CI/SfB Kn6



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Kingspan Kooltherm K10, K10 Plus & K15 Insulation Products

Isolation de murs Wärmedämmung

NSAI Agrément (Irish Agrément Board) is designated by Government to issue European Technical Approvals.

NSAI Agrément Certificates establish proof that the certified products are **'proper materials'** suitable for their intended use under Irish site conditions, and in accordance with the **Building Regulations 1997 to 2019**.



PRODUCT DESCRIPTION:

This Certificate relates to the following products:

- Kooltherm K10 and K10 Plus Soffit Board (Detail Sheet 1)
- Kooltherm K15 Board (Detail Sheet 2)

This Certificate certifies compliance with the requirements of the Building Regulations 1997 to 2019.

USE:

This is covered in each individual Detail Sheet.

MANUFACTURE AND MARKETING:

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Part One / Certification



1.1 ASSESSMENT

In the opinion of NSAI Agrément, the Kingspan Kooltherm range of insulation products, if used in accordance with this Certificate and in conjunction with the relevant Detail Sheet, can meet the requirements of the Building Regulations 1997 to 2019, as indicated in Section 1.2 of this Irish Agrément Certificate.

1.2 BUILDING REGULATIONS 1997 to 2019

REQUIREMENTS:

Part D – Materials and Workmanship

D3 – The Kingspan Kooltherm products, as certified in this Certificate, are comprised of 'proper materials' fit for their intended use (see Part 4 of this Certificate).

D1 – The Kingspan Kooltherm products, as certified in this Certificate, meet the requirements of the building regulations for workmanship.

Part B – Fire Safety B2 – Internal Fire Spread (Linings) Part B Vol 2 – Fire Safety B7 – Internal Fire Spread (Linings)

The Kingspan Kooltherm products are considered to be Euroclass C-s2, d0 when tested to IS EN 13501-1:2007+A1:2009 Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests.

B3 – Internal Fire Spread (Structure) B8 – Internal Fire Spread (Structure)

The Kingspan Kooltherm products referred to in this Certificate carry Euroclass C-s2, d0.

Part C – Site Preparation and Resistance to Moisture

C4 – Resistance to Weather and Ground Moisture

The Kingspan Kooltherm products referred to in this Certificate when installed in compliance with the conditions indicated in Part 3 of the relevant Detail Sheet will not promote the passage of moisture and will minimise the risk of surface or interstitial condensation.

Part J – Heat Producing Appliances J3 – Protection of Building

In the opinion of NSAI Agrément, the Kingspan Kooltherm products, if used in accordance with this Certificate and the relevant Detail Sheet, can meet the requirements of Part J of the Building Regulations 1997 to 2019.

Part L – Conservation of Fuel and Energy L1 – Conservation of Fuel and Energy

Based on the measured thermal conductivity of Kingspan Kooltherm products, the products can contribute to complying with the requirements of this Regulation.



Part Two / Technical Specification and Control Data

2.1 PRODUCT DESCRIPTION

Each of the Kingspan Kooltherm products is given a detailed description in the relevant Detail Sheet.

2.2 DELIVERY, STORAGE AND MARKING

The Kingspan Kooltherm products are supplied palletised in labelled packs and shrink wrapped in polyethylene. Each pack carries a label bearing the CE Marking together with the product description, product characteristics (λ and R values), size, thickness, batch number and date of manufacture, the manufacturer's name, NSAI Agrément identification mark and NSAI Agrément Certificate number for the system.

The product packaging must not be considered adequate for outside protection. Ideally boards should be stored inside the building. If stored outside, the products should be stacked flat on a level base raised off the ground on skids and should be covered with a polythene sheet or protected with weatherproof tarpaulins.

Boards should be protected in transit and in storage from damage caused by ropes and tie straps.

The boards must not be exposed to a naked flame or other ignition sources.

On-site cutting of boards where it is necessary to maintain continuity of insulation around doors, windows or other openings is easily executed using a fine tooth saw or by cutting through the insulation, and paper backing of any plasterboard layer, then snapping the boards face down over a straight edge and cutting the paper facing of the plasterboard on the other side.

Tapered edged boards are jointed and finished in accordance with standard dry lining procedure offering a surface suitable for paper hanging and paint finishes.

Good workmanship and appropriate site procedures are necessary to achieve expected thermal and air tightness performance. Ensure accurate trimming to achieve close butting joints and continuity of insulation.

