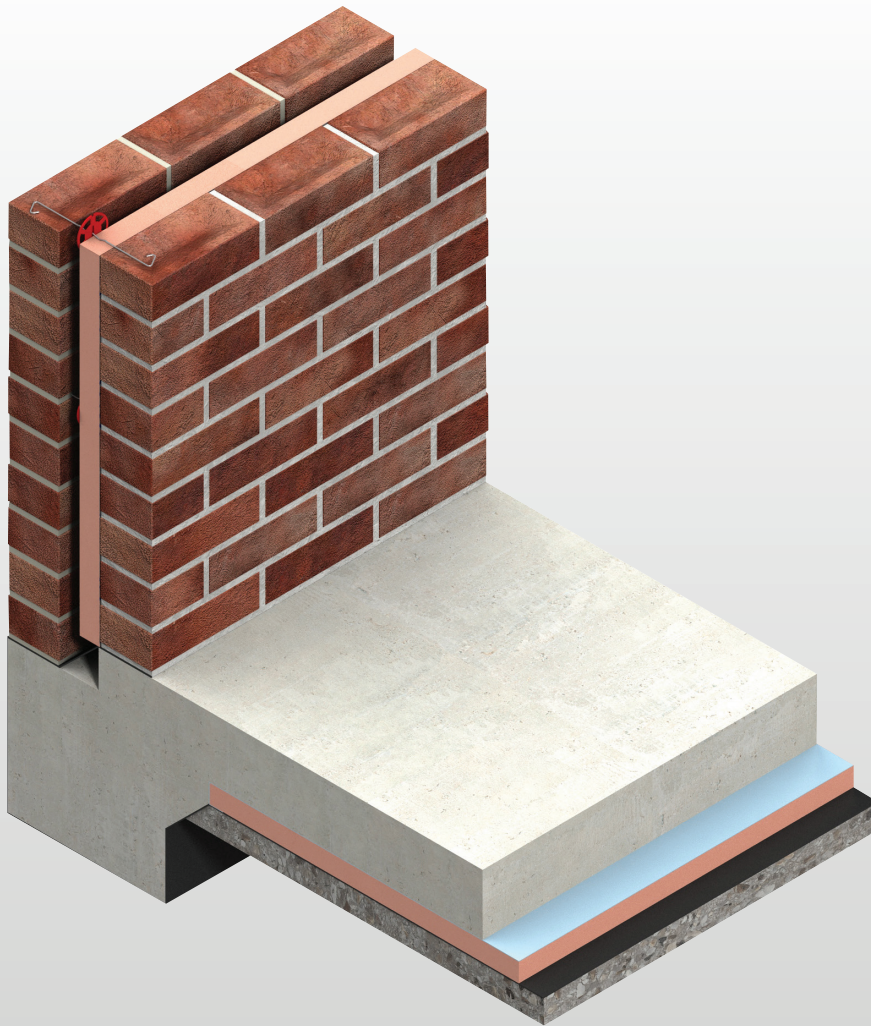




Kooltherm® K3 Floorboard

INSULATION FOR FLOORS



- Super high performance rigid thermoset phenolic insulation
- Fibre-free, closed cell insulation core
- Resistant to the passage of water vapour
- Easy to handle and install
- Ideal for new build and refurbishment
- No CFC or HCFC used in manufacture
- Has zero ODP and low GWP
- NCC and AS/NZS 4859.1:2018 compliant
- Made in Australia



Fibre-free
Core



Low Energy –
Low Carbon Buildings

Typical Construction and Total Construction R-values

Solid Residential Concrete Slab on Ground Floor - Insulation below the Floor Slab

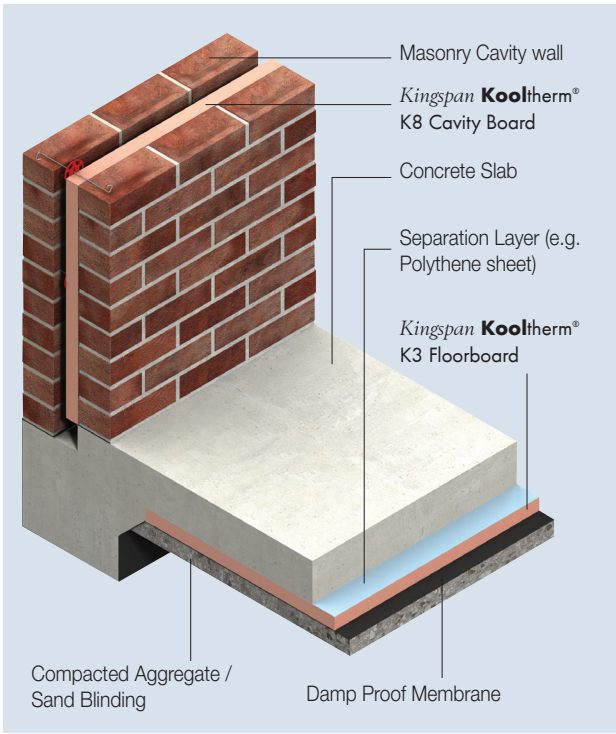


Figure 1

Thermal Performance

Calculations in accordance with NCC 2019 Vol 2.

| Total R-values for various thicknesses of Kingspan Kooltherm ® K3 Floorboard | |
|-------------------------------------------------------------------------------------|--------------------|
| Product Thickness | Heat flow out |
| 25 mm | R _T 1.4 |
| 30 mm | R _T 1.6 |
| 40 mm | R _T 2.1 |
| 50 mm | R _T 2.7 |

Assumptions

The above thermal calculations are taken through the construction profile with 150 mm concrete slab and Kingspan **Kooltherm**® K3 Floorboard. The R-values shown are Total R-values for the building element as required by the Energy Provisions of the National Construction Code, calculated in accordance with AS/NZS 4859.1:2002 Amdt.1.

Kingspan **Kooltherm**® products are manufactured, tested and packaged in conformance with AS/NZS 4859.1:2018

Product Details

Product Description

Kingspan **Kooltherm**® K3 Floorboard is a super high performance, fibre-free rigid thermoset closed cell phenolic insulation core, sandwiched between two layers of tissue based facing autohesively bonded to the insulation core during manufacture.

**Fibre-free
Core**

Kingspan **Kooltherm**® K3 is manufactured without the use of CFCs/HCFCs and has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).



Product Data

| | |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Declared Thermal Conductivity (λ -value) | 0.021 W/m.K at 23°C (Insulant thickness \geq 45 mm) 0.023 W/m.K at 23°C (Insulant thickness 25 - 44 mm) |
| Product Dimensions | 2400 mm x 1200 mm (2.88 m ²) |
| Nominal Product Thickness | 25, 30, 40, 50 mm |

Product R-values

| Nominal Product Thickness | Declared Product R-value at 23°C |
|---------------------------|----------------------------------|
| 25 mm | R1.10 |
| 30 mm | R1.30 |
| 40 mm | R1.75 |
| 45 mm | R2.15 |
| 50 mm | R2.35 |

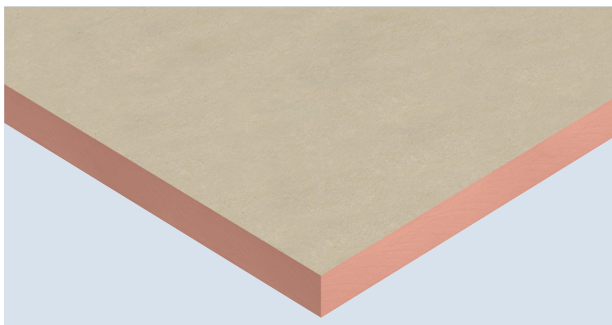


Figure 2 Super high performance Kingspan **Kooltherm**® K3 Floorboard

Specification Guide

Kingspan **Kooltherm**® K3 Floorboard

The floor insulation shall be Kingspan **Kooltherm**® K3 Floorboard ____ mm thick, with a tested smoke obscuration of not more than 100 m²/kg, comprising a CFC/HCFC-free and zero Ozone Depletion Potential (ODP) rigid thermoset phenolic insulation core with a tissue based facing on both sides, manufactured under a management system certified to ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2007 and ISO 50001:2011 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.

