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Kingspan Kooltherm K10 Plus Insulation
INSTALLATION GUIDE

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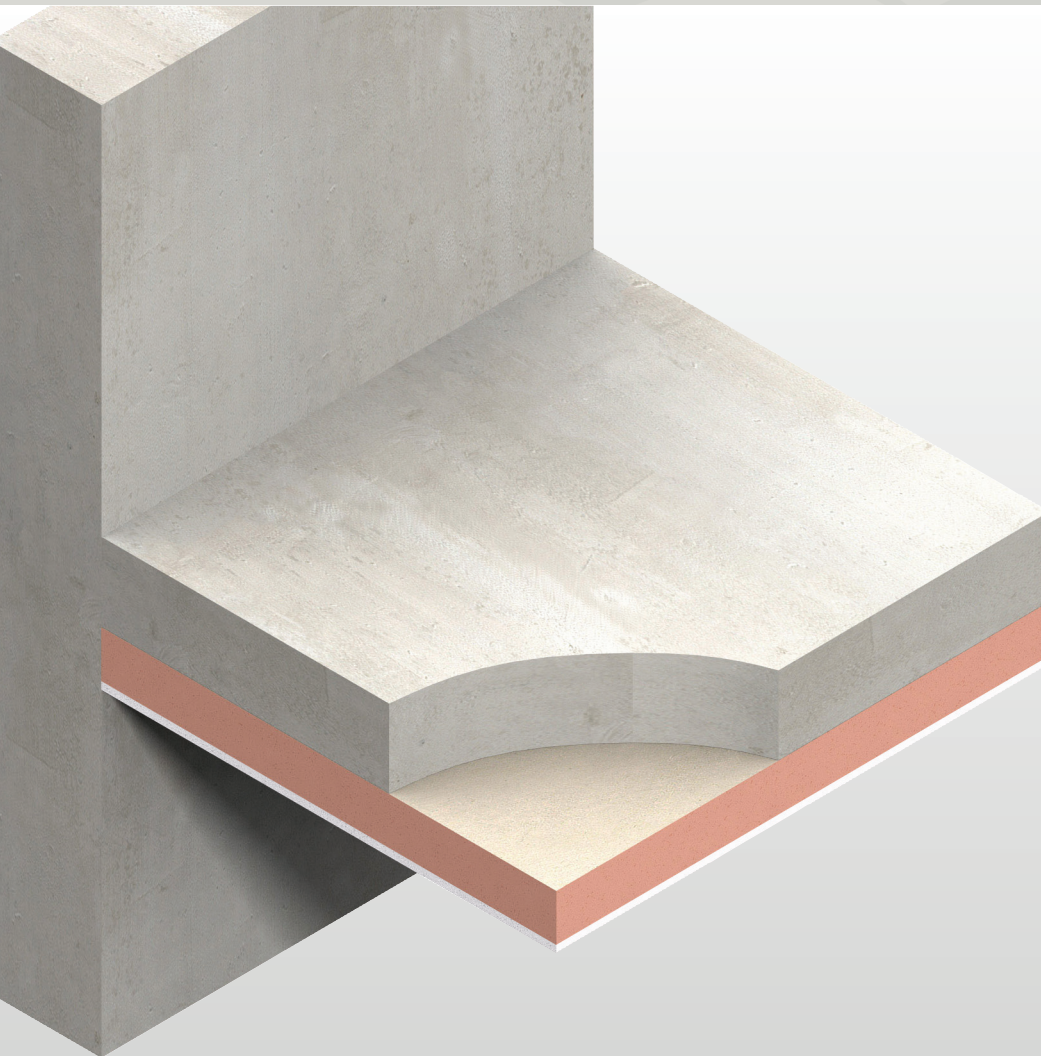
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Reach out to get your hands on product samples, or discuss your project in more detail - **03 9580 7800 / hello@mbsarchitectural.com.au**



