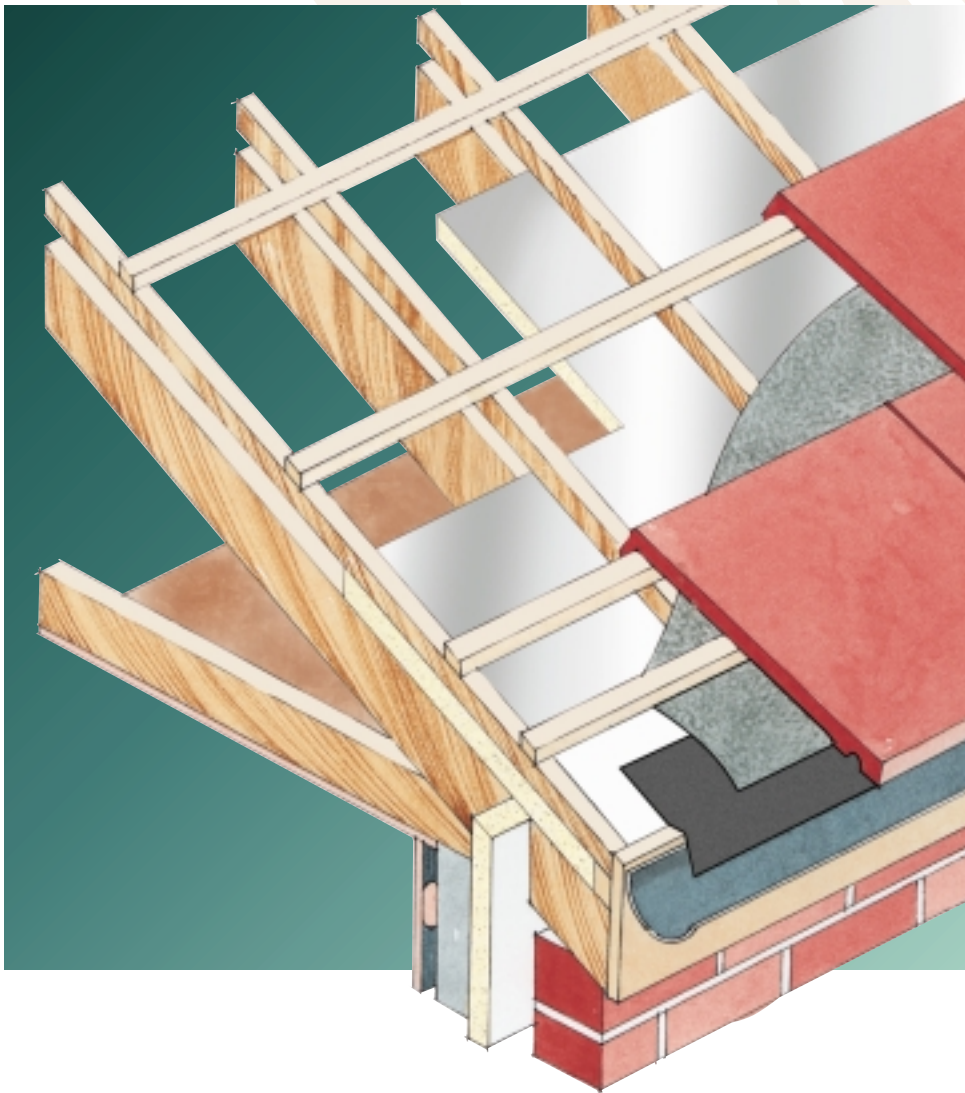


# Thermapitch TP10

*Sarking insulation beneath tiled or slated pitched roofs*



- ▼ On average its use creates 15% more usable warm roof space
- ▼ High performance insulation – 35 mm can achieve 0.35 W/m<sup>2</sup>K
- ▼ Cross ventilation and insulation of pipes and tanks are unnecessary
- ▼ No condensation risk
- ▼ Unaffected by air movement
- ▼ Resistant to the passage of water vapour
- ▼ Easy to install
- ▼ Ideal for newbuild and refurbishment
- ▼ CFC-free



