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Architectural

Kingspan Kooltherm K12 Insulation  
**INSTALLATION GUIDE**

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# Kooltherm® K12 Framing Board

INSULATION FOR USE BEHIND WALL LINING  
AND IN FRAMED WALLS



- Super high performance 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
- No CFC or HCFC used in manufacture
- Has zero ODP and low GWP
- Compliant with AS/NZS 4859.1:2018
- Made in Australia



Low Energy –  
Low Carbon Buildings

# Typical Constructions and Total R-values

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

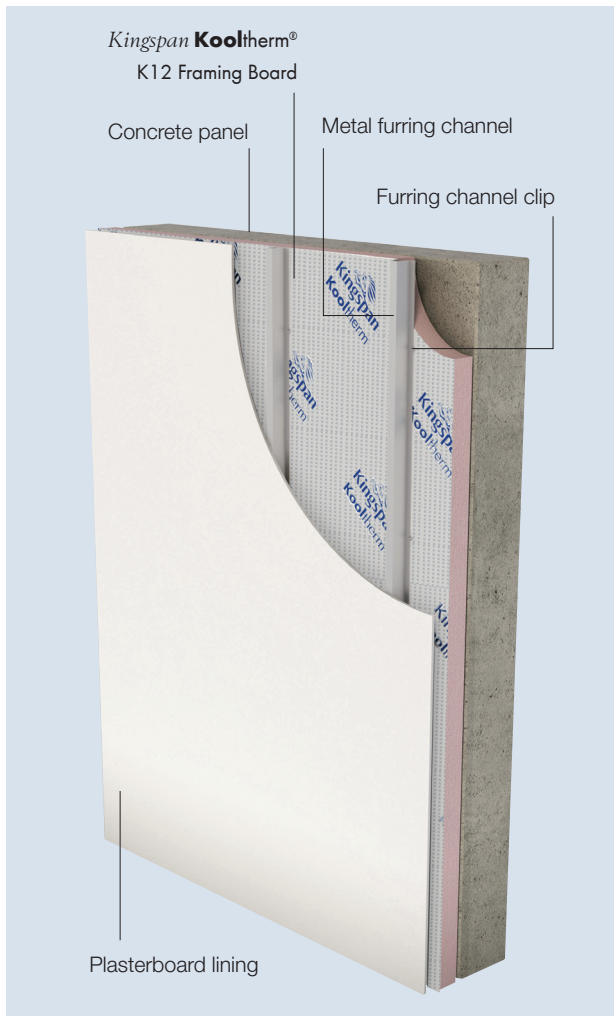


Figure 1

## Brick Veneer Installation (External Side of Frame)

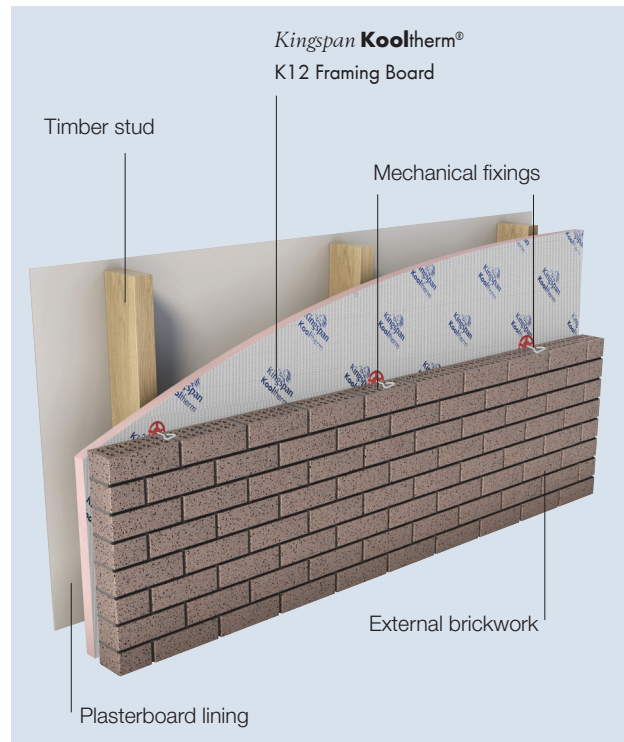


Figure 2

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

## Thermal Performance

NCC 2019 prescribes different methods to determine Total R-value Calculations for Volume 1 and Volume 2.

