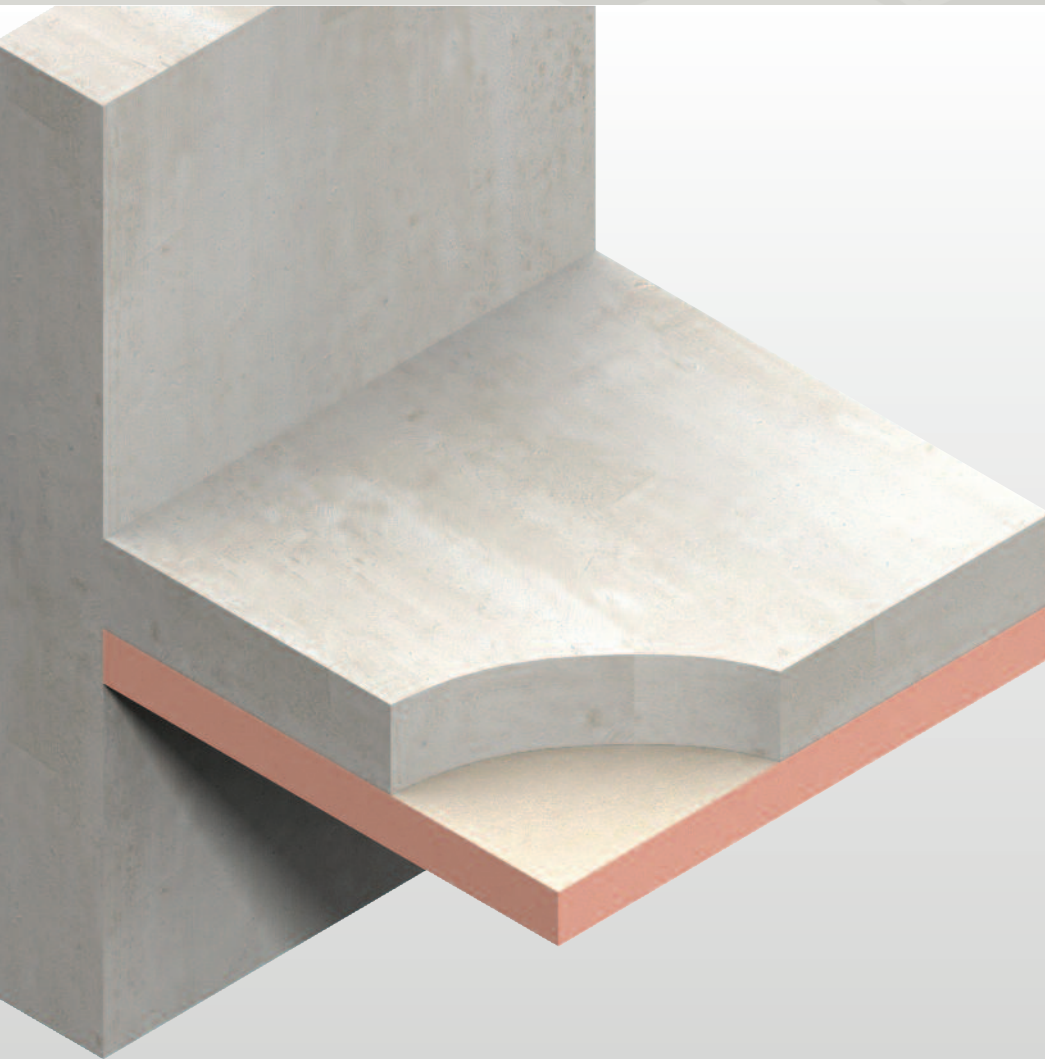




# Kooltherm® K10 FM Soffit Board

INSULATION FOR STRUCTURAL CEILINGS (SOFFITS)



- Premium performance rigid thermoset insulation – thermal conductivities as low as 0.020 W/m-K
- FM approved to Class 1 fire rating Class Number 4880
- 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



*Low Energy –  
Low Carbon Buildings*

# Typical Constructions and U-values

## Assumptions

The U-values in the tables that follow have been calculated, under a management system certified to the BBA Scheme for Assessing the Competency of Persons to Undertake U-value and Condensation Risk Calculations, 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). They are valid for the constructions shown in the details immediately above each table.



