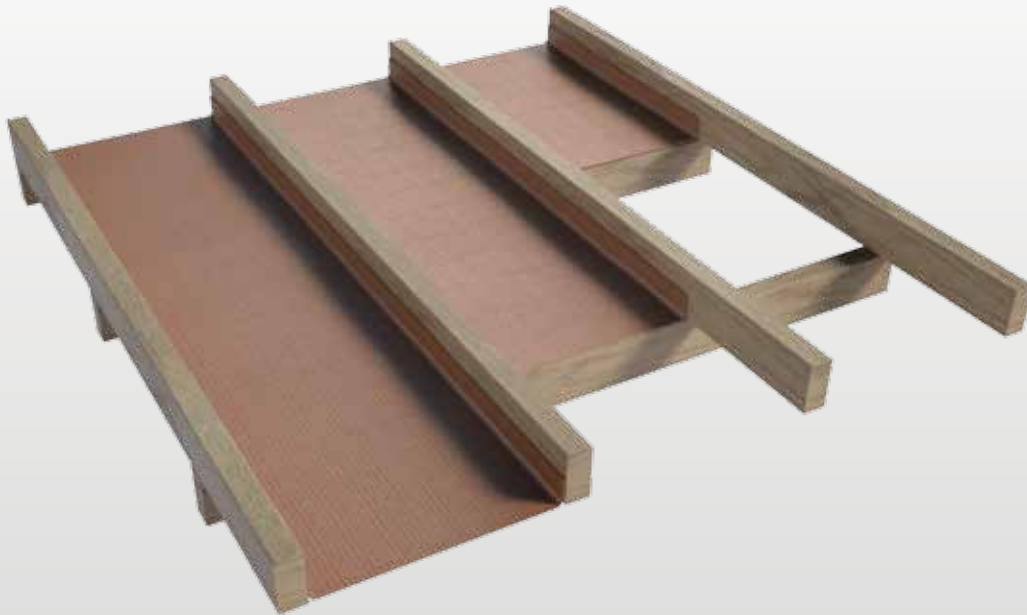




# AIR-CELL Permifloor®

## WATER-PERMEABLE UNDERFLOOR INSULATION



- Helps improve energy efficiency
- 2-in-1 insulation and moisture management solution
- Fibre-free, non-allergenic, non-irritant
- Quick and easy to install
- Strong, tough, durable
- Rodent and insect resistant
- Flammability Index  $\leq 5$
- Compliant with AS/NZS 4859.1



Low Energy –  
Low Carbon Buildings

# Typical Constructions and Total R-values

## Suspended Framed Floors

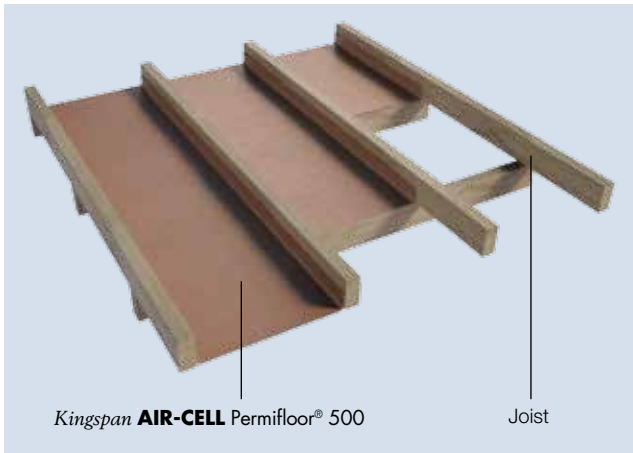


Figure 1 Pre-cut **Kingspan AIR-CELL Permifloor® 500** installed between floor joists