Total R-values for various thicknesses of Kingspan Kooltherm® K12 Framing Board and different wall types

Product Thickness	Heat flow in	Heat flow out
Concrete wall (150 mm) or block wall (140mm)		
25 mm	R <sub>T</sub> 1.8	R <sub>T</sub> 1.8
30 mm	R <sub>T</sub> 2.0	R <sub>T</sub> 2.1
40 mm	R <sub>T</sub> 2.4	R <sub>T</sub> 2.5

### Assumptions

The R-values shown are Total R-values for the building element as required by the Energy Provisions of the National Construction Code, calculated in accordance with AS/NZS 4859.2 2018 & NZS 4214. 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)

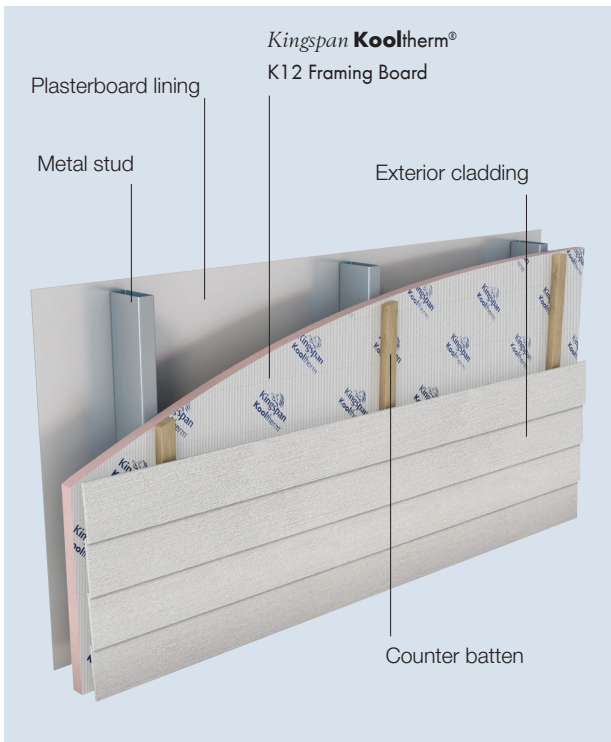


Figure 3

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

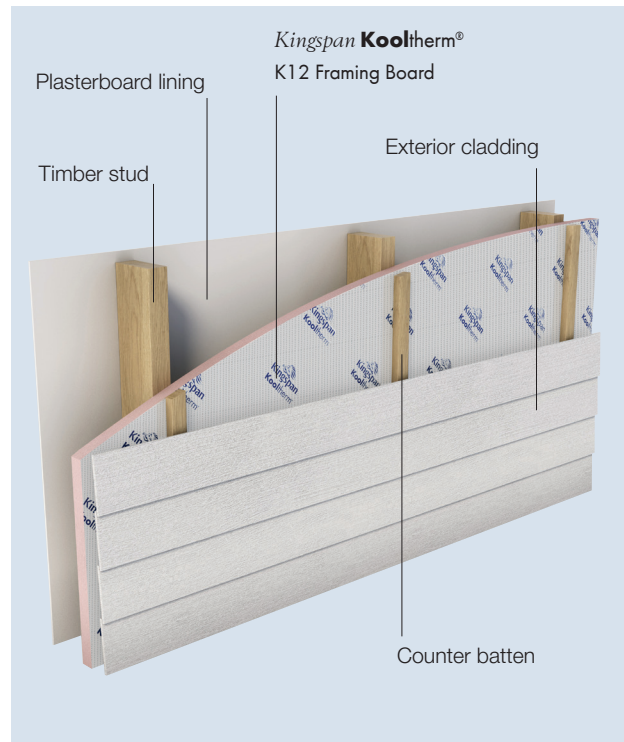


Figure 4

Total R-values for various product thicknesses of *Kingspan Kooltherm*® K12 Framing Board applicable for NCC Volume One, Class 2 to 9 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

Total R-values for various product thicknesses of *Kingspan Kooltherm*® K12 Framing Board applicable for NCC Volume One, Class 2 to 9 buildings

Product Thickness	Heat flow in	Heat flow out
25 mm	R <sub>T</sub> 2.6	R <sub>T</sub> 2.6
30 mm	R <sub>T</sub> 2.8	R <sub>T</sub> 2.8

Total R-values for various product thicknesses of *Kingspan Kooltherm*® K12 Framing Board applicable for NCC Volume Two, Class 1 & 10a buildings and NCC Volume One, Class 2 sole-occupancy unit or a Class 4 part of a building

Product Thickness	Heat flow in	Heat flow out
25 mm	R <sub>T</sub> 2.6	R <sub>T</sub> 2.7
30 mm	R <sub>T</sub> 2.8	R <sub>T</sub> 2.9

Total R-values for various product thicknesses of *Kingspan Kooltherm*® K12 Framing Board applicable for NCC Volume Two, Class 1 & 10a buildings and NCC Volume One, Class 2 sole-occupancy unit or a Class 4 part of a building

Product Thickness	Heat flow in	Heat flow out
25 mm	R <sub>T</sub> 2.6	R <sub>T</sub> 2.7
30 mm	R <sub>T</sub> 2.8	R <sub>T</sub> 2.9

### 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.

For multi-storey Construction Types A & B walls in NCC Class 2 -9 buildings, and for rainscreen applications, please refer to the *Kingspan Kooltherm*® K15 Rainscreen Board brochure.

