

Insulation



# Kooltherm® K12 Framing Board

Insulation for use behind Wall Lining and in Framed Walls



- Rigid thermoset phenolic insulation
- Fibre-free, closed cell insulation core
- Can be used between studs or as an insulating sheathing
- Suitable for use with timber frame and steel frame wall constructions
- Can eliminate cold bridging
- Resistant to the passage of water vapour
- NCC and AS/NZS 4859.1:2018 compliant
- CodeMark-certified for NCC compliance
- Made in Australia



# Typical Constructions and Total R-values

## Commercial Concrete Wall Installation (Clip/Channel System)

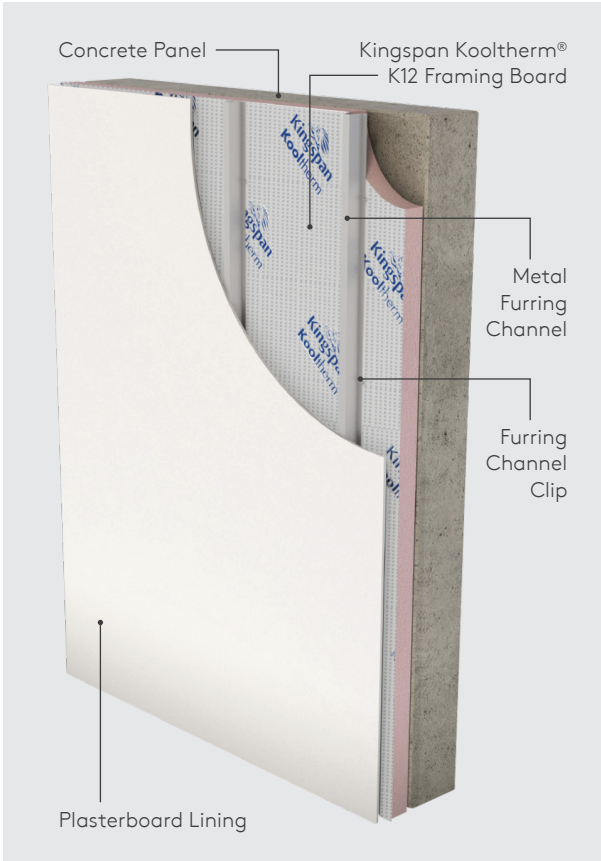


Figure 1. Commercial Concrete Wall Installation with a Clip and Channel System.

## Thermal Performance

Total R-values for various thicknesses of Kingspan Kooltherm® K12 Framing Board applicable for NCC Volume One, Class 2 to 9 buildings & NCC Volume Two, Class 1 & 10a buildings		
Concrete Wall (150 mm) or Block Wall (140mm)		
Product Thickness	Heat Flow In	Heat Flow Out
25 mm	R <sub>f</sub> 1.7	R <sub>f</sub> 1.8
30 mm	R <sub>f</sub> 1.9	R <sub>f</sub> 2.0
40 mm	R <sub>f</sub> 2.3	R <sub>f</sub> 2.4

## Type C Wall Installation (Low-rise Insulated Wall Solution)

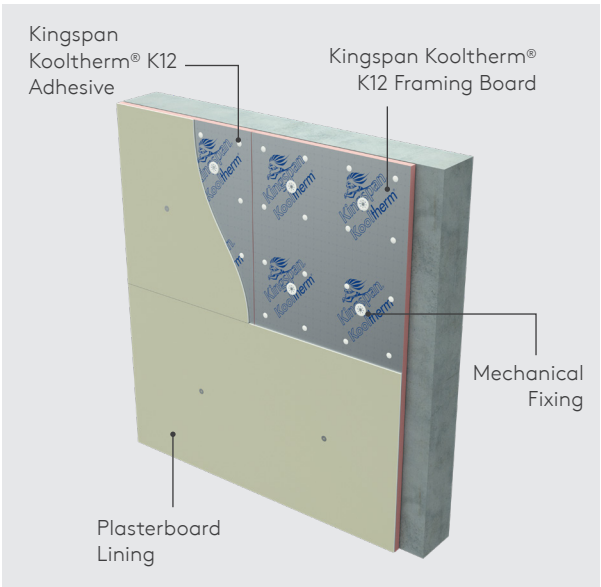


Figure 2. Kingspan Kooltherm® K12 Framing Board Mechanically Fixed to the Concrete Wall, with the plasterboard adhered to the Framing Board using Kingspan Kooltherm® K12 Adhesive.

