

Viking
WarmSpan¹

The future of low-slope roofing

Roofspec
Viking
Taking care of detail

www.vikingroofspec.co.nz



Viking WarmSpan¹ **simply the best warm roof system**

Viking WarmSpan¹ is a New Zealand engineered warm-roof-on-steel roofing assembly, designed for low-sloped roofs.

In its basic form, WarmSpan¹ is the industry's simplest, yet most energy-efficient warm roof system.

Three fundamental components make up Viking WarmSpan¹ before any others can be added.

These fundamental components are:

1. A wide-spanning steel-tray roof deck
2. A Kingspan polyisocyanurate (PIR) rigid foam insulation panels waterproofed
3. One of Viking's CodeMarked membrane systems.

This simplest assembly is called WarmSpan¹ 'Classic'. Additional components such as vapour barrier; cover board; and walkway rolls are available depending on the specific requirements of the building, determined by geography; acoustics; foot traffic, etc.

See the complete WarmSpan¹ series outlined in this brochure.





Viking WarmSpan¹ Features and Benefits

A Complete Roof

Warm roofs have traditionally comprised of insulation panels and membranes installed on an existing concrete, plywood, or steel tray substrate ie: the substrate was already in place or supplied by others. Viking WarmSpan¹ is a complete roof assembly supplied with the substrate in the form of a steel tray that has been engineer-tested to comply with New Zealand's Building Code, but more importantly, to withstand NZ's harsh conditions.

Simple and Fit-For-Purpose

It's important that a building owner investing in a warm roof, receives one that is robust; energy-efficient and fit-for-purpose. Recent industry hype surrounding warm roof technology, has seen the practice of some suppliers recommending extra components that are not only superfluous to requirements, but are costly; heavy; and in many instances less thermally-efficient than a simpler warm roof.

For almost a decade, the standard WarmSpan¹ 'Classic' assembly has been and continues to be an appropriate specification for 99% of projects. In the instance when there are building specific requirements for: extra sound insulation; protection from high foot traffic; vapour control for swimming pool complexes; cool stores and buildings in Climate Zone 3-6, then one of our WarmSpan¹ series options incorporating additional tested and proven components, will ensure a fit-for-purpose solution.

Energy Efficiency

Viking WarmSpan¹ doesn't use mechanical fasteners and washers to secure the insulation. Mechanical fasteners penetrate the whole assembly below the membrane, resulting in thermal-bridging which reduces the thermal efficiency of the system. Conversely, Viking WarmSpan¹ uses a proprietary two-part polyurethane adhesive called 'F.A.S.T.' to bond the rigid insulation panels to the steel tray; promoting a continuous thermal blanket of the industry's most energy-efficient insulation board (polyisocyanurate), instead of one that is penetrated by thousands of screws. This proven adhesion technology, also provides greater strength and wind uplift resistance than mechanical fixings.

Durability Performance

WarmSpan¹ is a NZ engineer certified warm-roof-on-steel roofing assembly; developed and tested to meet the wind and snow loadings specified in New Zealand's Building Code. Canterbury-based engineer Holmes Solutions completed load testing to establish the ULS (Ultimate Limit State) and SLS (Serviceability Limit State) of the WarmSpan¹ system over a range of spans between purlins. The exceptional results have been tabled in a 50-page report; one of the highlights being that WarmSpan¹ can span up to 3.6m between supports.

Foot Traffic and Impact Management

Strategically placed cover board and/or walkway mats perform the role of channelling foot traffic and managing the loading of materials where desired to protect the roof. (See 'WarmSpan¹ 'Light Traffic' and 'Heavy Traffic' options in the WarmSpan¹ Series section).

Acoustic Performance

WarmSpan¹ has been assessed by Sound Engineers – Marshall Day, for acoustic performance for buildings with specific sound insulation requirements. The pertinent WarmSpan¹ specification for these instances is called WarmSpan¹ 'Acoustic' which includes a 10mm cover board below the membrane.

