



AIR-CELL Permifloor®

WATER-PERMEABLE UNDERFLOOR INSULATION



- 3x faster to install* than foil-faced polystyrene panels
- Helps achieve a 6-star house energy rating
- 2-in-1 insulation and moisture management solution
- Fibre-free, non-allergenic, non-irritant
- Strong, tough, durable
- Rodent and insect resistant
- Flammability Index ≤ 5
- Compliant with AS/NZS 4859.1:2018
- CodeMark-certified for NCC compliance
- Made in Australia



* Fast and furious installation challenge – see page 5



Low Energy –
Low Carbon Buildings

Residential Suspended Framed Floors

Typical Design Details

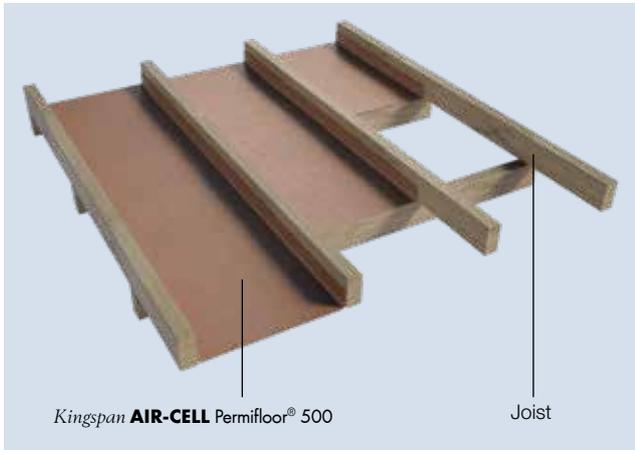


Figure 1 Pre-cut **Kingspan AIR-CELL Permifloor® 500** installed between floor joists

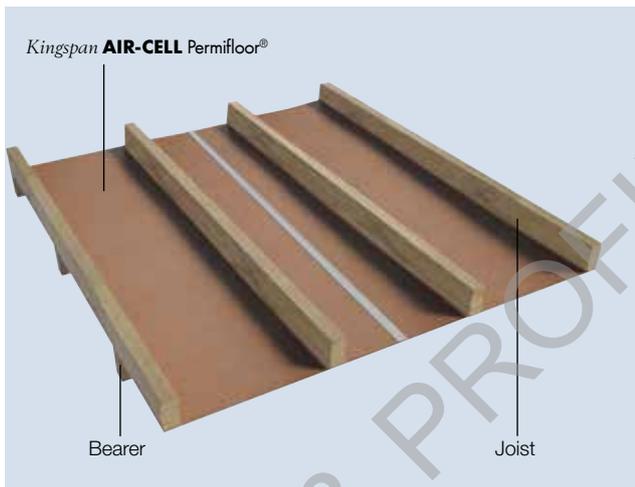


Figure 2 **Kingspan AIR-CELL Permifloor®** installed over bearers

Product Options

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

Thermal Performance

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

| Unenclosed sub-floor | Heat flow in | Heat flow out |
|---|--------------------|--------------------|
| Kingspan AIR-CELL Permifloor® / Kingspan AIR-CELL Permifloor® 500 | R _T 0.8 | R _T 1.6 |
| Enclosed sub-floor | Heat flow in | Heat flow out |
| Kingspan AIR-CELL Permifloor® / Kingspan AIR-CELL Permifloor® 500 | R _T 1.6 | R _T 3.0 |

The R-values shown are Total R-values for the building element as required by the Energy Provisions of the NCC Volume 2, calculated in accordance with AS/NZS 4859.2 2018. **Kingspan AIR-CELL®** products are manufactured, tested and packaged in conformance with AS/NZS 4859.1:2018

Specification Guide

Kingspan AIR-CELL Permifloor® 500

The underfloor insulation fixed between the floor joists shall be water-permeable, CodeMark-certified **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, CodeMark-certified **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.

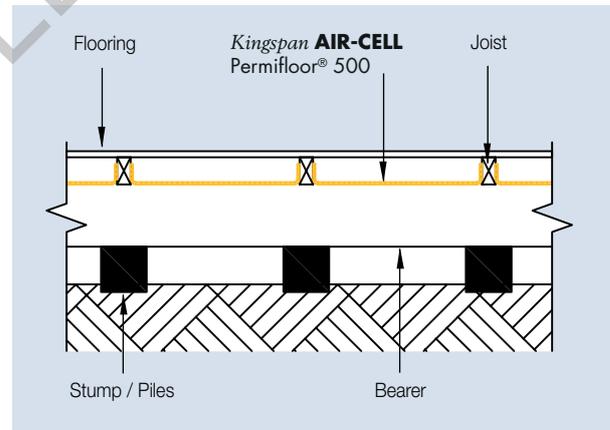


Figure 3 Side elevation of **Kingspan AIR-CELL Permifloor® 500** in a suspended framed floor

