

Product Data Sheet

Kooltherm[®] K7

Pitched Roof Board

Roof / Ceiling Insulation



Kooltherm® K7 Pitched Roof Board

Product Description

Kooltherm®

Kooltherm K7 is a roof insulation board used to insulate the rafters of tiled, slated or profiled metal roofs. It is suitable for use in attic floors/ceiling levels, mansard roofs and dormer windows.

Kooltherm K7 is manufactured with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).

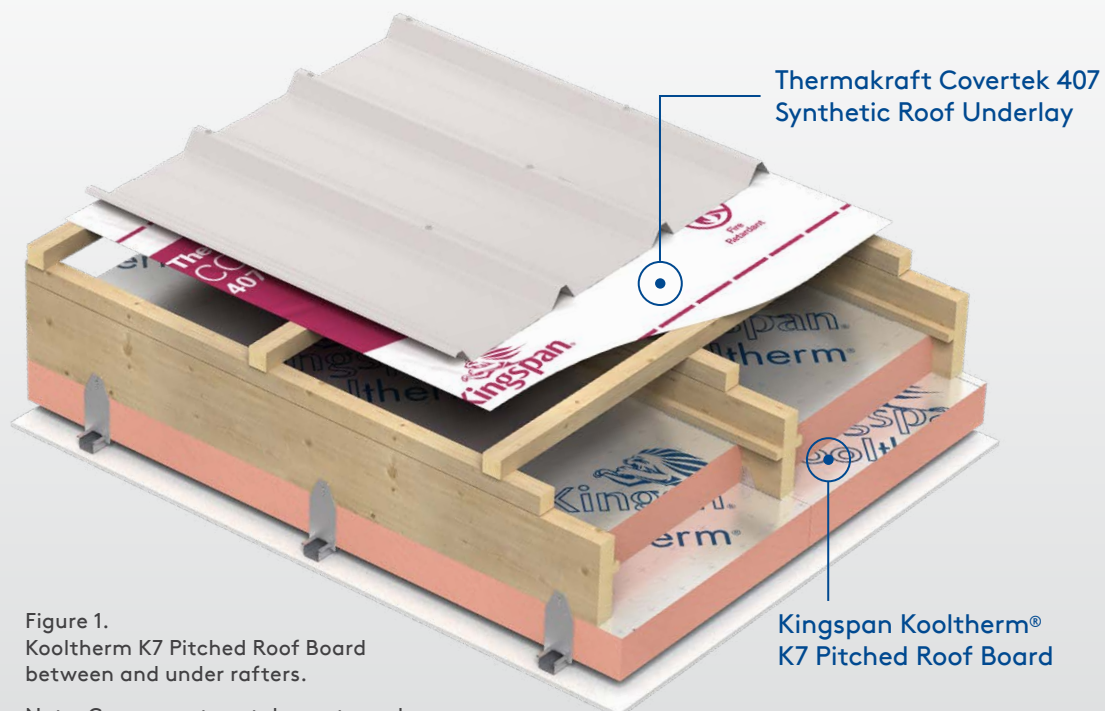


Figure 1.
Kooltherm K7 Pitched Roof Board
between and under rafters.

Note: Components not drawn to scale.

- Fibre-free rigid thermoset phenolic insulation core
- Can be used over or under rafters as continuous insulation
- Can eliminate thermal bridging
- Ideal for new build or refurbishment
- Easy to handle and install
- NZBC and AS/NZS 4859.1:2018 compliant

Fibre-free
Core

Kooltherm® K7 Pitched Roof Board

Product Performance Data

| Product Data | |
|--|--|
| Thermal Conductivity (λ -value) at 15°C as per AS/NZS 4859.1:2018 | 0.022 W/mK (Insulant Thickness \geq 45 mm) 0.023 W/mK (Insulant Thickness 25 - 44 mm) |
| Emittance (Foil Face) | E0.06 |
| Product Dimensions | 2400 mm x 1200 mm (2.88 m ²) |
| Product Thickness | 25, 30, 40, 50, 60, 70, 80, 90, 100 mm |

Product R-value

| Product Thickness | Product R-value |
|-------------------|-----------------|
| 25 mm | R1.10 |
| 30 mm | R1.30 |
| 40 mm | R1.75 |
| 50 mm | R2.35 |
| 60 mm | R2.80 |
| 70 mm | R3.30 |
| 80 mm | R3.75 |
| 90 mm | R4.20 |
| 100 mm | R4.70 |

Declared Product R-value and thermal conductivity at 15°C as per AS/NZS 4859.1:2018

Scope of Use

Kooltherm K7 Pitched Roof Board is a rigid thermoset phenolic insulation for roof/ceiling applications. It has a fibre-free core and a highly reflective aluminium foil on both sides autohesively bonded to the insulation core during manufacture.