Compressive Loads

Un-reinforced floor screeds can be used in conjunction with Kingspan **Kooltherm**® K3 Floorboard in most applications. However, where floor loads are to be excessive, please contact our Technical Services Department on 1300 247 235 or email technical@kingspaninsulation.com.au.

Substrate

Kingspan **Kooltherm**® K3 Floorboard is not recommended for use in direct contact with subsoil and must be used over a DPM. Where vertical slab edge insulation is required, the DPM should always be placed on the external face of the Kingspan **Kooltherm**® K3 Floorboard.

Wheeled / Foot Traffic

Ensure boards are protected during installation from wheeled / foot traffic by using scaffold planks or other protective measures.

Standards and Approvals

Kingspan **Kooltherm**® K3 Floorboard 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 |
| OHSAS 18001:2007 | Health and Safety Management |
| ISO 50001:2011 | Energy Management |

Product Testing

| Characteristic | Standard | Result |
|-------------------------|---------------------------------------|----------------------------------------------|
| Compressive Stress | AS 2498.3 | Typically exceeds 120 kPa at 10% compression |
| Water Vapour Resistance | BS EN 12086:1997 / I.S. EN 12086:1998 | > 35 MN-s/g |

Fire Performance

| Test | Test Method | Result |
|---------------------------------------------------------|-------------|--------------------------------------------------------|
| Ignitability, Flame spread, Heat release, Smoke release | AS 1530.3 | Spread of Flame Index: 0 Smoke Development \leq 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 |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Recyclability | Non-contaminated insulation site waste is recyclable, but there are currently no facilities in Australia to process returned material |
| Re-usability | Re-usable if removed with care (long term of service expected) |
| Water Use | No water used in Kingspan Insulation's manufacturing process |
| Blowing Agent Global Warming Potential (GWP) | Manufactured with a blowing agent that has low GWP |
| Blowing Agent Ozone Depletion Potential (ODP) | Manufactured with a CFC/HCFC-free blowing agent that has zero ODP |
| Packaging | Contains 0% recycled product Polythene wrap and EPS skids 100% recyclable |

Installation Instructions

1. The site should be prepared and foundations, where appropriate, built to damp proof course (DPC) level.
2. A thin sand blinding may be used to achieve a continuous level surface free from projections over rolled aggregate.
3. The damp proof membrane (minimum 300 micron / 1200 gauge polythene) should be laid with joints well lapped and folded, to prevent the passage of ground water, over well compacted aggregate, prior to laying *Kingspan Kooltherm® K3 Floorboard*.
4. The membrane should be brought up the surrounding foundation walls/slab until it is sufficiently above the height of the wall DPC so that it will connect with or form the DPC.
5. *Kingspan Kooltherm® K3 Floorboard* should not be placed under any direct point loads or foundations including slab thickening.
6. The insulation boards should always be loose-laid break-bonded, with joints lightly butted.
7. If two layers of *Kingspan Kooltherm® K3 Floorboard* are required, they should be horizontally offset relative to each other so that, as far as possible, the board joints in the two adjacent layers do not coincide with each other.
8. Insulation boards should be overlaid with a polythene sheet (not less than 125 micron / 500 gauge) as best practice, to prevent the wet concrete penetrating the joints between the boards, and to act as a vapour control layer. Ensure the polythene sheet has 150 mm overlaps, taped at the joints.
9. The subsequent installation of the concrete slab and screed or other flooring material is carried out in a manner similar to that for an un-insulated floor. The concrete slab and screed should be allowed to dry out prior to the installation of the floor finish.

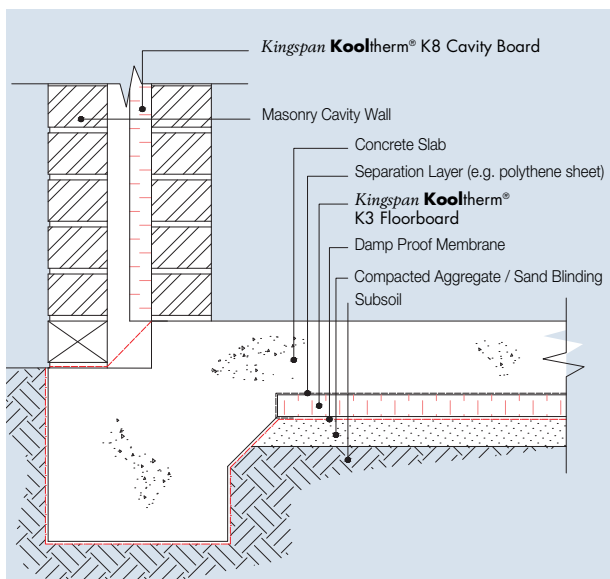


Figure 3 Side elevation - Cavity Wall on Ground Floor Slab with *Kingspan Kooltherm® K3 Floorboard*

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.

Packaging

According to quantity, the boards are supplied in packs, labelled and shrink-wrapped in polythene.

Handling and Storage

The polythene packaging of Kingspan Kooltherm® should not be considered adequate for long term outdoor protection. Ideally, boards should be stored inside a building. If, however, outside storage cannot be avoided, then the boards should be stacked clear of the ground and covered with a 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.

OH & S

Kingspan Insulation products are chemically inert and safe to use. A Product Safety Information sheet is available from Kingspan Insulation Pty Ltd.

Installation must be in accordance with AS 3999 *Bulk Thermal Insulation Installation* and AS 3000 *Electrical Installations* (Wiring Rules).

Contact Details

General Enquiries

Tel: 1300 247 235

Email: info@kingspaninsulation.com.au

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



Kingspan Insulation Pty Ltd

Tel: 1300 247 235

Email: info@kingspaninsulation.com.au

www.kingspaninsulation.com.au



Kooltherm® K10 G2 Soffit Board

INSULATION FOR CONCRETE SOFFITS



- High performance rigid thermoset phenolic insulation
- Fibre-free, closed cell insulation core
- FM approved to Class 1 fire rating Class Number 4880
- Group 2 NCC fire classification determined in a full room ISO 9705 test in accordance with AS/NZS 5637
- Resistant to the passage of water vapour
- No CFC or HCFC used in manufacture
- Has zero ODP and low GWP
- NCC and AS/NZS 4859.1:2018
- Made in Australia
- CodeMark-certified for NCC compliance



