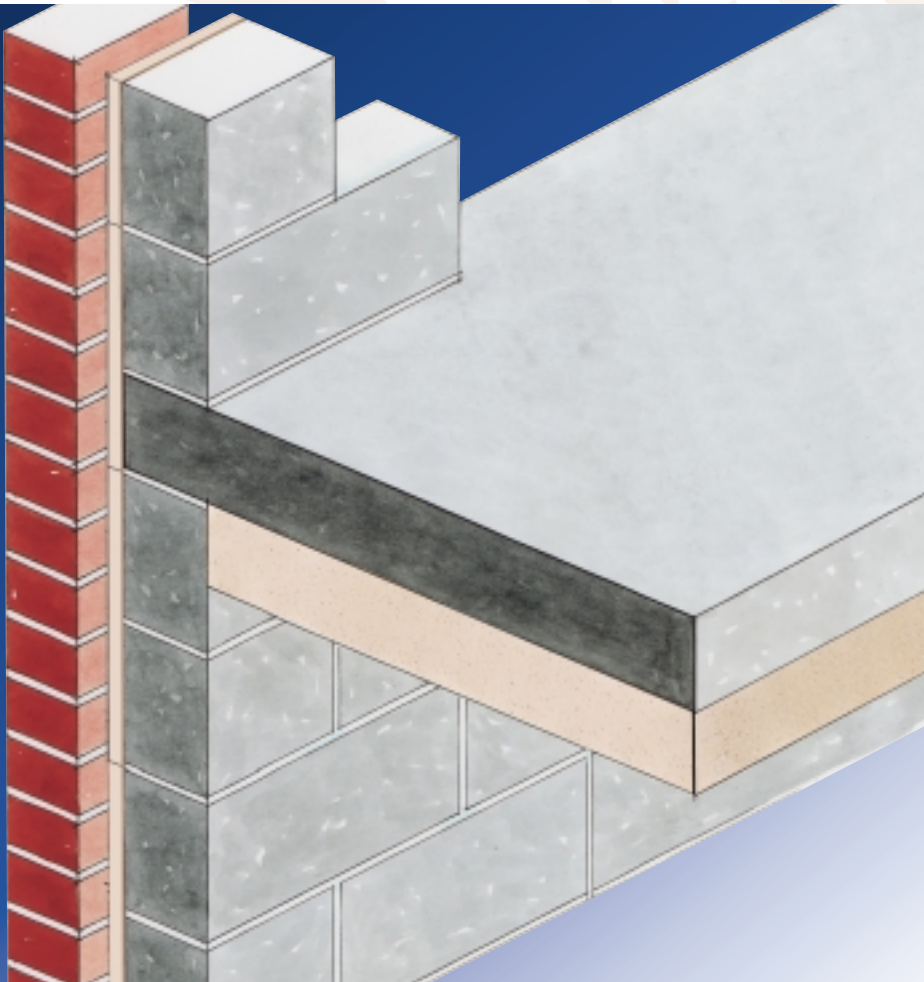


Kooltherm[®]

K10 and K10 Plus Soffit Boards

INSULATION FOR STRUCTURAL
CEILINGS (SOFFITS)



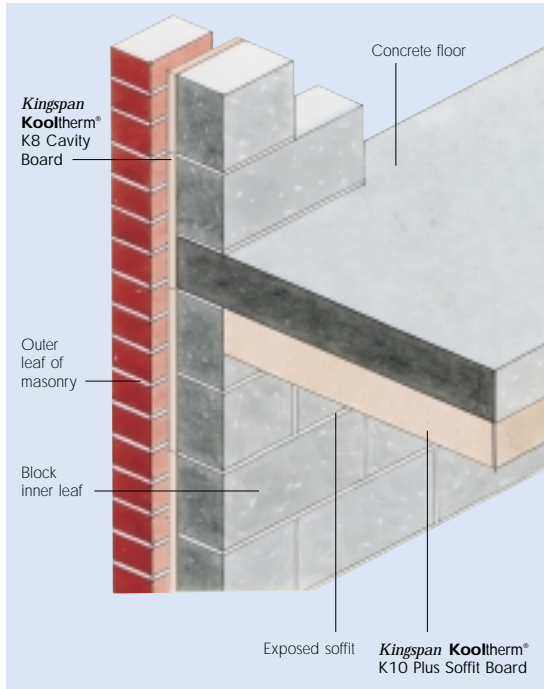
- ▼ Premium performance rigid phenolic insulation – thermal conductivity 0.018 W/m.K
- ▼ Class O fire rating
- ▼ Negligible smoke emission
- ▼ Designed for use under structural ceilings e.g. concrete soffits
- ▼ Eliminates cold bridging
- ▼ Unaffected by air movement
- ▼ Resistant to the passage of water vapour
- ▼ Easy to handle and install
- ▼ Ideal for newbuild and refurbishment
- ▼ CFC-free