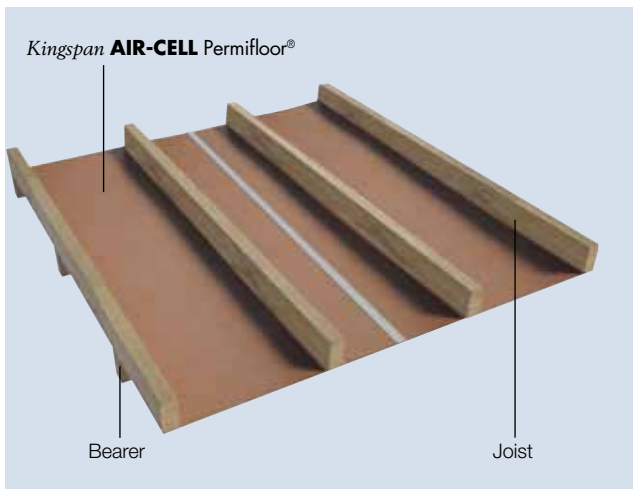


Figure 2 **Kingspan AIR-CELL Permifloor®** installed over bearers

## Product Options

- **Kingspan AIR-CELL Permifloor®**
- **Kingspan AIR-CELL Permifloor® 500** (pre-cut for a perfect fit between joists)

## Thermal Performance

Unenclosed sub-floor	Heat flow in	Heat flow out
<b>Kingspan AIR-CELL Permifloor®</b> / <b>Kingspan AIR-CELL Permifloor® 500</b>	$R_T$ 0.8	$R_T$ 1.5
Enclosed sub-floor	Heat flow in	Heat flow out
<b>Kingspan AIR-CELL Permifloor®</b> / <b>Kingspan AIR-CELL Permifloor® 500</b>	$R_T$ 1.2	$R_T$ 1.8

Calculations based on Floor Area to Perimeter Length ratio of 5.6 in accordance with NZS 4214:2006.  
The R-values shown are Total R-values for the building element and are calculated in accordance with AS/NZS 4859.1 and NZS 4214. **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

### **Kingspan AIR-CELL Permifloor® 500**

The underfloor insulation fixed between the floor joists shall be water-permeable **Kingspan AIR-CELL Permifloor® 500** fibre-free, thermo reflective insulation, comprising a closed-cell foam structure sandwiched with an anti-glare foil facing on one side and a plain foil facing on the other side manufactured 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.

### **Kingspan AIR-CELL Permifloor®**

The underfloor insulation fixed on the floor frame shall be water-permeable **Kingspan AIR-CELL Permifloor®** fibre-free, thermo reflective insulation, comprising a closed-cell foam structure sandwiched with an anti-glare foil facing on one side and a plain foil facing on the other side manufactured 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.

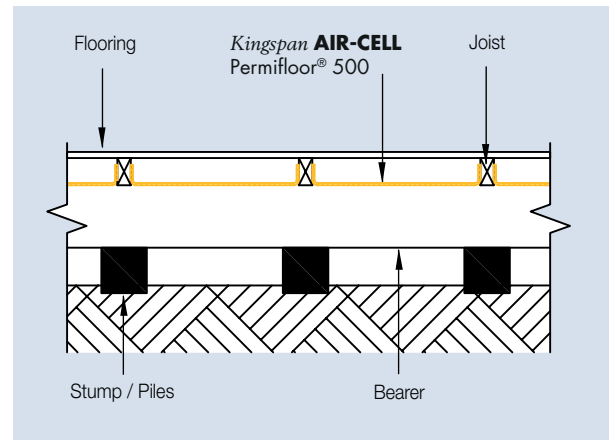


Figure 3 Side elevation of **Kingspan AIR-CELL Permifloor® 500** in a suspended framed floor

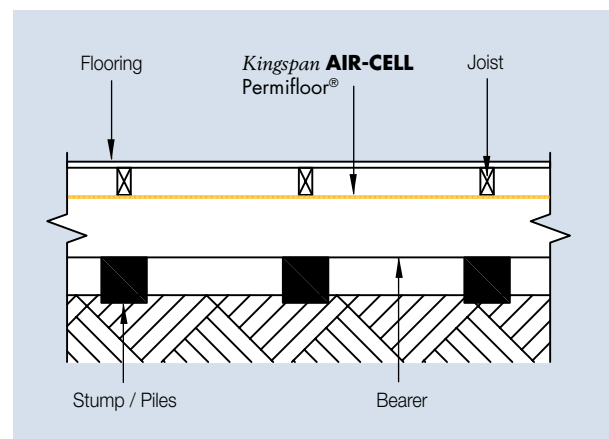


Figure 4 Side elevation of **Kingspan AIR-CELL Permifloor®** in a suspended framed floor

# Product Details

## Product Description

Australian made *Kingspan AIR-CELL Permifloor*<sup>®</sup> (Patent No. 548994) is an insulation innovation designed specifically for suspended framed floor applications delivering a 2-in-1 insulation and moisture management solution.

