



# Concrete Walls & Block Walls

## INSULATION GUIDE



- Section J compliant solutions
- Rigid *Kingspan Kooltherm™* and flexible *Kingspan AIR-CELL™* solutions available
- Minimises wall footprint, maximising internal floor space
- Wall cavities remain unfilled and accessible for services
- Fibre-free, non-allergenic, non-irritant solutions available
- Quick and easy to install
- Strong, tough, durable
- Ideal for new builds and refurbishments
- ISO 9001 Quality Standards
- Compliant with AS/NZS 4859.1



*Low Energy –  
Low Carbon Buildings*

# AIR-CELL Insulbreak™ FR

## Typical Design Detail

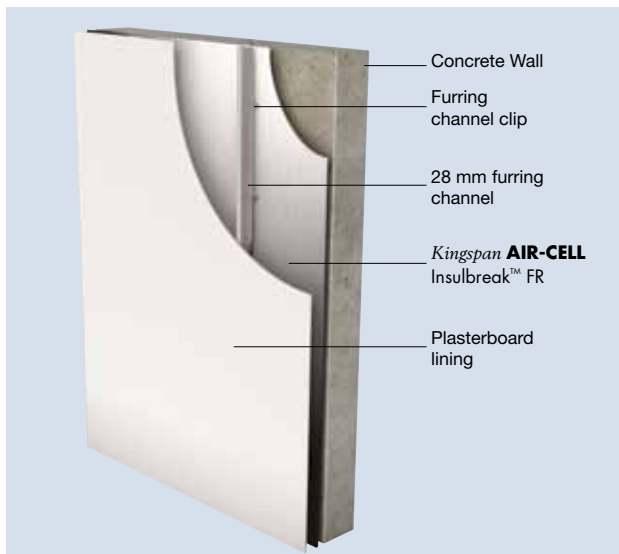


Figure 1 **Kingspan AIR-CELL Insulbreak™ FR** clip-and-channel system

## Thermal Performance

Concrete Wall (150 mm)	Heat flow in
<b>Kingspan AIR-CELL Insulbreak™ 40FR</b>	$R_T$ 1.8
<b>Kingspan AIR-CELL Insulbreak™ 80FR</b>	$R_T$ 1.9
Block Wall (150 mm)	Heat flow in
<b>Kingspan AIR-CELL Insulbreak™ 40FR</b>	$R_T$ 1.9
<b>Kingspan AIR-CELL Insulbreak™ 80FR</b>	$R_T$ 2.0

The R-values shown are Total R-values for the building element as required by the Energy Provisions of the Building Code of Australia. **Kingspan AIR-CELL™** products are manufactured, tested and packaged in conformance with AS/NZS 4859.1. The contribution of the product Total R-values depends on installation and environmental conditions.

## Specification Guide

The wall insulation fixed to the internal side of the wall over the furring channel clips shall be **Kingspan AIR-CELL Insulbreak™** \_\_\_\_ FR (specify 40 or 80) fibre-free, thermo reflective insulation, comprising a cross-linked, closed-cell foam core sandwiched with a plain foil facing on both sides manufactured by Kingspan Insulation Pty Ltd, and shall be installed in accordance with the instructions issued by them.

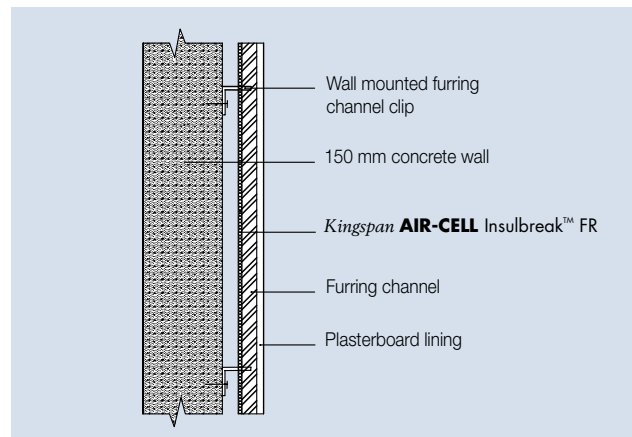


Figure 2 Side elevation of **Kingspan AIR-CELL Insulbreak™ FR** clip-and-channel system

## Installation Instructions

1. Install chosen furring channel clips at required spacing for plasterboard lining.
2. Fit **Kingspan AIR-CELL Insulbreak™ FR** over channels and hold in position with tape or screws, or cut slots for the **Kingspan AIR-CELL Insulbreak™ FR** to fit over the wings of the channel clips.
3. Butt join rolls of **Kingspan AIR-CELL Insulbreak™ FR** and tape with 72 mm wide reinforced aluminium tape.
4. Install furring channel by clipping into channel clips.
5. Install plasterboard lining.