- Suitable for timber and steel frame roof construction.
- Suitable for new build and refurbishment.

Assumptions

- Construction R-values in this document have been calculated following the appropriate procedures outlined in AS/NZS 4859.2:2018 with bridging allowances using NZS 4214:2006.
- Average construction R-values have been quoted.

Product Performance

Typical Constructions and Construction R-Values

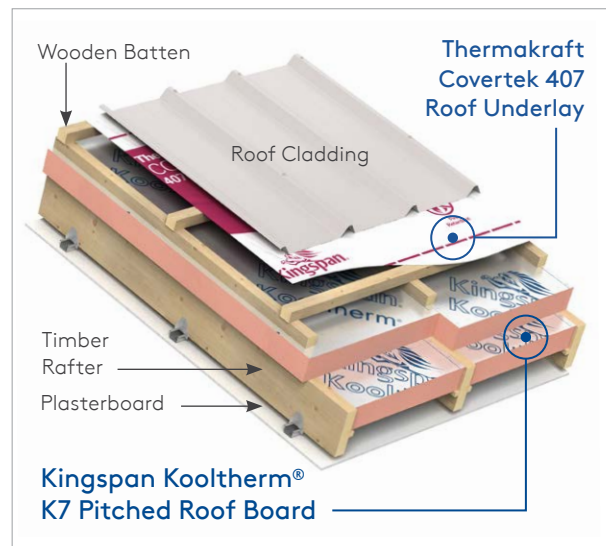


Figure 2. Kooltherm K7 between and over rafters at maximum 600mm centres.
(Note: Components not drawn to scale.)

Construction R-Value for Various Thicknesses of Kingspan Kooltherm K7 and Different Timber Rafter Depth (See Figure 2.)

| Thickness of Kooltherm K7 | Timber Rafter Depth | | | | |
|---------------------------|---------------------|-------|-------|-------|-------|
| | 90mm | 140mm | 190mm | 240mm | 290mm |
| 40+40 mm | 3.55 | 3.60 | 3.60 | 3.65 | 3.65 |
| 50+50 mm | 4.40 | 4.45 | 4.50 | 4.50 | 4.50 |
| 60+60 mm | 5.10 | 5.20 | 5.25 | 5.25 | 5.25 |
| 70+70 mm | 5.80 | 5.90 | 5.95 | 5.95 | 6.00 |
| 80+80 mm | 6.35 | 6.70 | 6.70 | 6.75 | 6.75 |
| 90+90 mm | 6.90 | 7.40 | 7.45 | 7.50 | 7.50 |
| 100+100 mm | NA | 8.15 | 8.20 | 8.20 | 8.20 |

- First thickness refers to thickness between rafters, second thickness over rafters. The thermal resistance of the over rafter layer of insulation must be greater than or equal to the between rafter layer so that roof condensation risk is reduced.
- Roof system is based on 45mm wide timber rafters at 600mm centres @ 10% framing, Covertex 407 roof underlay, 90mm depth counter batten system, long-run profiled metal roof cladding, and 10mm plasterboard with service cavity.