Resistance-from-Fire Performance

Viking WarmSpan¹ has achieved a 'Group 1S' rating from testing to ISO9705 standards. This is the highest possible rating for resistance from fire in the industry.

Cost Reduction Without Compromise in Durability

WarmSpan¹ is not just a roofing system, it is a tool that facilitates a smarter method of overall building

construction. WarmSpan¹ significantly reduces a building's overall structural costs, without compromising the integrity of the architecture, with a spanning capability between purlins of up to 3.6m (versus the 400mm centred joists required under a heavy 17mm plywood substrate).

On average, Viking WarmSpan¹ is approximately 35% less expensive than a conventional warm roof installed on a timber substrate. The steel tray itself is more cost-effective and significantly faster to install; offering savings on both product and labour costs.

Track Record

Viking WarmSpan¹ has been successfully installed and continues to perform on buildings for organisations such as: Ryman Healthcare; Hilton Hotels; Auckland University of Technology; Inland Revenue; Dunedin Art Gallery and ifly, to name a few.



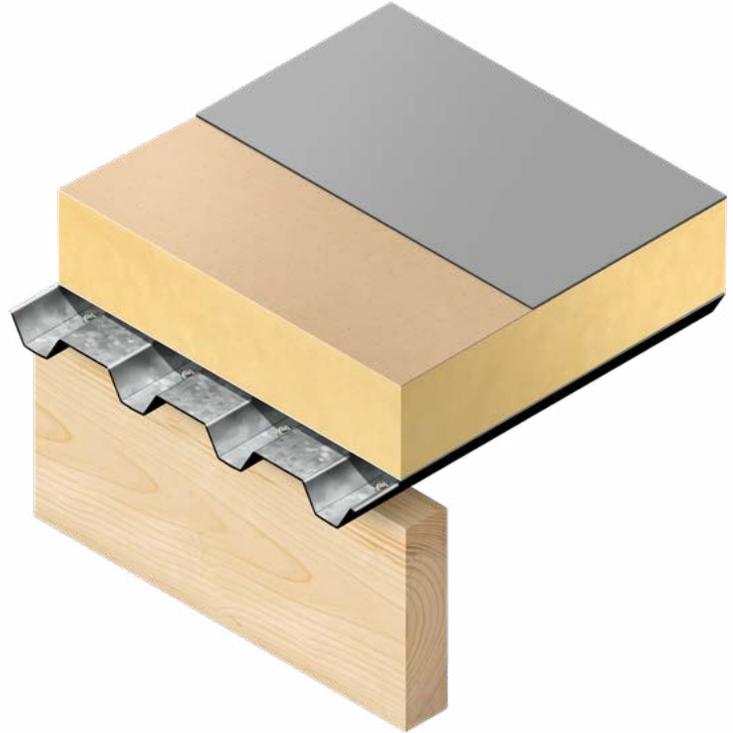
The WarmSpan¹ Series

The WarmSpan¹ series outlined below caters for nearly every type of building requirement

WarmSpan¹ 'Classic'

This is Viking's basic assembly comprising of:

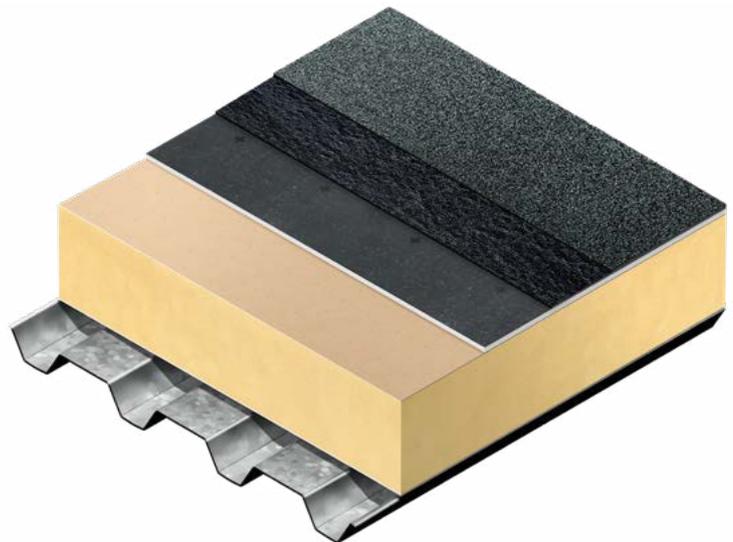
- Either of Viking's CodeMark Certified **membrane systems;**
Viking Torch-On or Enviroclad
- Engineer-tested **steel tray substrate**
(either Steel & Tube ST900, or Metalcraft's Metcom7)
- **Vapour Barrier** – taped system or full self-adhered sheet
- Kingspan TR27 Polyisocyanurate **insulation board**