Kooltherm® K10 PLUS Soffit Board

INSULATED FIBRE CEMENT SHEET FOR CONCRETE SOFFITS



- Super high performance rigid thermoset phenolic insulation
- Non-combustible building board outer face
- Fibre-free, closed cell insulation core
- Available in a range of selected lining materials
- Group 1 NCC fire classification
- Resistant to the passage of water vapour
- No CFC or HCFC used in manufacture
- Has zero ODP and low GWP
- NCC and AS/NZS 4859.1:2018 compliant
- Made in Australia



Low Energy –
Low Carbon Buildings

Typical Constructions and Total R-values

Concrete Soffit Floor / Roof Installation

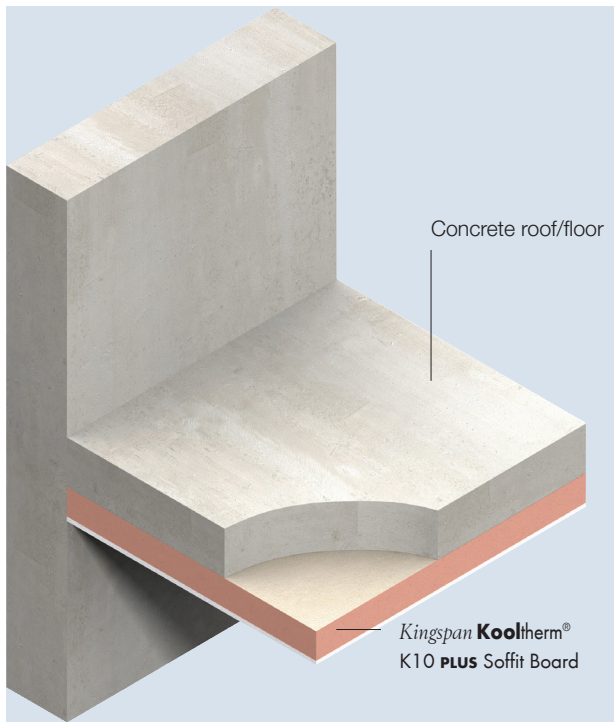


Figure 1

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 <i>Kingspan Kooltherm</i> ® K10 PLUS Soffit Board Applicable for NCC Volume One, Class 2 to 9 buildings & NCC Volume Two, Class 1 & 10a buildings, & NCC Volume One, Class 2 sole-occupancy unit or a Class 4 part of a building		
Product Thickness*	Heat flow in	Heat flow out
Roof application, no ceiling (150 mm concrete)		
31 mm	R _T 1.4	R _T 1.4
36 mm	R _T 1.6	R _T 1.6
46 mm	R _T 2.0	R _T 2.1
56 mm	R _T 2.6	R _T 2.7
66 mm	R _T 3.1	R _T 3.2
76 mm	R _T 3.5	R _T 3.7
86 mm	R _T 4.0	R _T 4.2
96 mm	R _T 4.5	R _T 4.7

Total R-values for various thicknesses of <i>Kingspan Kooltherm</i> ® K10 PLUS Soffit Board Applicable for NCC Volume One, Class 2 to 9 buildings & NCC Volume Two, Class 1 & 10a buildings, & NCC Volume One, Class 2 sole-occupancy unit or a Class 4 part of a building		
Product Thickness*	Heat flow in	Heat flow out
Unenclosed sub-floor application (150 mm concrete)		
31 mm	R _T 1.4	R _T 1.4
36 mm	R _T 1.5	R _T 1.7
46 mm	R _T 2.0	R _T 2.1
56 mm	R _T 2.6	R _T 2.8
66 mm	R _T 3.0	R _T 3.3
76 mm	R _T 3.5	R _T 3.7
86 mm	R _T 4.0	R _T 4.0
96 mm	R _T 4.4	R _T 4.7
Enclosed sub-floor application (150 mm concrete)		
31 mm	R _T 2.0	R _T 2.1
36 mm	R _T 2.2	R _T 2.4
46 mm	R _T 2.6	R _T 2.8
56 mm	R _T 3.2	R _T 3.5
66 mm	R _T 3.7	R _T 4.0
76 mm	R _T 4.1	R _T 4.4
86 mm	R _T 4.6	R _T 4.9
96 mm	R _T 5.1	R _T 5.4

*Product thickness = nominal insulation thickness + 6 mm Fibre Cement sheet

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

Product Details

Product Description

Kingspan **Kooltherm**® K10 **PLUS** Soffit Board is a super high performance, fibre-free rigid thermoset, closed cell phenolic insulation core, sandwiched between a front facing fibre cement sheet and a reverse tissue based facing autohesively bonded to the insulation core during manufacture.