*Kingspan AIR-CELL Permifloor*<sup>®</sup> is manufactured with a patented closed-cell, cross-linked foam structure sandwiched by highly reflective foil surfaces and perforated with tiny, evenly-spaced holes. These perforations allow water and vapour to permeate through preventing moisture that can often collect under flooring when using conventional underfloor insulation systems.

500 mm wide pre-cut version available for a perfect fit between joists (*Kingspan AIR-CELL Permifloor*<sup>®</sup> 500).

Product Data	<i>Kingspan AIR-CELL Permifloor</i> <sup>®</sup>	<i>Kingspan AIR-CELL Permifloor</i> <sup>®</sup> 500
Product Code	PSW040	PSW040500
Product Thickness		4 mm
Product R-value		R0.12
Roll Diameter		420 mm
Roll Weight	9.5 kg	6.4 kg
Roll Size	1350 mm x 33.33 m (45 m <sup>2</sup> )	2 x 500 mm x 30 m (30 m <sup>2</sup> )
<b>Reflectance</b>		
Anti-Glare Face		95%
Reflective Face		97%
<b>Emittance</b>		
Anti-Glare Face		E0.05
Reflective Face		E0.03
Max. Span	2.4 m without support mesh	



Figure 5 Perforated *Kingspan AIR-CELL Permifloor*<sup>®</sup>

## Management Standards

Standard	Management System
BS / I.S. EN ISO 9001:2008	Quality Management
AS/NZS ISO 14001:2004	Environmental Management

## Product Specifications

Characteristic	Test Method / Standard	Specification
Flammability Index	AS 1530.2	≤ 5
Material Thermal Resistance	ASTM C518	0.12 m <sup>2</sup> ·K/W
Emittance	ASTM E408	Reflective Face E0.03 Anti-Glare Face E0.05
Duty Rating (Burst Force)	AS 3706.4	0.9 kN - equivalent to Extra Heavy Duty
Vapour Barrier	ASTM E96	Low Resistance
Shrinkage	AS/NZS 4201.3	< 0.5%
Dry Delamination	AS/NZS 4201.1	Pass
Wet Delamination	AS/NZS 4201.2	Pass
Water Barrier	AS/NZS 4201.4	Unclassified
Water Absorbency	AS/NZS 4201.6	Unclassified
Corrosion Resistance	AS/NZS 4859.1 Appendix I	Pass

## Environmental Data

Aspect	Characteristic
Recycled Content	Approx 3%
Recyclability	Waste not recyclable Roll width to suit most applications to minimise on site waste
Re-usability	Re-usable if removed with care (long term of service expected)
Water Use	No water used in Kingspan Insulation's manufacturing process
Processing Greenhouse Gas Emissions	No Greenhouse Gas Emissions in Kingspan Insulation's manufacturing process
Ozone Depleting Substances	None present in the finished product or in Kingspan Insulation's manufacturing process
Packaging	Contains approx 10% recycled product Packaging 100% recyclable
Transport	Distribution policy incorporating the principals of ISO 14001
Embodied Energy	35 MJ/m <sup>2</sup> approximately

# Installation Instructions

## *Kingspan AIR-CELL Permifloor® 500*

*Note: Both these methods will not provide a continuous vapour barrier.*

### **Timber Frame, New Building**

1. Roll *Kingspan AIR-CELL Permifloor® 500* in parallel direction to floor joists ensuring that it is set in-between joists with the anti-glare side facing upwards.
2. Gently push down on the rolled out sections of the insulation so that the material is set to the depth in line with the bottom of the floor joists.
3. Ensure that there is sufficient up-turned laps of *Kingspan AIR-CELL Permifloor® 500* on the inside of each joist.
4. Fix the up-turned laps to the inside of the floor joist using staples or screws at approx a maximum 150 mm centres.