# Product Details

## Product Description

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



Kingspan **Kooltherm**® K12 Framing Board is manufactured without the use of CFCs/HCFCs and has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).

Product Data	
Declared Thermal Conductivity	0.021 W/m.K at 23°C (Insulant thickness ≥ 45 mm) 0.023 W/m.K at 23°C (Insulant thickness 25 – 44 mm)
Emittance (Foil Face)	E0.06
Product Dimensions	2400 mm x 1200 mm (2.88 m <sup>2</sup> )
Nominal Product Thickness	25, 30, 40, 50 mm <i>Other thicknesses available upon enquiry. Minimum order quantities apply</i>

## Product R-value

Nominal Product Thickness	Declared Product R-value at 23°C
25 mm	R1.1
30 mm	R1.3
40 mm	R1.75
50 mm	R2.35

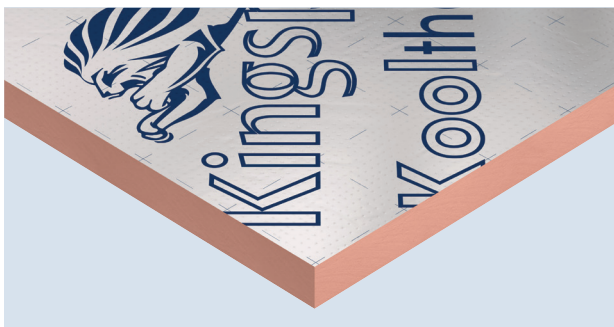


Figure 5 Super high performance Kingspan **Kooltherm**® K12 Framing Board

## Specification Guide

### Kingspan **Kooltherm**® K12 Framing Board

The wall insulation shall be Kingspan **Kooltherm**® K12 Framing Board \_\_\_ mm thick, with a tested smoke obscuration of not more than 100 m<sup>2</sup>/kg, comprising a CFC/HCFC-free and zero Ozone Depletion Potential (ODP) 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, OHSAS 18001:2007 and ISO 50001:2011 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.

## 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
OHSAS 18001:2007	Health and Safety Management
ISO 50001:2011	Energy Management

## Product Testing

Characteristic	Standard	Result
Compressive Stress	AS 2498.3	Typically exceeds 100 kPa at 10% compression
Water Vapour Resistance	BS EN 12086:1997 / I.S. EN 12086:1998	> 35 MN-s/g

## Fire Performance

Test	Test Method	Result
Ignitability, Flame spread, Heat release, Smoke release	AS 1530.3	Spread of Flame Index: 0 Smoke Development ≤ 3

# Installation Instructions

## Durability

If correctly applied, *Kingspan Kooltherm*<sup>®</sup> 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*<sup>®</sup> products are warranted for a period of 10 years for both residential and commercial installations.\*

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

## Environmental Data

Aspect	Characteristic
Recyclability	Non-contaminated insulation site waste is recyclable, but there are currently no facilities in Australia to process returned material
Re-usability	Re-usable if removed with care (long term of service expected)
Water Use	No water used in Kingspan Insulation's manufacturing process
Blowing Agent Global Warming Potential (GWP)	Manufactured with a blowing agent that has low GWP
Blowing Agent Ozone Depletion Potential (ODP)	Manufactured with a CFC/HCFC-free blowing agent that has zero ODP
Packaging	Contains 0% recycled product Polythene wrap and EPS skids 100% recyclable

## Concrete Wall Installation (Clip/Channel System)

1. Install chosen furring channel clips at required spacing for plasterboard lining.
2. Fit *Kingspan Kooltherm*<sup>®</sup> 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*<sup>®</sup> 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*<sup>®</sup> 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*<sup>®</sup>. 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*<sup>®</sup> 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.