Adequate protection and safety precautions should be taken.

Part Three / Design Data

3.1 GENERAL

This matter is dealt with for each product in their Detail Sheet.



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Part Four / Technical Investigations

4.1 BEHAVIOUR IN FIRE

Each Detail Sheet contains the relevant information.

4.2 WATER PENETRATION

The Kingspan Kooltherm products referred to in this Certificate are of a closed cell structure, which does not allow water uptake by capillary action. When used in accordance with this Certificate, the products present no significant risk of water penetration.

4.3 THERMAL INSULATION

The aged/design thermal conductivity ' $\lambda_{90/90}$ ' value' of the Kingspan Kooltherm products has been measured in accordance with I.S. EN 12667:2001 Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meters method – Products of high and medium thermal resistance (see each individual Detail Sheet). The high thermal resistance of the Kingspan Kooltherm Products ensures that cold bridging and extra heat loss around the edges of openings can be avoided.

Lintel jamb and cill designs similar to those shown in Diagram 3 of the TGD to Part L of the Building Regulations 1997 to 2019 will be satisfactory to limit thermal bridging.

Uncontrolled leakage of air through the fabric of a building and/or cracks in and around door and window frames, sills, jambs etc. can occur due to wind pressure or air movement due to thermal effects. Details of how to avoid the infiltration of cold air are given in TGD to Part L of the Building Regulations 1997 to 2019, Section 1.6 page 14.

The required maximum U-values for roofs can be obtained from the relevant Detail Sheet.

4.4 LIMITING THERMAL BRIDGING

The linear thermal transmittance ` ψ ' (Psi) describes the heat loss associated with junctions and around openings. Junction design used with the Kingspan Kooltherm products have been assessed and when detailed in accordance with this Certificate can meet the requirements of Table D2 of TGD to Part L of the Building Regulations 1997 to 2019.

When **all** bridged junctions within a building comply with the requirements of Table D2 of TGD to Part L, the improved 'y' factor of 0.08 can be entered into the DEAP building energy rating (BER) calculation. If **all** junctions can be shown to be equivalent or better than Acceptable Construction Details published by the DECLG, then the values published in Table D2 apply.

Where either of the above options are shown to be valid, or when the required values cannot be achieved, all relevant details should be recorded on the 'Certificate of Compliance' for that project for use in future BER calculations.

 ψ' values for other junctions outside the scope of this Certificate should be assessed in accordance with BRE IP1/06 Assessing the effects of thermal bridging at junctions and around openings and BRE BR 497 Conventions for calculating linear thermal transmittance and temperature factors in accordance with Appendix D of TGD to Part L of the Building Regulations 1997 to 2019.

As per Acceptable Construction Details, a minimum thermal resistance of 0.6m²K/W should be provided at window reveals, heads and sills.

4.5 MATERIALS IN CONTACT WITH ELECTRICAL WIRING

Electrical installations should be in accordance with the ETCI publication ET 207 *Guide to the National Rules for Electrical Installations as Applicable to Domestic Installations.* It is recommended that cables should not be buried in the insulation and carried in a conduit. In relation to recessed spotlights and other luminaries, ET 207 requires they be not less than the minimum distances from combustible materials as specified in clause 559.3.2 of the TCI National rules of the Electro Technical Council of Ireland (ET 101). For extra low voltage (ELV) it is recommended that only surface mounted ELV lighting be permitted in conjunction with QL Dry Lining with Plasterboard Laminate.

4.6 CONDENSATION RISK

When insulating buildings the recommendations of BS 5250:2011+A1:2016 *Code of Practice for control of condensation in buildings* should be followed to minimise the risk of condensation within the building elements and structures.

4.7 RESISTANCE TO SOLVENTS, FUNGI AND RODENTS

The Kingspan Kooltherm referred to in this Certificate do not promote infestation, as there is no food value in the materials used. They also resist attack by mould and microbial growth. 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 keytone. Adhesives containing such solvents should not be used in





association with the boards. Boards which have been in contact with harsh solvents, petrol, mineral oil or acids or boards that have been damaged in any other way should not be used.

4.8 WALL MOUNTED FITTINGS

This matter is dealt with in the Detail Sheets.

4.9 MAINTENANCE

This matter is dealt with in the Detail Sheets.

4.10 DURABILITY

The Kingspan Kooltherm products referred to in this Certificate are rot-proof and durable.

