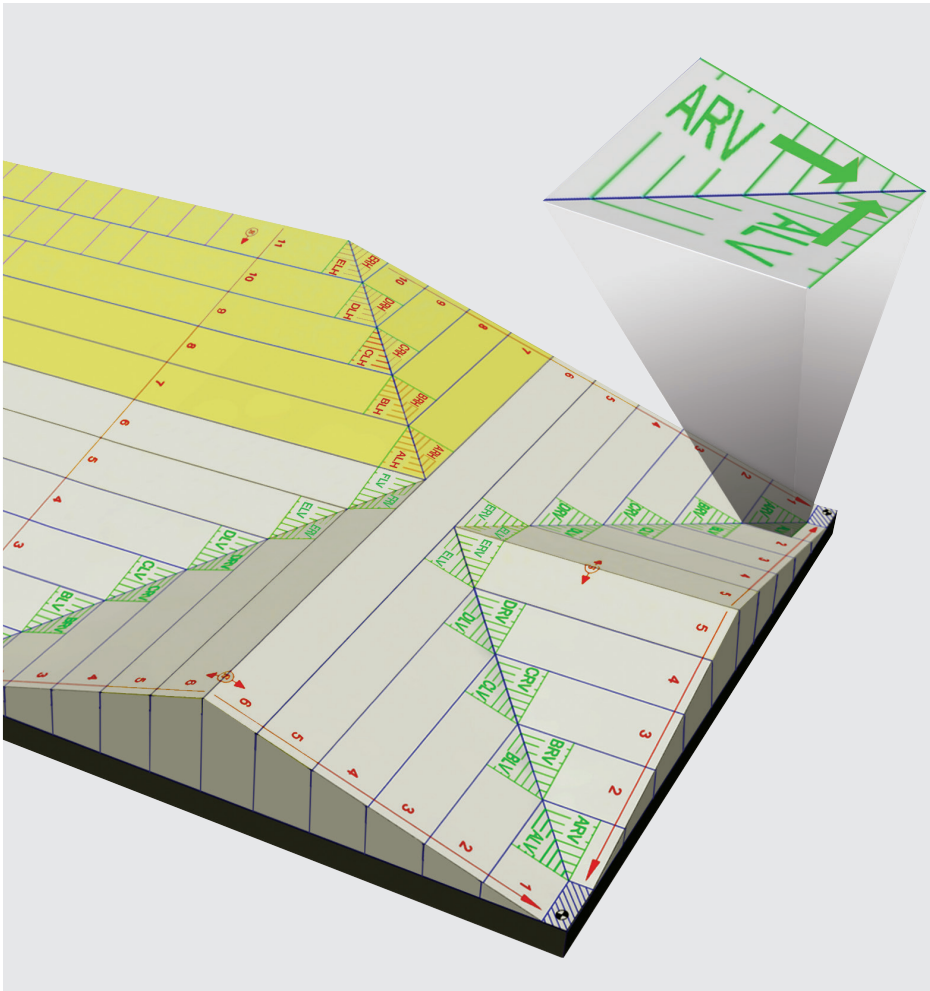
Insulation

AUSTECH building products

Therma™ TT46 & TT47 Tapered Roofing Systems

Tapered Insulation to Enhance Water Drainage from Flat Roofs



- Rigid thermoset insulation
- Kingspan Therma™ TT46 and Therma™ TT47 are certified to Approval Standard FM 4470 for flat roof solutions
- Insulation and drainage in one
- Compatible with most waterproofing and green roof systems
- Provides a practical alternative to screeding, structural falls or furrings
- Load bearing implications for an existing structure can be minimal
- Resistant to the passage of water vapour
- Easy to handle and install
- Ideal for new build and refurbishment

Fibre-free Core

FM APPROVED

Kingspan®

Introduction to Therma™ Tapered Roofing Systems

The Problem

There are many critical factors which must be taken into consideration when designing a flat roof construction.

Two of these factors, insulation and rainwater run–off, can be addressed with one product range – Therma™ Tapered Roofing Systems from Kingspan Insulation Limited.

Many flat roof failures can be traced to the inability of the roof to shed rainwater from its surface, leading to the formation of water ponds. Ponding of rainwater can decrease the design life of a roof by subjecting its waterproofing membrane to attack from thermal stress and growth of plants, moss and algae.

Excessive ponding can also increase roof loading, causing further deflection of the deck, which may add to the problem of drainage. The most effective solution is to eliminate ponding by designing an adequate fall into the roof.