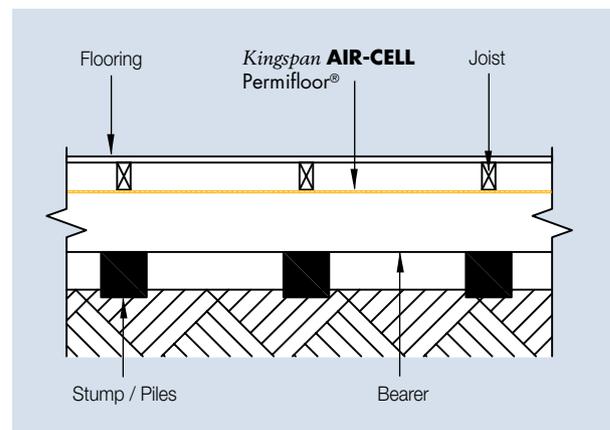


Figure 4 Side elevation of **Kingspan AIR-CELL Permifloor®** in a suspended framed floor

Product Details

Product Description

Australian-made *Kingspan AIR-CELL Permifloor*[®] 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[®] is manufactured with a 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*[®] 500).

| Product Data | <i>Kingspan AIR-CELL Permifloor</i> [®] | <i>Kingspan AIR-CELL Permifloor</i> [®] 500 |
|--------------------------|--|--|
| Product Thickness (nom.) | 4 mm | |
| Product R-value | R0.11 m ² .K/W at 23°C | |
| Roll Diameter (nom.) | 420 mm | |
| Roll Weight (nom.) | 9.5 kg | 6.4 kg |
| Roll Size | 1350 mm x 33.33 m (45 m ²) | 2 x 500 mm x 30 m (30 m ²) |
| Reflectance | | |
| Anti-Glare Face | 95% | |
| Reflective Face | 97% | |
| Emittance | | |
| Anti-Glare Face | E0.05 | |
| Reflective Face | E0.03 | |
| Max. Span | 2.4 m without support mesh | |

Management Standards

| Standard | Management System |
|------------------|--------------------------|
| ISO 9001:2015 | Quality Management |
| ISO 14001:2015 | Environmental Management |
| OHSAS 18001:2007 | Safety Management |

Environmental Data

| Aspect | Characteristic |
|----------------------------|--|
| 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 |
| 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 |
| Embodied Energy | 35 MJ/m ² approximately |

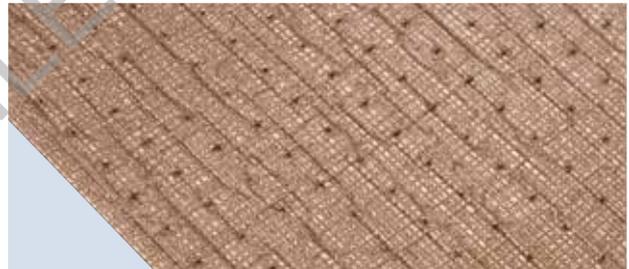


Figure 5 Perforated *Kingspan AIR-CELL Permifloor*[®]

Product Specifications

| Property | Test Method / Standard | Specification | Classification |
|--------------------------|-------------------------------|--|--------------------------------|
| Flammability Index | AS 1530.2 | ≤ 5 | Low |
| Material R-value | ASTM C518 at 23°C | 0.11 m ² .K/W | - |
| IR Emittance | AS/NZS 4201.5 | Reflective face: 0.03 Anti-Glare Face: 0.05 | IR Reflective IR Reflective |
| IR Emittance | - | - | Category RR |
| Burst Strength | AS 3706.4 (CBR) | 0.9 kN | - |
| Vapour Control | ASTM E96 | Vapour Permeable 1.200 µg/N.s | Class 3 |
| Water Control | AS/NZS 4201.4 | Pass | Non-Water Barrier |
| Moisture Shrinkage | AS/NZS 4201.3 | < 0.5% | - |
| Dry Delamination | AS/NZS 4201.1 | Pass | - |
| Wet Delamination | AS/NZS 4201.2 | Pass | - |
| Surface Water Absorbency | AS/NZS 4201.6 | < 100g/m ² | Low |
| Corrosion Resistance | AS/NZS 4859.1:2018 App. E | Pass | - |
| Electrical Conductivity | AS/NZS 200.1:2017 - c.5.3.1.2 | ≤ 10 MΩ | Electrically Conductive |

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 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 100 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.



ROOFING & PROFILING LTD

THE FAST & FURIOUS INSTALLATION CHALLENGE



Scan to watch the video

Contact Details

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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.com.au



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*Applies to **AIR-CELL Permifloor**® 500

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