Kingspan **Kooltherm**® K10 **PLUS** Soffit 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	Insulant	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)
	Fibre Cement	0.23 W/m.K at 23°C (Fibre Cement thickness 6 mm)
Product Dimensions	2400 mm x 1200 mm (2.88 m²) Other dimensions available upon enquiry. Minimum order quantities apply.	
Nominal Product Thickness (inc. FC Sheet)	31, 36, 46, 56, 66, 76, 86, 96 mm	
Nominal Fibre Cement Sheet Thickness	6 mm	

A selection of alternative lining boards to create customised finishes and facings is available. Please contact us for more information.

Product R-value

Nominal Product Thickness (inc. Fibre Cement Sheet)	Declared Product R-value
31 mm	R1.10
36 mm	R1.40
46 mm	R1.75
56 mm	R2.35
66 mm	R2.85
76 mm	R3.35
86 mm	R3.80
96 mm	R4.30

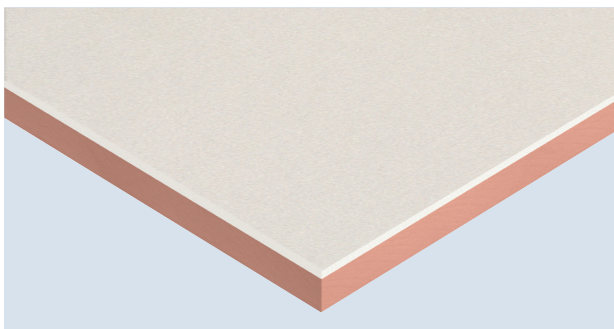


Figure 2 Super high performance Kingspan **Kooltherm**® **PLUS** Plus Soffit Board

Specification Guide

Kingspan **Kooltherm**® K10 **PLUS** Soffit Board

The soffit insulation shall be **Kingspan Kooltherm**® K10 **PLUS** Soffit Board ___ mm thick, with a tested smoke obscuration of not more than 100 m²/kg, comprising a CFC/HCFC-free and zero Ozone Depletion Potential (ODP) rigid thermoset phenolic insulation core with a front facing non-combustible fibre cement sheet and a reverse tissue based facing, 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® K10 **PLUS** Soffit 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 (Insulant)	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 For the purpose of calculation of condensation risk, the resistivity of the fibre cement sheet component of the product should be taken as 250 MN-s/g-m.

Fire Performance

Test	Test Method	Result
Ignitability, Flame spread, Heat release, Smoke release	AS 1530.3	Spread of Flame Index: 0 Smoke Development ≤ 3*
NCC Group Number in accordance with AS 5637.1	AS/NZS 3837 / Amdt 1	Group 1**
Average Specific Extinction Area	AS/NZS 3837	≤ 100 m²/kg**
Fire-resistance test of elements of construction	AS 1530.4***	-/240/240 (HDPE pipe)

* Applies only to the Kingspan **Kooltherm**® K10 insulation board used in the manufacture of this composite insulated fibre cement product.

** Applies to compliant fibre cement facing.

*** Testing to AS 1530.4 for the Kingspan **Kooltherm**® K10 performed in accordance with NCC BCA C3.15 Openings for service penetrations using a 120 mm concrete soffit.

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.

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

Installation Instructions

Fibre Cement Sheet

Kingspan **Kooltherm**® K10 **PLUS** must be installed in accordance with AS 2908.2:1992 Cellulose Cement Products.

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

Fixing Directly to Concrete Soffits

Kingspan **Kooltherm**® K10 **PLUS** Soffit Board can be fully restrained to a concrete soffit by the use of minimum 11 No. appropriate mechanical insulation fasteners with a minimum head diameter of 25 mm.