Total R-values for various thicknesses of Kingspan Kooltherm® K12 Framing Board applicable for NCC Volume One, Class 2 to 9 buildings & NCC Volume Two, Class 1 & 10a buildings		
Concrete Wall (150 mm)		
Product Thickness	Heat Flow In	Heat Flow Out
25 mm	R <sub>f</sub> 1.4	R <sub>f</sub> 1.4
30 mm	R <sub>f</sub> 1.6	R <sub>f</sub> 1.7
40 mm	R <sub>f</sub> 2.0	R <sub>f</sub> 2.1
50 mm	R <sub>f</sub> 2.5	R <sub>f</sub> 2.6

# Typical Constructions and Total R-values

## Brick Veneer Installation (External Side of Frame)

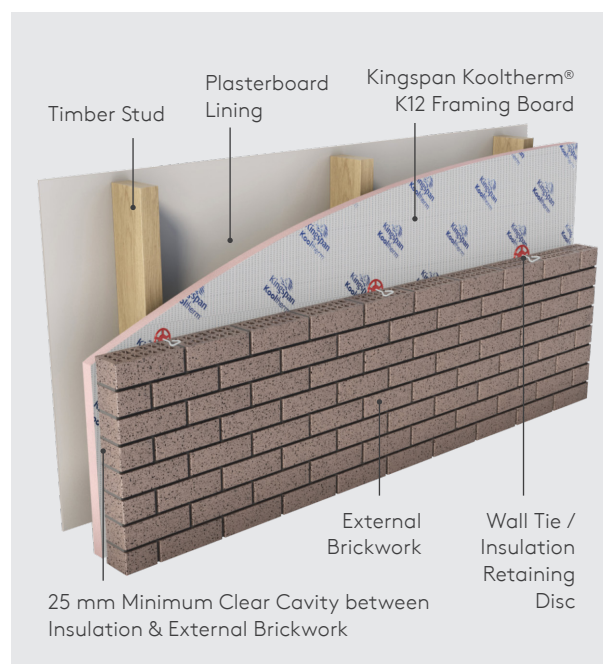


Figure 3. Brick Veneer Installation with Kingspan Kooltherm® K12 Framing Board installed on External Side of Timber Framing.

Total R-values for various thicknesses of Kingspan Kooltherm® K12 Framing Board applicable for NCC Volume One, Class 2 to 9 buildings & NCC Volume Two, Class 1 & 10a buildings

Product Thickness	Heat Flow In	Heat Flow Out
25 mm	R <sub>t</sub> 2.7	R <sub>t</sub> 2.8
30 mm	R <sub>t</sub> 2.9	R <sub>t</sub> 3.0
40 mm	R <sub>t</sub> 3.3	R <sub>t</sub> 3.4
50 mm	R <sub>t</sub> 3.8	R <sub>t</sub> 3.9

### Assumptions

The R-values shown are Total R-values for the building element as required by the Energy Provisions of the National Construction Code 2022, calculated in accordance with AS/NZS 4859.2:2018 & NZS 4214:2006. Kingspan Kooltherm® products are manufactured, tested and packaged in conformance with AS/NZS 4859.1:2018.

## Fire Resistance

Examples shown are suitable for NCC Class 1 & 10a housing and Fire-Resisting Construction Type C walls in NCC Class 2 – 9 buildings. For Fire-Resisting Construction Type A & B walls in NCC Class 2 – 9 buildings a Performance Solution is required.

Please contact Kingspan Insulation Technical Services on 1300 247 235 or email [technical@kingspaninsulation.com.au](mailto:technical@kingspaninsulation.com.au) for further guidance.

## Steel Framed Wall Installation (External Side of Frame with Close Jointed Cladding)

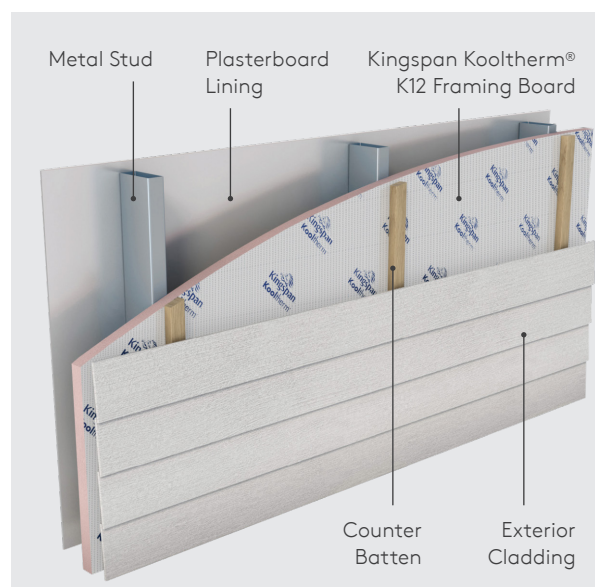


Figure 4. Steel Framed Wall Installation.