The Solution

Kingspan Therma™ Tapered Roofing Systems have been developed to help solve these problems. Kingspan Therma™ Tapered Roofing Systems comprise tapered insulation boards, flat packer boards, pre–mitred hip and valley boards and the market's leading tapered roofing design service.

Kingspan Therma™ Tapered Roofing Systems products are designed:

- for use under most waterproofing membranes;
- to provide required roof falls; and
- to provide insulation to meet the requirements of Building Regulations / Standards.

The Benefits

Simpler

On new roofs, the use of a Kingspan Therma™ Tapered Roofing Systems eliminates the need to incorporate a fall into the design of the roof deck. On existing roofs, a Kingspan Therma™ Tapered Roofing Systems and a new waterproofing membrane can be laid on top of the original waterproofing. This eliminates the need for stripping down the roof to deck level, and the provision of a vapour control layer may not be required.

NB: The existing insulation / substrate and waterproofing must be sound, in order to provide a satisfactory surface for the Kingspan Therma™ Tapered Roofing Systems, and the risk of interstitial condensation must be fully assessed.

Quicker

Kingspan Therma™ Tapered Roofing Systems avoid a wet trade and do not need time to dry out, saving time in the scheduling of a construction project.

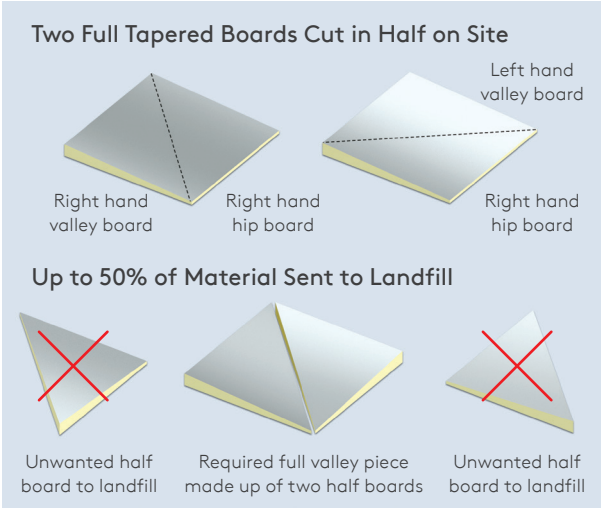
Lighter

Kingspan Therma™ Tapered Roofing Systems are also a lighter weight alternative to screeding and they do not present the risk of an overloaded structure due to excessive screed depths. Kingspan Therma™ Tapered Roofing Systems can be as little as 1.5%, or less, of the weight of a solution using screed to falls with a flat insulation board.

Less Waste

Pre–mitred boards reduce waste from the installation process. Insulation boards are cut in half by Kingspan Insulation in its factory to make mitred hip and valley boards. These are single picked to match the tapered system design so as to reduce waste from cutting hips and valleys on site. Both (hip and valley) halves of the cut board are used and the only waste is the dust generated by sawing. Whereas, when boards are cut on site, up to 50% of the cut boards could be wasted, depending on the particulars of the specific board layout and falls design.

In the Old Days:



The New Order:

