Insulation

The Kingspan Low-Rise (Type C) Insulated Wall Solution

Installation Guide

Kooltherm®

Kingspan®

The Kingspan Low-Rise (Type C) Insulated Wall Solution

For commercial low-rise buildings such as offices, showrooms, shops, restaurants, warehouses, storage facilities and factories.

Kingspan's Low-Rise Insulated Wall Solution features the Kingspan Kooltherm K12 Framing Board and Kooltherm K12 Adhesive. The Kooltherm K12 Framing Board is mechanically fixed to the concrete wall, with plasterboard adhered directly to the insulation board using the Kooltherm K12 Adhesive. This combination creates a fast, straightforward wall installation with your choice of plasterboard.

The Kooltherm K12 Framing Board's thin-profile, rigid design ensures slimmer walls while providing continuous insulation, effectively reducing thermal bridging. This construction method eliminates the need for traditional framing, offering significant cost savings.

Additionally, Kingspan provides an insulation-to-plaster adhesion warranty, ensuring long-lasting performance and peace of mind.

Kooltherm®
K12 Framing Board
with K12 Adhesive

+

Any Plasterboard
product

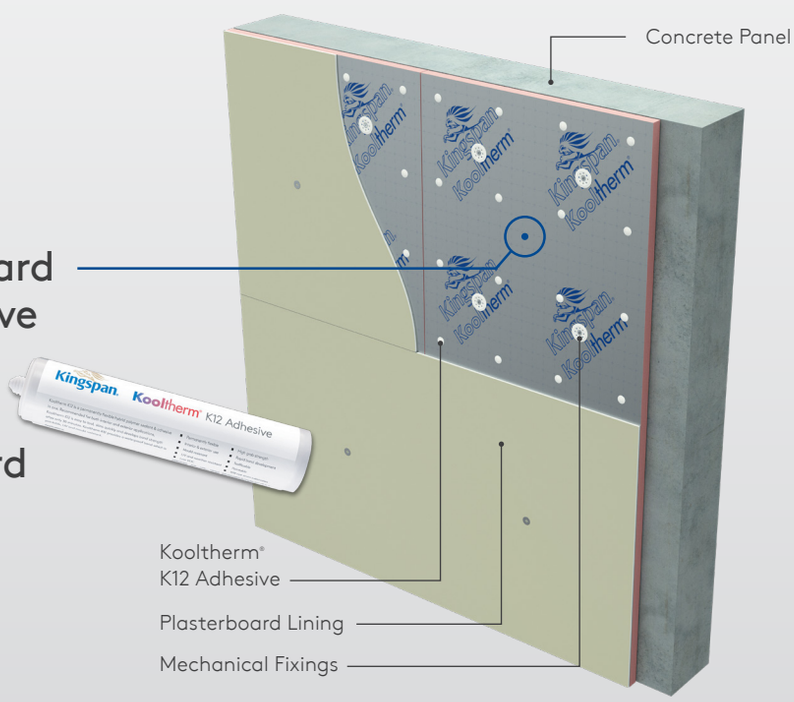

Figure 1. The Kingspan Low-Rise Insulated Wall Solution.

Kooltherm®

The phenolic Kooltherm range is a great example of our knowledge and expertise combining to create a rigid phenolic insulation board for roof, wall and floor.

With a thermal conductivity from as low as 0.022 W/m.K, Kingspan Kooltherm is the most thermally efficient and thinnest commonly used insulation board for any specific R-value. This means that you can benefit from reduced heating or cooling demand or use thinner boards to gain more space in your building. The closed cell structure resists both moisture and water vapour ingress and is unaffected by air infiltration – a problem which can be associated with open cell materials such as mineral fibre resulting in reduced thermal performance.

Here are a few features of a Kooltherm rigid insulation board:

1. Fibre-free, closed cell insulation core
2. Low smoke development
3. Rigid thermoset phenolic insulation
4. Compliant with AS/NZS 4859.1:2018
5. Slim profile insulation boards

Kooltherm phenolic rigid insulation boards are suitable for:

Roof Ceiling Wall Floor

The Kingspan Low-Rise Insulated Wall Solution

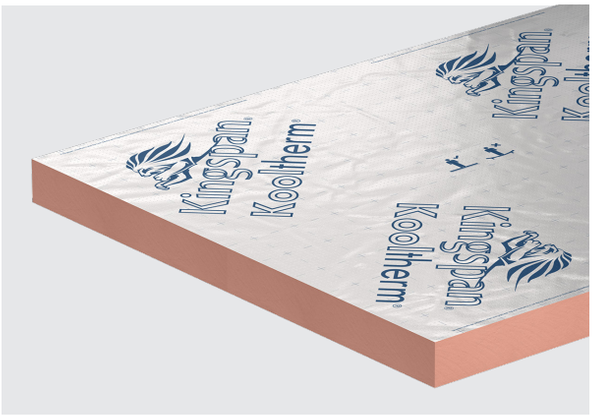

Figure 2. Kingspan Kooltherm K12 Framing Board.