These examples are based on the use of *Kingspan Kooltherm® K10 FM Soffit Board* mechanically fixed directly to the soffit of a 200 mm concrete deck.

*NB When calculating U-values to BS / I.S. EN ISO 6946: 2007, the type of fixing used may change the thickness of insulation required. These calculations assume the use of telescopic tube fasteners with a thermal conductivity of 1.00 W/m·K or less, the effect of which is insignificant.*

*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 those 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

Where an **x** is shown, the U-value is higher than the worst of the maximum new build area weighted average U-values allowed by the 2010 Editions of Approved Documents L to the Building Regulations (England & Wales), the 2010 Editions of Technical Handbooks Section 6 (Scotland), the 2006 Editions of Technical Booklets F (Northern Ireland), or the 2008 Editions of Technical Guidance Documents L\* (Republic of Ireland).

\* Excluding Change of Use and Material Alterations.

## Fixed Directly to Concrete Soffit

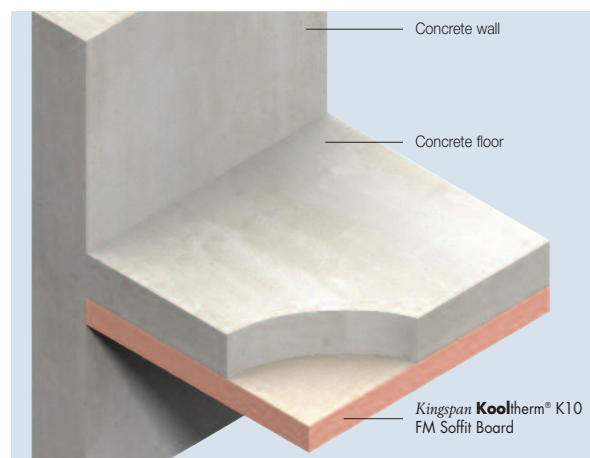


Figure 1

Insulant Thickness (mm)	U-values (W/m <sup>2</sup> ·K)
70	x
75	0.24
80	0.23
85	0.22
90	0.21
100	0.19
110	0.17
120	0.16
125	0.15
130	0.15
140	0.14
150	0.13
80 + 80	0.12
90 + 90	0.11
100 + 100	0.10

# 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 Kooltherm® K10 FM Soffit 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 Kooltherm® K10 FM Soffit 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 is 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 at the point of need by contacting Kingspan Insulation's Technical Service 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](http://www.kingspaninsulation.co.uk/sustainabilityandresponsibility).

## Specification Clause

**Kingspan Kooltherm® K10 FM Soffit Board** should be described in specifications as:-

The soffit insulation shall be **Kingspan Kooltherm® K10 FM Soffit Board** \_\_\_\_ mm thick: comprising a premium performance rigid thermoset insulation core with a glass tissue based facing on its front surface and low emissivity composite foil on its reverse surface. 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):  
E60-110, 130 and 140 (Standard)



## Wind Loading

Where the insulation boards may be subject to external wind pressure, wind loadings should be assessed in accordance with BS 6399-2: 1997 (Loading 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) taking into account:

- length / width / height of the building;
- orientation of the building;
- wind speed;
- aspect (i.e. on a hill side); and
- topographical value of the surrounding area.

## Lightning Protection

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

# 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 Kooltherm*® K10 FM Soffit Board will vary with the geographical location of the building, the local topography, the height and width of the soffit concerned, and the soffit construction.
- A minimum of 11 mechanical fixings, with a minimum head diameter of 35 mm, are required to secure the insulation board to the soffit.
- Where the insulation boards may be subject to external wind pressure, the requirement for additional fixings should be assessed in accordance with BS 6399-2: 1997 (Loading 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, and must offer a minimum 40 mm penetration into a solid substrate.
- Please refer to the column opposite 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.
- Insulation boards can also be fitted by a shot fired fixing method which can result in significantly faster installation times. All of the guidance above still applies.