Kooltherm® K7 Pitched Roof Board

Product Performance Data

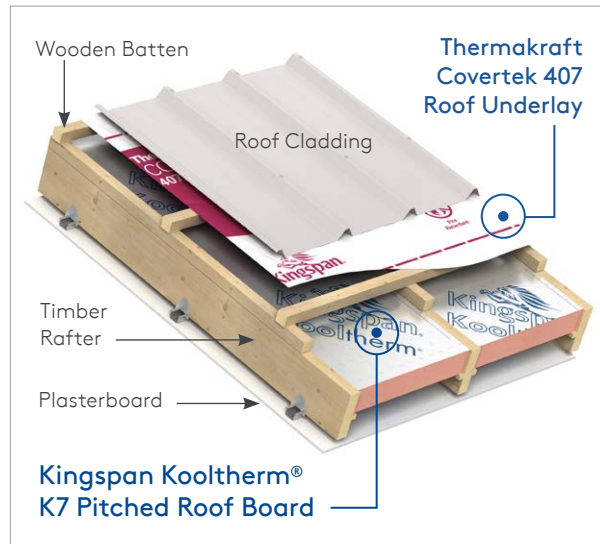


Figure 3. Kooltherm K7 between rafters.
(Note: Components not drawn to scale.)

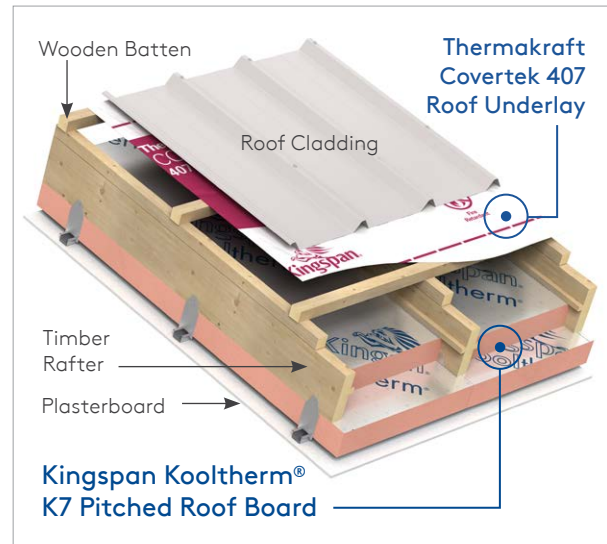


Figure 4. Kooltherm K7 between and under rafters at 600mm centres.
(Note: Components not drawn to scale.)

| Construction R-Value for Various Thicknesses of Kingspan Kooltherm K7 and Different Timber Rafter Depth (see Figure 3.) | | | | | |
|---|---------------------|-------|-------|-------|-------|
| Thickness of Kooltherm K7 | Timber Rafter Depth | | | | |
| | 90mm | 140mm | 190mm | 240mm | 290mm |
| 70 mm | 2.7 | 2.8 | 2.85 | 2.85 | 2.85 |
| 80 mm | 2.85 | 3.1 | 3.15 | 3.15 | 3.15 |
| 90 mm | 2.85 | 3.4 | 3.45 | 3.45 | 3.45 |
| 100 mm | NA | 3.65 | 3.7 | 3.75 | 3.75 |
| 60+60 mm | NA | 4.2 | 4.3 | 4.4 | 4.4 |
| 70+70 mm | NA | 4.4 | 4.9 | 4.95 | 5 |
| 80+80 mm | NA | NA | 5.45 | 5.55 | 5.6 |
| 90+90 mm | NA | NA | 5.85 | 6.15 | 6.15 |
| 100+100 mm | NA | NA | NA | 6.7 | 6.75 |

- Roof system is based on 45mm wide timber rafters at 600mm centres @ 10% framing, Covertex 407 roof underlay, 90mm depth counter batten system, long-run profiled metal roof cladding, and 10mm plasterboard with service cavity.

| Construction R-Value for Various Thicknesses of Kingspan Kooltherm K7 and Different Timber Rafter Depth (See Figure 4.) | | | | | |
|---|---------------------|-------|-------|-------|-------|
| Thickness of Kooltherm K7 | Timber Rafter Depth | | | | |
| | 90mm | 140mm | 190mm | 240mm | 290mm |
| 40+40 mm | 3.40 | 3.40 | 3.40 | 3.40 | 3.40 |
| 50+50 mm | 4.25 | 4.25 | 4.25 | 4.25 | 4.25 |
| 60+60 mm | 4.95 | 4.95 | 4.95 | 4.95 | 4.95 |
| 70+70 mm | 5.75 | 5.75 | 5.75 | 5.75 | 5.75 |
| 80+80 mm | 6.45 | 6.45 | 6.45 | 6.45 | 6.45 |
| 90+90 mm | 7.20 | 7.20 | 7.20 | 7.20 | 7.20 |
| 100+100 mm | NA | 8.00 | 8.00 | 8.00 | 8.00 |

- First thickness refers to thickness between rafters, second thickness under rafters. The thermal resistance of the between rafter layer of insulation must be greater than or equal to the under rafter layer so that roof condensation risk is reduced.
- Roof system is based on 45mm wide timber rafters at 600mm centres @ 10% framing, Covertex 407 roof underlay, 90mm depth counter batten system, long-run profiled metal roof cladding, and 10mm plasterboard with service cavity.