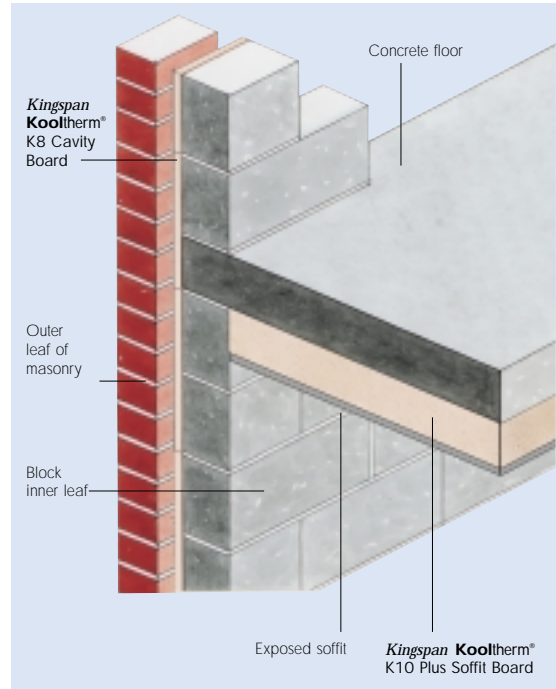
Kingspan **Kooltherm**® K10 and K10 Plus Soffit Boards

TYPICAL DESIGN DETAIL

FIXING KOOLTHERM K10 DIRECTLY TO CONCRETE SOFFIT



FIXING KOOLTHERM K10 PLUS DIRECTLY TO CONCRETE SOFFIT



SPECIFICATION CLAUSE

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

The soffit insulation shall be **Kingspan Kooltherm**® K10 Soffit Board ___mm thick CFC-free rigid phenolic insulation core with autohesively bonded facings on both sides manufactured to BS EN ISO 9002: 1994 by Kingspan Insulation Limited and shall be applied in accordance with the instructions issued by them.

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

The soffit insulation shall be **Kingspan Kooltherm**® K10 Plus Soffit Board comprising a 6 mm gypsum based board facing bonded to a ___mm thick CFC-free rigid phenolic insulation core during manufacture in accordance with the requirements of BS EN ISO 9002: 1994 by Kingspan Insulation Limited and shall be applied in accordance with the instructions issued by them.

Details also available in NBS PLUS.
NBS users should refer to clause(s): P10 217



THERMAL PROPERTIES

THERMAL CONDUCTIVITY - **Kingspan Kooltherm**® K10 SOFFIT BOARD

The boards achieve a thermal conductivity (λ -value) of 0.018 W/m.K.

THERMAL RESISTANCES - **Kingspan Kooltherm**® K10 SOFFIT BOARD

Thermal resistance (R-value) varies with thickness and is calculated by dividing the thickness of the board (expressed in metres) by its thermal conductivity.

Insulant Thickness (mm)	Thermal Resistance (m ² .K/W)
25	1.388
30	1.667
35	1.944
40	2.222
45	2.500
50	2.778
60	3.333
65	3.611
70	3.889

THERMAL CONDUCTIVITY - *Kingspan Kooltherm*[®] K10 Plus Soffit Board

The thermal conductivity (λ -value) of the gypsum based board component of *Kingspan Kooltherm*[®] K10 Plus Soffit Board is 0.24 W/m.K. The thermal conductivity of the insulation core of *Kingspan Kooltherm*[®] K10 Plus Soffit Board is 0.018 W/m.K.

THERMAL RESISTANCES - *Kingspan Kooltherm*[®] K10 Plus Soffit Board

Thermal resistance (R-value) varies with the thickness of each component. It is calculated by dividing the thickness of each components (expressed in metres) by its thermal conductivity and adding the resultant figures together.

*Product Thickness (mm)	Thermal Resistance (m ² .K/W)
31	1.414
36	1.692
41	1.969
46	2.247
51	2.525
56	2.803
66	3.358
71	3.636

* Product thickness = insulant thickness + 6 mm gypsum based board.