4.11 CE MARKING

The manufacturer has taken responsibility of CE marking the Kingspan Koolterm in accordance with harmonised European Standard IS FN 13166:2012+A2:2016 Thermal insulation products for buildings - Factory made phenolic foam (PF) products - Specification. An asterisk (*) appearing in this Certificate indicates that data shown is an essential characteristic of the product and declared in the manufacturers Declaration of Performance (DoP).

Reference should be made to the latest version of the manufacturer's DoP for current information on any essential characteristics declared by the manufacturer.

Part Five / Conditions of Certification

5.1 National Standards Authority of Ireland ("NSAI") following consultation with NSAI Agrément has assessed the performance and method of installation of the product/process and the quality of the materials used in its manufacture and certifies the product/process to be fit for the use for which it is certified provided that it is manufactured, installed, used and maintained in accordance with the descriptions and specifications set out in this Certificate and in accordance with the manufacturer's instructions and usual trade practice. This Certificate shall remain valid for five years from date of issue so long as:

- (a) the specification of the product is unchanged.
- (b) the Building Regulations 1997 to 2019 and any other regulation or standard applicable to the product/process, its use or installation remains unchanged.
- (c) the product continues to be assessed for the quality of its manufacture and marking by NSAI.
- (d) no new information becomes available which in the opinion of the NSAI, would preclude the granting of the Certificate.
- (e) the product or process continues to be manufactured, installed, used and maintained in accordance with the description, specifications and safety recommendations set out in this certificate.
- (f) the registration and/or surveillance fees due to NSAI are paid.

5.2 The NSAI Agrément mark and certification number may only be used on or in relation to product/processes in respect of which a valid Certificate exists. If the Certificate becomes invalid the Certificate holder must not use the NSAI Agrément mark and certification number and must remove them from the products already marked.

5.3 In granting Certification, the NSAI makes no representation as to;

- (a) the absence or presence of patent rights subsisting in the product/process; or
- (b) the legal right of the Certificate holder to market, install or maintain the product/process; or
- (c) whether individual products have been manufactured or installed by the Certificate holder in accordance with the descriptions and specifications set out in this Certificate.

5.4 This Certificate does not comprise installation instructions and does not replace the manufacturer's directions or any professional or trade advice relating to use and installation which may be appropriate.

5.5 Any recommendations contained in this Certificate relating to the safe use of the certified product/process are preconditions to the validity of the Certificate. However the NSAI does not certify that the manufacture or installation of the certified product or process in accordance with the descriptions and specifications set out in this Certificate will satisfy the requirements of the





Safety, Health and Welfare at Work Act 2005, or of any other current or future common law duty of care owed by the manufacturer or by the Certificate holder.

5.6 The NSAI is not responsible to any person or body for loss or damage including personal injury arising as a direct or indirect result of the use of this product or process.

5.7 Where reference is made in this Certificate to any Act of the Oireachtas, Regulation made thereunder, Statutory Instrument, Code of Practice, National Standards, manufacturer's instructions, or similar publication, it shall be construed as reference to such publication in the form in which it is in force at the date of this Certification.

NSAI Agrément

This Certificate No. **08/0321** is accordingly granted by the NSAI to **Kingspan Insulation Ltd** on behalf of NSAI Agrément.

Date of Issue: August 2008

Signed

Seán Balfe Director of NSAI Agrément

Readers may check that the status of this Certificate has not changed by contacting NSAI Agrément , NSAI, 1 Swift Square, Northwood, Santry, Dublin 9, Ireland. Telephone: (01) 807 3800. Fax: (01) 807 3842. <u>www.nsai.ie</u>

Revisions:

12th January 2018: References to Building Regulations and standards updated, product specifications updated to reflect manufacturer's DoP.
30th April 2021: General revisions.



Kingspan Kooltherm K10 & K10 Plus Soffit Board Insulation for Structural Ceilings (Soffits)



PRODUCT DESCRIPTION:

This Detail Sheet relates to Kingspan Kooltherm K10 & K10 Plus Soffit Boards, as defined in NSAI Agrément Certificate 08/0321.

USE:

Kingspan Kooltherm K10 & K10 Plus Soffit Boards are used for the thermal insulation of structural ceilings.