Typical Constructions and Total R-values

Concrete Soffit Floor / Roof Installation

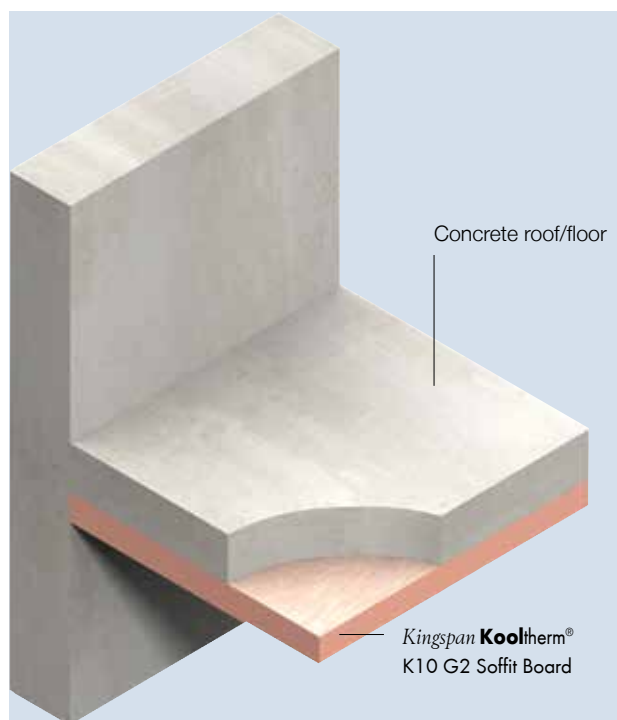


Figure 1

Thermal Performance

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

| Total R-values for various thicknesses of <i>Kingspan Kooltherm® K10 G2 Soffit Board</i> Applicable for NCC Volume One, Class 2 to 9 buildings & NCC Volume Two, Class 1 & 10a buildings, & NCC Volume One, Class 2 sole-occupancy unit or a Class 4 part of a building | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|
| Product Thickness | Heat flow in | Heat flow out |
| Roof application, no ceiling (150 mm concrete) | | |
| 25 mm | R _T 2.0 | R _T 1.5 |
| 30 mm | R _T 2.2 | R _T 1.7 |
| 40 mm | R _T 2.6 | R _T 2.2 |
| 45 mm | R _T 3.0 | R _T 2.6 |
| 50 mm | R _T 3.2 | R _T 2.8 |
| 60 mm | R _T 3.7 | R _T 3.3 |
| 70 mm | R _T 4.2 | R _T 3.8 |
| 80 mm | R _T 4.6 | R _T 4.3 |
| 90 mm | R _T 5.1 | R _T 4.8 |
| 100 mm | R _T 6.0 | R _T 5.7 |

| Roof application, suspended ceiling void greater than 300mm (150 mm concrete) | | |
|----------------------------------------------------------------------------------|--------------------|--------------------|
| 25 mm | R _T 2.5 | R _T 2.0 |
| 30 mm | R _T 2.7 | R _T 2.2 |
| 40 mm | R _T 3.1 | R _T 2.7 |
| 45 mm | R _T 3.5 | R _T 3.1 |
| 50 mm | R _T 3.7 | R _T 3.3 |
| 60 mm | R _T 4.2 | R _T 3.8 |
| 70 mm | R _T 4.7 | R _T 4.3 |
| 80 mm | R _T 5.1 | R _T 4.8 |
| 90 mm | R _T 5.6 | R _T 5.3 |
| 100 mm | R _T 6.0 | R _T 5.7 |

| Total R-values for various thicknesses of <i>Kingspan Kooltherm® K10 G2 Soffit Board</i> Applicable for NCC Volume One, Class 2 to 9 buildings & NCC Volume Two, Class 1 & 10a buildings, & NCC Volume One, Class 2 sole-occupancy unit or a Class 4 part of a building | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|
| Product Thickness | Heat flow in | Heat flow out |
| Unenclosed sub-floor application (150 mm concrete) | | |
| 25 mm | R _T 1.3 | R _T 1.4 |
| 30 mm | R _T 1.5 | R _T 1.6 |
| 40 mm | R _T 1.9 | R _T 2.1 |
| 45 mm | R _T 2.3 | R _T 2.5 |
| 50 mm | R _T 2.5 | R _T 2.7 |
| 60 mm | R _T 3.0 | R _T 3.2 |
| 70 mm | R _T 3.5 | R _T 3.7 |
| 80 mm | R _T 3.9 | R _T 4.2 |
| 90 mm | R _T 4.4 | R _T 4.7 |
| 100 mm | R _T 6.0 | R _T 5.7 |

| Enclosed sub-floor application (150 mm concrete) | | |
|--------------------------------------------------|--------------------|--------------------|
| 25 mm | R _T 2.0 | R _T 2.7 |
| 30 mm | R _T 2.3 | R _T 3.0 |
| 40 mm | R _T 2.7 | R _T 3.4 |
| 45 mm | R _T 3.1 | R _T 3.8 |
| 50 mm | R _T 3.3 | R _T 4.1 |
| 60 mm | R _T 3.8 | R _T 4.5 |
| 70 mm | R _T 4.2 | R _T 5.0 |
| 80 mm | R _T 4.7 | R _T 5.5 |
| 90 mm | R _T 5.1 | R _T 6.0 |
| 100 mm | R _T 6.0 | R _T 5.7 |

Assumptions

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

Product Details

Product Description

Kingspan **Kooltherm**® K10 G2 Soffit Board is a super high performance, fibre-free rigid thermoset, closed cell phenolic insulation core, sandwiched between an upper tissue-based facing and a lower facing of highly reflective aluminium foil autohesively bonded to the insulation core during manufacture.



Kingspan **Kooltherm**® K10 G2 Soffit Board is manufactured without the use of CFCs/HCFCs and has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).



| Product Data | |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------|
| Declared Thermal Conductivity (λ-value) | 0.021 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) | E0.05 |
| Product Dimensions | 2400 mm x 1200 mm (2.88 m²) |
| Nominal Product Thickness | 25, 30, 40, 50, 60, 70, 80, 90 mm |

For a white finish or other customised finishes and facings please refer to the “Kingspan **Kooltherm**® K10 G2W White” and the “Kingspan **Kooltherm**® K10 PLUS” product brochure respectively.

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 |
| 45mm | R2.15 |
| 50 mm | R2.35 |
| 60 mm | R2.85 |
| 70 mm | R3.35 |
| 80 mm | R3.80 |
| 90 mm | R4.30 |
| 100mm | R4.75 |

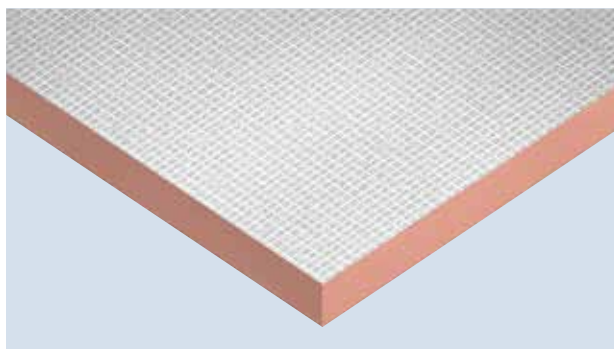


Figure 2 Super high performance Kingspan **Kooltherm**® K10 G2 Soffit Board

Specification Guide

Kingspan **Kooltherm**® K10 G2 Soffit Board

The soffit insulation shall be Kingspan **Kooltherm**® K10 G2 Soffit Board ____ mm thick, CodeMark-certified, Group 2, with a tested SMOGRA_{RC} of not more than 30 m²/s² x 1000, comprising a CFC/HCFC-free and zero Ozone Depletion Potential (ODP) rigid thermoset phenolic insulation core with an upper tissue-based facing and a lower facing of highly reflective aluminum foil, manufactured under a management system certified to ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 and ISO 50001:2018 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**® K10 G2 Soffit 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 | Health and Safety Management |
| ISO 50001:2018 | Energy Management |

