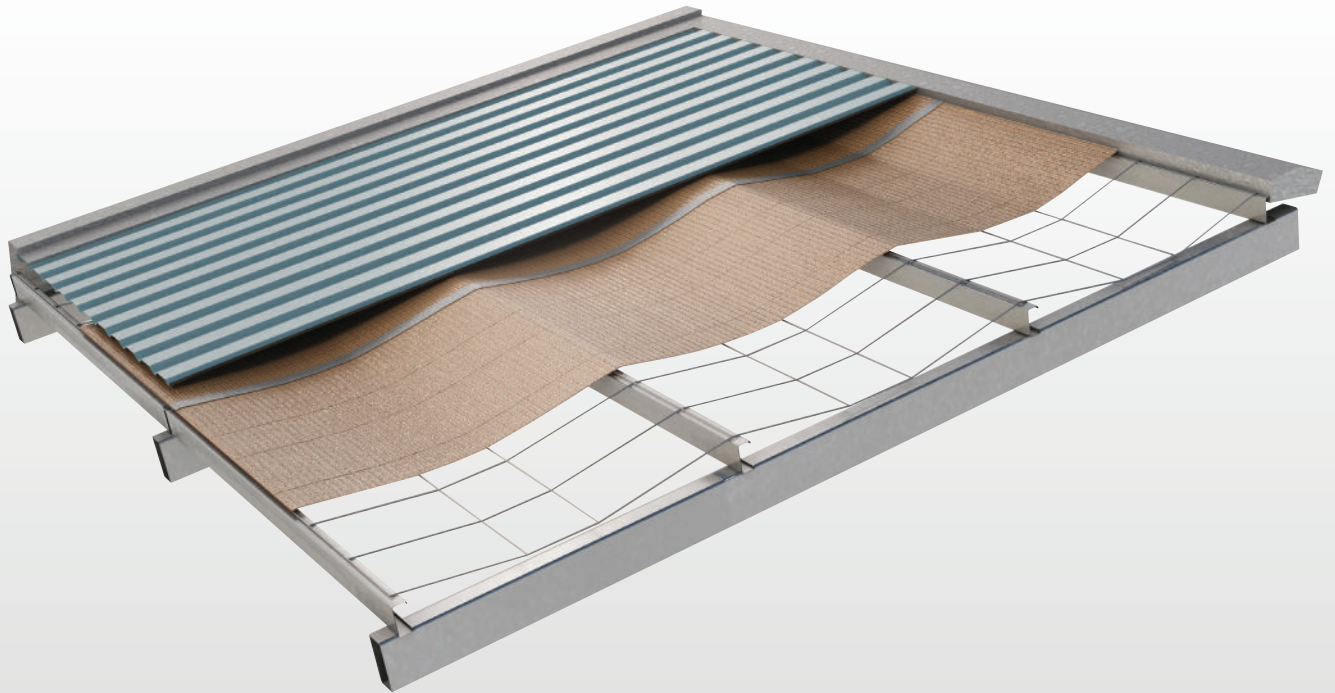




AIR-CELL Insuliner®

REFLECTIVE INSULATION FOR USE WHERE
IT ACTS AS THE WALL OR CEILING LINING



- Group 2 NCC fire classification
- Designed for warehouses and commercial or industrial sheds where the insulation acts as the wall or ceiling lining
- 3-in-1 Insulation, vapour barrier and reflective barrier
- Quick and easy to install
- CodeMark-certified for NCC compliance
- Strong, tough, durable
- Water-resistant and unaffected by moisture
- Rodent and insect resistant
- Flammability Index ≤ 5
- NCC 2019 and AS/NZS 4859.1:2018 compliant
- Made in Australia