I.S. EN ISO 9002 : 1994  
Registration No. M449



BS EN ISO 9002 : 1994  
Certificate No. FM 10697

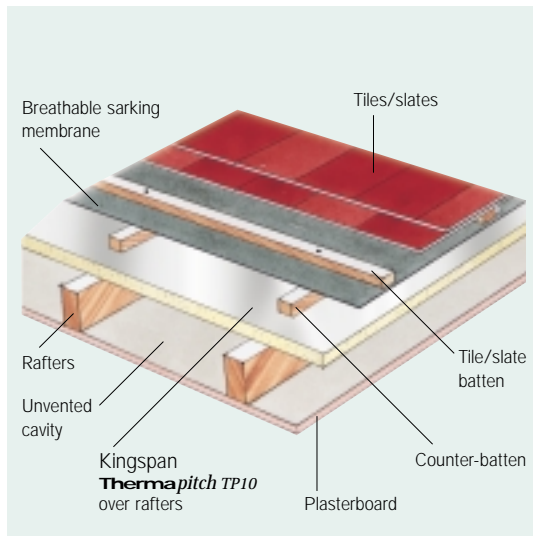


# Kingspan Thermapitch TP10

## Typical Design Details

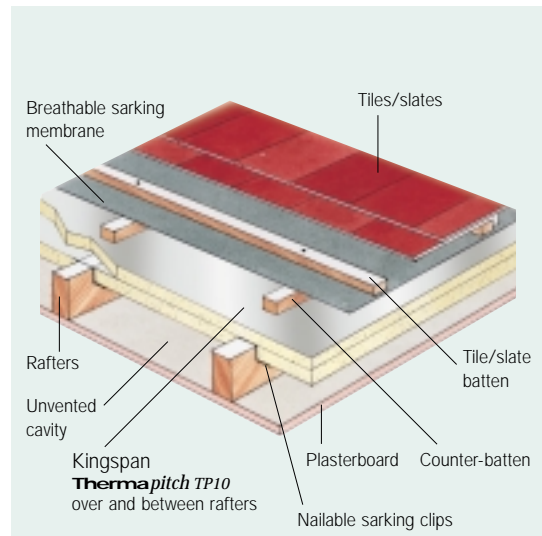
### SINGLE LAYER INSULATION

Figure 1



### DOUBLE LAYER INSULATION

Figure 2



## Specification Clause

Kingspan **Thermapitch** TP10 should be described in specifications as:-

The insulating sarking board shall be Kingspan **Thermapitch** TP10 \_\_\_mm thick comprising a CFC-free rigid urethane core with low emissivity composite foil facings on both sides manufactured to BS EN ISO 9002 : 1994/IS 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.



## Design Considerations

### FIRE STOPS

The requirements of the current Building Regulations approved Documents B, Appendix G should be considered with regard to the requirements and/or provision of fire stops.

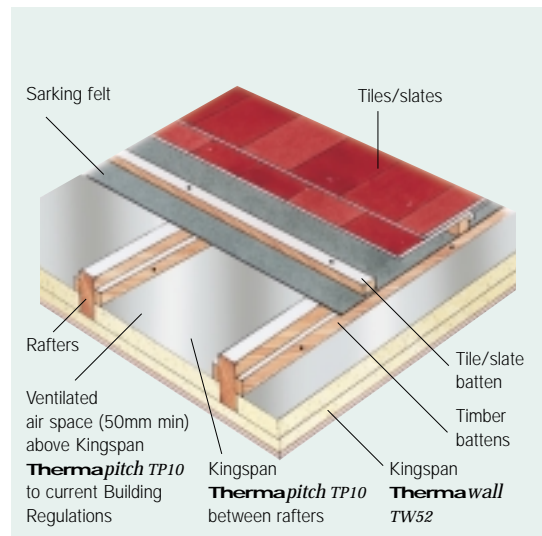
### SINGLE/DOUBLE LAYER

Dependent on the designed insulation value of the construction and the available space, it may be possible to apply Kingspan **Thermapitch** TP10 insulating sarking board in a single thickness. If the thickness required is considered to be excessive it is recommended that double layer insulation should be considered (see 'Sitework' on page 4 and Figures 1 and 2 above).

