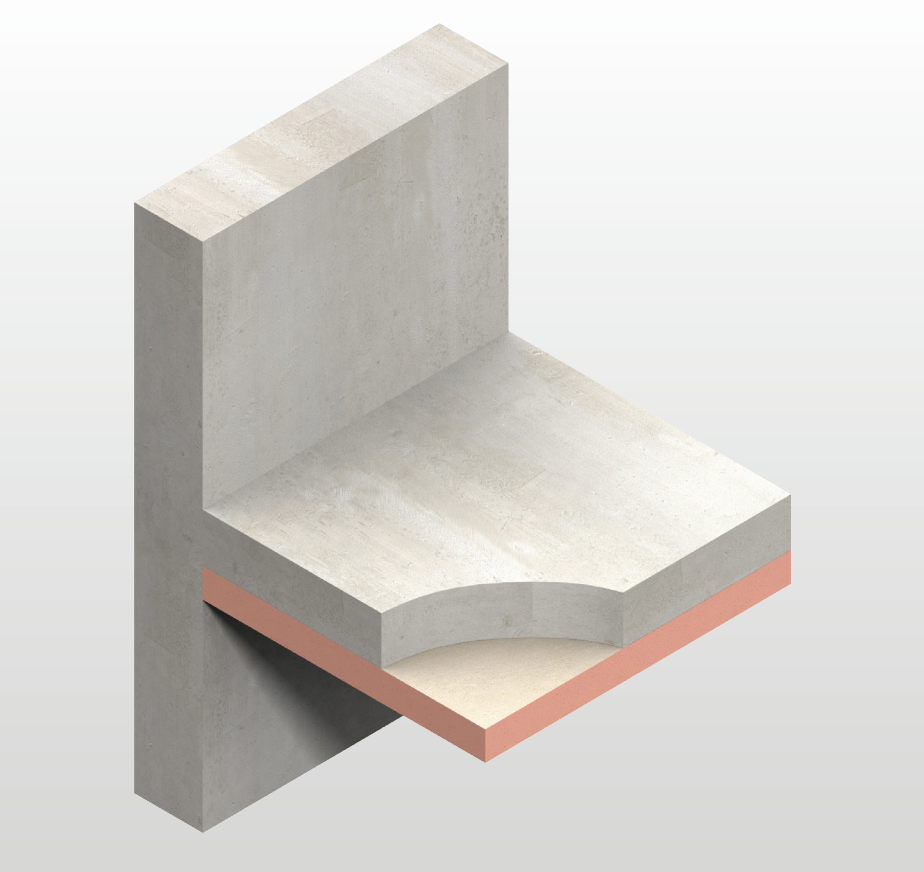
Insulation

Kooltherm™ K10 Soffit Board

Insulation for Structural Ceilings (Soffits)



- Rigid thermoset insulation
- FM Approved to FM 4880 Examination Standard
- Rated Class A under ASTM E84 / UL 723 Surface Burning Characteristics
- Easy to handle and install
- Manufactured with a blowing agent that has zero ODP (contains no CFC and HCFC) and low GWP
- Approved for use by Dubai Central Laboratory

Fibre-free Core

PRODUCT CONFORMITY

Kingspan®

Typical Constructions and U-values

Assumptions

The U-values in the tables that follow have been calculated using the method detailed in BS EN ISO 6946: 2017 (Building components and building elements. Thermal resistance and thermal transmittance. Calculation methods), and using the conventions set out in BR 443 (Conventions for U-value calculations). They are valid for the constructions shown in the details immediately above each table.

Fixed Directly to Concrete Soffit

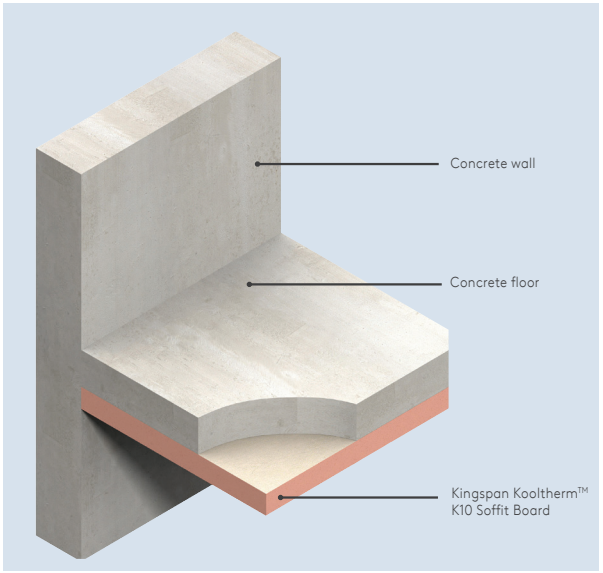


Figure 1

Insulant Thickness (mm)	U-values (W/m².K)
25	0.65
30	0.56
35	0.49
40	0.44
45	0.39
50	0.36
55	0.33
60	0.30
65	0.28
70	0.26
75	0.25

Table 1: Thicknesses of Kingspan Kooltherm™ K10 Soffit Board, installed within the construction shown in the image above to meet the associated U-value.