Commercial Metal Deck Roof

Typical Design Detail

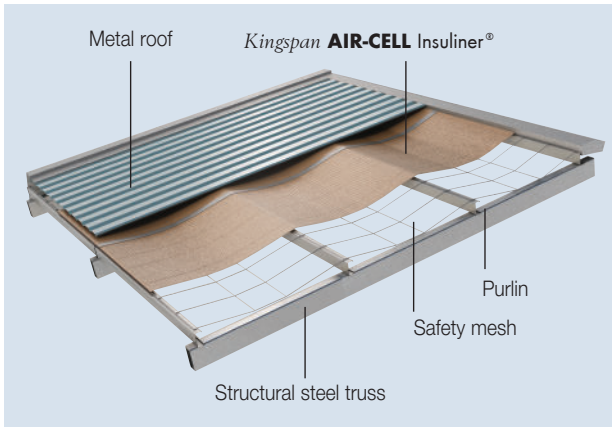


Figure 1 Warehouse metal deck roof installation

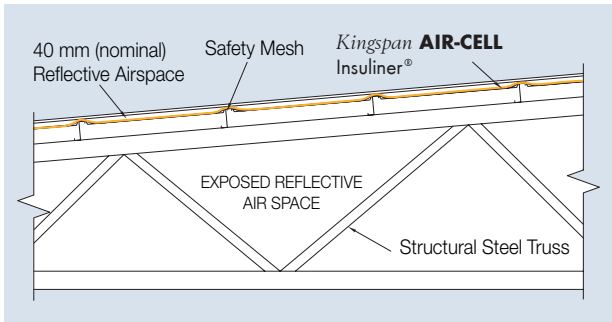


Figure 2 Side elevation of Kingspan AIR-CELL Insuliner® in a warehouse metal deck roof

Thermal Performance

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

Application	Heat flow in	Heat flow out
Warehouse metal deck roof	R _t 1.8	R _t 0.8

The R-values shown are Total R-values for the building element as required by the Energy Provisions of the NCC Volume 1, calculated in accordance with AS/NZS 4859.2:2018 & NZS 4214. Kingspan AIR-CELL® products are manufactured, tested and packaged in conformance with AS/NZS 4859.1:2018.

Specification Guide

The roof insulation installed over the purlins shall be classified as Group 2 in accordance with NCC fire classification for wall and ceiling linings and shall be CodeMark-certified Kingspan AIR-CELL Insuliner® fibre-free, thermo reflective insulation, comprising a cross-linked, closed-cell foam core sandwiched with an anti-glare foil facing on one side and a plain foil facing on the other side manufactured by Kingspan Insulation, and shall be installed in accordance with the instructions issued by them.

A Project Specific Warranty provided by Kingspan Insulation must be submitted.

Installation Instructions

1. Lay Kingspan AIR-CELL Insuliner® perpendicular to purlins ensuring a max. 25mm overlap into the gutter.
2. Allow a nominal 40 mm sag between purlins. If safety mesh is used ensure that the safety mesh is not compromised by sagging.
3. Overlap by 50 mm at joints and apply minimum 72 mm wide Kingspan reinforced aluminium insulation tape to top of joint. Alternatively allow 150 mm overlap when joints are not to be taped (please refer to brochure "Kingspan Insulation Tape" for further information).
4. End joints should be overlapped by 600 mm if not taped.
5. Fix roof sheeting by screwing through Kingspan AIR-CELL Insuliner® to the purlins.

