department (see above left). The information, technical details and fixing instructions etc. included in this literature are given in good faith and apply to uses described. Recommendations for use should be verified for suitability and compliance with actual requirements, specifications and any applicable laws and regulations. For other applications or conditions of use, Kingspan Insulation offers a Technical Advisory Service (see above), the advice of which should be sought for uses of Kingspan Insulation products that are not specifically described herein. Please check that your copy of this literature is current by contacting the Kingspan Insulation Marketing Department (see left).

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



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Castleblayney, County Monaghan, Ireland

www.kingspaninsulation.co.uk www.kingspaninsulation.ie

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