Product Testing

| Characteristic | Standard | Result |
|-------------------------|---------------------------------------|----------------------------------------------|
| Compressive Stress | AS 2498.3 | Typically exceeds 100 kPa at 10% compression |
| Water Vapour Resistance | BS EN 12086:1997 / I.S. EN 12086:1998 | > 35 MN-s/g |

Fire Performance

| Test | Test Method | Result |
|---------------------------------------------------------|-------------|-----------------------------------------------------------------------------|
| Ignitability, Flame spread, Heat release, Smoke release | AS 1530.3 | Spread of Flame Index: 0 Smoke Development ≤ 3 |
| NCC Group Number | AS ISO 9705 | Group 2 Tested in accordance with AS/NZS 5637 as required by NCC Amdt. 1 |
| SMOGRA _{RC} | AS ISO 9705 | ≤ 30 m²/s²x1000 |
| FM Class No. 4880* | UBC 26-3 | Class 1 |
| Fire-resistance test of elements of construction | AS 1530.4** | -/240/240 (HDPE pipe) |

* This approval is valid for ceiling / soffit installation only, with non-combustible walls. Please contact us for correct installation instructions.

** Testing to AS 1530.4 performed in accordance with NCC BCA C3.15 Openings for service penetrations using a 120 mm concrete soffit.

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 |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Recyclability | Non-contaminated insulation site waste is recyclable, but there are currently no facilities in Australia to process returned material |
| Re-usability | Re-usable if removed with care (long term of service expected) |
| Water Use | No water used in Kingspan Insulation's manufacturing process |
| Blowing Agent Global Warming Potential (GWP) | Manufactured with a blowing agent that has low GWP |
| Blowing Agent Ozone Depletion Potential (ODP) | Manufactured with a CFC/HCFC-free blowing agent that has zero ODP |
| Packaging | Contains 0% recycled product Polythene wrap and EPS skids 100% recyclable |

Installation Instructions

Fixing Directly to Concrete Soffits

Kingspan Kooltherm® K10 G2 Soffit Board can be fully restrained to a concrete soffit by the use of minimum 11 No. appropriate insulation fasteners with a minimum head diameter of 35 mm.

1. The fasteners should be evenly distributed over the whole area of the board and designed to provide suitable restraint for the project requirements. Consultation with the chosen fastener supplier is recommended.
2. Board joints can be either staggered (see Figure 5) or squared (see Figure 6) and taped with 96 mm wide silver *Kingspan* Insulation Tape. Fasteners along each length - no less than 50 mm - no more than 150 mm from edge of board, 3 No. fasteners along the middle (offset from edge positions as per diagram Figure 3).
3. Where the board may be subject to external wind pressure, the requirement for additional fixings should be assessed in accordance with appropriate Australian wind load standards.
4. Consideration should be given to the material the fixing is made from and should be deemed appropriate for application, exposure and fire rating by the fixing manufacturer.

Why 11 fixings?

Best practice determines that any rigid board insulation, not just *Kingspan Kooltherm*® K10 G2 Soffit Board, should be fixed with 11 mechanical fixings for very good reasons:

- There will always be differential expansion and contraction between any rigid insulation material and adjacent building products due to varying moisture content and temperature.
- In any concrete forming, there will be an uneven surface throughout the slab.
- Where concrete formwork is joined it is normal to have ridges of up to 3 mm which make the concrete surface uneven.
- An insulation board held horizontally may bow like any other sheetmaterial under its own weight.

Using 11 fixings ensures that the insulation board has a strong and permanent fix under the concrete soffit and that it is not compromised by any of the above issues. It also provides a proven robust fire safe solution.

These best practice recommendations are a result of over 30 years of Kingspan Insulation experience in soffit applications.

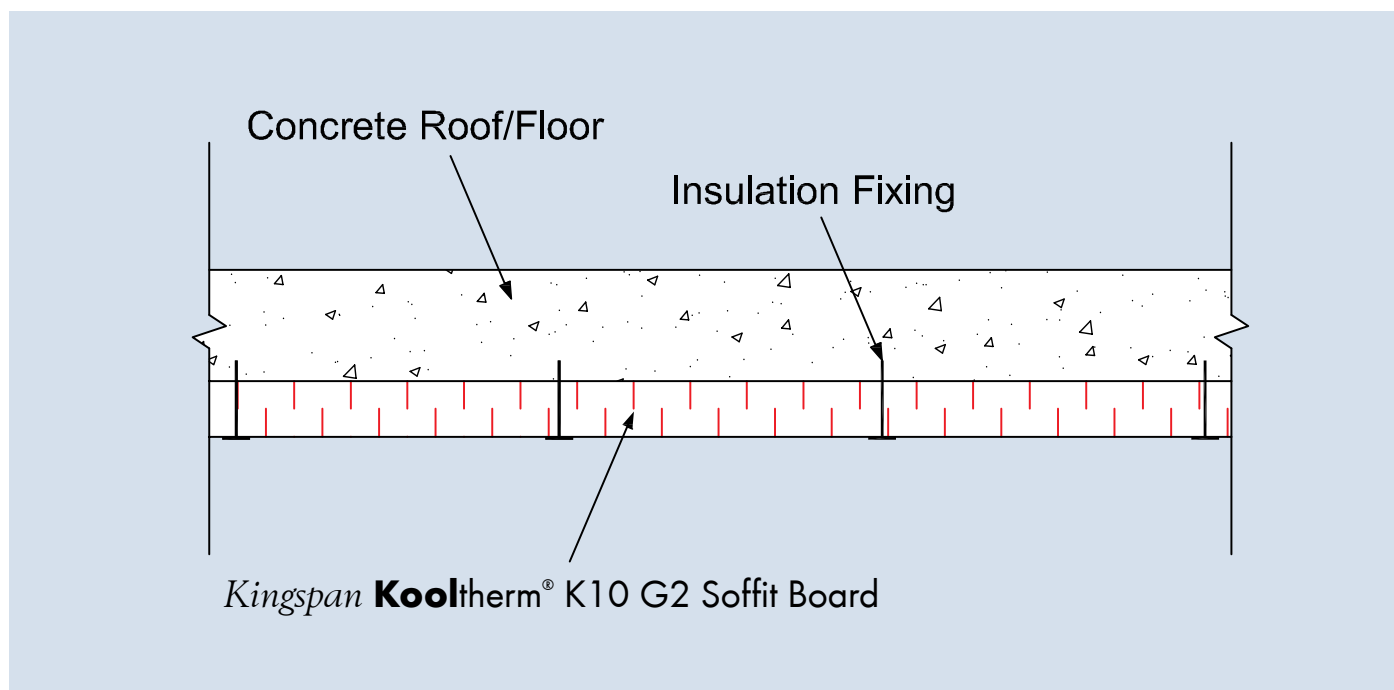


Figure 4 Side elevation - Concrete Soffit with Kingspan **Kooltherm**® K10 G2 Soffit Board

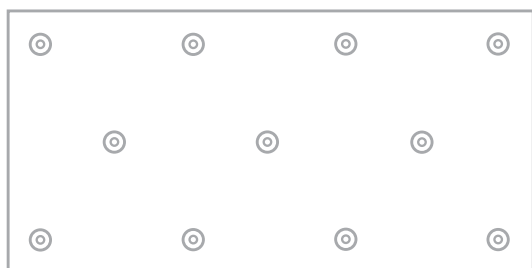


Figure 3 Fastener pattern (11 No. per board)