1. The fasteners should be evenly distributed over the whole area of the board and designed to provide suitable restraint for the project requirements. Consultation with the chosen fastener supplier is recommended.
2. Board joints can be either staggered (see Figure 5) or squared (see Figure 6). 4 No. fasteners along each length - no less than 50 mm - no more than 150 mm from edge of board, 3 No. fasteners along the middle (offset from edge positions as per diagram Figure 3).
3. Where the board may be subject to external wind pressure, the requirement for additional fixings should be assessed in accordance with appropriate Australian wind load standards.
4. Consideration should be given to the material the fixing is made from and should be deemed appropriate for application, exposure and fire rating by the fixing manufacturer.

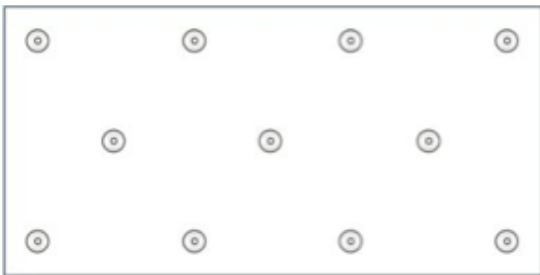


Figure 3 Fastener pattern (11 No. per board)
Board size to 2.400 x 1.200 - 3.81 fixings / m²

Why 11 fixings?

Best practice determines that any rigid board insulation, not just Kingspan **Kooltherm**® K10 **PLUS** Soffit Board, should be fixed with 11 mechanical fixings for very good reasons:

- There will always be differential expansion and contraction between any rigid insulation material and adjacent building products due to varying moisture content and temperature.
- In any concrete forming, there will be an uneven surface throughout the slab.
- Where concrete formwork is joined it is normal to have ridges of up to 3 mm which make the concrete surface uneven.
- An insulation board held horizontally may bow like any other sheetmaterial under its own weight.

Using 11 fixings ensures that the insulation board has a strong and permanent fix under the concrete soffit and that it is not compromised by any of the above issues. It also provides a proven robust fire safe solution.

These best practice recommendations are a result of over 30 years of Kingspan Insulation experience in soffit applications.

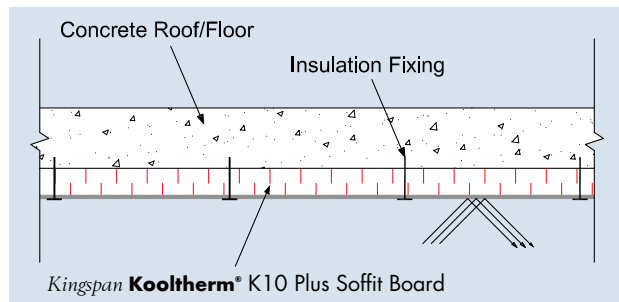


Figure 4 Side elevation - Concrete Soffit with Kingspan **Kooltherm**® K10 **PLUS** Soffit Board

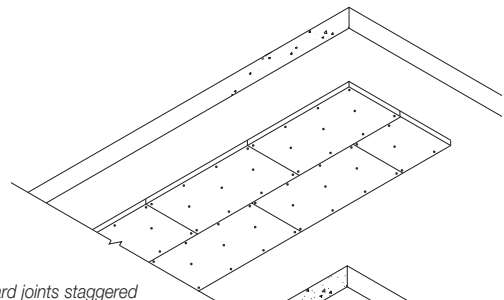


Figure 5 Board joints staggered

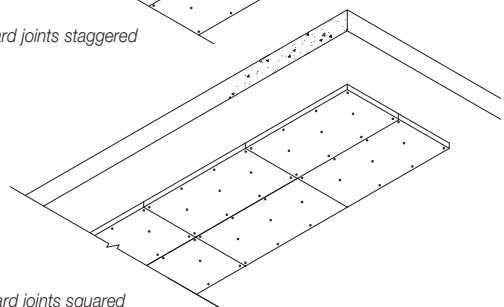


Figure 6 Board joints squared

Installation Instructions (continued)