Commercial Metal Deck Roof Retrofit

Typical Design Detail

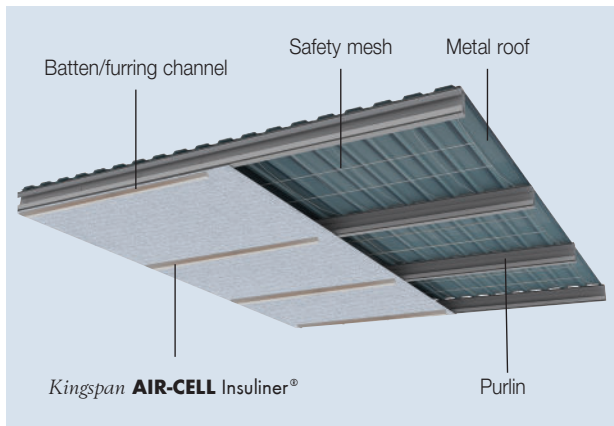


Figure 3 Warehouse metal deck roof retrofit installation

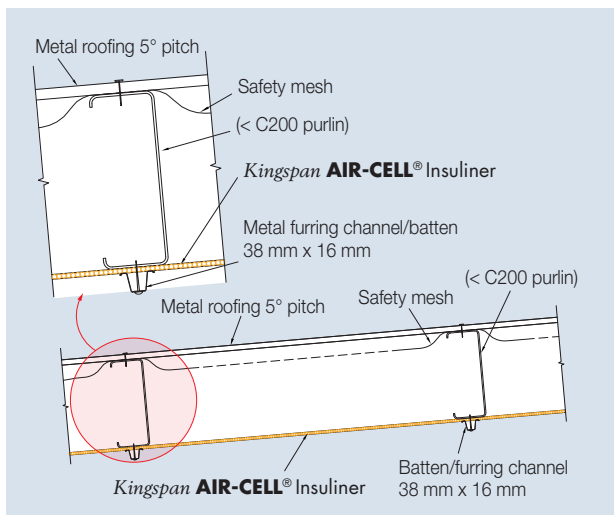


Figure 4 Side elevation of **Kingspan AIR-CELL Insuliner** in a warehouse metal deck roof retrofit

Thermal Performance

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

Application	Heat flow in	Heat flow out
Warehouse metal deck roof retrofit	R _t 2.3	R _t 0.8

The R-values shown are Total R-values for the building element as required by the Energy Provisions of the NCC Volume 1, calculated in accordance with AS/NZS 4859.2 2018 & NZS 4214. Kingspan AIR-CELL products are manufactured, tested and packaged in conformance with AS/NZS 4859.1:2018.

Specification Guide

The roof insulation installed to the underside of the purlins shall be classified as Group 2 in accordance with NCC fire classification for wall and ceiling linings and shall be CodeMark-certified **Kingspan AIR-CELL Insuliner** fibre-free, thermo reflective insulation, comprising a cross-linked, closed-cell foam core sandwiched with an anti-glare foil facing on one side and a plain foil facing on the other side manufactured by Kingspan Insulation, and shall be installed in accordance with the instructions issued by them.

A Project Specific Warranty provided by Kingspan Insulation must be submitted.

Installation Instructions

- Kingspan AIR-CELL Insuliner** should be applied to the underside of purlins by rolling out perpendicular to the purlin.
- Attach end of insulation roll to end fixing point using three 12 gauge Tek screws or similar as an interim fixing (normally fixed to the underside of a purlin).
- Kingspan AIR-CELL Insuliner** should be kept taut and wrinkle free between purlins.
- Ensure a 100 mm clearance between insulation and heat producing items such as hot flues, light fittings and transformers.
- Continue fixing to the underside of the purlins using interim fixings as for end point above.
- Join subsequent alongside rolls by butt joining and tape joint with minimum 72 mm wide Kingspan reinforced aluminium insulation tape (please refer to brochure "Kingspan Insulation Tape" for further information). If taping is not required, overlap side joints by 150 mm. If the insulation is required to act as a water vapour barrier then the joints should be taped.
- End joints should be overlapped and fixed at a purlin and taped with minimum 72 mm wide Kingspan reinforced aluminium insulation tape.
- Fix a steel furring channel, top hat or similar of approx. 38 mm x 16 mm over **Kingspan AIR-CELL Insuliner** to the bottom of the purlins using 4 fixings across the width of the insulation, to cover the preliminary fixings and secure the insulation.
- If both roof and walls are installed with **Kingspan AIR-CELL Insuliner** the roof and wall insulation should join to form a continuous thermal barrier and water vapour barrier if required.