For details on fixings refer to:

Ejot UK Limited +44 (0) 1977 687 040  
[www.ejot.co.uk](http://www.ejot.co.uk)

ITW Spit +44 (0) 800 731 4924  
[www.itwcp.co.uk/Spit/](http://www.itwcp.co.uk/Spit/)

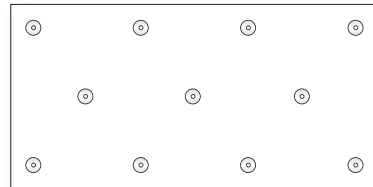
MAK Fasteners +353 (0) 1 451 99 00  
[www.makfasteners.com](http://www.makfasteners.com)

SFS Intec +44 (0) 113 2085 500  
[www.sfsintec.biz/uk](http://www.sfsintec.biz/uk)

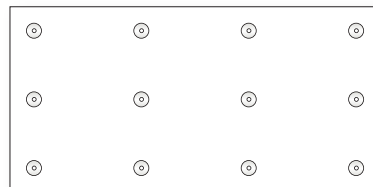
Tech Fasteners +353 (0) 1 457 33 00  
[www.techfasteners.ie](http://www.techfasteners.ie)

## Recommended Fixing Patterns

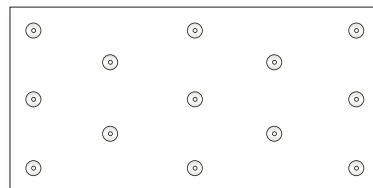
- The images below show recommended fixing patterns, the number of fixings used and the resulting fixing density (number of fixings per m<sup>2</sup>).



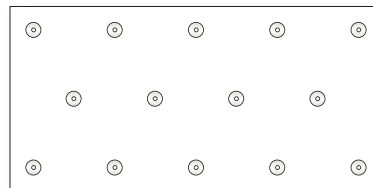
11 No. per board  
 (2.4 x 1.2 m board – 3.81 fixings / m<sup>2</sup>)



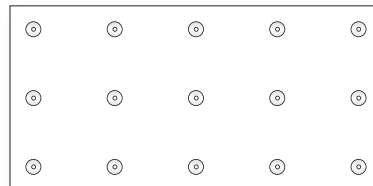
12 No. per board  
 (2.4 x 1.2 m board – 4.16 fixings / m<sup>2</sup>)



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



14 No. per board  
 (2.4 x 1.2 m board – 4.86 fixings / m<sup>2</sup>)



15 No. per board  
 (2.4 x 1.2 m board – 5.20 fixings / m<sup>2</sup>)

## Proprietary Grid Systems

- *Kingspan Kooltherm*<sup>®</sup> K10 FM Soffit Board can also be fixed to a proprietary grid system comprising metal furring bars or timber battens.
- For further information regarding proprietary grid system specifications, please contact the Kingspan Insulation Technical Service Department (see rear cover) for further information.

## Taping

- The joints of *Kingspan Kooltherm*<sup>®</sup> K10 FM Soffit Board should always be taped using a 75 mm min. wide self-adhesive aluminium foil tape.
- In the absence of other protection, exposed edges of *Kingspan Kooltherm*<sup>®</sup> K10 FM Soffit Board should be protected by a suitable self-adhesive aluminium foil tape, with a 50 mm min. wide overlap onto the insulation board face, see Figure 2.
- For advice on the specification of self-adhesive aluminium foil tape and application guidelines, please refer to:

Bostik Limited +44 (0) 1785 272 727  
[www.bostik.co.uk](http://www.bostik.co.uk)

Venture Tape Europe +44 (0) 1327 876 555  
[www.venturetape.com](http://www.venturetape.com)

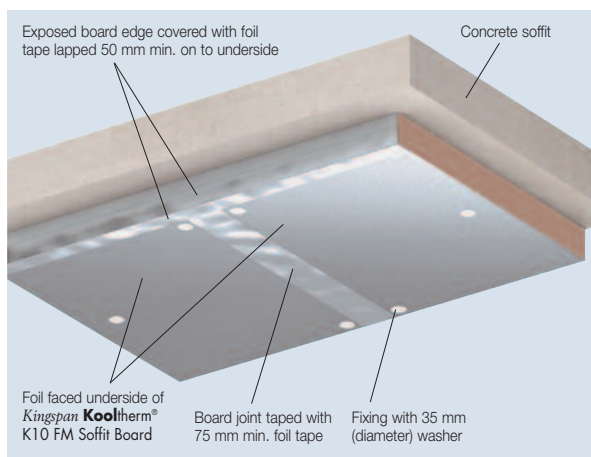


Figure 2

## 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.

### Availability

- *Kingspan Kooltherm*<sup>®</sup> K10 FM Soffit 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](http://www.kingspaninsulation.co.uk/safety) or [www.kingspaninsulation.ie/safety](http://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 Upper Facing

The upper facing of *Kingspan Kooltherm® K10 FM Soffit Board* is a glass tissue based facing, autohesively bonded to the insulation core during manufacture.