Total R-values for various thicknesses of Kingspan Kooltherm® K12 Framing Board applicable for NCC Volume One, Class 2 to 9 buildings & NCC Volume Two, Class 1 & 10a buildings

Product Thickness	Heat Flow In	Heat Flow Out
25 mm	R <sub>t</sub> 2.3	R <sub>t</sub> 2.4
30 mm	R <sub>t</sub> 2.5	R <sub>t</sub> 2.6
40 mm	R <sub>t</sub> 3.0	R <sub>t</sub> 3.1
50 mm	R <sub>t</sub> 3.5	R <sub>t</sub> 3.6

## Fire Resistance

Examples shown are suitable for NCC Class 1 & 10a housing and Fire-Resisting Construction Type C walls in NCC Class 2 – 9 buildings. For Fire-Resisting Construction Type A & B walls in NCC Class 2 – 9 buildings a Performance Solution is required.

Please contact Kingspan Insulation Technical Services on 1300 247 235 or email [technical@kingspaninsulation.com.au](mailto:technical@kingspaninsulation.com.au) for further guidance.

# Typical Constructions and Total R-values

## Timber Framed Wall Installation (External Side of Frame with Close Jointed Cladding)

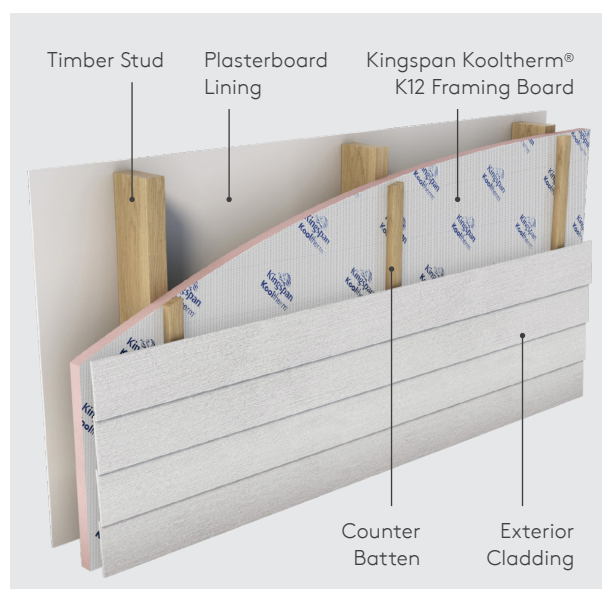


Figure 5. Timber Framed Wall Installation.

Total R-values for various thicknesses of  
Kingspan Kooltherm® K12 Framing Board applicable  
for NCC Volume One, Class 2 to 9 buildings &  
NCC Volume Two, Class 1 & 10a buildings

Product Thickness	Heat Flow In	Heat Flow Out
25 mm	R <sub>f</sub> 2.5	R <sub>f</sub> 2.6
30 mm	R <sub>f</sub> 2.7	R <sub>f</sub> 2.8
40 mm	R <sub>f</sub> 3.2	R <sub>f</sub> 3.3
50 mm	R <sub>f</sub> 3.7	R <sub>f</sub> 3.8



# Product Details

## Product Description

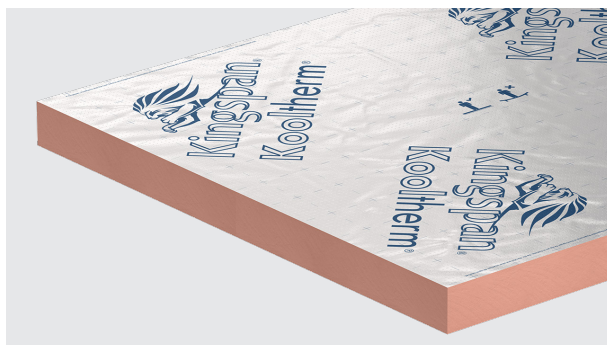


Figure 6. Kingspan Kooltherm® K12 Framing Board.