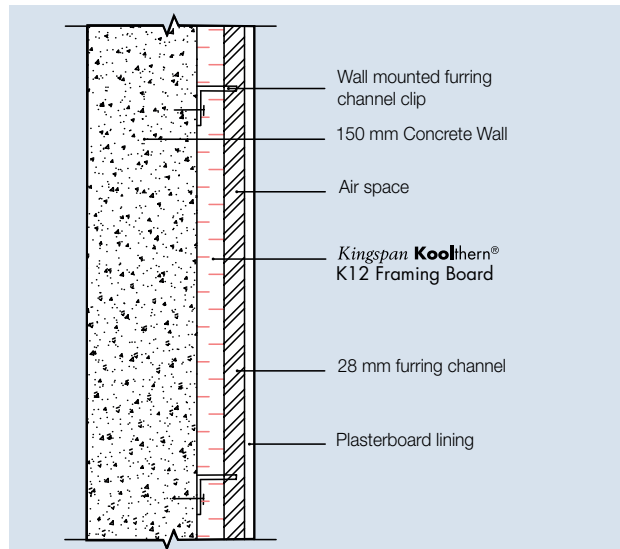


Figure 6 Side elevation of *Kingspan Kooltherm*<sup>®</sup> K12 Framing Board clip-and-channel system



# Installation Instructions (continued)

## Brick Veneer Wall (External Side of Frame)

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.

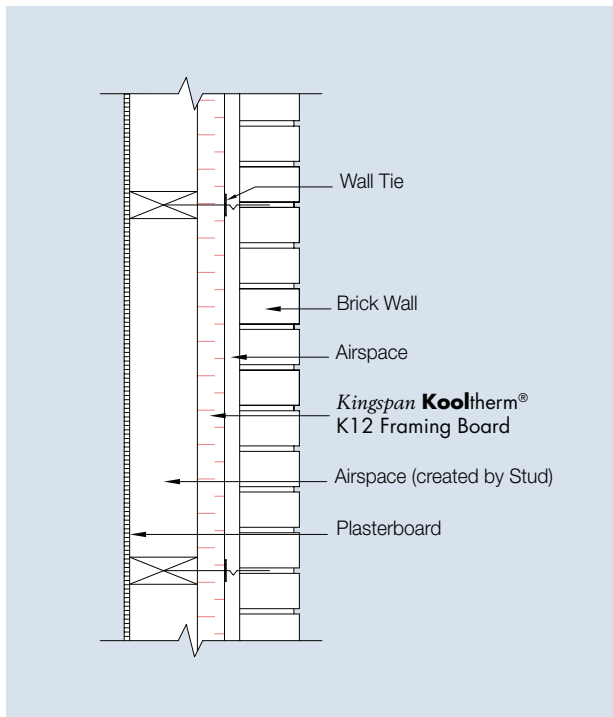


Figure 8 Side elevation – Brick Veneer wall with **Kingspan Kooltherm® K12 Framing Board**

## Steel- and Timber-framed Wall (External Side of Frame)

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.

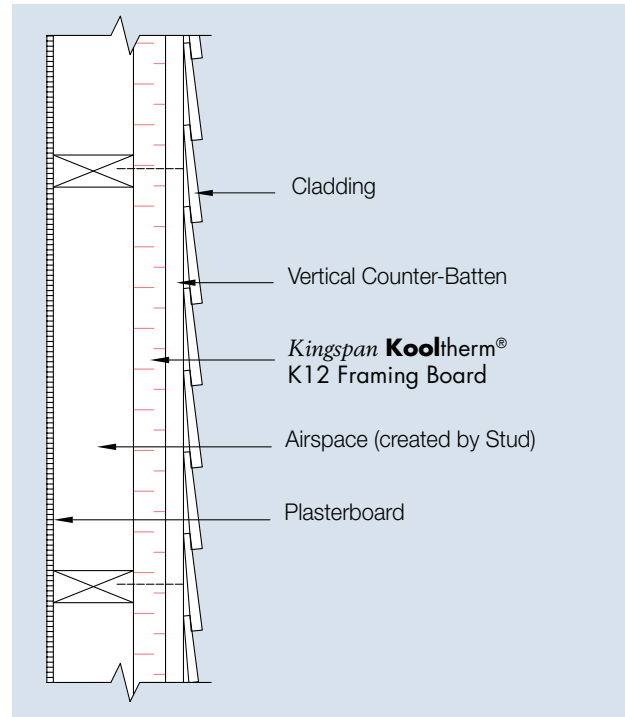


Figure 9 Side elevation – Stud wall with **Kingspan Kooltherm® K12 Framing Board** and vertical counter-battens using an internal plasterboard lining

## 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.

### 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*<sup>®</sup> 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.

### OH & S

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 *Bulk Thermal Insulation Installation* and AS 3000 *Electrical Installations (Wiring Rules)*.



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