Board size to 2400 mm x 1200 mm - 3.81 fixings / m²

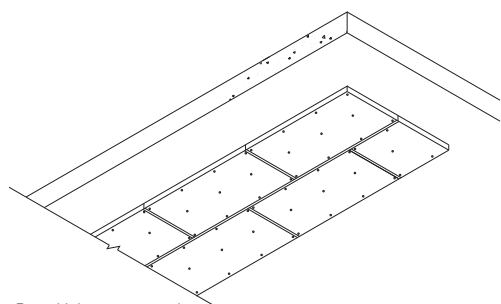


Figure 5 Board joints staggered

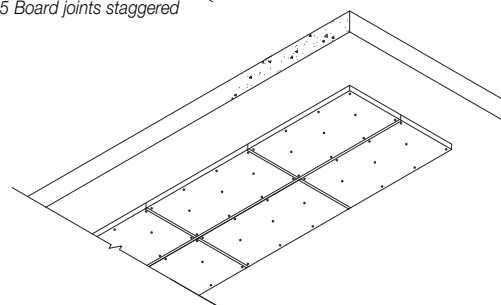


Figure 6 Board joints squared



Installation Instructions (continued)

Proprietary Grid Systems

Kingspan Kooltherm® K10 G2 Soffit Board can also be fixed to a proprietary grid system comprising metal furring bars or timber battens. For further information regarding proprietary grid system specifications, please contact the Kingspan Insulation Technical Service Department.

For advice on ancillary materials, such as fixings and tapes please contact our Technical Services Department.



Installation around Fire Collars

1. Fitting *Kingspan Kooltherm® K10 G2 Soffit Board* tight to the fire collar is recommended to reduce the effects of thermal bridging through the slab.
2. Do not cover the face of the fire collar. For fire collars to activate in a fire situation the front face needs to be exposed. This is particularly important when using cast-in collars as the face will be flush with the concrete and it would be easy to cover with the insulation board.



Figure 7 Penetration example - *Kingspan Kooltherm® K10 G2 Soffit Board* installed tight around the fire collar and HDPE service pipe.



Scan to see installation video
"Fixing Directly to Concrete Soffits"

General

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.

Taping

For all fixing methods board joints should be taped with 96 mm wide silver *Kingspan Insulation Tape* (please refer to brochure "Kingspan Insulation Tape" for further information).

1. Firstly, ensure that the climate conditions are suitable for the tape being used as well as the product the tape is to be applied too.
2. The surface of the *Kingspan Kooltherm*® to which aluminium foil tape is being applied, should be free of dust, dirt or oils. In any case, the surface should be cleaned with a dry cloth before application of the tape.
3. The release liner on the tape should be removed 300 - 600 mm at a time and the adhesive face pressed firmly onto the insulation facing. Care should be taken not to stretch the tape tightly as this will create buckles and voids in the contact area.
4. Care must also be taken to apply the tape over the centre of the join so that there is adequate area on both sides of the joint for the tape to bond. Uneven width distribution also puts additional shear stress on the smaller side of the butt joint.
5. The tape should then be wiped firmly from the centre out (like wallpaper) with a plastic squeegee. The more pressure that is applied, the more surface contact will be reached, therefore, the greater the bond surface.
6. The tape should then be cut and fitted with a knife and scissors. The same wiping instructions should then be used as above.

In the absence of other protection exposed board edges should be protected by silver *Kingspan Insulation Tape* with a minimum 48 mm wide overlap onto the board face (see Figure 8) or alternatively use a proprietary metal c-section.

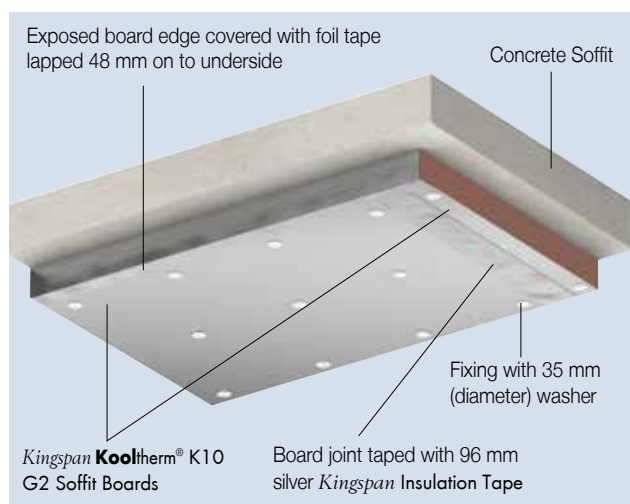


Figure 8

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.

OH & S

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 *Bulk Thermal Insulation Installation* and AS 3000 *Electrical Installations* (Wiring Rules).

Contact Details

General Enquiries

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Email: info@kingspaninsulation.com.au

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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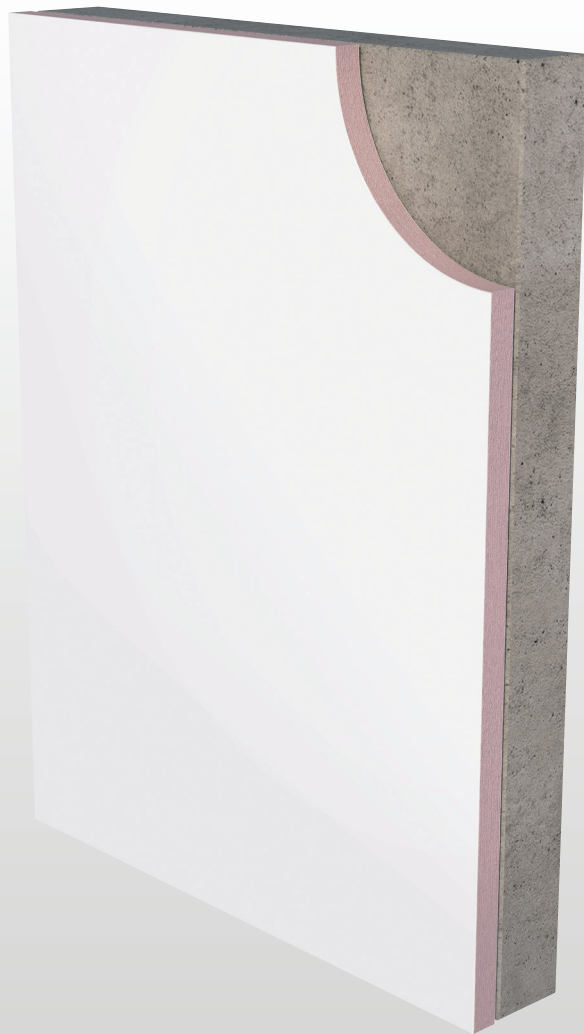
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Kooltherm® K17 Insulated Plasterboard

INSULATED DRY-LINING PLASTERBOARD FOR ADHESIVE BONDING



- High performance rigid thermoset phenolic insulation
- Fibre-free, closed cell insulation core
- 3-in-1 insulation, dry-lining and vapour control
- Also available in a range of other selected lining materials
- Group 1 NCC fire classification determined in a full room AS ISO 9705 test in accordance with AS 5637
- Resistant to the passage of water vapour
- Easy to handle and install
- Ideal for new build and refurbishment
- No CFC or HCFC used in manufacture
- Has zero ODP and low GWP
- Compliant with AS/NZS 4859.1:2018
- Made in Australia



Fibre-free
Core




Kingspan®

*Low Energy –
Low Carbon Buildings*

Typical Constructions and Total R-values

Adhesive Bonding to Concrete Wall (150 mm)