TYPICAL U-VALUES

The following examples have been calculated using both the combined method and the proportional area method. The combined method is required for compliance with Building Regulations / Standards revised after the year 2000. These examples are based on the use of *Kingspan Kooltherm*[®] K10 Soffit Board and *Kingspan Kooltherm*[®] K10 Plus Soffit Board fixed direct to the soffit of a 200 mm concrete deck with 50 mm screed. If your construction is any different, please consult our Technical Services Department (see rear cover).

Combined Method – U-values were calculated using the method which has been adopted to bring National standards in line with the European Standard calculation method, BS / IS EN ISO 6946: 1997 (Building components and building elements. Thermal resistance and thermal transmittance. Calculation method).

Proportional Area Method – the U-values shown below were calculated using the proportional area method as detailed in The Chartered Institute of Building Services Engineers (CIBSE) Guide A3 (Thermal Properties of Building Structures).

NB when calculating U-values to BS / IS EN ISO 6946: 1997, the type of fixing used may change the thickness of insulation required. For the purposes of these calculations, the use of insulation fasteners with a cross sectional area of 18.1 mm² has been assumed. Please contact the Kingspan Insulation Technical Services Department (see rear cover) for project calculations.

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.

The figures below are for guidance only. A detailed U-value calculation together with a condensation risk analysis should be completed for each individual project. Please call our Technical Services Department for assistance (see rear cover).

***Kingspan Kooltherm*[®] K10 Soffit Board**

Insulant Thickness (mm)	U-value (W/m ² .K)	
	Combined Method	Proportional Area Method
25	0.57	0.56
30	0.49	0.48
35	0.44	0.43
40	0.39	0.38
45	0.35	0.35
50	0.32	0.32
60	0.27	0.27
65	0.25	0.25

***Kingspan Kooltherm*[®] K10 Plus Soffit Board**

*Product Thickness (mm)	U-value (W/m ² .K)	
	Combined Method	Proportional Area Method
31	0.57	0.55
36	0.49	0.48
41	0.43	0.42
46	0.38	0.34
51	0.35	0.34
56	0.32	0.31
66	0.27	0.27
71	0.25	0.25

* Product thickness = insulant thickness + 6 mm gypsum based board

Kingspan **Kooltherm**[®] K10 and K10 Plus Soffit Boards

SITWORK

Kingspan Kooltherm[®] K10 Soffit Board and *Kingspan Kooltherm*[®] K10 Plus Soffit Board can be fully restrained to a concrete soffit by the use of 11 No. polypropylene insulation fasteners with a minimum head diameter of 35 mm. The fasteners should be evenly distributed over the whole area of the board and must offer a minimum 40 mm penetration into a solid substrate. Board joints should preferably be staggered.

Alternatively a timber batten or proprietary grid system may be adopted if there is an uneven surface or mechanical services and direct fixing is not possible. 50 mm x 25 mm battens are placed at 600 mm centres to coincide with the edges/centre of the boards. The battens are fixed to the soffit by the use of a suitable fixing method e.g. shot fire may be considered.

Kingspan Kooltherm[®] K10 Soffit Board and *Kingspan Kooltherm*[®] K10 Plus Soffit Board should be fixed to the treated timber battens using suitable nails or screws. Fixings should be maximum 300 mm centres (maximum 200 mm when using nails into timber) in rows not greater than 600 mm apart. For aesthetic appearance, consideration may be given to the application of a PVC cover strip at board joints.

Fixings should not be less than 12 mm from the edges of the board. Exposed joints should be covered with a suitable cover strip.

For applications where a greater impact resistance is required, *Kingspan Kooltherm*[®] K10 Plus Soffit Board should be used.

CUTTING

Cutting of *Kingspan Kooltherm*[®] K10 Soffit Board should be carried out using a fine toothed saw or by scoring with a sharp knife and snapping the board over a straight edge and cutting the foil facing on the other side.

Cutting of *Kingspan Kooltherm*[®] K10 Plus Soffit Board should be carried out using a fine toothed saw. Ensure accurate trimming to achieve close butting joints and continuity of insulation

AVAILABILITY

Kingspan Kooltherm[®] K10 Soffit Board and *Kingspan Kooltherm*[®] K10 Plus Soffit Board are available through specialist insulation distributors and selected builders merchants throughout the UK, Ireland and Europe.

PACKAGING

According to quantity, the boards are supplied in packs or on pallets, labelled and shrinkwrapped in polythene.