Design Considerations

Sustainability & Responsibility

Kingspan Insulation has a long–term commitment to sustainability and responsibility: as a manufacturer and supplier of insulation products; as an employer; and as a substantial landholder.

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: comprising a fibre–free rigid thermoset phenolic insulation core with a composite foil on its front surface and glass tissue based facing 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 ISO 9001: 2015, ISO 14001: 2015, ISO 45001: 2018, ISO 37301:2021; by Kingspan Insulation and installed in accordance with the instructions issued by them.

Water Vapour Control/Condensation

Consideration should be given to the risk of condensation when designing thermal elements. A condensation risk analysis should be carried out following the procedures set out in BS 5250: 2002 (Code of practice for the control of condensation in buildings). Kingspan Insulation can provide this service.

Wind Loading

Where the insulation boards may be subject to external wind pressure, wind loadings should be assessed in accordance with EN 1991–1–4: 2005 + A1: 2010 (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 hillside); and
- topographical value of the surrounding area.

Lightning Protection

Building designers should give consideration to the requirements of BS / I.S. EN 62305: 2011 - 2012 (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 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 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. For more information, please refer to:

  Ejot
  www.ejot.ae +971 6 557 9770

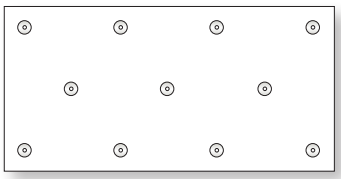
  Hilti
  www.hilti.ae +971 800 44584

  SFS Group Fastening Technology Ltd.
  www.sfsintec.co.uk +44 113 2085 500

- Insulation boards can also be fitted by a shot fired fixing method which can result in significantly faster installation times. All of the above guidelines still apply.

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^2).
- Alternative fixing patterns should be approved by fixing manufacturer.



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

Sitework

Proprietary Grid Systems

- Kingspan Kooltherm™ K10 Soffit Board can also be fixed to a proprietary grid system comprising metal furring bars.
- For further information regarding proprietary grid system specifications, please contact Kingspan Insulation.

Taping

- The joints of Kingspan Kooltherm™ K10 Soffit Board should always be taped using a 50 mm min. wide self–adhesive aluminium foil tape and/or fibreglass reinforcement mesh.
- In the absence of other protection, exposed edges of Kingspan Kooltherm™ K10 Soffit Board should be protected by a suitable self–adhesive aluminium foil tape and/or fibreglass reinforcement mesh, with a 50 mm min. wide overlap onto the insulation board face, see Figure 2.

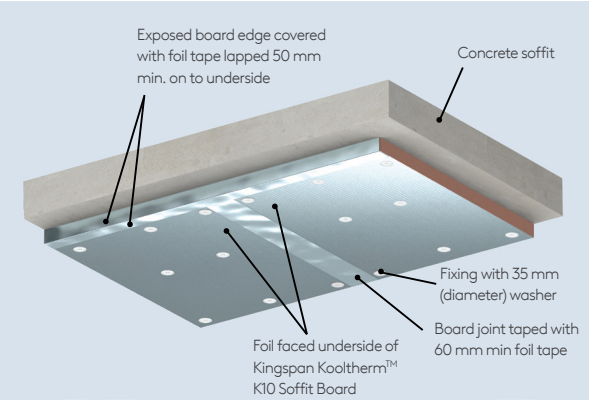


Figure 2

Surface Finishings

Please contact the Kingspan Insulation Technical Department to discuss the available options.

General

Cutting

- Cutting should be carried out either by using a fine-toothed saw, or by scoring with a sharp knife, snapping the board over a straight edge and then cutting the facing on the other side.
- Ensure accurate trimming to achieve close butting joints and continuity of insulation.

Daily Working Practice

- At the completion of each day's work, or whenever work is interrupted for extended periods of time, board edges and joints should be protected from inclement weather.

Availability

- Please contact Kingspan Insulation to enquire about the availability of Kingspan Kooltherm™ K10 Soffit Board.

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

- Please refer MSDS, For more information contact Kingspan Insulation.

Warning – do not stand on or otherwise support your weight on this board unless it is fully supported by a load-bearing surface.