Kingspan Kooltherm® K12 Framing Board is a fibre-free rigid thermoset phenolic insulation, faced on both sides with a composite foil autohesively bonded to the insulation core during manufacture. This reflective surface improves the thermal resistance of unventilated cavities adjacent to the board.

### Product Data

Declared Thermal Conductivity ( $\lambda$ -value) AS/NZS 4859.1:2018 / ASTM C518-2017	0.022 W/m.K at 23°C (Insulant Thickness $\geq$ 45 mm) 0.023 W/m.K at 23°C (Insulant Thickness 25 - 44 mm)
Emittance (Foil Face) ASTM C1371:2015	E0.06
Product Dimensions	2400mm x 1200mm (2.88m <sup>2</sup> )
Nominal Product Thickness	25, 30, 40, 45, 50, 80 mm Other thicknesses available upon enquiry. Minimum order quantities apply

The 80mm Kooltherm® K12 Framing Board is intended for residential applications. For a separate datasheet with detailed specifications and information, please contact us.

## Product R-value

Nominal Product Thickness	Declared Product R-value at 23°C
25 mm	R1.10
30 mm	R1.30
40 mm	R1.75
45 mm	R2.05
50 mm	R2.30
80 mm	R3.60

## Specification Guide

### Kingspan Kooltherm® K12 Framing Board

The wall insulation shall be CodeMark-certified Kingspan Kooltherm® K12 Framing Board \_\_\_\_ mm thick, with a tested smoke obscuration of not more than 100 m<sup>2</sup>/kg, comprising a rigid thermoset phenolic insulation core with composite foil facings on both sides manufactured under a management system certified to ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, ISO 50001:2018 and ISO 37301:2021 by Kingspan Insulation Pty Ltd and shall be installed in accordance with the instructions issued by them.

A Project Specific Warranty provided by Kingspan Insulation must be submitted.

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# Product Details

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## Standards and Approvals

Kingspan Kooltherm® K12 Framing Board is manufactured to the highest standards and certified under the following management systems:

Standard	Management System
ISO 9001:2015	Quality Management
ISO 14001:2015	Environmental Management
ISO 45001:2018	Occupational Health and Safety
ISO 50001:2018	Energy Management
ISO 37301:2021	Compliance Management

## Product Testing

Characteristic	Standard	Result
Compressive Stress (Insulant)	AS 2498.3:1993	On average exceeds 100 kPa at 10% compression
Water Vapour Transmission	ASTM E96 / E96M - 2022	> 35 MN.s/g

## Fire Performance

Test	Test Method	Result
Early Fire Hazard Properties. (Ignitability, Flame spread, Heat release, Smoke release)	AS 1530.3:1999	Spread of Flame Index: 0 Smoke Development $\leq 3$

## Durability

If correctly applied, Kingspan Kooltherm® products can be expected to have a long life of service.

Their durability depends on the supporting structure and the conditions of its use.

Kingspan Kooltherm® products are warranted for a period of 10 years for both residential and commercial installations.\*

\* Subject to the terms of the complete Kingspan Kooltherm® warranty document which is available upon request or downloadable from [www.kingspaninsulation.com.au](http://www.kingspaninsulation.com.au)

## Environmental Data

Aspect	Characteristic
Re-usability	Re-usable if removed with care (long term of service expected)
Water Use	No water used in Kingspan Insulation's manufacturing process

# Installation Instructions

## Concrete Wall Installation (Clip/Channel System)

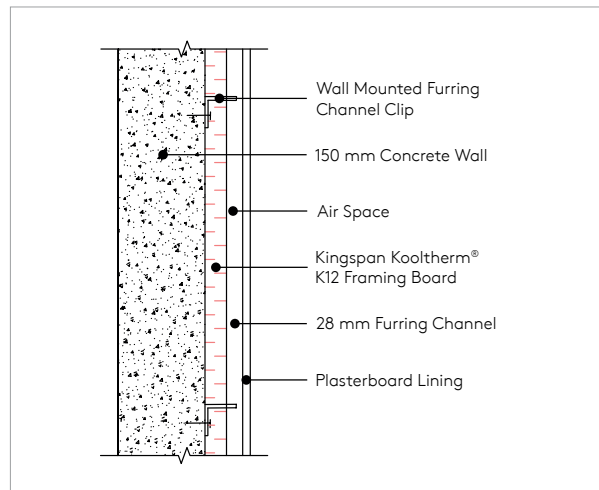


Figure 7. Side elevation of Kingspan Kooltherm® K12 Framing Board clip-and-channel system.