MANUFACTURE AND MARKETING:

The product is manufactured and marketed by:

Kingspan Insulation Ltd., Castleblayney, Co. Monaghan Ireland. T: +353 (0)42 9795000 F: +353 (0)42 9754299 E: <u>info@insulation.kingspan.com</u> W: <u>www.kingspaninsulation.ie</u>



Part One / Certification



In the opinion of NSAI Agrément, Kingspan Kooltherm K10 & K10 Plus Soffit Boards, if used in accordance with this Detail Sheet, meet the requirements of the Building Regulations 1997 to 2019 as indicated in Section 1.2 of Certificate 08/0321.

1.2 BUILDING REGULATIONS 1997 to 2019

This matter is dealt with in NSAI Agrément Certificate 08/0321.

Part Two / Technical Specification and Control Data



2.1 PRODUCT DESCRIPTION

This Detail Sheet relates to the Kingspan Kooltherm K10 & K10 Plus Soffit Boards, comprising rigid phenolic insulation board manufactured in accordance with IS ΕN 13166:2012+A2:2016. Kingspan Kooltherm K10 Soffit Board is faced on one side with a low emissivity composite foil and on the reverse side with a tissue based facing, both autohesively bonded to the insulation core during manufacture. This Detail Sheet also relates to Kingspan Kooltherm K10 Plus Soffit Board, comprising a 6mm board bonded to a rigid phenolic insulation board - it is faced on the other side with a low emissivity composite foil. Kingspan Kooltherm K10 & K10 Plus Soffit Boards are CFC and HCFC free and therefore have zero ozone depletion potential (zero ODP).

This Detail Sheet certifies compliance with the requirements of the Building Regulations 1997 to 2019.

Length	2400mm	
Width	1200mm	
Thickness	75 to 140mm	
Edge profile	Square	
Thermal conductivity*	15-44mm: 0.021W/mK 45-120mm: 0.020W/mK 121-159mm: 0.021W/mK	
Reaction to fire*	C-s2, d0	
Compressive strength*	CS(Y)100	
Tensile strength*	TR60	

Table 1: Product Range & Physical Properties

2.2 MANUFACTURE

Kingspan Kooltherm K10 & K10 Plus Soffit Boards are manufactured from a formulation of chemicals, which are distributed onto low emissivity composite foil facings subsequently autohesively bonded to the insulation core during manufacture.

2.3 DELIVERY, STORAGE AND MARKING

This matter is dealt with in Section 2.2 of NSAI Agrément Certificate 08/0321.

2.4 INSTALLATION

Kingspan Kooltherm K10 & K10 Plus Soffit Board can be fully restrained to a concrete soffit by the use of 11 no. approved insulation fasteners with a minimum head diameter of 35mm. The fasteners should be evenly distributed over the whole area of the board and must offer a minimum 40mm 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. 50mm x 25mm battens are placed at 600mm 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.

Kingspan Kooltherm K10 & K10 Plus Soffit Board should be fixed to the treated timber battens using suitable nails or screws. Fixings should be maximum 300mm centres (maximum 200mm when using nails into timber) in rows not greater than 600mm 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 12mm 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 K10 Plus Soffit Board should be used.





Figure 2: Fixing Kingspan Kooltherm K10 Plus Board directly to concrete soffit



Part Three / Design Data

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3. GENERAL

Kingspan Kooltherm K10 & K10 Plus Soffit Boards, when installed in accordance with this Detail Sheet, are effective in reducing the 'U' value (thermal transmittance) of structural ceiling constructions.

As with all types of insulation, the construction detailing should comply with good practice.

Part Four / Technical Investigations

4.1 BEHAVIOUR IN FIRE

Kingspan K10 & K10 Plus Soffit Boards are combustible and must be protected from naked flames and other ignition sources during and after installation.

Toxicity – Negligible when used in a protected roof situation.

Kingspan Kooltherm K10 & K10 Plus Soffit Boards are manufactured without the use of CFCs or HCFCs, and there is no release of such gas on burning.

4.2 STRENGTH

Kingspan Kooltherm K10 & K10 Plus Soffit Boards, when installed in accordance with the manufacturer's instructions and this Detail Sheet, will resist the loads likely to be met during installation and in service.

4.3 WATER PENETRATION

Capillary Action – The closed cell structure does not allow water uptake by capillary action.

Kingspan Kooltherm K10 & K10 Plus Soffit Boards, when used in accordance with this Detail Sheet, present no significant risk of water penetration.