Product Details

The Upper Facings

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

The Core

The core of Kingspan Kooltherm™ K10 Soffit Board is fibre–free rigid thermoset phenolic 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 Soffit Board is a composite foil, autohesively bonded to the insulation core during manufacture. The exposed facing used on Kingspan Kooltherm™ K10 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 Kingspan Insulation.

Standards and Approval

Kingspan Kooltherm™ K10 Soffit Board is manufactured to the highest standards under a management system certified to ISO 9001: 2015 (Quality Management System), ISO 14001: 2015 (Environmental Management System), ISO 45001: 2018 (Occupational Health and Safety Management System) and ISO 37301:2021 (Compliance Management System).

Kingspan Kooltherm™ K10 Soffit Board is approved by Dubai Central Laboratory.

Kingspan Kooltherm™ K10 Soffit Board is approved for use by Dubai Civil Defence and Abu Dhabi Civil Defence.

Standard Dimensions

Kingspan Kooltherm™ K10 Soffit Board is available in the following standard size(s):

Nominal Dimension		Availability
Length*	(m)	2.4
Width*	(m)	1.2
Product Thickness*	(mm)	Refer to Kingspan Insulation for current stock and non-stock sizes

* Standard manufacturing tolerance may apply, for more information contact Kingspan Insulation.

Density

The apparent density of Kingspan Kooltherm™ K10 Soffit Board is 35 kg/m^3 when tested to BS EN 1602: 2013 (Thermal insulating products for building application.

Compressive Stress

The compressive stress of Kingspan Kooltherm™ K10 Soffit Board exceeds 100 kPa at 10% compression, when tested to BS EN 826: 2013 (Thermal insulating products for building applications.

Product Details

Durability

If correctly installed, Kingspan Kooltherm™ K10 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 Kingspan Insulation to determine the product's suitability.

FM Approval

Kingspan Kooltherm™ K10 Soffit is certified to Examination Standard FM 4880 for interior finish material solutions to ceilings. Not all thicknesses and sizes are covered by the FM Approval.

Further details of the FM Approval listing for Kooltherm™ K10 Soffit are published on the FM Approvals Approval Guide website at: www.approvalguide.com. To view the listing, search Keyword(s): Kooltherm K10. Please contact the Kingspan Technical Insulation Technical Services department for further confirmation

Thermal Properties

The λ–values and R-values detailed below are quoted in accordance with ASTM C518-17 (Standard test method for steady-state thermal transmission properties by means of the heat flow meter apparatus).

Thermal Conductivity

Thermal resistance can be expressed in either metric or imperial measurement. Using the metric measurement, the boards achieve a thermal conductivity (λ–value) 0.020 W/m.K at 23°C mean temperature.

Thermal Resistance

Thermal resistance can be expressed in either metric or imperial measurement. Using the imperial measurement, the boards achieve a thermal resistance (R-value) per inch of thickness of 7.21 $Ft^2.hr.^0f/Btu$

The metric measurement of 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^2.K/W).

Fire Performance

Kingspan Kooltherm™ K10 Soffit Board, when subjected to the fire test standard in the table below, has achieved the result shown.

Test	Result
ASTM E 84 / UL 723 Surface Burning Characteristics	Flame Spread Index (FSI) of 25, Smoke Developed Index (SDI) of 450 Class A

Table 3: ASTM E 84 / UL 723 result of Kingspan Kooltherm™ K10 Soffit Board.

Insulant Thickness (mm)	Thermal Resistance (m^2·K/W) (RSI metric units)	Approx Weight (kg/m^2)
25	1.25	1.05
30	1.50	1.22
35	1.75	1.395
40	2.00	1.57
45	2.25	1.745
50	2.50	1.92
55	2.75	2.095
60	3.00	2.27
65	3.25	2.445
70	3.50	2.62
75	3.75	2.8

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 for current stock and non–stock sizes. Where multiple layers of insulation of different thicknesses are used, the thickest layer should be installed as the outermost layer in the construction.

Table 4: Thermal Resistance of Differing Thicknesses of Kingspan Kooltherm™ K10 Soffit Board.

Contact Details

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Technical Service

Kingspan Insulation has one of the most technically advanced support services in the industry offering a full spectrum of advice, free of charge for all types of design projects.

The Kingspan Insulation technical team are continually updating their knowledge on building regulations, best practise, construction methods and the development of building materials to ensure the advice and services provided are always one step ahead.

Services available:

- U-value calculations;
- condensation/dew point risk calculations;
- advice on product selection and product data for the full range of Kingspan Insulation products;
- installation and fixing advice on all applications and products;
- specification and construction advice; and
- Tapered Roofing Design service.

Email: technical@kingspaninsulation.ae

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