WarmSpan¹ 'Acoustic'

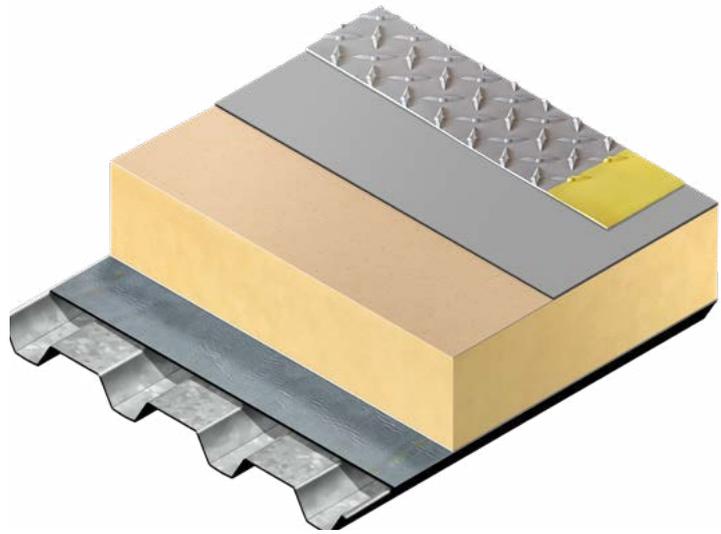
This is Viking's answer to those buildings with specific sound insulation requirements. When used with 75mm Polyiso board and two-layer Torch-On, the WarmSpan¹ Acoustic roof blocks 31 decibels of outside noise (STC rating) and transmits 53 decibels of rain noise. The full assembly includes:

- Either of Viking's CodeMark Certified **membrane systems;**
Viking Torch-On or Enviroclad
- Viking **cover board** 10mm
- Kingspan TR27 Polyisocyanurate **insulation board**
- Engineer-tested **steel tray substrate**
(either Steel & Tube ST900, or Metalcraft's Metcom7)



WarmSpan¹ 'Light Traffic'

While most roofs experience next to no foot traffic apart from the occasional roof inspection; some require protection from regular foot traffic. In the case of those roofs waterproofed with Viking's Enviroclad, a proprietary TPO-weldable walkway mat can be installed in strategically placed parts of the roof to channel visitors along the same protective path way. In the case of Torch-On projects, an extra layer of cap sheet in a different colour; coated with two layers of crystal glaze, will achieve the same result.



The full assembly includes:

- Either TPO-weldable **walkway mat** or an extra layer of a different coloured cap sheet
- Either of Viking's CodeMark Certified **membrane systems**; Viking Torch-On or Enviroclad
- Kingspan TR27 Polyisocyanurate **insulation board**
- Engineer-tested **steel tray substrate** (either Steel & Tube ST900, or Metalcraft's Metcom7)