4.4 CONDENSATION RISK

Kingspan Kooltherm K10 & K10 Plus Sofft Boards have a water vapour resistance greater than 100MNs/g when tested in accordance with BS 4370-2:1993 Methods of test for rigid cellular materials – Methods 7 to 9.

4.5 THERMAL INSULATION

The aged/design thermal conductivity ` $\lambda_{30/90}$ ' value of Kingspan Kooltherm K10 & K10 Plus Soffit Board is shown in the manufacturer's CE Marking Declaration of Performance.

The required maximum U-values for semi-exposed concrete floor decks can be obtained with Kingspan Kooltherm K10 & K10 Plus Soffit Board as indicated in Table 2. Calculations were performed to IS EN ISO 6946:2007 *Building components and building elements – Thermal resistance and thermal transmittance – Calculation method*.

The values shown in Table 2 are for guidance only – a detailed U-value calculation should be carried out together with a condensation risk analysis for each individual project. Kingspan Technical Services should be contacted for further assistance.

4.6 TESTS AND ASSESSMENTS WERE CARRIED OUT TO DETERMINE THE FOLLOWING:

- Density
- Water vapour resistance
- Long term water absorption
- Dimensional accuracy
- Compressive and cross breaking strength
- Dimensional stability
- Thermal conductivity
- Efficiency of the construction process

4.7 OTHER INVESTIGATIONS

 Existing data on product properties in relation to fire, toxicity, environmental impact and the effect on mechanical strength/stability and durability were assessed. Kingspan



Kooltherm K10 & K10 Plus Soffit Board does not contain CFC or HCFC gas and has zero ODP.

- (ii) The manufacturing process was examined including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.
- (iii) Site visits were conducted to assess the practicability of installation and the history of performance in use of the product.

U-value ⁽²⁾ (W/m ² K)	Insulation thickness (mm) ⁽³⁾	
0.13	-	
0.15	125	
0.20	95	
0.22	85	
⁽¹⁾ Values including fixing correction due to		
mechanical fixings causing cold bridging. 3.82		
fixings/m ² . λ = 17W/mK (stainless steel) and a		
cross-sectional area of 8mm ² .		

- (2) Construction (internal to external) 150mm concrete deck with 2% steel. $\lambda = 2.5$ W/mK. K10 soffit insulation fixed directly to the concrete soffit.
- (3) Nearest available thickness.

Table 2: Sample⁽¹⁾ U-values for K10 fixed directly to the soffit



Kingspan Kooltherm K15 Board

PRODUCT DESCRIPTION:

This Detail Sheet relates to Kingspan Kooltherm K15 Board, as defined in NSAI Agrément Certificate 08/0321.

USE:

The product is used as thermal insulation in masonry construction.

MANUFACTURE AND MARKETING:

The product is manufactured and marketed by:

Kingspan Insulation Ltd., Castleblayney, Co. Monaghan Ireland. T: +353 (0)42 9795000 F: +353 (0)42 9754299 E: <u>info@insulation.kingspan.com</u> W: <u>www.kingspaninsulation.ie</u>

Part One / Certification

1.1 ASSESSMENT

In the opinion of NSAI Agrément, Kingspan Kooltherm K15 Board, if used in accordance with this Detail Sheet, meets the requirements of the Building Regulations 1997 to 2019 as indicated in Section 1.2 of Certificate 08/0321.

1.2 BUILDING REGULATIONS 1997 to 2019

This matter is dealt with in NSAI Agrément Certificate 08/0321



Part Two / Technical Specification and Control Data

2.1 PRODUCT DESCRIPTION

This Detail Sheet relates to the Kingspan Kooltherm K15, comprising rigid phenolic insulation board manufactured in accordance with IS EN 13166:2012+A2:2016. Kingspan Kooltherm K15 Board is faced on both sides with a low emissivity composite foil autohesively bonded to the insulation core during manufacturer. Kingspan Kooltherm K15 Boards are CFC and HCFC free and therefore have zero ozone depletion potential (zero ODP).

This Detail Sheet certifies compliance with the requirements of the Building Regulations 1997 to 2019.

Length	2400mm	
Width	1200mm	
Thickness	40 to 140mm	
Density	40 to 42kg/m ³	
Thermal conductivity*	15-44mm: 0.021W/mK 45-120mm: 0.020W/mK 121-159mm: 0.021W/mK	
Reaction to fire*	C-s2, d0	
Compressive strength*	CS(Y)100	
Short term water absorption*	WS3	

Table 1: Product Range & Physical Properties

2.2 MANUFACTURE

Kingspan Kooltherm K15 Board is manufactured from a formulation of chemicals, which are distributed onto low emissivity composite foil facings subsequently autohesively bonded to the insulation core during manufacture.