**Note:** However, where this necessitates two different board thicknesses, the greatest depth should be placed over rafter in an effort to prevent condensation occurring between the two layers.

### INSULATION BETWEEN RAFTERS – COLD ROOF/WARM ROOF SPACE

Figure 3



### BREATHABLE SARKING MEMBRANE

A breathable sarking membrane should be specified for use with Kingspan **Thermapitch** TP10. Proprietary membranes, similar to those used in timber frame construction, are available for this purpose. The vapour resistance of the breather membrane must not exceed 0.17 MNs/g.

### MANSARD ROOFS/WALLS

Kingspan **Thermapitch** TP10 can be used for the construction of insulated tiled or slated mansard roof/walls. Its application on such contracts is identical to the standard specification which is given here.

## Typical U-values

### VENTILATION – WARM ROOFS

Sarking insulation at rafter level creates a warm pitched roof which does not require cross ventilation. Any water vapour reaching the counter batten cavity escapes through the breathable sarking membrane without condensing. There is then adequate air movement beneath the tiles to dissipate this water vapour to the outside atmosphere. A vapour control layer is not required on the underside of the insulation.

### INSULATION BETWEEN RAFTERS – COLD ROOF/WARM ROOF SPACE

Kingspan **Therma**pitch TP10 may also be used to install insulation between sloping rafters where the ceiling is to be attached directly to the underside of the rafters (see Figure 3). Consideration should be given to adopting Kingspan **Therma**wall TW52 beneath the rafter to prevent a thermal bridge through the timber. For further information on this detail please consult our Technical Services Department (see rear cover).

## Thermal Properties

**The  $\lambda$ -values quoted in this document are based on the ACERMI method for prediction of the long-term insulation values. Comparison with alternative products may not be appropriate unless similar test methods have been used.**

### THERMAL CONDUCTIVITY

The boards achieve a thermal conductivity ( $\lambda$ -value) of **0.019 W/mK**.

### THERMAL RESISTANCES

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

Insulant Thickness (mm)	Thermal Resistance (m <sup>2</sup> K/W)
25	1.316
30	1.579
35	1.842
40	2.105
45	2.368
50	2.632
55	2.895
60	3.158
65	3.421
70	3.684
75	3.947
80	4.211

The U-value requirements as detailed in the appropriate Building Regulations/Standards can be easily achieved utilising the appropriate thickness of Kingspan **Therma**pitch TP10.

The calculation of U-values for pitched roof insulation purposes is determined by a number of factors:

- Will the loft space be habitable or not.
- Does the ceiling line follow the pitch of the roof or is it a flat horizontal ceiling.
- The pitch of the roof (where a horizontal ceiling is to be used).
- Rafter centres/depth where insulation is between timbers.

The following examples are based on a construction of roof tiles/slates, battens, breather membrane, counter battens, Kingspan **Therma**pitch TP10, rafters (at 600 mm centres) in a warm roof structure with a 12.5 mm plasterboard ceiling. If the construction is any different, please consult our Technical Services Department (see rear cover).

The 'Double Layer' 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).

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).