STORAGE

The packaging of *Kingspan Kooltherm*[®] K10 Soffit Board and *Kingspan Kooltherm*[®] K10 Plus Soffit Board should not be considered adequate for long term outside protection. Ideally, boards should be stored inside a building. If, however, outside storage cannot be avoided, the boards should be stacked clear of the ground, and covered with a 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 leaflet on this topic which satisfies the requirements set out in the Control of Substances Hazardous to Health Regulations 1988 (COSHH) is available from our Technical Services Department.

Please note that the reflective surfaces on these products are designed to enhance their thermal performance. As such, they will reflect light as well as heat, including ultraviolet light. Therefore, if these boards are 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.

Warning – do not stand on or otherwise support your weight on these boards unless they are fully supported by a load bearing surface.

PRODUCT DESCRIPTION - KINGSPAN KOOLTHERM® K10 SOFFIT BOARD

THE FRONT FACING

The front facing of **Kingspan Kooltherm® K10 Soffit Board** is a composite foil.

THE CORE

The core of **Kingspan Kooltherm® K10 Soffit Board** is a CFC-free rigid phenolic insulant of typical density 40-42 kg/m³.

THE REVERSE FACE

The reverse facing of **Kingspan Kooltherm® K10 Soffit Board** is a plain glass fibre tissue.

CFC-FREE*

Kingspan Kooltherm® K10 Soffit Board is produced using alternative blowing agents in compliance with the Montreal Protocol.

* **Kingspan Kooltherm® K10 Soffit Board** is also available CFC/HCFC-free subject to enquiry.

PRODUCT DATA - KINGSPAN KOOLTHERM® K10 SOFFIT BOARD

STANDARDS AND APPROVALS

Kingspan Kooltherm® K10 Soffit Board is manufactured to the highest standards under a quality control system approved to BS EN ISO 9002: 1994 (Quality systems. Model for quality assurance in production, installation and servicing).



STANDARD DIMENSIONS

Kingspan Kooltherm® K10 Soffit Board is available in the following standard sizes and thicknesses.

Nominal Dimension	Availability
Length (m)	2.4
Width (m)	1.2*
Insulant Thickness* (mm)	25, 30, 40, 45, 50, 60, 65, 70

* 1.16 mm for insulant thicknesses over 50 mm

** Other thicknesses are available subject to quantity

INSULATION COMPRESSIVE STRENGTH

Typically exceeds 100 kPa at 10% compression when tested to BS 4370: Part 1: 1988 (1996) (Methods of test for rigid cellular materials).

WATER VAPOUR RESISTANCE

Modified to include board facings, the boards achieve a resistance far greater than 100 MN.s/g, when tested in accordance with BS 4370: Part 2: 1993.

DURABILITY

If correctly applied, **Kingspan Kooltherm® K10 Soffit Board** has 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 dilute acids, alkalis, mineral oil and petrol. It 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 **Kingspan Kooltherm® K10 Soffit Board**. Boards which have been in contact with harsh solvents, petrol, mineral oil or acids, or boards that have been damaged in any way should not be used.

The insulation core and facings used in the manufacture of **Kingspan Kooltherm® K10 Soffit Board** resist attack by mould and microbial growth and do not provide any food value to vermin.

FIRE PERFORMANCE

The rigid phenolic insulation core of **Kingspan Kooltherm® K10 Plus Soffit Board** will achieve the results given below which enables it to be classified by the Building Regulations as being **Class O rated**.

Test	Result
BS 476: Part 6:1989 (Fire Propagation Test)	Index of performance (1) not exceeding 12 and sub Index (i _r) not exceeding 6 for rigid phenolic insulation core
BS 476: Part 7: 1997 (Surface Spread of Flame Test)	Class 1 rating for rigid phenolic insulation core
BS 5111: Part 1: 1974 (Smoke Obscuration)	< 5%

Kingspan **Kooltherm**® K10 and K10 Plus Soffit Boards

PRODUCT DESCRIPTION - KINGSPAN KOOLTHERM® K10 PLUS SOFFIT BOARD

THE FRONT FACING

The front facing of **Kingspan Kooltherm**® K10 Plus Soffit Board is a 6 mm gypsum based board which is secondary bonded to the insulation core during manufacture.

THE CORE

The core of **Kingspan Kooltherm**® K10 Plus Soffit Board is a CFC-free rigid phenolic insulant of typical density 40-42 kg/m³.