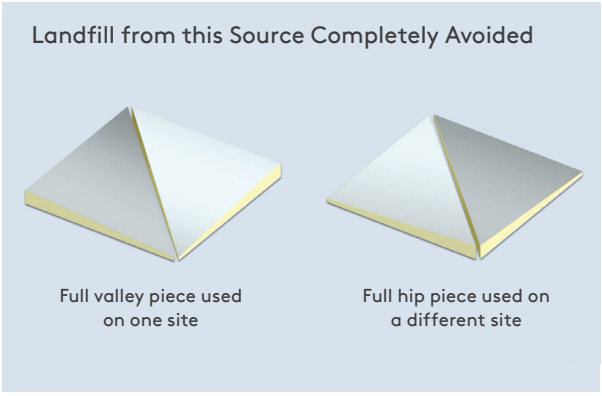
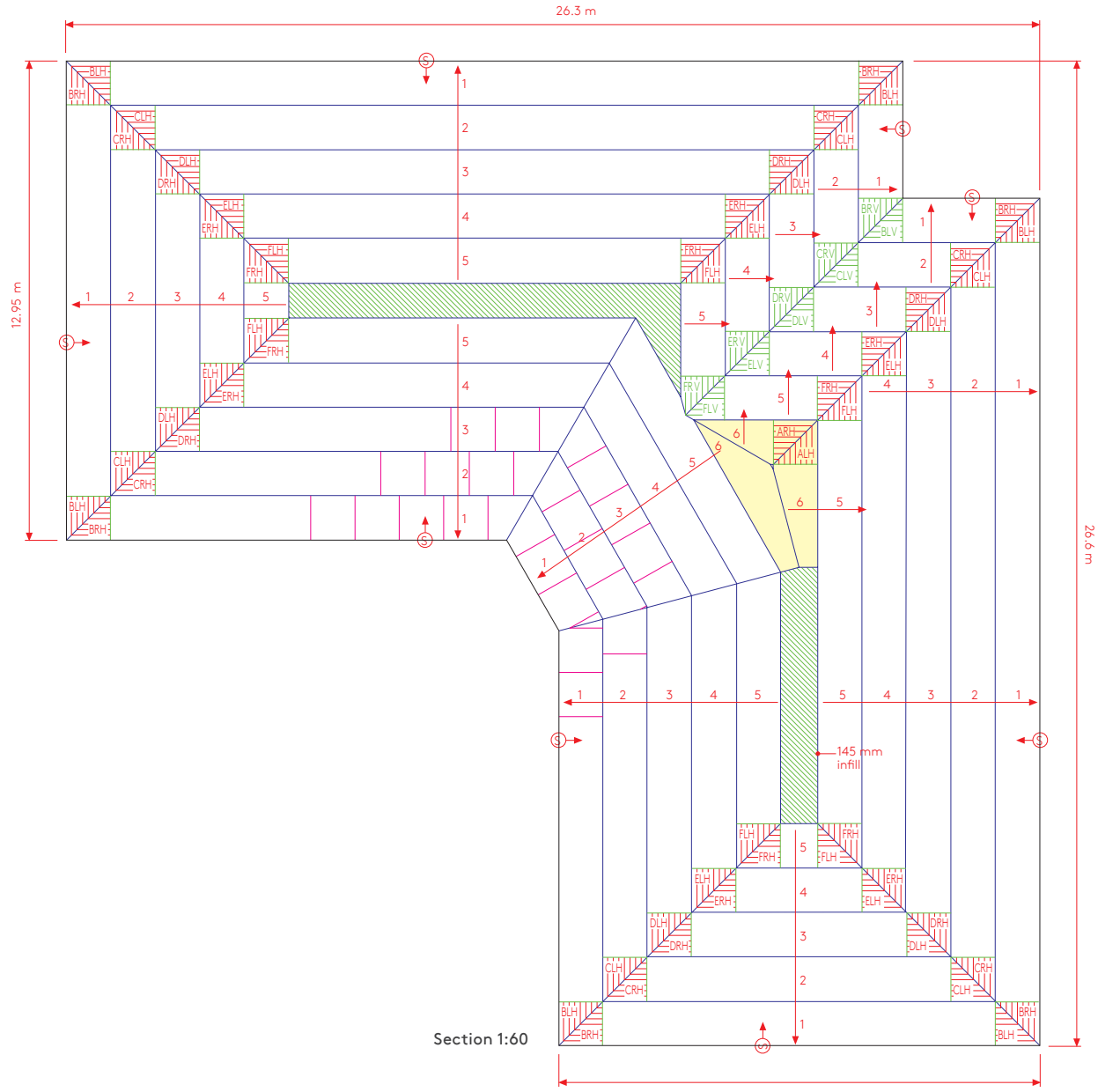


Figure 1. How Kingspan Therma™ Pre–Mitred Tapered Flat Roof Insulation Boards save waste from going to landfill.

Typical Tapered Roofing Design for Kingspan Therma™ TT47



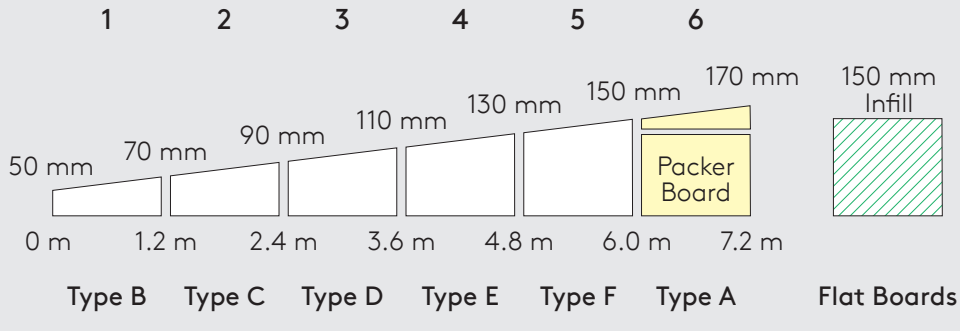


Figure 2.