### SINGLE LAYER

Insulant Thickness (mm)	U-value (W/m <sup>2</sup> K)
25mm	0.43
30mm	0.39
35mm	0.35
40mm	0.32
50mm	0.28
60mm	0.24
70mm	0.21

### DOUBLE LAYER

Insulant Thickness (mm)	U-value (W/m <sup>2</sup> K)
25mm + 25mm	0.29
35mm + 35mm	0.22
40mm + 40mm	0.20
50mm + 50mm	0.17

**Note: Where a flat ceiling is used, greater thicknesses of insulation are required.**

# *Kingspan **Thermapitch** TP10*

## Sitework

### SINGLE LAYER INSULATION

Single layer insulation, the most common method, is simply fixed by placing the boards over the rafters with a 38 x 38 mm softwood treated counter-batten in line with the rafters and securing them to the rafters by fixing through both the counter-batten and the Kingspan **Thermapitch** TP10. Boards should be lightly butted, they may be laid either across or down the line of the rafters and should preferably be laid break bonded in order to help improve the racking strength of the roof (see Figure 1). All board joints running from eaves to ridge must occur over rafters. There is no necessity to tape board joints. A preservative treated stop rail should be secured to the rafters close to the eaves (see Figures 4 & 5).

### DOUBLE LAYER INSULATION

Double layer insulation is achieved by the use of Kingspan nailable sarking clips which are driven into the upper surface of each rafter at 1 metre intervals up the roof slope. The Kingspan nailable sarking clips then support lengths of Kingspan **Thermapitch** TP10 suitably trimmed to size and placed between the rafters (see Figure 2). These sections form the first layer. The second layer is then applied as described in 'Single Layer Insulation' above.

### BREATHABLE SARKING MEMBRANE

The breather membrane (e.g. Monarflex Monarperm 450 or Klobber TYVEK 2001b PRO) is applied over the counter battens and held in place by the slate/tile battens which are nailed through the membrane to the counter battens. Adopting the breather membrane over the counter battens ensures maximum thermal efficiency from the low emissivity surface of the insulant. Application advice should be sought from the appropriate membrane manufacturer.

### SLATING AND TILING

Slating and tiling over Kingspan **Thermapitch** TP10 is exactly the same as an application on an un-insulated roof except that the slate laths are fixed to the previously applied counter-battens. It is, however, essential that slate or tiling rubble does not lay in contact with the breathable sarking membrane as this would allow driven rain or melted snow to penetrate the breathable sarking membrane.

### SURFACE TREATMENT

The boards have a foil faced durable surface and no further treatment is necessary. Kingspan **Thermapitch** TP10 is not intended to provide an internal finish and should be underlined with a suitable building board.

### CUTTING

Cutting should be carried out using a fine saw or by scoring with a knife and snapping the board over a straight edge and cutting the facing on the other side.

### DAILY WORKING PRACTICE

Installed Kingspan **Thermapitch** TP10 boards should be protected against inclement weather.

### FIXINGS

Helifix In-Skew or similar approved fixings should be applied at centres appropriate to the design of the roof and location of the building. **Refer to Helifix Ltd. Telephone: +44 (0) 181 749 4346.**

### AVAILABILITY

Kingspan **Thermapitch** TP10 is available through specialist insulation distributors and selected Builders Merchants throughout the UK, Ireland and Europe.

### PACKAGING

The boards are supplied in labelled packs shrinkwrapped in polythene.

### STORAGE

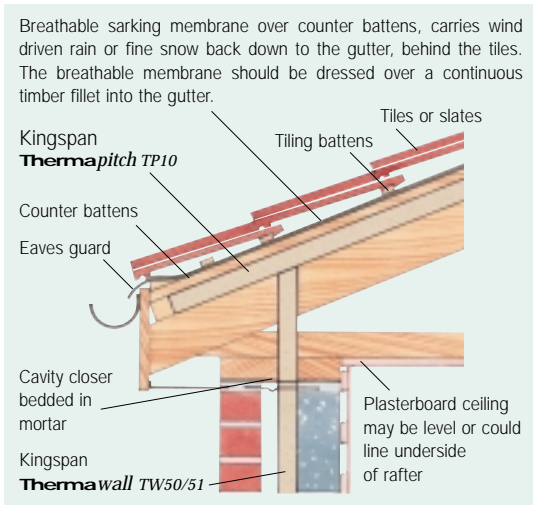
The packaging of Kingspan **Thermapitch** TP10 should not be considered adequate for long term outside protection. Ideally boards should be stored inside a building. If however, outside storage cannot be avoided the boards should be stacked clear of the ground and covered with a polythene sheet or weatherproof 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 (see rear cover).