Fixing to Timber Battens / Furring Channels

1. Alternatively, a treated softwood batten/furring channel lay-out may be adopted if there is an uneven surface or mechanical services present and direct fixing is not possible.
2. 50 mm x 25 mm battens/furring channels should be placed at 600 mm centres to coincide with the edges/centres of the boards.
3. The battens/furring channels should be fixed to the soffit by the use of a suitable fixing method e.g. shot-fire may be considered.
4. **Kingspan Kooltherm® K10 PLUS Soffit Board** should then be fixed to the treated timber battens/furring channels using suitable screw fixings. These should be placed at maximum 300 mm in rows not greater than 600 mm apart.
5. Locate fasteners not less than 12mm from sheet edges and 50mm from sheet corners.
6. Where the board may be subject to external wind pressure, the requirement for additional fixings may need to be assessed in accordance with appropriate wind load standards.

For advice on ancillary materials, such as fixings and tapes please contact our Technical Services Department.

Installation around Fire Collars

1. Fitting **Kingspan Kooltherm® K10 PLUS Soffit Board** tight to the fire collar is recommended to reduce the effects of thermal bridging through the slab.
2. Do not cover the exposed face of embedded cast in fire collars.

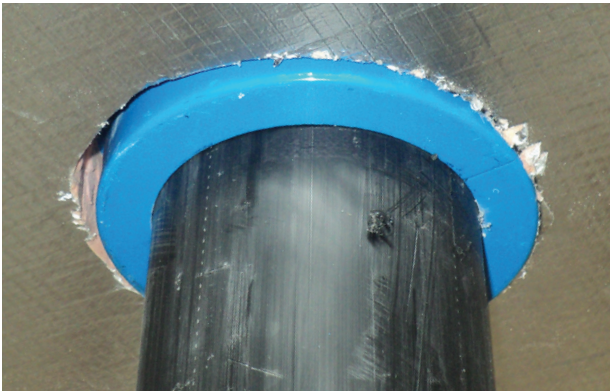


Figure 7 Penetration example - **Kingspan Kooltherm® K10 PLUS Soffit Board** installed tight around the fire collar and HDPE service pipe.



Scan to see installation video "Fixing Directly to Concrete Soffits"

General

Cutting

Cutting fibre cement sheets should be carried out by using a suitable fibre cement blade. For alternative lining materials ensure an appropriate blade is used. Ensure accurate trimming to achieve close-butting joints and continuity of insulation.

Taping

Taping is not required for bonded boards. In the absence of other protection, exposed board edges should be protected by silver Kingspan Insulation Tape with a minimum 48 mm wide overlap onto the board face (see Figure 8) or alternatively use a proprietary metal c-section.

However, to reduce vapour transmission consideration should be given to sealing the joints.

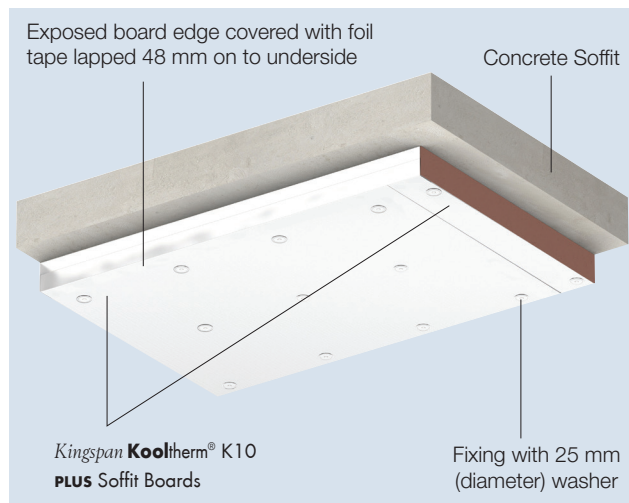


Figure 8 Protection of exposed insulation edges of Kingspan **Kooltherm**® K10 **PLUS** Soffit Board