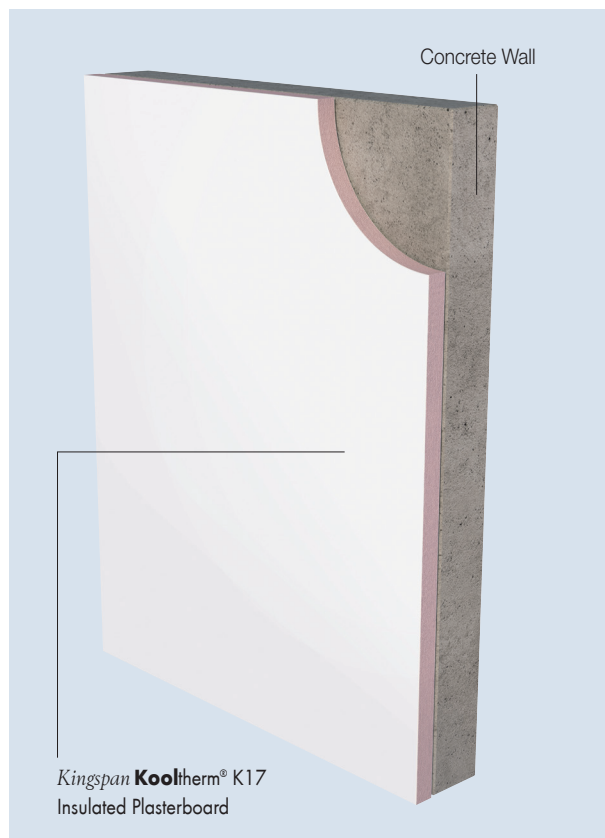


Figure 1

Adhesive Bonding to Masonry Block Wall (140 mm)

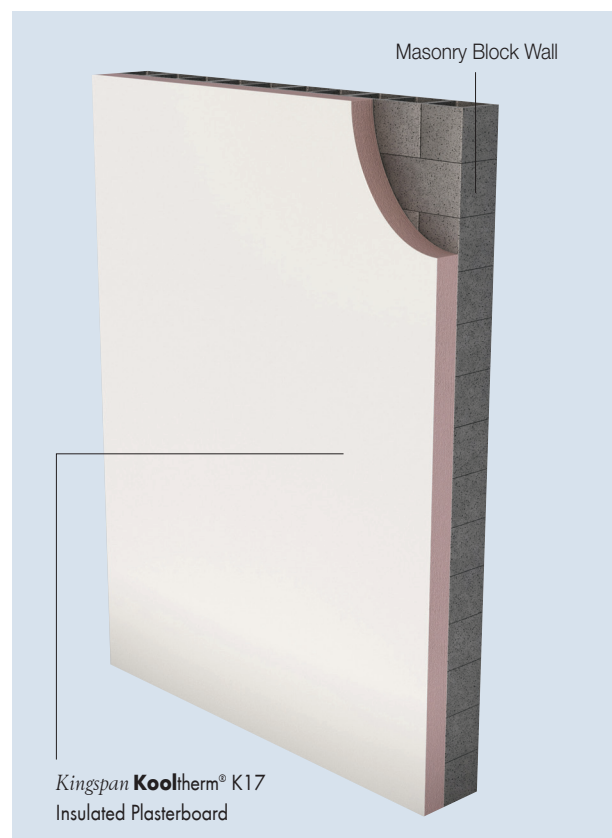


Figure 2

Thermal Performance

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

Total R-values for various thicknesses of *Kingspan Kooltherm® K17* Insulated Plasterboard applicable for NCC Volume One, Class 2 to 9 buildings & NCC Volume Two, Class 1 & 10a buildings

| Product Thickness (inc. Plasterboard) | Heat flow in | Heat flow out |
|---------------------------------------|--------------------|--------------------|
| 35 mm | R _t 1.4 | R _t 1.4 |
| 40 mm | R _t 1.6 | R _t 1.7 |
| 50 mm | R _t 2.0 | R _t 2.1 |
| 60 mm | R _t 2.6 | R _t 2.8 |
| 70 mm | R _t 3.1 | R _t 3.2 |
| 80 mm | R _t 3.5 | R _t 3.7 |
| 90 mm | R _t 4.0 | R _t 4.2 |

Assumptions

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

Total R-values for various thicknesses of *Kingspan Kooltherm® K17* Insulated Plasterboard applicable for NCC Volume One, Class 2 to 9 buildings & NCC Volume Two, Class 1 & 10a buildings

| Product Thickness (inc. Plasterboard) | Heat flow in | Heat flow out |
|---------------------------------------|--------------------|--------------------|
| 35 mm | R _t 1.4 | R _t 1.5 |
| 40 mm | R _t 1.6 | R _t 1.7 |
| 50 mm | R _t 2.0 | R _t 2.1 |
| 60 mm | R _t 2.7 | R _t 2.8 |
| 70 mm | R _t 3.1 | R _t 3.3 |
| 80 mm | R _t 3.6 | R _t 3.8 |
| 90 mm | R _t 4.0 | R _t 4.3 |

Fire Resistance

Examples shown are suitable for NCC Class 1 & 10a housing and Fire-Resisting Construction Type C walls in NCC Class 2 – 9 buildings. For Fire-Resisting Construction Type A & B walls in NCC Class 2 – 9 buildings a Performance Solution is required. Please contact Kingspan Insulation Technical Services on 1300 247 235 or email technical@kingspaninsulation.com.au for further guidance.

Product Details

Product Description

Kingspan Kooltherm® K17 Insulated Plasterboard is a super high performance, fibre-free rigid thermoset, closed cell phenolic insulation, sandwiched between a front facing of tapered edge gypsum based plasterboard, and a reverse tissue based facing



manufactured without the use of CFCs/HCFCs and has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).



| Product Data | | |
|--------------------------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------|
| Declared Thermal Conductivity | Insulant | 0.021 W/m.K at 23°C (Insulant thickness \geq 45 mm) |
| | | 0.023 W/m.K at 23°C (Insulant thickness 25 - 44 mm) |
| | Plasterboard | 0.17 W/m.K at 23°C (Plasterboard thickness 10 mm) |
| Product Dimensions | | 2400 mm x 1200 mm (2.88 m ²) Other dimensions available upon enquiry. Minimum order quantities apply |
| Nominal Product Thickness (inc. Plasterboard) | | 35, 40, 50, 60, 70, 80, 90 mm Other thicknesses available upon enquiry. Minimum order quantities apply |
| Nominal Plasterboard Thickness | | 10 mm |

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.

Product R-value

| Nominal Product Thickness (inc. Plasterboard) | Declared Product R-value at 23°C |
|--------------------------------------------------|-------------------------------------|
| 35 mm | R1.16 |
| 40 mm | R1.36 |
| 50 mm | R1.81 |
| 60 mm | R2.41 |
| 70 mm | R2.91 |
| 80 mm | R3.41 |
| 90 mm | R3.86 |

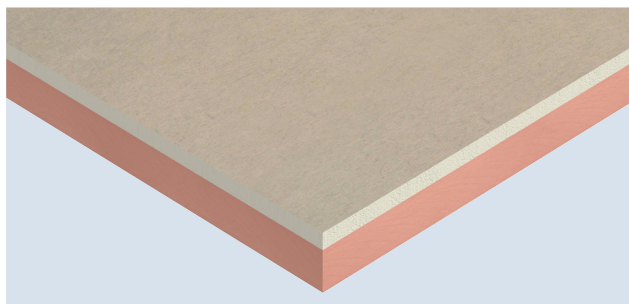


Figure 3 Super high performance *Kingspan Kooltherm® K17 Insulated Plasterboard*

Specification Guide

Kingspan Kooltherm® K17 Insulated Plasterboard

The wall dry-lining insulation shall be Group 1 *Kingspan Kooltherm® K17 Insulated Plasterboard* ____ mm thick, with a tested smoke obscuration of not more than 5 m²/kg, comprising a CFC/HCFC-free and zero Ozone Depletion Potential (ODP) rigid thermoset phenolic 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 ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2007 and ISO 50001:2011 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.

