Insulated Roof & Wall Panels

KS1000 TD Data Sheet

Topdek Single Ply Roof Deck

Kingspan®
Insulated Panels

KS1000 TD
Technical Data

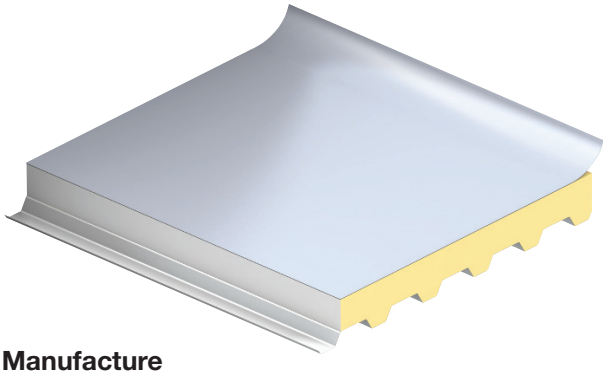
Product Overview

Kingspan offers superior roof panel systems compared to conventional multi-part site assembled systems. They are quicker to install, require less manual labour and provide guaranteed thermal performance.

Topdek is a single component factory pre-engineered roofdeck comprising a high performance single-ply membrane with insulation and a trapezoidal steel structural deck.

Application

Topdek is suitable for all building applications where the roof slope is 1.5º or more after deflection, it is also suitable for curved roof applications convex curve (45m radius) and concave curve (50m radius).



Manufacture

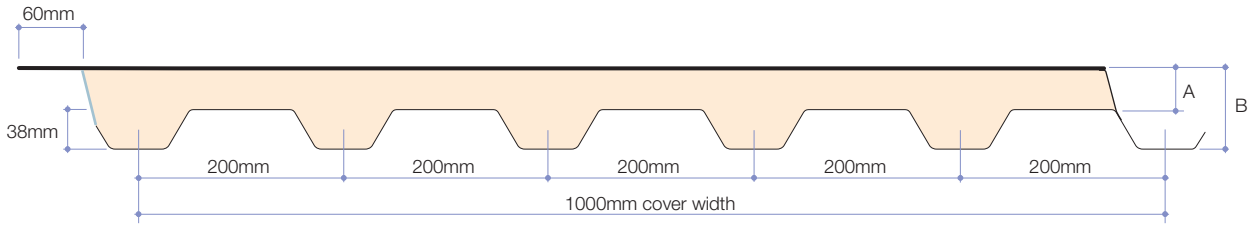
Panels are manufactured in a Kingspan owned facility in the UK. Lead times are typically 10-12 weeks for stocked coatings and colours. Non stocked coatings/colours require extra lead time.

Panel Performance

Panel Properties and Thermal Performance								
A - Core Thickness (mm)	34	46	68	71	80	91	100	120
B - Overall Dimension (mm)	72	84	106	109	118	129	138	158
R Values (m^2/kW)	2.22	2.70	3.86	4.00	4.35	5.00	5.55	6.67
Weight kg/m^2 0.7 liner	10.7	11.1	12.0	12.1	12.5	12.9	13.3	14.1

Available Lengths

Standard lengths are from 2m to 11.8m including panel end lap. (Eg. 11.740m + 0.060m lap).
Factory made cutbacks are available in 0.060m or flush.
KS1000 TD can be manufactured in left to right handed (TDY), right to left handed (TDX) or butt ended (TDP).



NZBC

The KS1000 TD panel is compliant with the following clauses of the NZBC, when Kingspan standard details are utilised:

B1 Structure B2 Durability C Fire
E2 External Moisture H1 Energy Efficiency

Internal Surface Finish (NZBC Cl 4.17)	
Standard Details	Firewall Details
Group 2S	N/A

Sprinkler Code NZS 4541:2007

The Sprinkler Standard NZS 4541:2007 contains levels of sprinkler protection required for buildings constructed with “Approved” and “Not Approved” panels - refer to section 212 and Appendix J.

Kingspan PIR panels are classed as “approved” as they have LPBC approval.

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Insurance

Kingspan panels have achieved FM Global

- LPCB Certificated (LPCB 1181)

Acoustic Performance

For sound transmission reduction, KS1000 TD panels have a single figure weighted sound reduction index (SRI) of Rw=23dB. For New Zealand specific acoustic solutions contact Kingspan Technical Services.

Frequency (Hz)	125	250	500	1000	2000	4000	Rw
SRI (dB)	18	18	17	23	30	40	23

Materials

Exterior Weather Sheet

- High performance single ply membrane
- Standard thickness - 1.5mm
- Standard Colour - light grey

Insulation Core

- Polyisocyanurate (PIR), with zero Ozone Depletion Potential (Zero ODP). Available in both FM Global and LPCB certificated PIR Core.
- PIR foam is a thermosetting material. It does not melt, flow or drip when exposed to fire. It will form a strong char that helps protect the foam core and prevent flame spread within the panels.

Internal Liner Sheet

- 0.7mm S220GD+ZAhot dip zinc alloy coated steel to BS EN10326
- Colour – Standard White Liner
  - other colours available on extended lead time and price
  - AQUAsafe (White) stocked in limited quantities for High Humidity Environments

Fabrication

Kingspan also provides profiled foam closers, butyl tapes, insulated gutters, and other fabrication items.

Product Selection Assistance

Sales representatives are available nationwide to answer queries on product options, assist with detailing, spans, colour swatches and other queries. They can also provide early stage budget estimates and co-ordinate the provision of project specifications.

Technical Assistance

Our technical team is available to provide specific advice on panel spans, product specifications, standard and bespoke detailing, panel optimisation, project specific acoustic solutions, panel guarantees, thermal condensation risk calculation along with general building science cladding advice.