Packaging

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

Handling and Storage

Storage

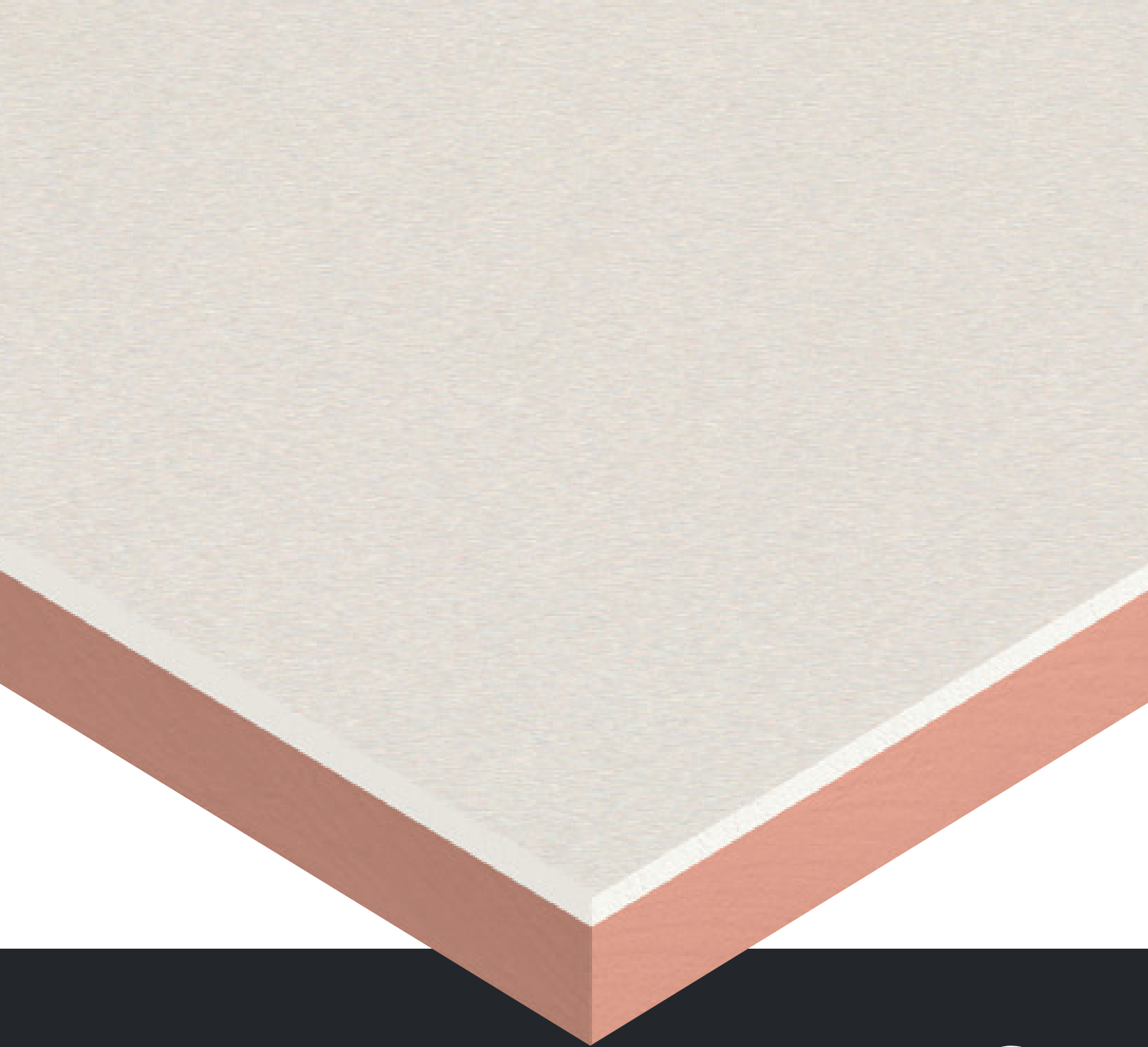
The packaging of Kingspan **Kooltherm**® should not be considered adequate for long term outdoor protection. Ideally boards should be stored inside a building. If, however, outdoor storage cannot be avoided then the boards should be stacked clear of the ground and covered with an opaque polythene sheet 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.

OH & S

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



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03 9580 7800

hello@mbsarchitectural.com.au

VIC | 7 Haymer Court, Braeside 3195

QLD | 13 Pease Court, Bethania 4205

@MBSarchitectural