* Applies only to the *Kingspan Kooltherm® K10* insulation board used in the manufacture of this composite insulated plasterboard product.

Standards and Approvals

Kingspan Kooltherm® K10 insulation board used for *Kingspan Kooltherm® K17 Insulated Plasterboard* 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 |
| OHSAS 18001:2007 | Health and Safety Management |
| ISO 50001:2011 | Energy Management |

Product Testing

| Characteristic | Standard | Result |
|-------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Compressive Stress (Insulant) | AS 2498.3 | Typically exceeds 100 kPa at 10% compression |
| Water Vapour Resistance | BS EN 12086:1997 / I.S. EN 12086:1998 | > 35 MN-s/g For the purpose of calculation of condensation risk, the resistivity of the plasterboard component of the product should be taken as 50 MN-s/g-m. |

Fire Performance

| Test | Test Method | Result |
|-----------------------------------------------------------|-------------|-----------------------------------------------------------------------------|
| Ignitability, Flame spread Heat release, Smoke release | AS 1530.3 | Spread of Flame Index: 0 Smoke Development \leq 3' |
| NCC Group Number in accordance with AS 5637.1 | AS ISO 9705 | Group 1 Tested in accordance with AS 5637 as required by NCC 2016 Amdt.1 |
| SMOGR _{RC} | AS ISO 9705 | \leq 10 m ² /s ² x1000 |

* Applies only to the *Kingspan Kooltherm® K10* insulation board used in the manufacture of this composite insulated plasterboard product.

Installation Instructions

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.

Limitations

Kingspan Kooltherm® K17 Insulated Plasterboard has a gypsum plasterboard face. It should, therefore, not be used to isolate dampness nor be used in continuously damp or humid conditions.

Environmental Data

| Aspect | Characteristic |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Recyclability | Non-contaminated insulation site waste is recyclable, but there are currently no facilities in Australia to process returned material |
| Re-usability | Re-usable if removed with care (long term of service expected) |
| Water Use | No water used in Kingspan Insulation's manufacturing process |
| Blowing Agent Global Warming Potential (GWP) | Manufactured with a blowing agent that has low GWP |
| Blowing Agent Ozone Depletion Potential (ODP) | Manufactured with a CFC/HCFC-free blowing agent that has zero ODP |
| Packaging | Contains 0% recycled product Polythene wrap and EPS skids 100% recyclable |

Installation should be in accordance with AS 3999:2015 Bulk thermal insulation - Installation.

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.

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. Appropriate 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).
7. For boards 3 m and longer 4 fixings should be used.
8. When using the *Kingspan Kooltherm K17+ Insulated Lining Board Range*, use a minimum of 6 mechanical fixings per board. Positioned 15 mm in from the edge, at the top, middle and bottom of the board.
9. 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.

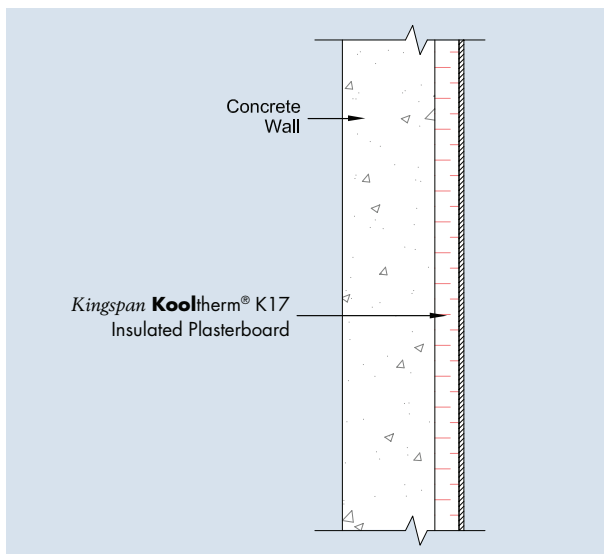


Figure 4 Side elevation - Concrete wall with Kingspan **Kooltherm**® K17 Insulated Plasterboard

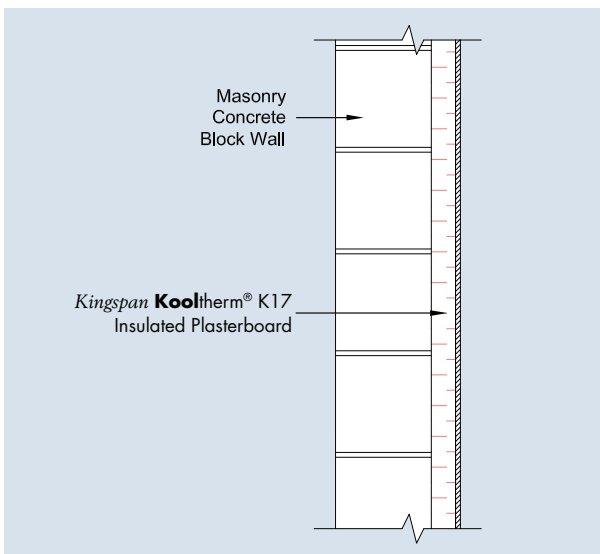


Figure 5 Side elevation - Masonry block wall with Kingspan **Kooltherm**® K17 Insulated Plasterboard

Mechanical Fixing

This method is for application to brick, block or concrete masonry cavity walls which are free from moisture penetration and an adhesive bond is not suitable or heavy surface linings such as tiles are to be applied.

1. Ensure the wall is true and free from projections which may prevent the board from sitting flat.
2. Predrill into the wall substrate using a masonry bit.
3. Insert a masonry anchor with a minimum of 25 mm embedment into the structure.
4. Fixings should be driven straight, with the heads embedded just below the surface of the plasterboard. Care should be taken not to overdrive screws.
6. Screws should be fixed at 600 mm max. horizontal centres and 300 mm max. vertical centres.

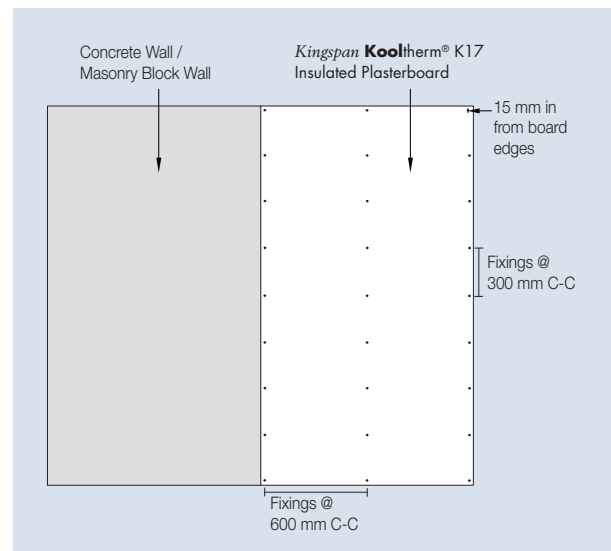


Figure 6 Kingspan **Kooltherm**® K17 Insulated Plasterboard Installation Details for mechanical fixing

Installation Instructions (continued)

Corner & Skirting Details

For internal and external corners, sheets should be cut and rebated to allow a plasterboard / plasterboard joint at the angle. Ensure sheets are lightly butted and air gaps minimised to reduce the risk of cold bridging. (See Figures 7 & 8).