Warehouse Wall

Typical Design Detail

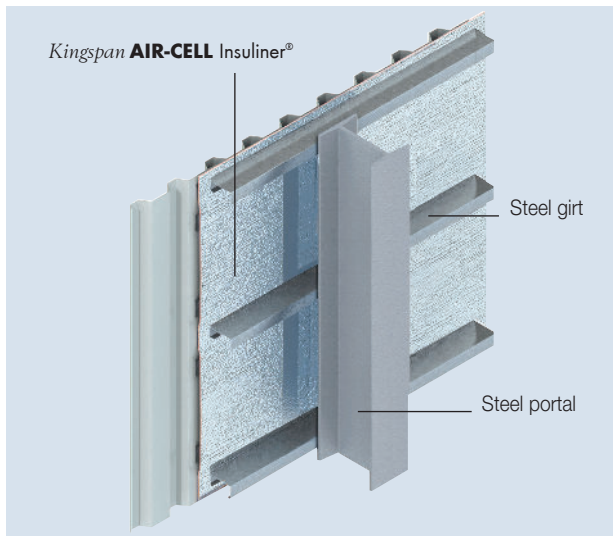


Figure 5 Warehouse wall installation

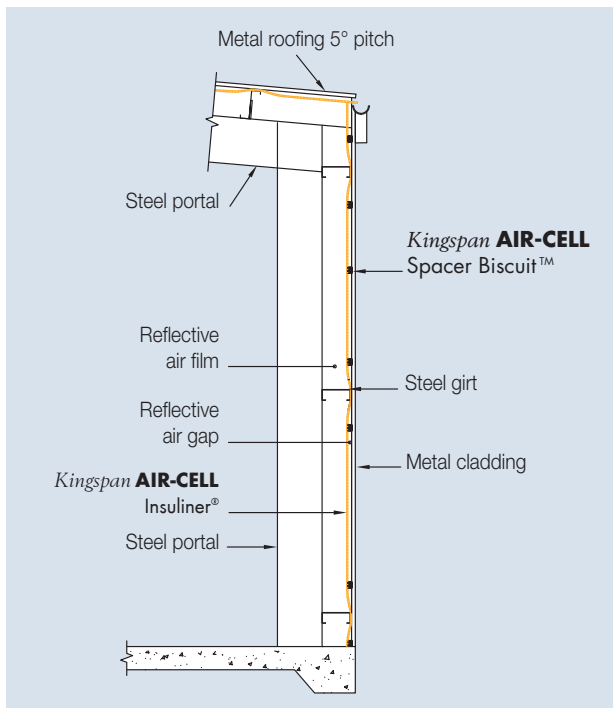


Figure 6 Side elevation of Kingspan AIR-CELL Insuliner in a warehouse wall

Thermal Performance

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

Application	Heat flow in	Heat flow out
Warehouse metal clad wall	R_T 1.0	R_T 1.1

The R-values shown are Total R-values for the building element as required by the Energy Provisions of the NCC Volume 1, calculated in accordance with AS/NZS 4859.2:2018 & NZS 4214. Kingspan AIR-CELL products are manufactured, tested and packaged in conformance with AS/NZS 4859.1:2018.

Specification Guide

The wall insulation fixed to outside of the girts shall be classified as Group 2 in accordance with NCC fire classification for wall and ceiling linings and shall be CodeMark-certified Kingspan AIR-CELL Insuliner fibre-free, thermo reflective insulation, comprising a cross-linked, closed-cell foam core sandwiched with an anti-glare foil facing on one side and a plain foil facing on the other side manufactured by Kingspan Insulation, and shall be installed in accordance with the instructions issued by them.

A Project Specific Warranty provided by Kingspan Insulation must be submitted.

Installation Instructions

1. Fix Kingspan AIR-CELL Insuliner loosely to the outside of the frame leaving flexibility for the insulation to be dished between the frame members.
2. Cut Kingspan AIR-CELL Insuliner carefully around the windows, doors and other openings, so that it neatly abuts to the frame.
3. For neatest finish, butt join sheets, alternatively overlap by 50 mm and tape with minimum 72 mm wide Kingspan reinforced aluminium insulation tape (please refer to brochure "Kingspan Insulation Tape" for further information).
4. Provide an outer air space by adhering the Kingspan AIR-CELL Spacer Biscuits to the outer face of the Kingspan AIR-CELL Insuliner (approximately three Biscuits per square meter are required).
5. Fix outer cladding.