### Alternative Installation: Counter-Batten System

1. Install chosen battens or channels at required spacing for plasterboard lining.
2. Fit **Kingspan AIR-CELL Insulbreak™ FR** over battens/channels and hold in position with tape, screws, or staples.
3. Butt join rolls of **Kingspan AIR-CELL Insulbreak™ FR** and tape with 72 mm wide reinforced aluminium tape.
4. Install counter-batten/channel by screwing into first batten/channel.
5. Install plasterboard lining.

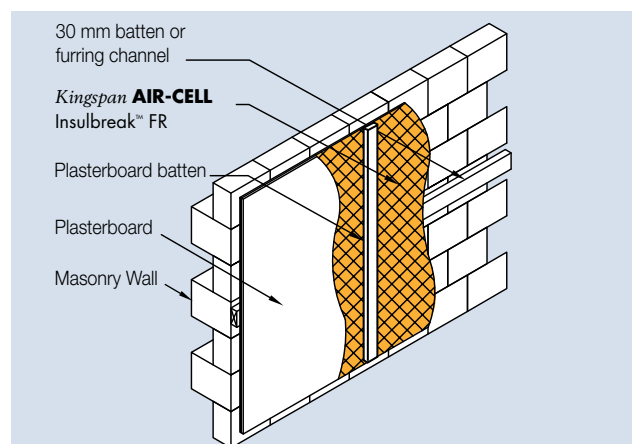


Figure 3 **Kingspan AIR-CELL Insulbreak™ FR** counter-batten system

# Kooltherm™ K5 External Wall Board

## Typical Design Detail

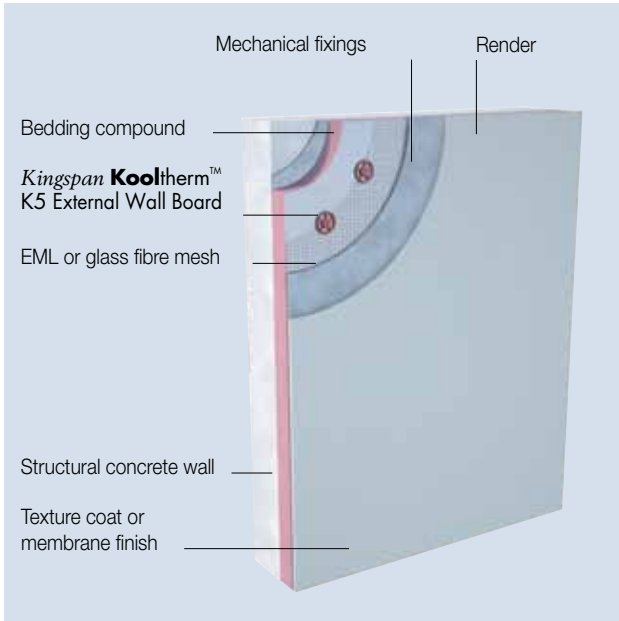


Figure 4 Kingspan **Kooltherm™** K5 External Wall Board insulated render system on concrete wall