Typical Constructions
Concrete Deck

Kingspan Therma™ TT46 in a Dense Concrete Deck with Suspended Ceiling

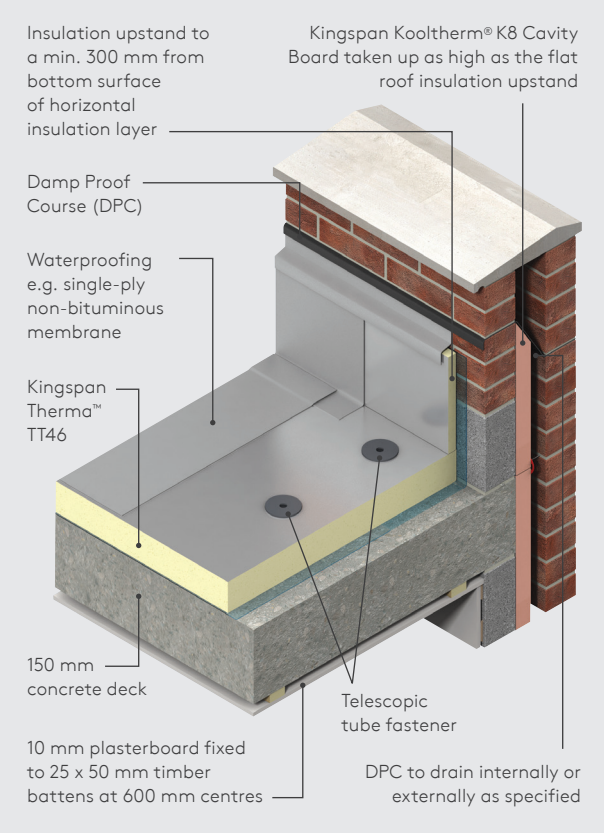


Figure 3. Kingspan Therma™ TT46 in a Dense Concrete Deck with Suspended Ceiling.

Kingspan Therma™ TT47 in a Dense Concrete Deck with Suspended Ceiling

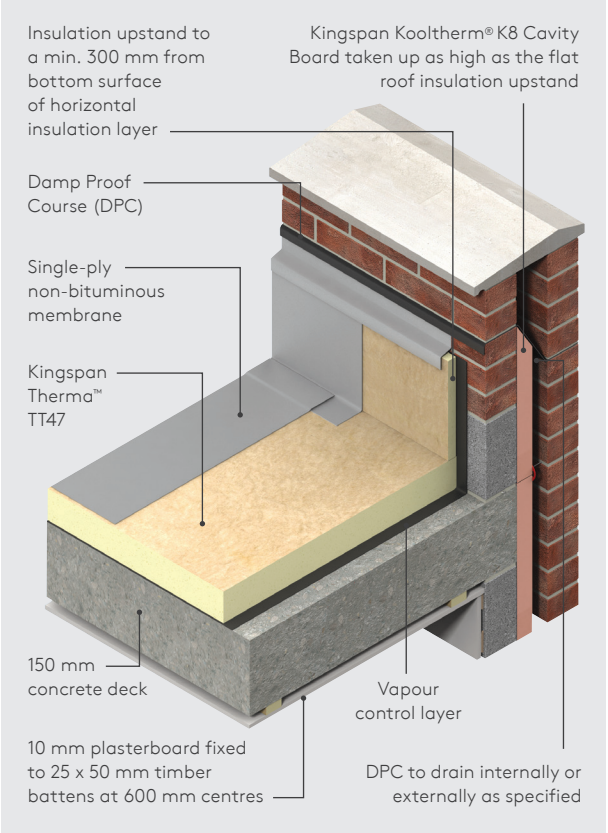


Figure 4. Kingspan Therma™ TT47 in a Dense Concrete Deck with Suspended Ceiling.