Warehouse Wall Retrofit

Typical Design Detail

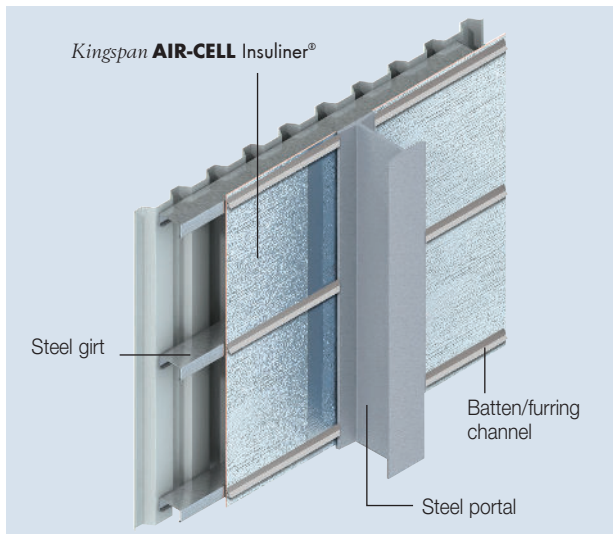


Figure 7 Warehouse wall retrofit installation

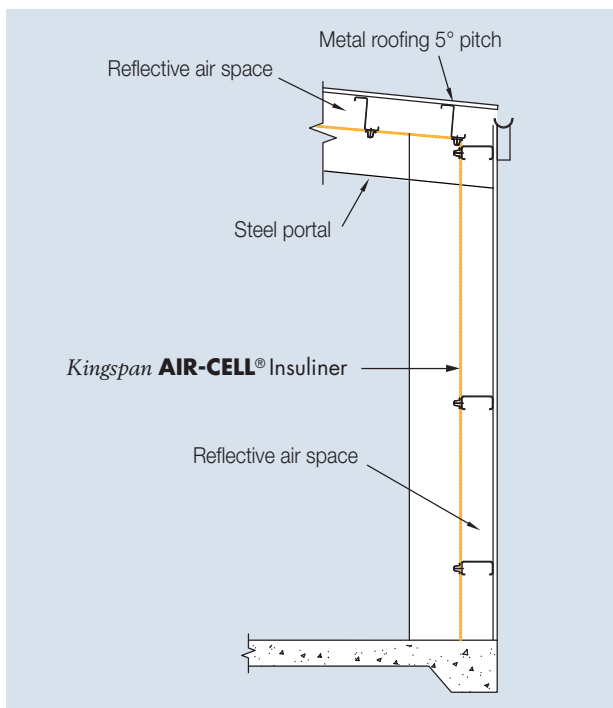


Figure 8 Side elevation of *Kingspan AIR-CELL Insuliner*® in a warehouse wall retrofit

Thermal Performance

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

Application	Heat flow in	Heat flow out
Warehouse metal clad wall retrofit	R _T 1.0	R _T 1.1

The R-values shown are Total R-values for the building element as required by the Energy Provisions of the NCC Volume 1, calculated in accordance with AS/NZS 4859.2 2018 & NZS 4214. Kingspan AIR-CELL products are manufactured, tested and packaged in conformance with AS/NZS 4859.1:2018.

Specification Guide

The wall insulation fixed to the inside of the girts shall be classified as Group 2 in accordance with NCC fire classification for wall and ceiling linings and shall be CodeMark-certified *Kingspan AIR-CELL Insuliner*® fibre-free, thermo reflective insulation, comprising a cross-linked, closed-cell foam core sandwiched with an anti-glare foil facing on one side and a plain foil facing on the other side manufactured by Kingspan Insulation, and shall be installed in accordance with the instructions issued by them.

A Project Specific Warranty provided by Kingspan Insulation must be submitted.