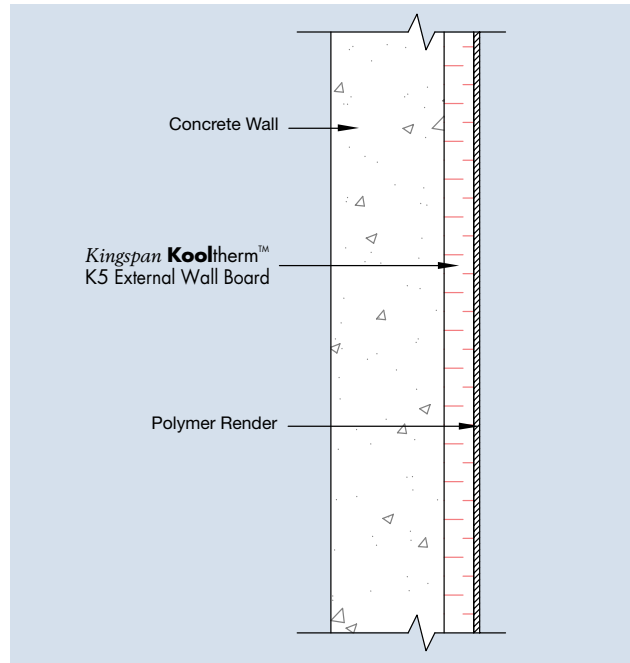


Figure 5 Side elevation of Kingspan **Kooltherm™** K5 External Wall Board insulated render system on concrete wall

Concrete Wall (150 mm)		
Product Thickness	Heat flow in	Heat flow out
50 mm	R <sub>T</sub> 2.9	R <sub>T</sub> 2.8
80 mm	R <sub>T</sub> 4.4	R <sub>T</sub> 4.3
Block Wall (140 mm)		
Product Thickness	Heat flow in	Heat flow out
50 mm	R <sub>T</sub> 2.8	R <sub>T</sub> 2.8
80 mm	R <sub>T</sub> 4.3	R <sub>T</sub> 4.3

The R-values shown are Total R-values for the building element as required by the Energy Provisions of the Building Code of Australia. Kingspan **Kooltherm™** products are manufactured, tested and packaged in conformance with AS/NZS 4859.1. The contribution of the product Total R-values depends on installation and environmental conditions.

## Installation Instructions

Kingspan **Kooltherm™** K5 External Wall Board should only be installed by approved installers. For more information please contact Technical Services at [technical@kingspaninsulation.asia](mailto:technical@kingspaninsulation.asia).

## Specification Guide

The external wall insulation shall be Kingspan **Kooltherm™** K5 External Wall Board \_\_\_ mm thick comprising a CFC/HCFC-free and zero Ozone Depletion Potential (ODP) rigid thermoset insulation core with a tissue based facing on both sides manufactured under a management system certified to BS / I.S. EN ISO 9001:2008, BS / I.S. EN ISO 14001:2004 and BS / I.S. OHSAS 18001:2007 by Kingspan Insulation Pty Ltd and shall be installed by approved installers (please contact Kingspan Insulation Pty Ltd).