2.3 DELIVERY, STORAGE AND MARKING

This matter is dealt with in Section 2.2 of NSAI Agrément Certificate 08/0321.

2.4 INSTALLATION

2.4.1 General

Kingspan Kooltherm K15 Board may be fully restrained against the structural wall in a brick bond pattern with suitable insulation fasteners. A minimum number of 9 fasteners should be placed within the individual board area and be sited more than 50mm but not less than 150mm from the edges and corners of the board.

2.4.2 Cold Bridging

The use of a neoprene/plastic gasket between the 'helping hand' bracket and the structure will help reduce cold bridging. For further information contact Kingspan Technical Services.



Part Three / Design Data

3.1 GENERAL

Kingspan Kooltherm K15 Board, when installed in accordance with this Detail Sheet, is effective in reducing the U-value (thermal transmittance) of masonry wall construction.

As with all types of insulation, the construction detail should comply with good practice.

Part Four / Technical Investigations

4

4.1 BEHAVIOUR IN FIRE

Kingspan K15 Board is combustible and must be protected from naked flames and other ignition sources during and after installation.

Toxicity – Negligible when used with a rainscreen cladding system.

Kingspan Kooltherm K15 Board is manufactured without the use of CFCs or HCFCs, and there is no release of such gas on burning.

4.2 STRENGTH

Kingspan Kooltherm K15 Board, when installed in accordance with the manufacturer's instructions and this Detail Sheet, will resist the loads likely to be met during installation and in service.

4.3 WATER PENETRATION

Capillary Action – The closed cell structure does not allow water uptake by capillary action.

Kingspan Kooltherm K15 Board, when used in accordance with this Detail Sheet, presents no significant risk of water penetration.

4.4 CONDENSATION RISK

Kingspan Kooltherm K15 Board has a water vapour resistance greater than 100MNs/g when tested in accordance with BS 4370-2:1993 *Methods of test for rigid cellular materials* – *Methods 7 to 9*.

4.5 THERMAL INSULATION

The aged/design thermal conductivity $\lambda_{90/90}$ value of Kingspan Kooltherm K15 Board is shown in the manufacturer's CE Marking Declaration of Performance.

The required maximum U-values for wall constructions can be obtained with Kingspan Kooltherm K15 Board as indicated in Table 2. Calculations were performed to IS EN ISO 6946:2007 Building components and building elements – Thermal resistance and thermal transmittance – Calculation method.

The values shown in Table 2 are for guidance only – a detailed U-value calculation should be carried out together with a condensation risk analysis for each individual project. Kingspan Technical Services should be contacted for further assistance.

4.6 TESTS AND ASSESSMENTS WERE CARRIED OUT TO DETERMINE THE FOLLOWING:

- Density
- Water vapour transmission
- Long term water absorption
- Dimensional accuracy
- Compressive and cross breaking strength
- Dimensional stability
- Thermal conductivity
- Efficiency of the construction process

4.7 OTHER INVESTIGATIONS

- Existing data on product properties in relation to fire, toxicity, environmental impact and the effect on mechanical strength/stability and durability were assessed. Kingspan Kooltherm K15 does not contain CFC or HCFC gas and has zero ODP.
- (ii) The manufacturing process was examined including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.



U-value (W/m ² K)	Insulation thickness (mm)		
	215mm brickwork ⁽¹⁾⁽²⁾ (refurbishment) $\lambda = 0.56W.mK$	100mm AAC blockwork ⁽¹⁾⁽³⁾ (new build) $\lambda = 0.15W.mK$	
0.18	110	95	
0.19	100	90	
0.26	70	60	
(1) Assuming fixings (19.6mm ²) at 3.13m ² and steel thermal conductivity 50W/mK.			
⁽²⁾ Brick at 93.3% (λ = 0.56W.mK) bridging with 6.7% mortar (λ =			
0.88W.mK)			
⁽³⁾ Dense block at 93.3% (λ = 0.15W.mK) bridging with mortar			
⁽⁴⁾ Plaster at 0.43W/mK and plasterboard at 0.25W/mK.			

Table 2: Sample U-value calculations for Kingspan K15 Board on masonry construction