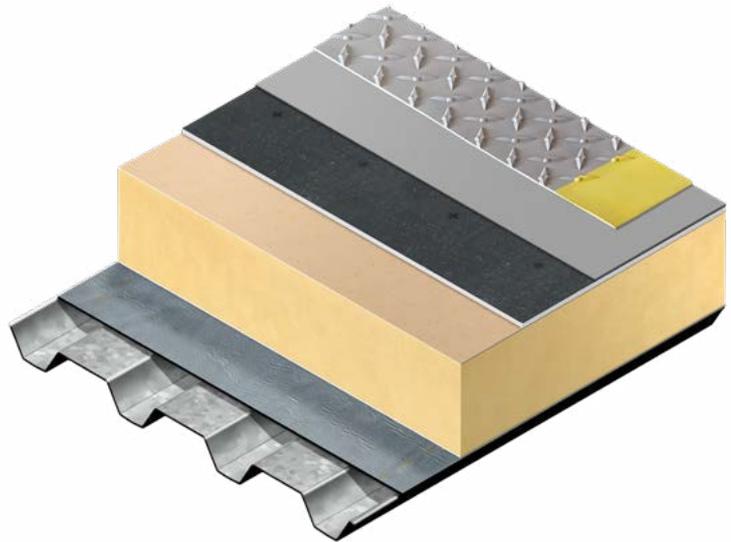


WarmSpan¹ 'Heavy Traffic'

Roofs can be daily work places for some people. In these cases, extra protection is recommended in the form of cover board (with walkway mat on top) installed in specific areas, not just for foot traffic but, for example, where freight is regularly craned onto the roof and stored.

The full assembly includes:

- Weldable **walkway mat** or cap sheet installed on the cover board
- SG Boral Secure Rock **cover board** installed in strategically placed traffic areas
- Either of Viking's CodeMark Certified **membrane systems**; Viking Torch-On or Enviroclad
- Kingspan TR27 Polyisocyanurate **insulation board**
- Engineer-tested **steel tray substrate** (either Steel & Tube ST900, or Metalcraft's Metcom7)



Vapour Control

In Climate Zones 3-6, as defined by NZBC H1/AS1, a vapour control membrane must be installed. This condensation control requirement also applies to specialty buildings such as cool stores and swimming pool complexes.

A vapour barrier can be used with any of the above-listed assembly types and can come in the form of the previously mentioned integrated perimeter tape system, or the full self-adhered membrane layer.



CASE STUDY: Dunedin Art Gallery



Viking WarmSpan¹ provides Dunedin art superior protection

THE CHALLENGE

The Dunedin Public Art Gallery needed a new roof. The existing one was a mixture of profiled metal and membrane installed on both ply and concrete substrates. The building had serious condensation issues and the old butyl membrane seams were letting in water thus deeming the roof-mounted plant susceptible of collapsing through the decaying timber substrate.

The Dunedin City Council set a strict brief for the Art Gallery's new roof, to improve weather tightness and thermal efficiency. It was also paramount that the new roofing solution be installed without disrupting or removing the precious items housed in the building and that it remained operational.

THE RESULT

As well as adhering to the strict brief of the Dunedin City Council, the lightweight nature of Viking WarmSpan¹ was the main reason for final specification; significantly reducing the stress on the building without compromising its structural integrity.

The first stage was to remove recycle; and replace the 550m² of tired rubber membrane and steel roofs. (The old rubber membrane was recycled for use as packaging to protect roofing materials while being transported.)

Viking WarmSpan¹ was installed; incorporating its trapezoidal steel substrate, integrated vapour barrier, and two layers of 50mm polyiso insulation – for ultimate thermal performance and achieving a continuous R-rating of R4. 3.0m wide rolls of heat-



weldable Viking Enviroclad TPO membrane were installed with no end-laps as each roll extended the full width of the roof.

Unlike plywood or concrete substrates, the steel substrate created a 100% watertight cover during the early stages and a permanent roof safety system was also installed to the perimeter.

THE SOLUTION

The precious art work in the gallery is now safe from external moisture and internal condensation thanks to the superb workmanship of the local Viking Approved Applicator. In fact, their workmanship was put to the test when 15 students climbed from a neighbouring building; jumped the razor-wire perimeter and had a party on the newly installed roof. The roof survived comfortably – the robust nature of Viking's materials along with the quality of workmanship proving to be a winning durable combination.