THE REVERSE FACE

The reverse facing of **Kingspan Kooltherm**® K10 Plus Soffit Board is a composite foil autohesively bonded to the insulation during manufacture.

CFC-FREE*

Kingspan Kooltherm® K10 Plus Soffit Board is produced using alternative blowing agents in compliance with the Montreal Protocol.

* **Kingspan Kooltherm**® K10 Plus Soffit Board is also available CFC/HCFC-free subject to enquiry.

PRODUCT DATA - KINGSPAN KOOLTHERM® K10 PLUS SOFFIT BOARD

STANDARDS AND APPROVALS

Kingspan Kooltherm® K10 Plus Soffit Board is manufactured to the highest standards under a quality control system approved to BS EN ISO 9002: 1994 (Quality systems. Model for quality assurance in production, installation and servicing).



STANDARD DIMENSIONS

Kingspan Kooltherm® K10 Plus Soffit Board is available in the following standard size and thicknesses:

Nominal Dimension	Availability
Length	(m) 2.4
Width	(m) 1.2*
Gypsum Based Board Thickness	(mm) 6
Insulant Thickness**	(mm) 25, 30, 35, 40, 45, 50, 60, 65, 70

* 1.16 mm for insulant thicknesses over 50 mm

** Other thicknesses are available subject to quantity

INSULATION COMPRESSIVE STRENGTH

Typically exceeds 100 kPa at 10% compression when tested to BS 4370: Part 1: 1988 (1996) (Methods of test for rigid cellular materials).

WATER VAPOUR RESISTANCE

Modified to include board facings, the boards achieve a resistance far greater than 100 MN.s/g, when tested in accordance with BS 4370: Part 2: 1993.

DURABILITY

If correctly applied, **Kingspan Kooltherm**® K10 Plus Soffit Board has 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 dilute acids, alkalis, mineral oil and petrol. It 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 **Kingspan Kooltherm**® K10 Plus Soffit Board. Boards which have been in contact with harsh solvents, petrol, mineral oil or acids, or boards that have been damaged in any way should not be used. The insulation core and facings used in the manufacture of **Kingspan Kooltherm**® K10 Plus Soffit Board resist attack by mould and microbial growth and do not provide any food value to vermin.

FIRE PERFORMANCE

The rigid phenolic insulation core of **Kingspan Kooltherm**® K10 Plus Soffit Board will achieve the results given below which enables it to be classified by the Building Regulations as being Class O rated. Factory bonded to the rigid phenolic insulation core is a 6 mm cementitious board which also has a Class O fire performance to the Building Regulations.

Test	Result
BS 476: Part 6: 1989 (Fire Propagation Test)	Index of performance (1) not exceeding 12 and sub Index (I _s) not exceeding 6 for rigid phenolic insulation core
BS 476: Part 7: 1997 (Surface Spread of Flame Test)	Class 1 rating for rigid phenolic insulation core
BS 5111: Part 1: 1974 (Smoke Obscuration)	< 5%

KINGSPAN INSULATION

Kingspan Insulation offers an extensive range of premium and high performance insulation products, breathable membranes and pre-fabricated / pre-insulated systems for the construction industry. Following an extensive investment programme, Kingspan Insulation is continuing to lead the insulation industry by manufacturing the majority of its insulation products with zero Ozone Depletion Potential (ODP) and quoting thermal performance data in accordance with the new harmonised European Standard.

Kingspan Insulation Limited specialise in the solution of insulation problems. Our range of insulation products which meet the exacting requirements of the construction industry are produced to the highest standards, including BS EN ISO 9002: 1994 and IS EN ISO 9002: 1994. Each product has been designed to fulfil a specific need and has been manufactured to precise standards and tolerances.

INSULATION FOR:

- PITCHED ROOFS
- FLAT ROOFS
- CAVITY WALLS
- TIMBER AND STEEL FRAMING
- EXTERNALLY INSULATED CLADDING SYSTEMS
- FLOORS
- SOFFITS

INSULATED DRY LINING

TAPERED ROOFING SYSTEMS

Kingspan KoolDuct® PRE-INSULATED DUCTING

Kingspan nilvent™ BREATHABLE MEMBRANES

Kingspan TEK Haus™ BUILDING SYSTEM

THE KINGSPAN INSULATION PRODUCT RANGE

THE KINGSPAN KOOLTHERM® K-RANGE

- With a thermal conductivity of 0.018 W/m.K rigid phenolic insulation is the most thermally efficient insulation product commonly available.
- Utilises the thinnest possible insulation board to achieve required U-values.
- Fire performance can be equivalent to mineral fibre.
- Achieves a Class O fire rating to the Building Regulations.
- Achieves the best possible rating of <5% smoke emission when tested to BS 5111: Part 1: 1974.
- CFC-free / available CFC/HCFC-free with zero Ozone Depletion Potential subject to enquiry.