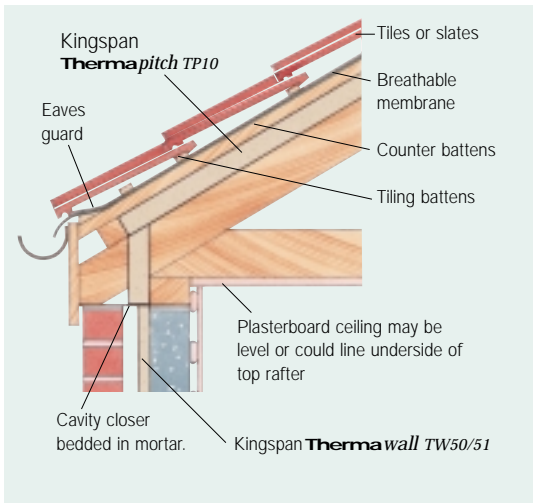
## OVERHANGING EAVES – SINGLE LAYER

Figure 4



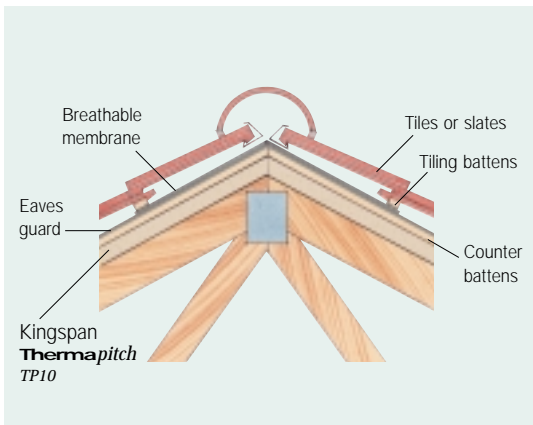
## FLUSH EAVES – SINGLE LAYER

Figure 5



## RIDGE DETAIL – SINGLE LAYER

Figure 6



# Kingspan *Thermapitch* TP10

## Product Description

### THE FACINGS

Kingspan *Thermapitch* TP10 is faced on both sides with a low emissivity composite foil facing which is highly resistant to the transmission of water vapour. This reflective, low emissivity surface effectively doubles the thermal resistance of the cavity in which the board is placed.

### THE CORE

The core of Kingspan *Thermapitch* TP10 is a high performance CFC-free rigid urethane insulant of typical density 32kg/m<sup>3</sup>.

### CFC-FREE\*

Kingspan *Thermapitch* TP10 is produced using alternative blowing agents in compliance with the Montreal Protocol.

\*Kingspan *Thermapitch* TP10 is also available CFC/HCFC-free subject to quantity.

## Product Data

### STANDARDS AND APPROVALS

Kingspan *Thermapitch* TP10 is assessed under BS EN ISO 9002 : 1994/IS EN ISO 9002 : 1994. Its use is covered by BBA Certificate 95/3126.



### DIMENSIONS AND TOLERANCES

Kingspan *Thermapitch* TP10 sarking board is available in the following standard sizes and thicknesses:

Dimension	Availability	Tolerance
Length (mm)	2400	+/- 5mm
Width (mm)	1200	+/- 3mm
Insulant Thickness* (mm)	25, 30	+/- 1.5mm
	35, 40, 45, 50	+/- 2mm
	55, 60, 65, 70, 75	+/- 3mm
	80	+/- 4mm
Diagonals	The diagonals of any one board do not differ by more than 0.3%.	