# Kooltherm™ K12 Framing Board

## Typical Design Detail

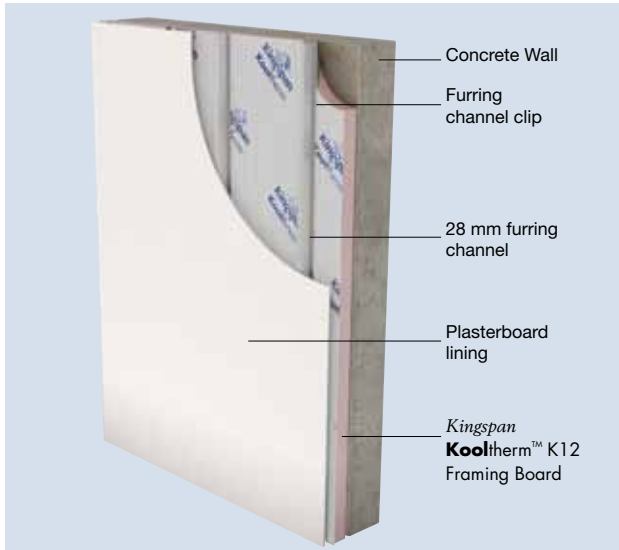


Figure 6 Kingspan Kooltherm™ K12 Framing Board clip-and-channel system

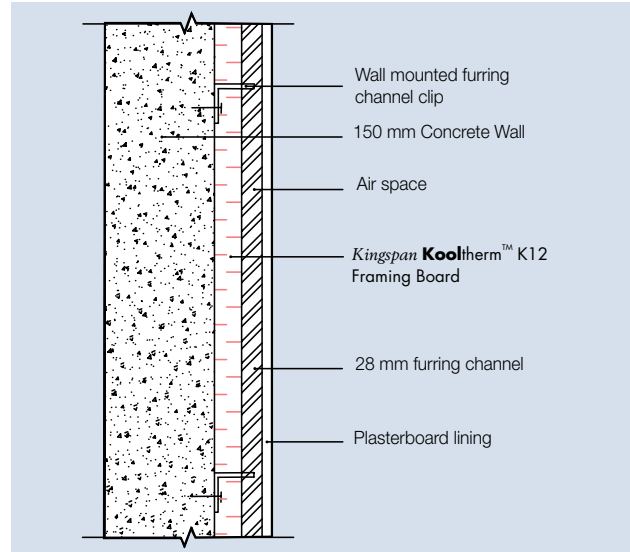


Figure 7 Side elevation of Kingspan Kooltherm™ K12 Framing Board clip-and-channel system

## Thermal Performance

Concrete Wall (150 mm)			
Product Thickness	Heat flow in	Heat flow out	
30 mm	R <sub>T</sub> 2.4	R <sub>T</sub> 2.5	
40 mm	R <sub>T</sub> 2.9	R <sub>T</sub> 3.0	
Block Wall (140 mm)			
Product Thickness	Heat flow in	Heat flow out	
30 mm	R <sub>T</sub> 2.5	R <sub>T</sub> 2.5	
40 mm	R <sub>T</sub> 3.0	R <sub>T</sub> 3.0	

The R-values shown are Total R-values for the building element as required by the Energy Provisions of the Building Code of Australia. Kingspan Kooltherm™ products are manufactured, tested and packaged in conformance with AS/NZS 4859.1. The contribution of the product Total R-values depends on installation and environmental conditions.

## Specification Guide

The insulation fixed to the internal side of the wall over the furring channel clips shall be Kingspan Kooltherm™ K12 Framing Board \_\_\_\_\_ mm thick CFC/HCFC-free and zero Ozone Depletion Potential (ODP) rigid thermoset insulation manufactured under a management system certified to BS / I.S. EN ISO 9001:2008, BS / I.S. EN ISO 14001:2004 and BS / I.S. OHSAS 18001:2007 by Kingspan Insulation Pty Ltd and shall be installed in accordance with the instructions issued by them.

## Installation Instructions

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 joint 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™. 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 joints of Kingspan Kooltherm™ K12 Framing Board boards in this system with 48 mm wide reinforced aluminium foil tape. Refer to the "General Requirements" section towards the back of this document for more important information regarding taping.