Kingspan Kooltherm K12 Framing Board

Kingspan Kooltherm 12 Framing Board comprises a fibre-free rigid thermoset phenolic insulation core, faced on both sides with a composite foil autohesively bonded to the insulation core during manufacture. This reflective surface improves the thermal resistance of any cavity adjacent to the board.

Figure 3. Kingspan Kooltherm K12 Adhesive.

Kingspan Kooltherm K12 Adhesive

Kingspan Kooltherm K12 Adhesive is a hybrid moisture curing adhesive and sealant with grab strength for use in low-rise insulated wall applications (Type C). Kingspan Kooltherm K12 Adhesive cures to form a tough, waterproof seal. Its versatility means it can replace most water based and solvent based construction adhesives, polyurethane adhesive and sealants as well as silicones in construction.

Typical Construction and Total R-values

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

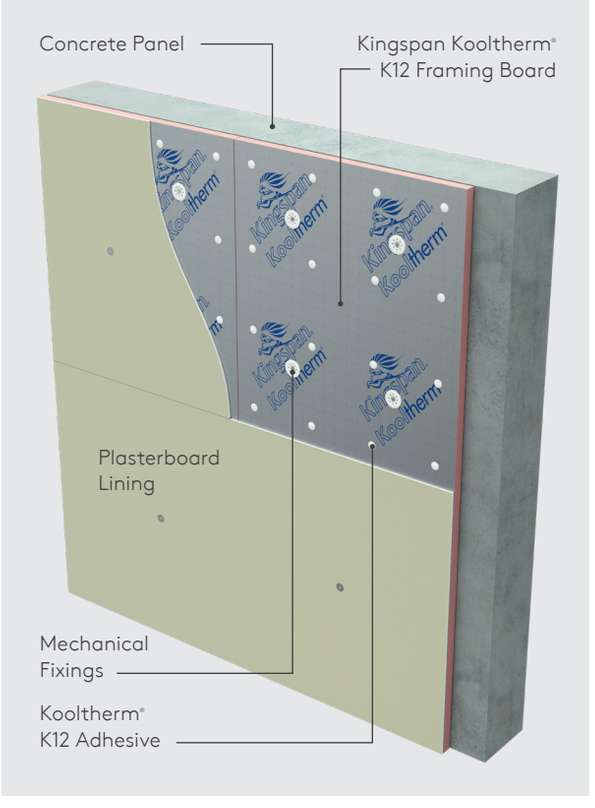

Figure 4. Kingspan Kooltherm K12 Framing Board mechanically fixed to the concrete wall, with the plasterboard adhered to the framing board using Kingspan Kooltherm K12 Adhesive.

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_T1.4	R_T1.4
30 mm	R_T1.6	R_T1.7
40 mm	R_T2.0	R_T2.1
50 mm	R_T2.5	R_T2.6

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

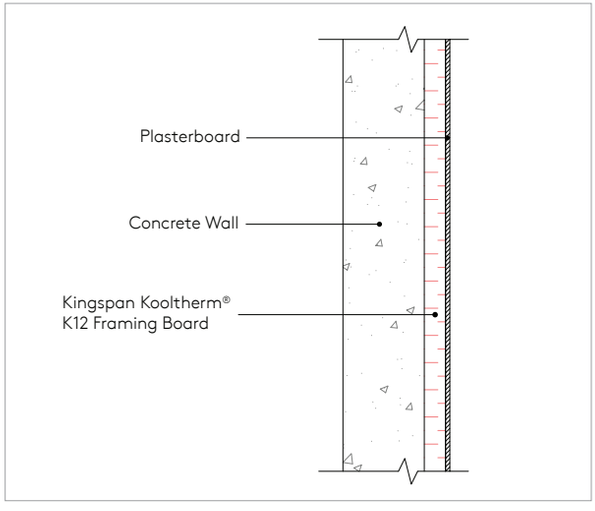

Figure 5. Side elevation of Kingspan Kooltherm K12 Framing Board mechanically fixed to the concrete wall.

Kooltherm K12 Framing Board
Product Details

Product Description

Kingspan Kooltherm 12 Framing Board comprises a fibre-free rigid thermoset phenolic insulation core, 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 (λ-value) AS/NZS 4859.1:2018 / ASTM C518-2017	0.022 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) ASTM C1371:2015	E0.06
Product Dimensions	2400mm x 1200mm (2.88m²)
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 m²/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.

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	Typically 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 ≤ 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

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 Steps

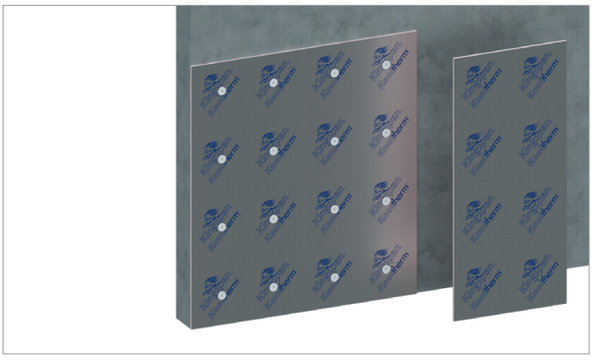

Figure 6. Fixing locations.