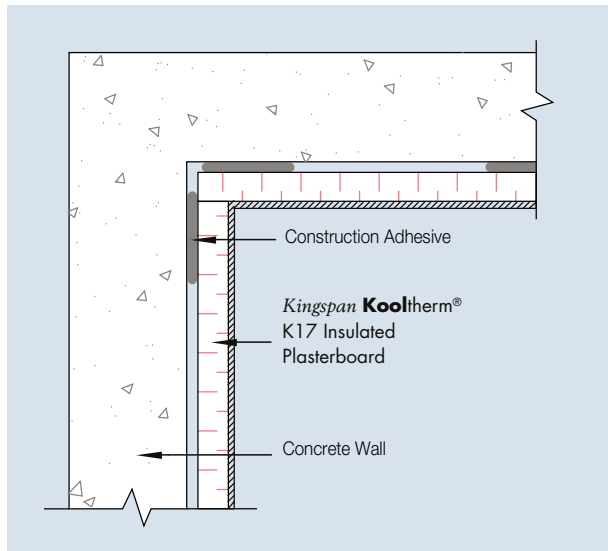


Figure 7 Internal corner detail with Kingspan **Kooltherm**® K17 Insulated Plasterboard

A 5 mm packer should be used at the base of the wall to provide a level surface from which to build up the boards. Replace with a flexible urethane / acoustic sealant prior to skirting being fitted (see Figure 8).

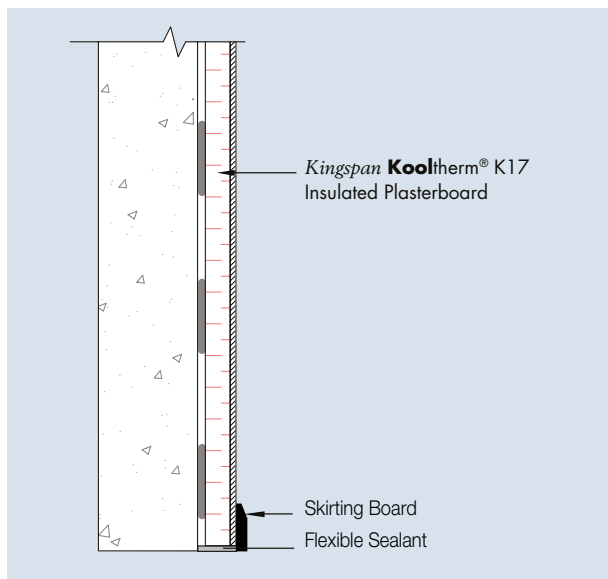


Figure 8 Packer and skirting detail with Kingspan **Kooltherm**® K17 Insulated Plasterboard

Window / Door Reveals & Soffit Details

A thinner sheet of Kingspan **Kooltherm**® K17 Insulated Plasterboard at reveals may be necessary (see Figure 9) to account for opening frames. Where adhesives are employed at openings, strips of insulated plasterboard should be temporarily supported.

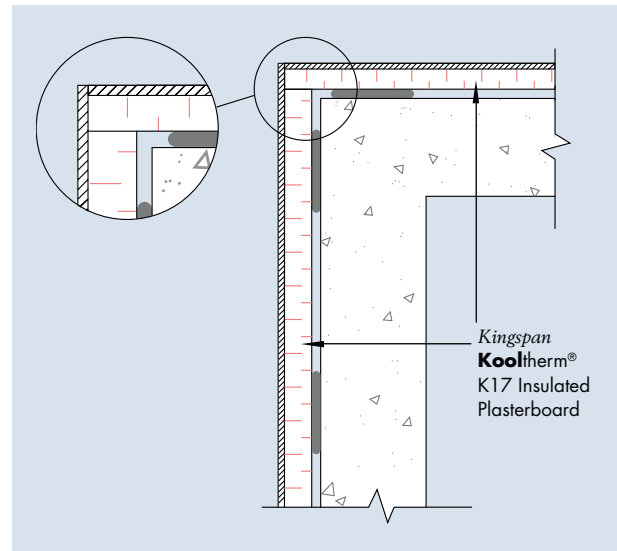


Figure 9 Insulated reveal and external corner with Kingspan **Kooltherm**® K17 Insulated Plasterboard

General

Cutting

Cutting should be carried out either by using a fine toothed saw, or by using a sharp knife to cut through the insulation and paper backing of the plasterboard, then snapping the board face down over a straight edge and cutting the paper facing of the plasterboard on the other side. Ensure accurate trimming to achieve close butting joints and continuity of insulation. Sheets being cut should be adequately supported to prevent breakage.

When using a fine toothed saw, ensure edges are supported to avoid excessive vibration.

When multiple cuts on a board are required, such as around windows, consider segmenting the board into smaller sections to prevent excessive movement of the board. Figure 10.

Board Orientation

The *Kingspan Kooltherm*® K17 Insulated Plasterboard can be laid in a horizontal or vertical orientation to best suit the room configuration.

Services

Where electrical and plumbing services are not surface mounted or chased into the structure, carefully recess the back of the insulation to accommodate the services.

To ensure an appropriate rate of heat dissipation from cables, the current-carrying capacity of any electrical services partially surrounded by thermal insulation should be determined in accordance with AS/NZS 3008.1 series.

Ensure excess insulation is not removed to minimise thermal weaknesses.

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.

OH & S

Kingspan Insulation products are chemically inert and safe to use. A Product Safety Information Sheet is available from Kingspan Insulation Pty Ltd.

Installation must be in accordance with AS 3999 Bulk Thermal Insulation Installation and AS 3000 Electrical Installations (Wiring Rules).

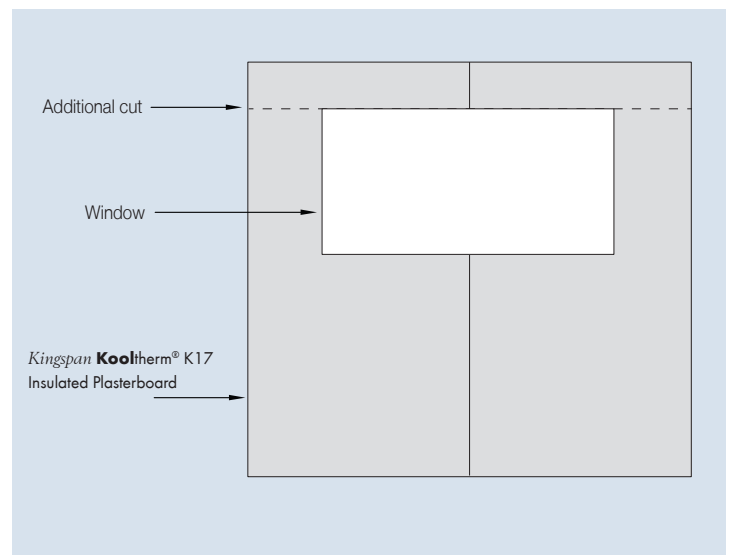


Figure 10 *Kingspan Kooltherm*® K17 Insulated Plasterboard Installation Details for cutting

Contact Details

General Enquiries

Tel: 1300 247 235

Email: info@kingspaninsulation.com.au

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