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Product Performance Data

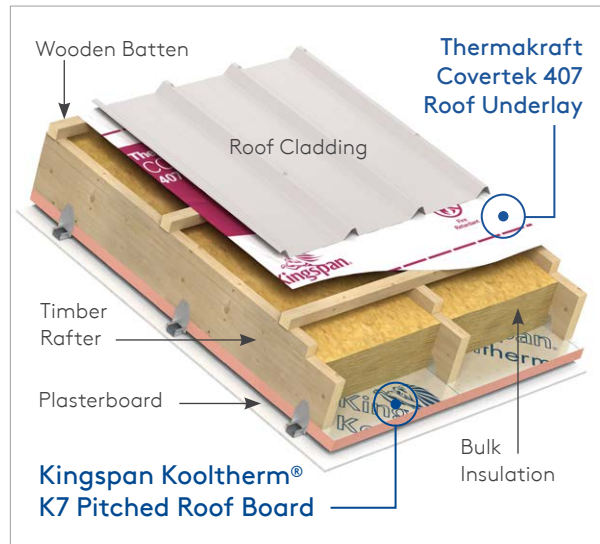


Figure 5. Kooltherm K7 under rafters and bulk insulation at 600mm centres.
(Note: Components not drawn to scale.)

Construction R-Value for Various Thicknesses of Kingspan Kooltherm K7 and Different Timber Rafter Depth (See Figure 5.)

| Thickness of Kooltherm K7 | Timber Rafter Depth | | | | |
|---------------------------|---------------------|-------|-------|-------|-------|
| | 90mm | 140mm | 190mm | 240mm | 290mm |
| | R2.1 | R3.6 | R5.0 | R6.0 | R7.4 |
| | Bulk | Bulk | Bulk | Bulk | Bulk |
| 40 mm | 3.95 | 5.10 | 6.15 | 7.05 | 7.90 |
| 50 mm | 4.45 | 5.60 | 6.70 | 7.55 | 8.40 |
| 60 mm | 4.90 | 6.05 | 7.15 | 8.00 | 8.90 |
| 70 mm | 5.30 | 6.50 | 7.55 | 8.40 | 9.35 |
| 80 mm | 5.80 | 6.95 | 8.05 | 8.90 | 9.75 |
| 90 mm | 6.25 | 7.35 | 8.50 | 9.30 | 10.25 |
| 100 mm | 6.65 | 7.85 | 8.90 | 9.75 | 10.65 |

- When a combination of different insulation materials is used, condensation calculation needs to be performed on the roof build up system to evaluate the condensation risk. Contact Kingspan technical services to discuss your specific project requirements.
- Roof system is based on 45mm wide timber rafters at 600mm centres @ 10% framing, Covertex 407 roof underlay, 90mm depth counter batten system, long-run profiled metal roof cladding, and 10mm plasterboard with service cavity.

Note, the roof system shown on figure 5 does not contain a separate layer of material on top of the bulk insulation

General

- NZBC and AS/NZS 4859.1:2018 compliant.
- Kooltherm K7 Pitched Roof Board is not subject to a warning or ban under section 26 of the Building Act 2004 when used as per the product scope.

- Average construction R-values have been shown in the above tables to capture both summer and winter roof system performance.
- Fibre-free rigid thermoset phenolic insulation core.
- Ideal for new build and refurbishment.
- Kooltherm K7 generally does not require regular maintenance. However, damaged, dented, or fractured insulation boards must be replaced.
- Product made in Australia.

Dependent on the designed construction R-value and the available rafter depth and headroom, different approaches can be taken to configure the position of Kooltherm K7. In most cases, approaches with layers of insulation between and over rafters are likely to yield tall fascia boards and so, generally, between and under rafter insulation approaches are probably more desirable e.g. Figure 4. The exception to the rule is when high construction R-values are required, in which case headroom may become an issue for between and under rafter solutions, so between and over rafter solution may be more practical.