Installation Instructions

1. Fix *Kingspan AIR-CELL Insuliner*® should be applied to the inside of girts, by rolling out perpendicular to the girt.
2. Attach end of insulation roll to end fixing point using three 12 gauge Tek screws or similar as an interim fixing (normally fixed to the inside of girt).
3. *Kingspan AIR-CELL Insuliner*® should be kept taut and wrinkle free between girts.
4. Ensure a 100 mm clearance between insulation and heat producing items such as hot flues, light fittings and transformers.
5. Continue fixing to the inside of girts, using interim fixings as for end point above.
6. Join subsequent alongside rolls by butt joining and tape joint with minimum 72 mm wide Kingspan reinforced aluminium insulation tape (please refer to brochure "Kingspan Insulation Tape" for further information). If taping is not required, overlap side joints by 150 mm. If the Insuliner is required to act as a water vapour barrier then the joints should be taped.
7. End joints should be overlapped and fixed at a girt, and taped with minimum 72 mm wide Kingspan reinforced aluminium insulation tape.
8. Fix a steel furring channel, top hat or similar of approx. 38 mm x 16 mm over the *Kingspan AIR-CELL Insuliner*® to the inside of girts, using 4 fixings across the width of the insulation, to cover the preliminary fixings and secure the insulation.
9. If both roof and walls are installed with *Kingspan AIR-CELL Insuliner*® the roof and wall insulation should join to form a continuous thermal barrier, and water vapour barrier if required.

Product Details

Product Description

Australian-made *Kingspan AIR-CELL Insuliner*® is the latest in thermo reflective insulation technology with the most advanced fire performance characteristics, achieving a Group 2 classification to NCC fire ratings for wall and ceiling linings. CodeMark-certified *Kingspan AIR-CELL Insuliner*® comprises a cross-linked, closed-cell insulation core sandwiched by highly reflective foil facings.

Product Data	
Product Thickness (nom)	5.5 mm
Product R-value at 23°C	R0.15 m ² .K/W
Roll Diameter (nom)	400 mm
Roll Weight (nom)	9 kg
Roll Size	1350 mm x 22.25 m (30 m ²)
Reflectance	
Anti-Glare Face	95%
Reflective Face	97%
Emittance	
Anti-Glare Face	E0.05
Reflective Face	E0.03
Max. Span Distance	1200 mm under sheet roof without support mesh*

*Acronem Report No. ACA-160218



Figure 9 Physically cross-linked *Kingspan AIR-CELL Insuliner*®

Management Standards

Standard	Management System
AS/NZS ISO 9001:2008	Quality Management
AS/NZS ISO 14001:2004	Environmental Management

Fire Performance

Characteristic	Standard	Classification
NCC Group Number	AS ISO 9705	Group 2
Flammability Index	AS 1530.2	≤ 5
Fire Propagation	BS 476 - 6	Class 0
Surface Spread of Flame	BS 476 - 7	Class 1
Surface Burning	UL 723	Class A

Product Specifications

Property	Test Method/Standard Specification		Classification
Flammability Index	AS 1530.2	≤ 5	Low
Material R-value	ASTM C518 at 23°C	R0.15 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)	0.7 kN	-
Vapour Control	ASTM E96	Vapour Barrier < 0.020 µg/N.s	Class 2
Water Control	AS/NZS 4201.4	Pass	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	≤ 10Ω	Electrically Conductive

Building Linings and NCC Fire Performance Requirements

According to the *Deemed-to-Satisfy* provisions of the NCC, any material that is used as a building lining must have a Group Number classification as defined by the NCC, with Group 1 being the highest possible level. This includes reflective insulation products which are used in buildings such as warehouses and commercial or industrial sheds where internal wall and ceiling linings are typically not applied. In these applications, the insulation material itself is considered the lining material, and must therefore have a Group Number classification.

For materials which have reflective surfaces, such as reflective insulation, and materials that melt and shrink away from a flame, the NCC requires an AS ISO 9705 full scale fire test to be undertaken to determine a Group Number to meet the *Deemed-to-Satisfy* provisions (NCC BCA Vol. 1 Specification C1.10 referencing AS 5637.1).

What does Group 2 mean?

A Group 2 fire performance classification means that the product can be used in most areas of buildings apart from fire-isolated exits and fire control rooms, and some un-sprinklered corridors.

Other Information

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 100 mm clearance around heat producing flues or light fittings (refer to light fitting manufacturer).

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.

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.

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

Safety Information

- Non-hazardous/non-toxic.
- No personal protective equipment required.
- UV protective sunglasses and screen should be used when installing in direct sunlight.
- Ensure at least 100 mm clearance from hot flues and light fittings (check for safe distance with lighting supplier).
- **Foil facings are conductive to electricity – avoid contact with un-insulated electrical cables and fittings.**

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



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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 our website.



Kingspan Insulation Pty Ltd