*Scan to see the installation video*

### **Timber Frame, Retrofit between Joists**

1. From below the floor joists, roll *Kingspan AIR-CELL Permifloor® 500* in parallel direction to floor joists ensuring that it is set in-between joists with the anti-glare side facing downwards.
2. Gently push up on the rolled out sections of the insulation so that the material is set to a depth to achieve maximum airspace.
3. Ensure that there is a sufficient down-turned lap of *Kingspan AIR-CELL Permifloor® 500* on the inside of each joist to adequately fix in place.
4. Fix the down-turned laps to the inside of the floor joist using staples or screws at approx a maximum 150 mm centres.

## *Kingspan AIR-CELL Permifloor®*

### **New Building**

1. Lay *Kingspan AIR-CELL Permifloor®* over and running perpendicular to the bearers and fix in position.
2. Install joists as required.
3. Fix *Kingspan AIR-CELL Permifloor®* to the underside of joists by stapling or screwing.
4. Butt join or overlap by 50 mm and tape with 48 mm reinforced foil tape (allow 150 mm overlap when joins are not to be taped).
5. Alternatively, *Kingspan AIR-CELL Permifloor®* can be installed over the joists provided it doesn't compromise the fixing of the chosen flooring, and the insulation is allowed to sag at least 40 mm between joists. For this method the *Kingspan AIR-CELL Permifloor®* should be butt joined and taped with 48 mm wide reinforced foil tape.

### **Retrofit to the Underside of Joists**

1. Fit *Kingspan AIR-CELL Permifloor®* under the joists, running perpendicular to the bearers and fix in position.
2. Abut to the side of bearers allowing for down-turn to adequately fix in place.
3. Fix *Kingspan AIR-CELL Permifloor®* to the underside of joists by stapling or screwing.
4. Butt join or overlap by 50 mm and tape with 48 mm reinforced foil tape (allow 150 mm overlap when joins are not to be taped).

## General Requirements

1. Fit *Kingspan AIR-CELL®* neatly around doors, windows, and any penetrations, and tape if necessary to prevent air leakage.
2. 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 (please refer to brochure 'Kingspan Insulation Tape' for further information).
3. Leave minimum 50 mm clearance around heat producing flues or light fittings (refer to light fitting manufacturer).

*Kingspan AIR-CELL®* 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.

## OH & S

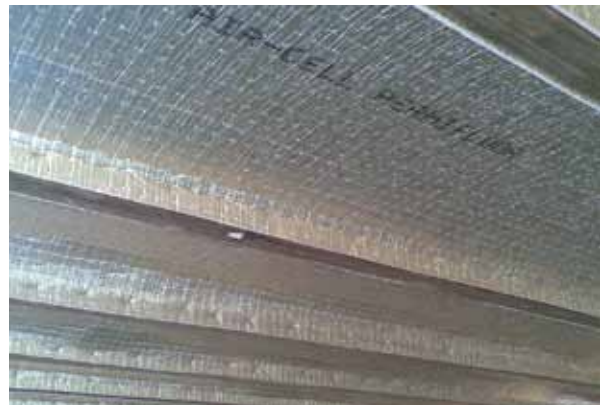
Foil facings are conductive to electricity and contact with un-insulated electrical cables and fittings must be avoided.

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

The installer must make due provision for safety when installing *Kingspan AIR-CELL®* in any application.

## Handling and Storage

*Kingspan AIR-CELL®* 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.



# Contact Details

## General Enquiries

Tel: 0800 1 23 23 1

Email: [info@kingspaninsulation.co.nz](mailto:info@kingspaninsulation.co.nz)

*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.co.nz](http://www.kingspaninsulation.co.nz)*



**Kingspan Insulation Pty Ltd**

Tel: 0800 1 23 23 1

Email: [info@kingspaninsulation.co.nz](mailto:info@kingspaninsulation.co.nz)

[www.kingspaninsulation.co.nz](http://www.kingspaninsulation.co.nz)