CASE STUDY: Neo Apartments

Height restrictions and low pitch no obstacle for Viking WarmSpan¹

THE CHALLENGE

Leuschke Group Architects alongside CMP Construction required a roofing system for the Neo Apartments; a brand new 1300m² building in Central Auckland.

The building had limited space due to an E10 height plane (maximum height) restriction; therefore an extremely low pitched roof was required in order to remain under the maximum allowable height. Just one degree of fall was all that could be achieved in some areas.

THE SOLUTION

Viking Roofspec was requested by the architects to consult on the project, advising straight away that Viking WarmSpan¹ would be the most efficient system. Seeing it is an integrated warm roof that was easily installed over the steel purlins, whilst adhering to the building's height restrictions and slope limitations.

The specified Viking WarmSpan¹ was made up of three components: a steel substrate; that, when fully sealed, works as an integrated vapour barrier, Kingspan polyiso boards; in this particular case, two layers of 50mm insulation panels installed in a half-drop staggered pattern – as requested by the engineer to ensure ultimate thermal performance and achieving a continuous R-rating of R4, and Viking Gemini APP, a two-layer torch-on membrane installed on top to seal the roof.

Installed by a Viking Approved Applicator, the Neo Apartments WarmSpan¹ system was installed to

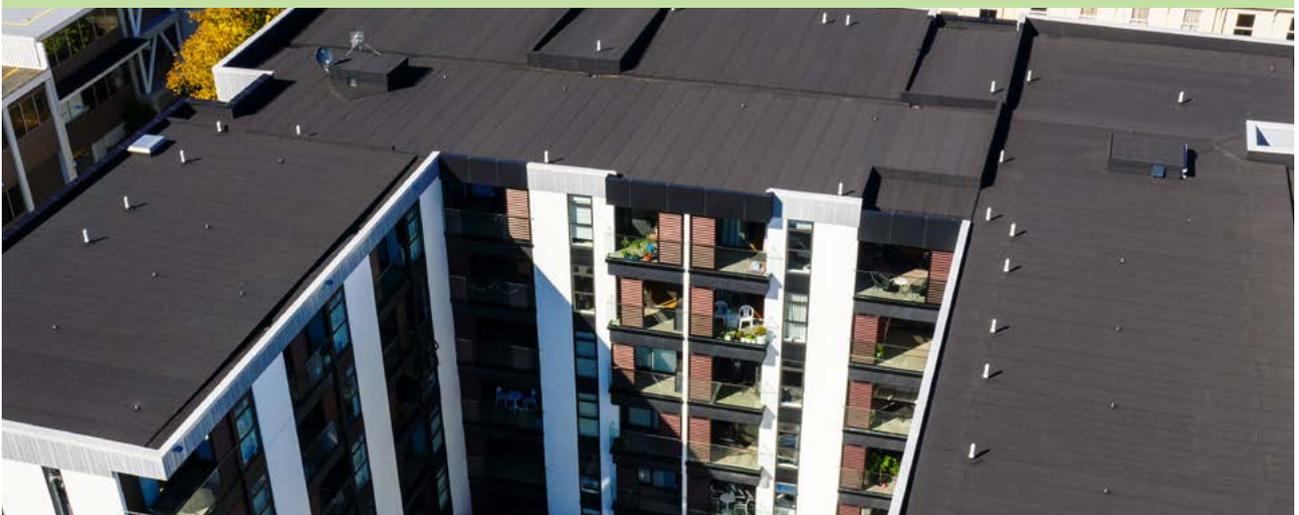


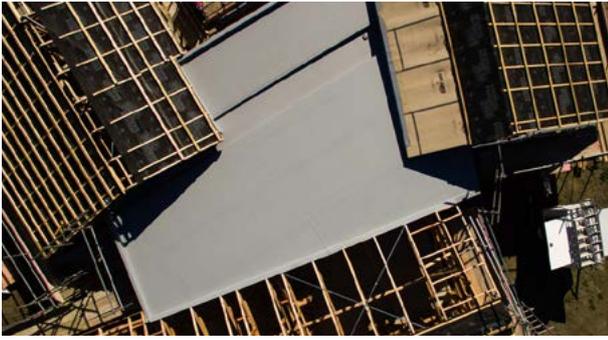
specification, including the use of F.A.S.T adhesive technology in place of screws and plates to avoid penetrating the insulation board. The two layer Gemini APP Torch-On membrane was then applied straight onto the insulation panels.