# Kooltherm™ K17 Insulated Plasterboard

## Typical Design Detail

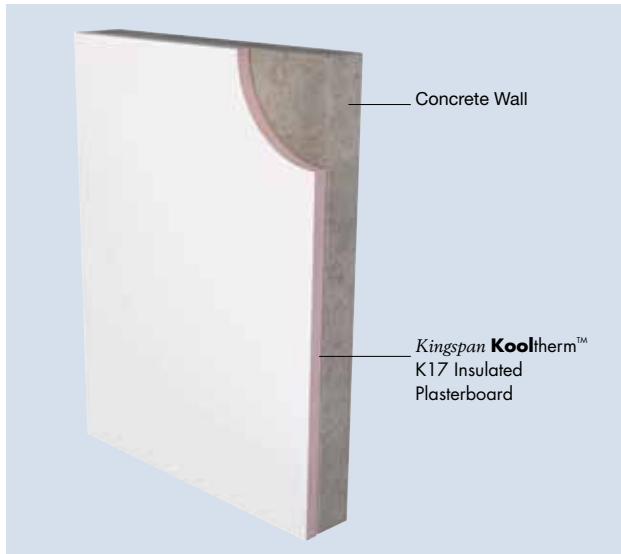


Figure 8 *Kingspan Kooltherm™ K17 Insulated Plasterboard* for adhesive bonding

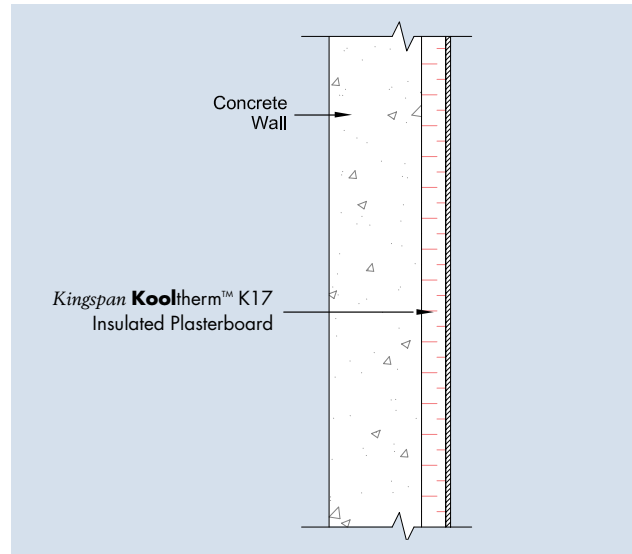


Figure 9 Side elevation of *Kingspan Kooltherm™ K17 Insulated Plasterboard* bonded to a concrete wall

## Thermal Performance

Concrete Wall (150 mm)			
Product Thickness (inc. Plasterboard)	Heat flow in	Heat flow out	
35 mm	R <sub>T</sub> 1.5	R <sub>T</sub> 1.5	
40 mm	R <sub>T</sub> 1.8	R <sub>T</sub> 1.7	
50 mm	R <sub>T</sub> 2.2	R <sub>T</sub> 2.2	
60 mm	R <sub>T</sub> 2.8	R <sub>T</sub> 2.8	
70 mm	R <sub>T</sub> 3.3	R <sub>T</sub> 3.3	
80 mm	R <sub>T</sub> 3.8	R <sub>T</sub> 3.8	
90 mm	R <sub>T</sub> 4.3	R <sub>T</sub> 4.3	
Block Wall (140 mm)			
Product Thickness (inc. Plasterboard)	Heat flow in	Heat flow out	
35 mm	R <sub>T</sub> 1.6	R <sub>T</sub> 1.5	
40 mm	R <sub>T</sub> 1.8	R <sub>T</sub> 1.8	
50 mm	R <sub>T</sub> 2.3	R <sub>T</sub> 2.3	
60 mm	R <sub>T</sub> 2.9	R <sub>T</sub> 2.9	
70 mm	R <sub>T</sub> 3.4	R <sub>T</sub> 3.4	
80 mm	R <sub>T</sub> 3.9	R <sub>T</sub> 3.9	
90 mm	R <sub>T</sub> 4.4	R <sub>T</sub> 4.4	

The R-values shown are Total R-values for the building element as required by the Energy Provisions of the Building Code of Australia. Kingspan Kooltherm™ products are manufactured, tested and packaged in conformance with AS/NZS 4859.1. The contribution of the product Total R-values depends on installation and environmental conditions.

## Specification Guide

The wall dry-lining insulation shall be *Kingspan Kooltherm™ K17 Insulated Plasterboard* \_\_\_\_ mm thick, comprising a CFC/HCFC-free and zero Ozone Depletion Potential (ODP) rigid thermoset insulation core with 10 mm plasterboard facing bonded to its front surface and a tissue based facing on its reverse surface, manufactured under a management system certified to BS / I.S. EN ISO 9001:2008, BS / I.S. EN ISO 14001:2004 and BS / I.S. OHSAS 18001:2007 by Kingspan Insulation Pty Ltd and shall be installed in accordance with the instructions issued by them.

Alternative lining boards, such as fibre cement sheets, can also be bonded to the insulation core to create customised finishes and facings in our *Kingspan Kooltherm™ K17+ Insulated Lining Board* range. Please contact us for more information.

## Installation Instructions

### Dry Wall Plasterboard

*Kingspan Kooltherm™ K17 Insulated Plasterboard* can be applied utilising a variety of traditional or modern dry-lining techniques, to dry and structurally sound walls. These include the construction adhesive bonding method. The particular system employed will depend on the construction or design of the wall to which *Kingspan Kooltherm™ K17 Insulated Plasterboard* is to be fixed. If an acceptable adhesive bond cannot be achieved due to the wall surface, consideration should be given to a mechanically fixed option. The tapered edge to the plasterboard enables a flat seamless surface equal to traditional plaster finishes after the correct jointing procedures as per plasterboard manufacturer's recommendation have been completed.