\* Other thicknesses are available subject to quantity.

### INSULATION COMPRESSIVE STRENGTH

Exceeds 150 kPa at 10% yield when tested to BS 4370 : Part 1 : 1988 (Methods of Test for Rigid Cellular Materials).

### WATER VAPOUR RESISTANCE

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

### DURABILITY

If correctly applied, Kingspan *Thermapitch* TP10 has an indefinite life. It's 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 with Kingspan *Thermapitch* TP10. 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 *Thermapitch* TP10 resist attack by mould and microbial growth and do not provide any food value to vermin.

### FIRE PERFORMANCE

Kingspan *Thermapitch* TP10, when subjected to British Standard fire tests, achieves the results given below. Further details of the fire performance of Kingspan Insulation products may be obtained from our Technical Services Department (see rear cover).

Test	Result
BS 476 : Part 3 : 1958 (1975) (External Fire Exposure Roof Test)	SAA rating
BS 476 : Part 7 : 1987 (1993) (Surface Spread of Flame Test)	Class 1 rating

## Kingspan Insulation

Kingspan Insulation offer an extensive range of high performance insulation products for the construction industry. Following an extensive investment programme, Kingspan Insulation are continuing to lead the industry by providing the ultimate in product flexibility which includes the technology to produce a range of products with zero Ozone Depletion Potential (ODP).

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.

Our range includes insulants for:

### FLAT ROOFING

- Built-Up Roofing
- Single Ply Roofing
- Mastic Asphalt Roofing
- Structural Insulated Decks
- Protected Membrane Roofing
- Tapered Roofing Systems
- Factory Mutual Approved Systems

### PITCHED ROOFING

- Slated or Tiled Warm Roofs
- Slate or Tiled Cold Roofs
- Insulated Lining Systems

### WALLS

- Insulated Plasterboard Dry-Lining
- Cavity Wall Insulation
- Insulated Lining Systems
- Timber Frame Insulation
- External Wall Insulation

### FLOORS

- Suspended Floor Insulation
- Solid Floor Insulation
- Floor Perimeter Insulation
- Floating Floor Insulation
- Semi Exposed Floors

## The Kingspan Therma Range

- With a thermal conductivity of 0.019-0.025 W/mK rigid urethane insulation is one of the most thermally efficient insulation products commonly available.
- Easily achieves required U-values with minimum board thickness.
- The most comprehensive range of products available – a product for every application.
- Achieves the required fire performance for the intended application.
- Available CFC/HCFC-free.
- Its 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 which can be experienced with mineral fibre and which can reduce thermal performance.
- Safe and easy to install – masks are not required as rigid urethane insulants don't produce loose dust or irritable fibres.
- Provides reliable long term thermal performance over the lifetime of the building.

## Technical Advice

Kingspan Insulation Limited 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 Technical Services Department on the *TECHLINE* numbers below:



UK – **Freefone 0800 610061**  
+44 (0) 1544 387260 (if dialling from outside the UK)  
– Fax: **01544 388888**  
– e-mail: technical.service@kil.kingspan.co.uk

Ireland – Telephone: **042 9795000**  
– Fax: **042 9746129**  
– e-mail: technical.service@kil.kingspan.ie

## Customer Service

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

UK – Telephone: **01544 388601**  
– Fax: **01544 388888**  
– e-mail: customer.service@kil.kingspan.co.uk

Ireland – Telephone: **042 9795000**  
– Fax: **042 9746129**  
– e-mail: customer.service@kil.kingspan.ie

### NB

*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 the uses described. For other applications or conditions of use, Kingspan Insulation offers a free Technical Advisory Service (see left) whose advice should be sought for all uses of Kingspan Insulation products that are not specifically described herein. When specifying the products that are described herein please check that your copy of this literature is current by calling our Technical Services Department (see left).*



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e-mail: general.enquiries@kil.kingspan.ie