THE RESULT

Viking worked closely with the architects, engineers, project managers and roofing installers from start to finish, providing advice on the best solution, typical detailing, and onsite installation inspections.

All stakeholders involved were very pleased with the final result. The workmanship of the Approved Applicator was exemplary, and the building consent process was smooth due to Viking WarmSpan¹ being BRANZ Appraised and Viking Gemini Torch-on being CodeMark certified.





Compatible with any Viking Membrane System

Viking WarmSpan¹ is designed specifically for any of Viking's membrane systems. Two have been featured in this brochure, for more information on Viking's other products and solutions visit: www.vikingroofspec.co.nz

Viking Enviroclad

Enviroclad is a mesh-reinforced, wide sheet (up to 3.6m) thermoplastic single-ply membrane with heat-welded seams that create stronger, flatter laps. This technology allows for quicker installation time while assuring long-term watertight integrity.

Viking Enviroclad is both CodeMark certified and BRANZ Appraised and is available in seven colours:

White, Dove Grey, Medium Brown, Rock Brown, Slate Grey, Patina Green and Ironsand.



Viking Torch-On

Viking offer four fit-for-purpose code-compliant Torch-On solutions. A plasticised (APP), rubberised (SBS), hybrid (APAO) and Anti-Root membrane system, all that can be applied directly on to the Kingspan Therma insulation boards.

The Viking Gemini APP, Lybra SBS and Phoenix Super APAO are both CodeMark certified and BRANZ Appraised.

Product Assurance

Viking WarmSpan¹ installed with one of Viking's Membrane systems is supported by a 20-year product warranty backed by the Tiri Group (www.tiri.co.nz).

Projects that represent 'absolute risk minimisation' in design, may also be eligible for Viking's comprehensive Full System Warranty* (also backed by the Tiri Group), that covers both the materials and the approved applicator's installation in one document for the building owner.

*Conditions Apply – for more information on Viking's Full System Warranty, visit: www.vikingroofspec.co.nz



Proven Record

Viking Roofspec has a combination of:

- 50 years' experience successfully supply roofing and decking materials to New Zealand and the Pacific Islands
- alignment to a nationwide network of licensed and approved applicators
- installing only world-class membrane systems that have been certified and appraised by nationally and/or internationally recognised product accreditation bodies

This has been instrumental in ensuring Viking Roofspec has one of, if not the lowest remedial rate in the waterproofing membrane industry.

Quality of Installation - Viking's Licensing Programme

To ensure installation quality of Polyiso insulation panels and absolute watertight finish of the membrane system, only Viking Approved Applicators are eligible to install Viking materials.

Viking Roofspec provides a professional membrane licensing programme. This three stage course includes a full curriculum with both practical application and an all-important theoretical component on the principles of waterproofing. This licensing programme has been designed to ensure a professional standard of installation of Viking systems.

Roofspec
Viking
LICENSED
INSTALLER



World Leading Insulation Manufacturer

The Viking WarmSpan¹ system uses Kingspan Therma insulation panels. Kingspan is a pioneer of building envelope technologies, with over 50 years of experience. Kingspan is one of the world's leading suppliers of panel-based insulation systems. Extensive testing of Kingspan Therma insulation panels has been undertaken to ensure performance quality, backed by a manufacturer guarantee.