Specification Guide

Kooltherm K7 Pitched Roof Board

The insulation shall be Kingspan Kooltherm K7 Pitched Roof Board [] mm thick rigid thermoset phenolic insulation core with composite foil facings on both sides 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 Kingspan instructions.

Limitations

- Cannot be permanently exposed to weather elements.
- Not suitable when risk of galvanic corrosion has been identified for the use with galvanised steel.
- Not a component for structural bracing.
- Not a fall arrest product.
- The requirement for a vapour control layer should be assessed by roof condensation calculation. Contact Kingspan technical services to discuss your specific project requirements.
- Maximum rafter centres is 600mm.

Compliance

Kooltherm K7 Pitched Roof Board meets the performance requirements of NZBC Clause B1 Structure (B1.3.1, B1.3.2, B1.3.3(a), B1.3.4), Clauses B2 Durability (B2.3.1 (a) 50 years, Clause E3 Internal Moisture (contributes to E3.3.1), Clause F2 Hazardous Building Materials (F2.3.1), and Clause H1 Energy Efficiency (contributes to H1.3.1 and H1.3.2E) by testing and comparison with acceptable solutions H1/AS1 and H1/AS2 and verification methods H1/VM1 and H1/VM2 providing:

- It is not damaged, dented or fractured.
- It is installed in accordance with installation instructions.
- It is installed by or under guidance of Licensed Building Practitioners.

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Product Performance Data

Control of Condensation

In climatic regions where condensation risks are high, such as cold or high humidity areas, care needs to be taken in specifying the correct design and installation to prevent moisture build-up in the roof cavities. Factors which may adversely affect the condensation risk in roofing systems include:

- Humid, and/or cold climatic regions.
- Low roof cavity air volume and restricted air movement.
- Omitting vapour control layers.
- Occupancy activities which have high moisture loading on conditioned spaces.
- Ceiling penetrations and entry of warm air into roof cavities.
- Combination of different insulation materials.
- Building structures ability to naturally dry construction moisture.

Contact Kingspan technical services to discuss your specific project requirements on **0800 806 595** or email technical@kingspaninsulation.co.nz

Standards and Approvals

Kooltherm K7 Pitched Roof 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 Warranty

Standard Kingspan Insulation Warranty applies. Refer to Kingspan Insulation Warranty statement for further details. Call us on **0800 806 595** or email info@kingspaninsulation.co.nz

Kingspan Insulation NZ Limited (NZBN 9429045930393), reserves the right to amend product specifications without prior notice. The information contained in Kingspan's literature is given in good faith and based on good building practice but are not an exhaustive statement of all relevant information and are subject to any conditions contained in the Warranty. Recommendations for use should be verified as to the suitability and compliance with actual requirements, specifications and any applicable laws and regulations. All product dimensions and performance claims are subject to any variation caused by normal manufacturing process and tolerances.

Furthermore, as the successful performance of the relevant system depends on numerous factors outside the control of Kingspan (for example quality of workmanship and design), Kingspan shall not be liable for the recommendations in that literature and the performance of the Product. 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 E&OE

Product Testing

| Characteristic | Standard | Result |
|-------------------------|----------------|----------------------------|
| Compressive Stress | AS 2498.3:1993 | ≥100kPa at 10% compression |
| Water Vapour Resistance | AS 2498.5:1993 | > 35 MN.s/g |

Fire Performance

| Test | Test Method | Result |
|--|--------------------|---|
| Ignitability, Flame spread Heat release, Smoke release | AS/NZS 1530.3:1999 | Spread of Flame Index: 0 Smoke Development ≤ 3 |
| Flame Propagation | AS 2122.1:1993 | Complies |

Durability

If correctly installed, Kingspan Kooltherm products can be expected to have a long life of service. Their durability depends on the supporting structure and the conditions of 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.co.nz

Environmental Data

| Aspect | Characteristic |
|---------------|---|
| 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 | Manufactured with a blowing agent that has zero ODP and low GWP |
| CFC/HCFC | Product CFC/HCFC Free |