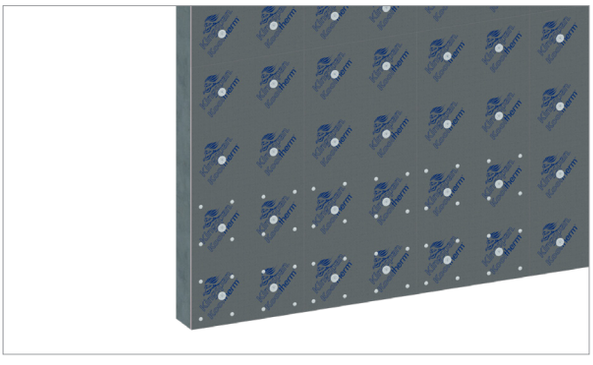

Figure 7. Adhesive locations.

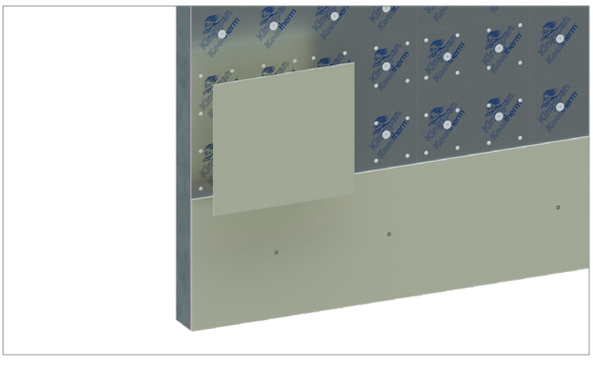

Figure 8. Plasterboard installation and mechanical fixings.

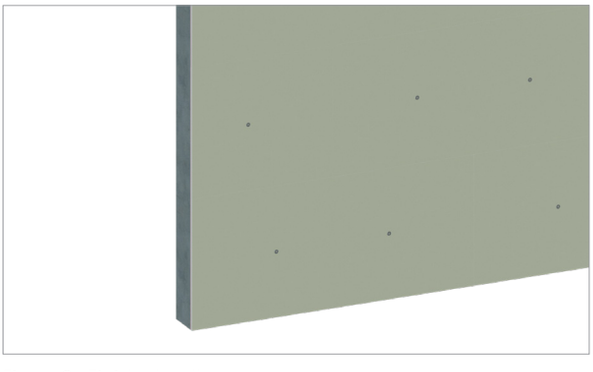

Figure 9. Finished wall.

1. **Prepare for Installation:**
   Ensure you have the necessary materials and tools ready. Make sure you have the recommended number of suitable fixings depending on the thickness of the Kooltherm board.
2. **Mark Fixing Locations:**
   Install eight or more fixings per 2400 x 1200 mm board (2.77 fixings / m²). Refer to Figure 6. for fixing locations.
3. **Apply String Line:**
   Use a string line and mark the centre line of the Kooltherm board to guide the installation process.
4. **Apply Adhesive:**
   Use Kingspan Kooltherm K12 Adhesive for bonding. Before applying the adhesive, ensure the Kooltherm K12 board is free of debris. Apply 16 daubs of glue on the bottom half of each Kooltherm K12 board. Ensure that the outer perimeter of each daub of glue is no more than 50 to 70 mm away from the edge of the board. Each daub of glue should be approximately 10ml in volume and approximately 30 mm in diameter. It is recommended to work on three bottom halves of Kooltherm K12 boards at a time to allow for efficient installation. Refer to Figure 7. for adhesive locations.
5. **Install Bottom Half of Boards:**
   Begin installing the bottom halves of the plasterboard, adhering them to the wall. Ensure that the boards are level and tap them accordingly to achieve a level surface. Refer to Figure 8.
6. **Apply Mechanical Fixings:**
   Starting from the first board that was installed, apply minimum two mechanical fixings per 3.6 m length plasterboard. Make sure the mechanical fixings are securely fastened to the wall. Refer to Figure 8. for mechanical fixings.
7. **Repeat Steps 3 to 6 for the Top Half:**
   Apply adhesive as per step 3 on the top half of the wall. Install the top halves of the Kooltherm K12 boards in the same manner as the bottom halves. Use mechanical fixings as described in step 6 for the top half as well.
8. **Complete Installation:**
   Ensure that all boards are securely installed and level. Verify that all mechanical fixings are in place and properly tightened. Clean up any excess adhesive.
9. **Finish the Installation:**
   Proceed with further steps or finishing work as needed for your specific project.

Note: Always follow safety guidelines and any additional instructions provided by the manufacturer for the best results and safety during the installation process.

Installation Instructions

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).

Contact Details

Australia

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