1. Install chosen furring channel clips at required spacing for plasterboard lining.
2. Fit Kingspan Kooltherm® K12 Framing Board over furring channel clips by pushing over the clips to abut the wall, and so that the wings of the clips penetrate the board. Care should be taken to avoid the foil facing of the Kingspan Kooltherm® K12 Framing Board separating from the insulation core by neatly trimming the foil face at the point where the furring channel clip penetrates the insulation.
3. Butt join boards of Kingspan Kooltherm® K12 Framing Board to provide a continuous insulation layer.
4. Install furring channels by clipping into channel clips. Furring channels should be tight against the face of the Kingspan Kooltherm® K12 Framing Board. Where furring channels are not tight to the insulation contact Kingspan Insulation Technical Service for further advice.
5. Install plasterboard lining.

### Taping

It is considered best practice to tape joins of Kingspan Kooltherm® K12 boards in this system with 48 mm wide reinforced aluminium foil tape. When taping a plastic squeegee or blade must be used to apply appropriate pressure to the tape. Surfaces must be dry and free from dust, oil or grease prior to taping.

## Type C Wall Installation (Low-rise Insulated Wall Solution)

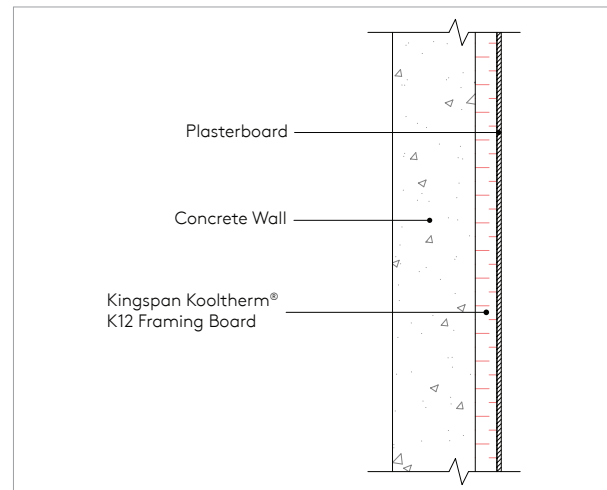


Figure 8. Side elevation of Kingspan Kooltherm® K12 Framing Board Mechanically Fixed to the Concrete Wall.

1. Gather all required materials and tools, including the recommended fixings based on Kooltherm® board thickness.
2. Secure the Kingspan Kooltherm® K12 Framing Board to the concrete using 8 or more fixings per 1200x2400 mm board.
3. Use a string line and mark the center line of the Kooltherm board to guide the installation process.
4. Place 16 daubs of Kingspan Kooltherm® K12 Adhesive on the bottom half of each board, with each daub about 10ml and 30 mm in diameter, and 50-70 mm from the board's edge. Ensure the Kingspan Kooltherm® K12 Framing Board is free from debris or contaminants which may affect the bond of the adhesive.
5. Install the bottom half of the plasterboard, adhering it to the Kingspan Kooltherm® K12 Framing Board.
6. Apply minimum 2 mechanical fixings per 3.6 m length of plasterboard. Make sure the mechanical fixings are securely fastened to the concrete substrate.
7. Apply adhesive to the top half as in Step 4. Install the top halves of the Kingspan Kooltherm® K12 boards similarly to the bottom, and secure with mechanical fixings as in Step 6.
8. Ensure that all boards are securely installed and level. Clean up any excess adhesive.

For detailed information on the installation for Kingspan Low-rise Insulated Walls, please refer to the installation guide, available on our website.

# Installation Instructions

## Brick Veneer Wall (External Side of Frame)

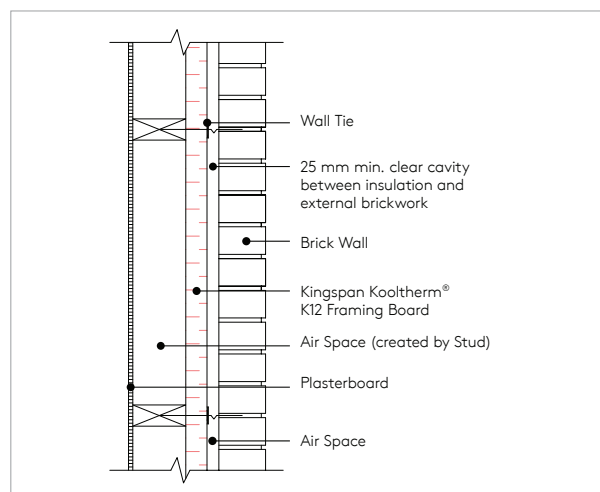


Figure 9. Side elevation – Brick Veneer wall with Kingspan Kooltherm® K12 Framing Board.