THE KINGSPAN THERMA ZERO ODP RANGE

- With a thermal conductivity of 0.022-0.026 W/m.K zero ODP rigid urethane insulation is one of the most thermally efficient insulation products commonly available.
- Easily achieves required U-values with minimum board thickness.
- Achieves the required fire performance for the intended application.
- CFC/HCFC-free with zero Ozone Depletion Potential (ODP).

THE KINGSPAN STYROZONE™ & PURLCRETE ZERO ODP RANGES

- Rigid extruded polystyrene insulation (XPS) has the highest compressive strength of any commonly available insulant.
- Ideal for specialist applications such as inverted roofing and heavy-duty flooring.
- Easily achieves required U-values with minimum board thickness.
- Achieves the required fire performance for the intended application.
- CFC/HCFC-free with zero Ozone Depletion Potential (ODP).

ALL PRODUCTS

- Their closed cell structure resists both moisture and water vapour ingress – problems which can be associated with open cell materials such as mineral fibre and which can result in reduced thermal performance.
- Unaffected by air movement – problems that can be experienced with mineral fibre and which can reduce thermal performance.
- Safe and easy to install – masks are not required, as Kingspan Insulation products do not produce loose dust or irritable fibres.
- Provide reliable long term thermal performance over the lifetime of the building.

CUSTOMER SERVICE

For quotations, order placement and details of despatches please contact our Building Fabric Insulation Customer Services Department on the numbers below:

UK – Telephone: +44 (0) 870 850 8555
– Fax: +44 (0) 870 850 8666
– email: commercial.uk@insulation.kingspan.com

Ireland – Telephone: +353 (0) 42 97 95000
– Fax: +353 (0) 42 97 46129
– email: commercial.ie@insulation.kingspan.com

TECHNICAL ADVICE

Kingspan Insulation Ltd support all of their products with a comprehensive Technical Advisory Service for specifiers, stockists and contractors.

This includes a free computer-aided service designed to give fast, accurate technical advice. Simply phone our **TECHLINE** with your project specification and we can run calculations to provide U-values, condensation/dew point risk, required insulation thicknesses etc... Thereafter we can run any number of permutations to help you achieve your desired targets.

We can also give general application advice and advice on design detailing and fixing etc... Site surveys are also undertaken as appropriate.

Please contact our Building Fabric Insulation Technical Services Department on the **TECHLINE** numbers below:



UK: – Telephone: +44 (0) 870 850 8555
– Fax: +44 (0) 1544 387 278
– email: techline.uk@insulation.kingspan.com

Ireland: – Telephone: +353 (0) 42 97 95032
– Fax: +353 (0) 42 97 46129
– email: techline.ie@insulation.kingspan.com

LITERATURE AND 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, on CD-ROM or as individual product brochures, Kingspan Insulation technical literature is an essential specification tool. For copies please contact our Marketing Department on the numbers below:

UK – Telephone: +44 (0) 1544 387 210
– Fax: +44 (0) 1544 387 299
– email: literature.uk@insulation.kingspan.com

Ireland – Telephone: +353 (0) 42 97 95038
– Fax: +353 (0) 42 97 46129
– email: literature.ie@insulation.kingspan.com

GENERAL ENQUIRIES

For all other enquiries contact Kingspan Insulation on the numbers below:

UK – Telephone: +44 (0) 870 850 8555
– Fax: +44 (0) 870 850 8666
– email: info.uk@insulation.kingspan.com

Ireland – Telephone: +353 (0) 42 97 95000
– Fax: +353 (0) 42 97 46129
– email: info.ie@insulation.kingspan.com

Kingspan Insulation reserve the right to amend product specifications without prior notice. 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 as to the suitability and compliance with actual requirements, specifications and any applicable laws and regulations. For other applications or conditions of use, Kingspan Insulation offers a free Technical Advisory Service (see left) whose advice should be sought for uses of Kingspan Insulation products that are not specifically described herein. Please check that your copy of the literature is current by contacting our Marketing Department (see above).



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