Typical Constructions
Metal Deck

Kingspan Therma™ TT46 in a Metal Deck with No Ceiling

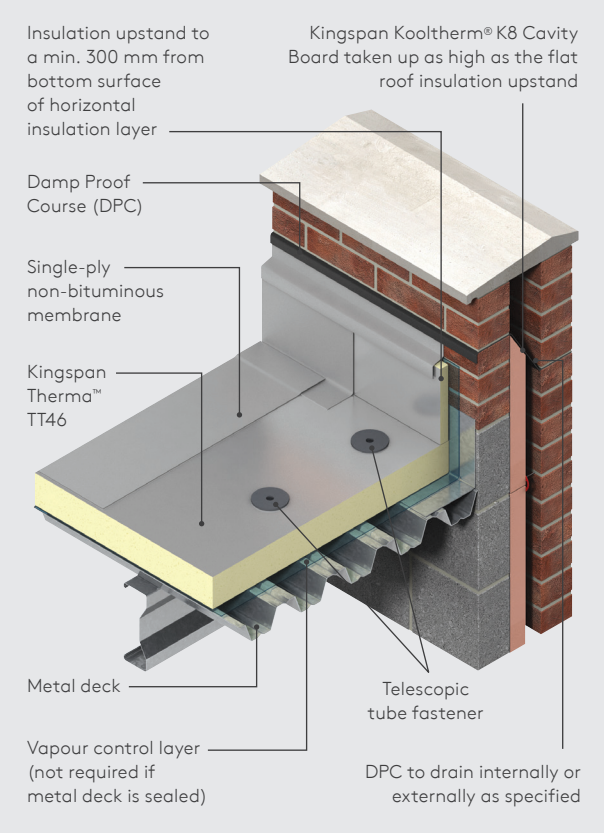


Figure 5. Kingspan Therma™ TT46 in a Metal Deck with No Ceiling.

Kingspan Therma™ TT47 in a Metal Deck with No Ceiling

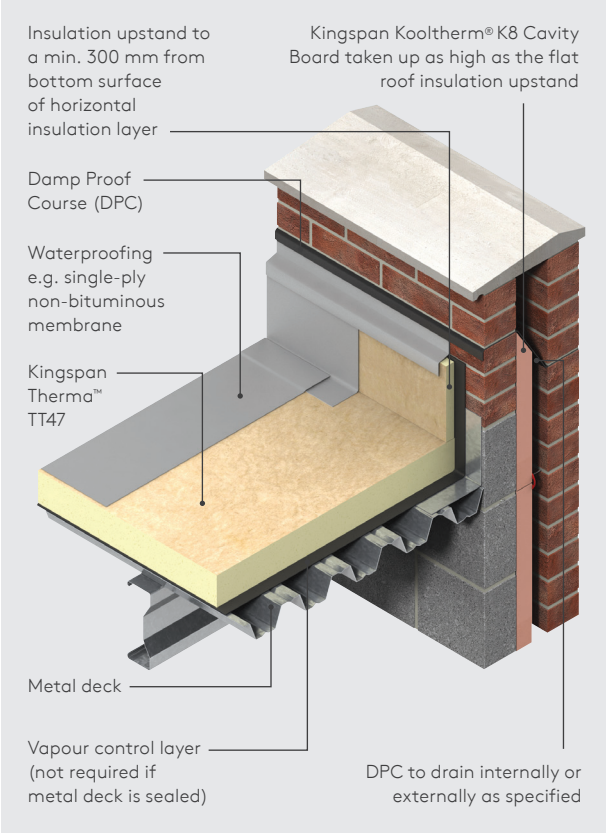


Figure 6. Kingspan Therma™ TT47 in a Metal Deck with No Ceiling.

Product Details

Product Description

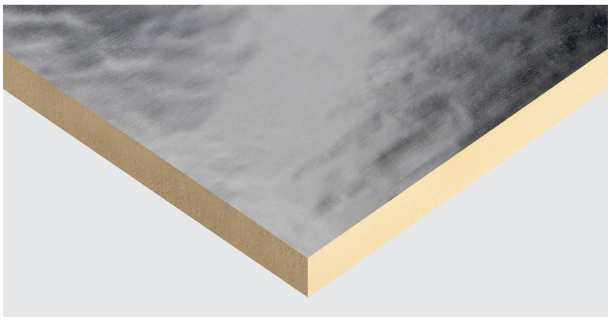


Figure 7. Tapered foil-faced Kingspan Therma™ TT46.

Kingspan Therma™ TT46

Kingspan Therma™ TT46 is a tapered rigid thermoset insulation with a fibre-free core, faced on both sides with a composite foil autohesively bonded during manufacture.

Figure 8. Tapered glass tissue-faced Kingspan Therma™ TT47.

Kingspan Therma™ TT47

Kingspan Therma™ TT47 is a tapered rigid thermoset insulation with a fibre-free core, faced on both sides with a coated glass tissue autohesively bonded during manufacture.