1. Ensure that stud spacings do not exceed 600 mm centres.
2. Attach appropriate wall ties to frame at spacings required for the masonry external leaf.
3. Fix Kingspan Kooltherm® K12 Framing Board to the external surface of the frame structure ensuring vertical board joints coincide with a vertical member.
4. Ensure that the boards are lightly butted and continuity of insulation is maintained.
5. Use large headed galvanised clout nails or screws as fixings prior to the insulation boards being tied to the frame with an appropriate timber frame wall tie and insulation retaining disc.
6. Ensure that fixings are coincident with the underlying timber studs, top and bottom wall plates.
7. Construct the outer leaf of masonry in the conventional manner, using appropriate wall ties to hold the two wall leaves together.
8. Ensure that a residual cavity of at least 25mm is maintained in accordance with the moisture penetration provisions of the NCC. Cavity width should not exceed 75mm.

## Steel and Timber Framed Wall (External Side of Frame)

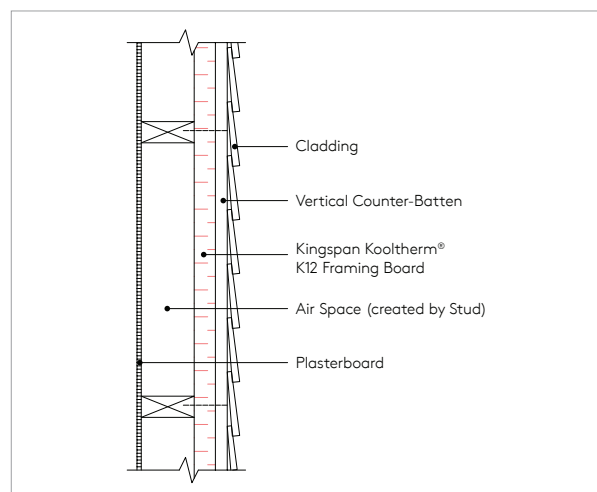


Figure 10. Side elevation – Stud wall with Kingspan Kooltherm® K12 Framing Board and vertical counter-battens using an internal plasterboard lining.

1. Ensure that stud spacings do not exceed 600 mm centres.
2. Fix Kingspan Kooltherm® K12 Framing Board to the external surface of the frame structure ensuring vertical board joints coincide with a vertical member.
3. Ensure that the boards are lightly butted and continuity of insulation is maintained.
4. Use large headed galvanised clout nails or screws as temporary fixings prior to the secondary support batten being fitted.
5. Fix preservative treated softwood battens vertically to the wall frame, through the insulation sheathing, ensuring that the battens and fixings are coincident with the underlying timber studs, top and bottom plates.
6. Consider the weight of cladding when selecting the type of fixing and fixing frequency for the battens.
7. Fix the external cladding panel to the secondary support batten in the traditional manner.



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# Installation Instructions

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## General Requirements

### 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.

### Protection during Construction

During construction, insulation boards should be protected from the elements, particularly hot sun and rain, until they are enclosed by the final external cladding.

### Packaging

According to quantity, the boards are supplied in packs, labelled and shrink-wrapped in polythene.

## Handling and Storage

### Storage

The packaging of Kingspan Kooltherm® should not be considered adequate for long term outdoor protection. Ideally boards should be stored inside a building. If, however, outdoor 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.

### Resistance to Solvents

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.

## Safety Information

Kingspan Insulation products are chemically inert and safe to use. A Product Safety Information sheet is available from Kingspan Insulation Pty Ltd.

Please note that the reflective surfaces on this product 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 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 bare skin with a UV block sun cream.

**Foil facings are conductive to electricity – avoid contact with un-insulated electrical cables and fittings.**

Installation must be in accordance with AS 3999:2015 Bulk Thermal Insulation Installation and AS 3000:2018 Electrical Installations (Wiring Rules).

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# Contact Details

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## Australia

Kingspan Insulation Pty Ltd

T: 1300 247 235

E: [info@kingspaninsulation.com.au](mailto:info@kingspaninsulation.com.au)

[www.kingspaninsulation.com.au](http://www.kingspaninsulation.com.au)



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