Kingspan Physical Properties

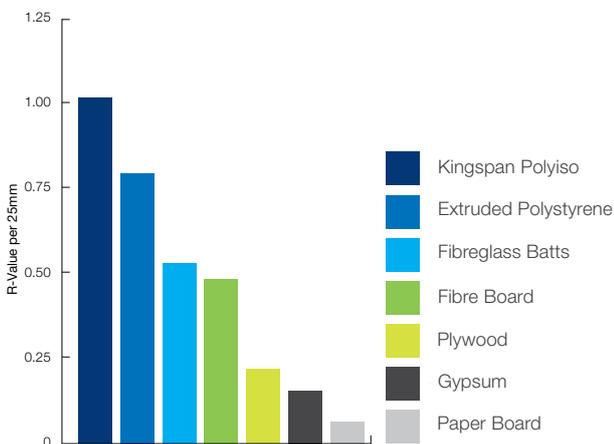
PROPERTY	
Compressive Strength	1.5kPa @ 10% compression (BS EN 826)
Water Vapour Resistance	>300MN s/g-m (BS EN 12086)
Fire Performance Rating	Group 1-S (ISO9705)

Kingspan Polyiso Long Term R-Values*

THICKNESS	PANEL DIMENSIONS	LTRR
25mm	1.2 x 2.4	1.00
50mm	1.2 x 2.27	2.00
75mm	1.2 x 2.27	3.00
100mm	1.2 x 2.4	4.00

*Long Term Thermal Resistance' which is the average R-Value over the life of the product

Insulation Efficiency Comparison (R-Value from new)

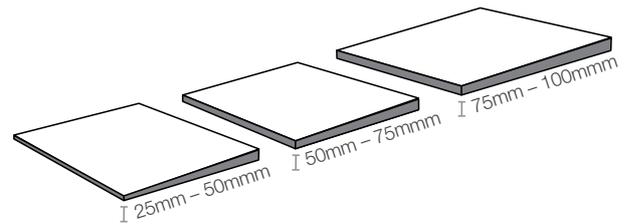


Tapered Board

Using tapered polyiso panels can be a practical solution to promote watershed near to roof outlets, or for some projects, to slope a whole roof rather than re-pitch the flat substrate. Viking has two ways of providing tapered insulation:

Proprietary Tapered Sheets

Viking currently stocks four sizes of tapered polyiso insulation panels; three at 1.4° and one at 2.3°, that can be placed together to create slope.



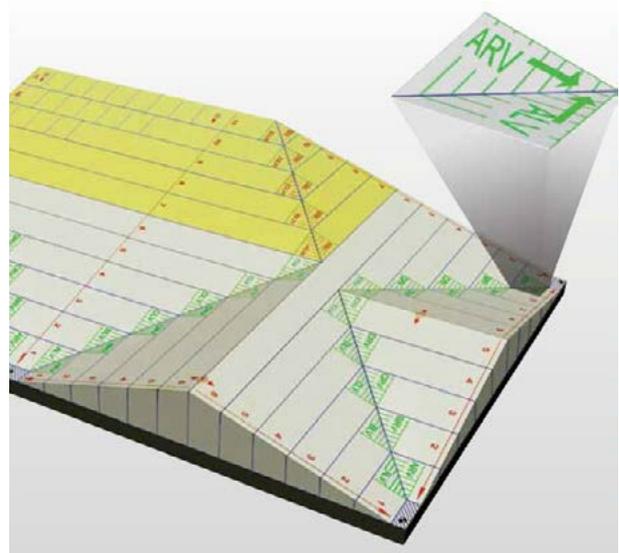
TAPERED POLYISO DETAILS

25mm – 50mm	1.4 degrees	1.2m x 1.2m
50mm – 75mm	1.4 degrees	1.2m x 1.2m
75mm – 100mm	1.4 degrees	1.2m x 1.2m
25mm – 75mm	2.3 degrees	1.2m x 1.2m

Bespoke Tapered Service

Kingspan offers a premium service where a building's plans can be supplied to their head office in the United Kingdom. With the specific slope specified along with the positioning of the hips and valleys, the tapered insulation can be custom manufactured with required falls for simple site-assembly.

A minimum lead-time of 14 weeks will be required after confirmation of order.





**Contact us here
to meet your needs**

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