# Kooltherm™ K17 Insulated Plasterboard

## Construction Adhesive Bonding

This method is for application to brick, block or concrete masonry cavity walls which are free from moisture penetration.

1. Ensure that the wall surface to be bonded to is free from oil, grease, paint, release agent, or any contaminate that may affect the bond of the adhesive to the wall.
2. Gun apply a continuous blob of construction adhesive around perimeter wall and ceiling junctions, and around any openings, such as windows and doors, in order to provide a seal.
3. Gun apply blobs of construction adhesive to the wall or the back of the board approximately 25 mm in diameter (single squeeze), at 300 mm centres in both directions or to specific adhesive manufacturer's instructions. Ensure that the blobs adjacent to a board joint are approximately 25 mm in from the edge to avoid bridging the joint.
4. Tap the board back firmly using a straightedge, ensuring that the vertical edge is plumb.
5. Continue dry lining in the same manner.
6. Provide temporary mechanical support to the *Kingspan Kooltherm™ K17 Insulated Plasterboard* for at least 24 hours.
7. Mechanical fixings are recommended to complement the adhesive bond. Apply 2 per board after the adhesive has set, positioned 15 mm in from the board edge and at mid height with a nominal 25 mm embedment into the wall. (Refer to fixing manufacturer instructions for more information).
8. It is recommended that mechanical fixings are positioned in the tapered edge of the boards so that they are covered when the board is finished, (e.g. joints taped and skim coating) at mid height. Boards should be fitted tight to the ceiling/joists.

# General Requirements

1. Fit *Kingspan AIR-CELL*<sup>™</sup> neatly around doors, windows, and any penetrations, and tape if necessary to prevent air leakage.
2. Foil facings are conductive to electricity and contact with uninsulated electrical cables and fittings must be avoided.
3. 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.
4. Leave minimum 50 mm clearance around heat producing flues or light fittings (refer to light fitting manufacturer).

The instructions in this document are guidelines only and should be interpreted with consideration for the specific building design. The installation of *Kingspan AIR-CELL*<sup>™</sup> should be in conformance with the applicable clauses from AS 3999 and AS/NZS 4200.2 unless otherwise specified.

*Kingspan AIR-CELL*<sup>™</sup> can be damaged by intense heat above 105° C and contact with sparks and flame from blow torches, welders, cutting tools, etc. must be avoided.

The installer must make due provision for safety when installing *Kingspan AIR-CELL*<sup>™</sup> and *Kingspan Kooltherm*<sup>™</sup> in any application.

## Cutting

### **Kooltherm**<sup>™</sup>

Cutting of *Kingspan Kooltherm*<sup>™</sup> boards 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. Please note that scoring and snapping would not apply to *Kingspan Kooltherm*<sup>™</sup> K17 Insulated Plasterboard due to the bonded plasterboard lining.

## Handling and Storage

### **AIR-CELL**<sup>™</sup>

*Kingspan AIR-CELL*<sup>™</sup> insulation products must be transported and stored in its protective packaging and kept clean and dry. Standing rolls on end reduces risk of damage should moisture be present in the packaging. Surfaces must be kept free of contaminants such as dust and grease, and must not be stored with foil surfaces in contact with alkaline materials i.e. wet cement, lime, etc.

### **Kooltherm**<sup>™</sup>

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.

# Contact Details

## General Enquiries

Email: [info@kingspaninsulation.asia](mailto:info@kingspaninsulation.asia)

*Kingspan Insulation Pty. Ltd. reserves the right to amend product specifications without prior notice. The information, technical details and fixing instructions etc. included in this literature are given in good faith and apply to uses described. Recommendations for use should be verified as to the suitability and compliance with actual requirements, specifications and any applicable laws and regulations. For other applications or conditions of use, Kingspan Insulation offers a Technical Advisory Service the advice of which should be sought for uses of Kingspan Insulation products that are not specifically described herein. Please check that your copy of the literature is current by contacting us or visiting [www.kingspaninsulation.asia](http://www.kingspaninsulation.asia)*



**Kingspan Insulation Pty Ltd**

Email: [info@kingspaninsulation.asia](mailto:info@kingspaninsulation.asia)

[www.kingspaninsulation.asia](http://www.kingspaninsulation.asia)