Product Data	
Product Dimensions	1200 mm x 1200 mm (1.44 m²)
Product Thickness	Systems with a 1:30 & 1:40 fall: 60 mm minimum
	Systems with a 1:60 & 1:80 fall: 30 mm minimum
	All systems: Unlimited maximum*
Taper Gradients	Falls of 1:30, 1:40, 1:60 and 1:80**

** For information regarding tapered roof designs incorporating Kingspan Therma™ TT46 or Kingspan Therma™ TT47 in a wider range of falls please contact the Kingspan Insulation Technical Services.

Installation should be in accordance with AS 3999:2015, Section 4 - Safety Requirements for Insulation Installation.

For further details please contact Kingspan Insulation Technical Services.

Thermal Properties

The effective thermal conductivity and thermal resistance of the insulation in a tapered roofing system is specific to the individual roof design. The Kingspan Insulation Tapered Roofing Department (see rear cover for details) performs calculations to determine these values in accordance with Annex C of BS EN ISO 6946:2007 (Building components and Building elements – Thermal resistance and thermal transmittance – Calculation method) as part of the scheme design process.

Specification Guide

Kingspan Therma™ TT46

The roof insulation shall be Kingspan Therma™ TT46 ____ mm thick, comprising a rigid thermoset 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, ISO 50001:2018 and ISO 37301:2021 by Kingspan Insulation Pty Ltd and shall be installed in accordance with the instructions issued by them.

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

Kingspan Therma™ TT47

The roof insulation shall be Kingspan Therma™ TT47 ____ mm thick, comprising a rigid thermoset insulation core with coated glass tissue facings on both sides, manufactured under a management system certified to ISO 9001:2015, ISO 14001:2015, SO 45001:2018, ISO 50001:2018 and ISO 37301:2021 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.

Roof Loading/Traffic

Kingspan Therma™ TT47 is suitable for use on access decks subject to limited foot traffic.

Where frequent foot traffic is liable to occur, it is recommended that the roof surface is protected by specially designed walkways, or a trafficable material.

Spanning on Metal Decks

The designer's attention is drawn to the requirement that insulation boards are of the minimum thicknesses shown in the table on page 7, when used over metal decks with trough openings as shown.

Product Details

Trough Opening	Minimum Insulant Thickness
≤75 mm	25 mm
76 mm – 100 mm	30 mm
101 mm – 125 mm	35 mm
126 mm – 150 mm	40 mm
151 mm – 175 mm	45 mm
176 mm – 200 mm	50 mm
201 mm – 225 mm	55 mm
226 mm – 250 mm	60 mm

Standards and Approvals

Kingspan Therma™ TT46 and Kingspan Therma™ TT47 are compliant with AS/NZS 4859.1:2018 as required by the NCC BCA.

Kingspan Therma™ TT46 and Kingspan Therma™ TT47 are 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	Occupational Health and Safety
ISO 50001:2018	Energy Management
ISO 37301:2021	Compliance Management

Product Testing

Characteristic	Standard	Result
Compressive Stress	AS 2498.3:1993	Exceeds 150 kPa at 10% compression
Water Vapour Resistance	AS 2498.5:1993	Kingspan Therma™ TT46 > 100 MN.s/g Kingspan Therma™ TT47 > 7 MN.s/g

Fire Performance

Kingspan Therma™ TT46 and Kingspan Therma™ TT47, when subjected to the Australian Standard fire test specified in the table below:

Test	Test Method	Result
Early Fire Hazard Properties. (Ignitability, Flame spread, Heat release, Smoke release)	AS 1530.3:1999	Spread of Flame Index: 0 Smoke Development: 2 (TT46); 5 (TT47)

FM Approval

Kingspan Therma™ TT46 and Therma™ TT47 are certified to Approval Standard FM 4470 for flat roof solutions. Not all thicknesses and sizes are covered by the FM Approval.

Further details of the FM Approval listing for Therma™ TT46 and Therma™ TT47 are published on the FM Approvals Approval Guide website at: www.roofnav.com.

To view the listing, search Keyword(s): Therma™ TT46, Therma™ TT47. Please contact the Kingspan Insulation Technical Services department for further confirmation.

Durability

If correctly applied, Kingspan Therma™ 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 Therma™ products are warranted for a period of 10 years for both residential and commercial installations.*

* Subject to the terms of the complete Kingspan Therma™ warranty document which is available upon request or downloadable from www.kingspaninsulation.com.au

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

Contact Details

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