## The Core

The core of *Kingspan Kooltherm® K10 FM Soffit 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).



## The Exposed Facing

The exposed facing of *Kingspan Kooltherm® K10 FM Soffit Board* is a low emissivity composite foil, autohesively bonded to the insulation core during manufacture. The exposed facing used on *Kingspan Kooltherm® K10 FM Soffit Board* has not been designed with the purpose of an aesthetic finish as its primary function. Where appearance is critical, advice should be sought from the Kingspan Insulation Technical Service Department (see rear cover).

## Standards and Approvals

*Kingspan Kooltherm® K10 FM Soffit 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 Kooltherm® K10 FM Soffit Board*, produced at Kingspan Insulation's Pembridge manufacturing facility, is covered by BBA Certificate 09/4675, and that produced at Kingspan Insulation's Castleblayney manufacturing facility by NSAI Agrément Certificate 08/0321.



## Standard Dimensions

*Kingspan Kooltherm® K10 FM Soffit Board* is available in the following standard size:

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 Kooltherm® K10 FM Soffit 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® K10 FM Soffit Board* can have an indefinite life. Its durability depends on the supporting structure and the conditions of its use.

*NB If the building is considered to be in an exposed location advice should be sought from the Kingspan Insulation Technical Service Department (see rear cover) to determine the product's suitability.*

## 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 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® K10 FM Soffit Board* resist attack by mould and microbial growth, and do not provide any food value to vermin.



## FM Certification

The standard Factory Mutual test for soffit lining boards is Class Number 4880 : 2005 (Insulated Wall or Wall and Roof / Ceiling Panels, Interior Finish Materials or Coatings, and Exterior Wall Systems). **Kingspan Kooltherm® K10 FM Soffit Board** (thicknesses up to, and including, 120 mm) produced at Kingspan Insulation's Pembridge and Castleblayney manufacturing facilities is certified as achieving Class 1 Fire Rating to Factory Mutual Class Number 4880.

For further details please contact the Kingspan Insulation Technical Service Department (see rear cover) or alternatively search for Kingspan Insulation on [www.approvalguide.com](http://www.approvalguide.com).



This approval is valid for ceiling / soffit installation only, with non-combustible walls and a floor to ceiling / soffit height restriction of 30 feet (9.1 m). This approval is valid for any fixing specification. However, for mechanical reasons, the fixing specification given on page 4 of this document and the taping specification given on page 5 must still be followed.

## Fire Performance

**Kingspan Kooltherm® K10 FM Soffit Board**, and its rigid thermoset insulation core, are Class 0, as defined by the Building Regulations.

The rigid thermoset insulation core of **Kingspan Kooltherm® K10 FM Soffit 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)

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

## Thermal Properties

The  $\lambda$ -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 ( $\lambda$ -value) of: 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 (m<sup>2</sup>·K/W).

Insulant Thickness (mm)	Thermal Resistance (m <sup>2</sup> ·K/W)
70	3.50
75	3.75
80	4.00
85	4.25
90	4.50
100	5.00
110	5.50
120	6.00
125	6.25
130	6.50
140	7.00
150	7.50

\* Kingspan Insulation's maximum available thickness is subject to alteration without notice. At the time of publication, this specific insulation thickness must be built up from two thinner layers, but this may have changed by the time that the information in this literature is relied upon. Please contact Kingspan Insulation Technical Service Department for current stock and non-stock sizes (see rear cover for details). Where multiple layers of insulation of different thicknesses are used, the thickest layer should be installed as the outermost layer in the construction.

# 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 4296
	- 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](http://www.kingspaninsulation.co.uk) [www.kingspaninsulation.ie](http://www.kingspaninsulation.ie)