Kingspan Technical Services can provide ‘side by side’ assistance with regard to project detailing, attending design meetings, providing training and undertaking site visits when required.

Guarantees

Kingspan panel and membrane guarantee covers the structural, thermal and membrane performance for a typical period of up to 15 years. Kingspan will provide product guarantees on an individual project basis.

Kingspan Panel Guarantee covering the structural, thermal and membrane performance for a period of up to 15 years.

Environmental

The KS1000 TD roof panels have a Green Guide A + rating as per the BRE Global "The Green Guide to Specification", Green Guide 2008 ratings. Green Guide element no. 81255001.

Biological

Kingspan panels are normally immune to attack from mould, fungi, mildew, and vermin. No urea or formaldehyde is used in the construction, and the panels are not considered deleterious to health.

Quality and Durability

KS1000 TD panels are manufactured to ISO 9001 standards from the highest quality materials, using state of the art production equipment to rigorous quality control standards, ensuring long term reliability and service life. The panels have also been manufactured under Environmental Management System Certification ISO 14001. Compliant to BS OHSAS 18001 Occupational Health and Safety.

Delivery & Packing

Standard Packing

Kingspan roof panels are stacked horizontally.
The number of panels in each pack depends on panel thickness.

Delivery

All deliveries (unless indicated otherwise) are by road transport to project site by flat bed truck for off loading by crane or fork hoist. Off loading is the responsibility of the installer.
Handling guidelines are available from Kingspan Technical Services.

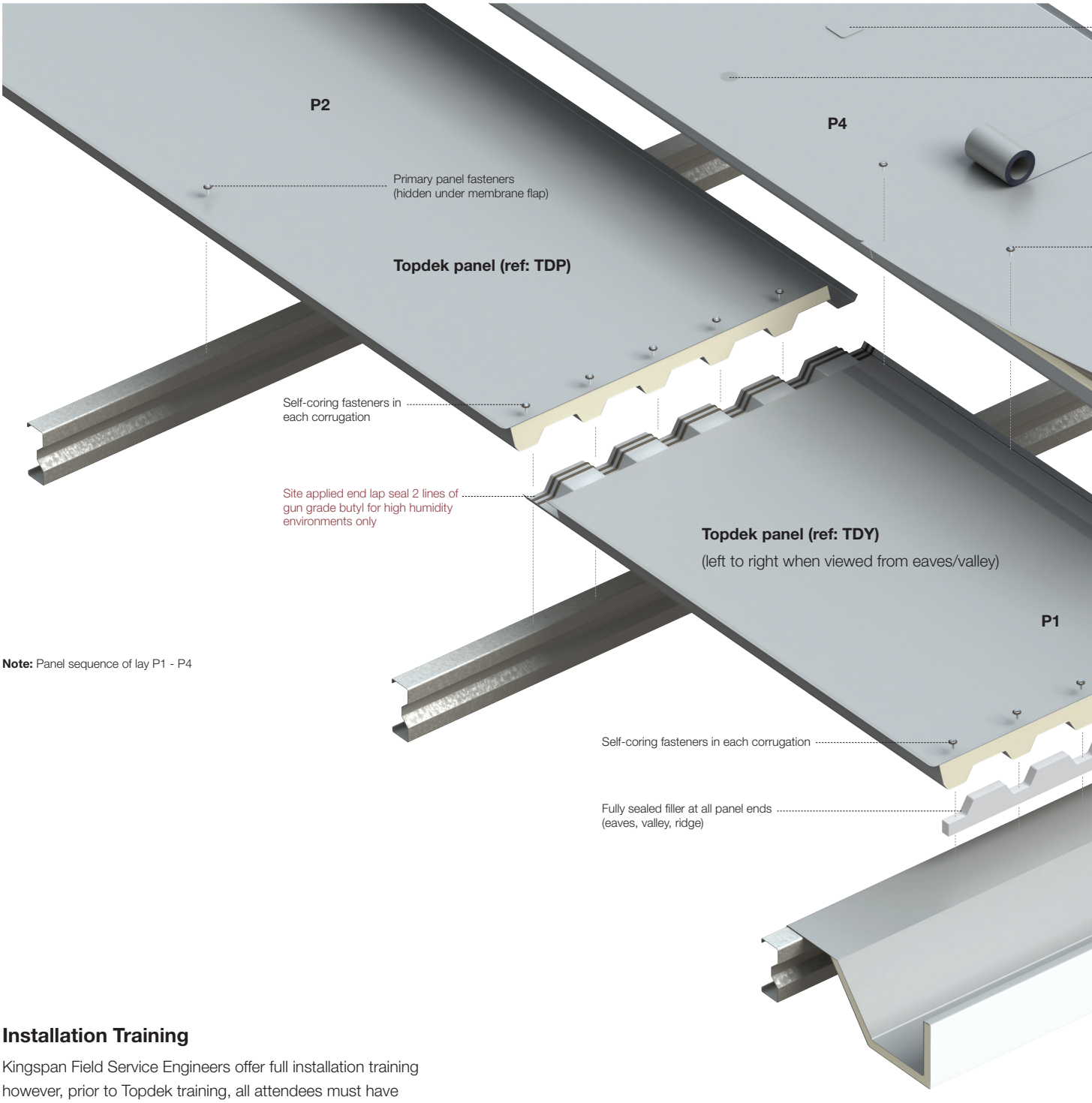
Site Installation Procedure

A site assembly instruction brochure is available from Kingspan Technical Services.

Kingspan Insulated Panels

Installation

KS1000 TD Installation Details

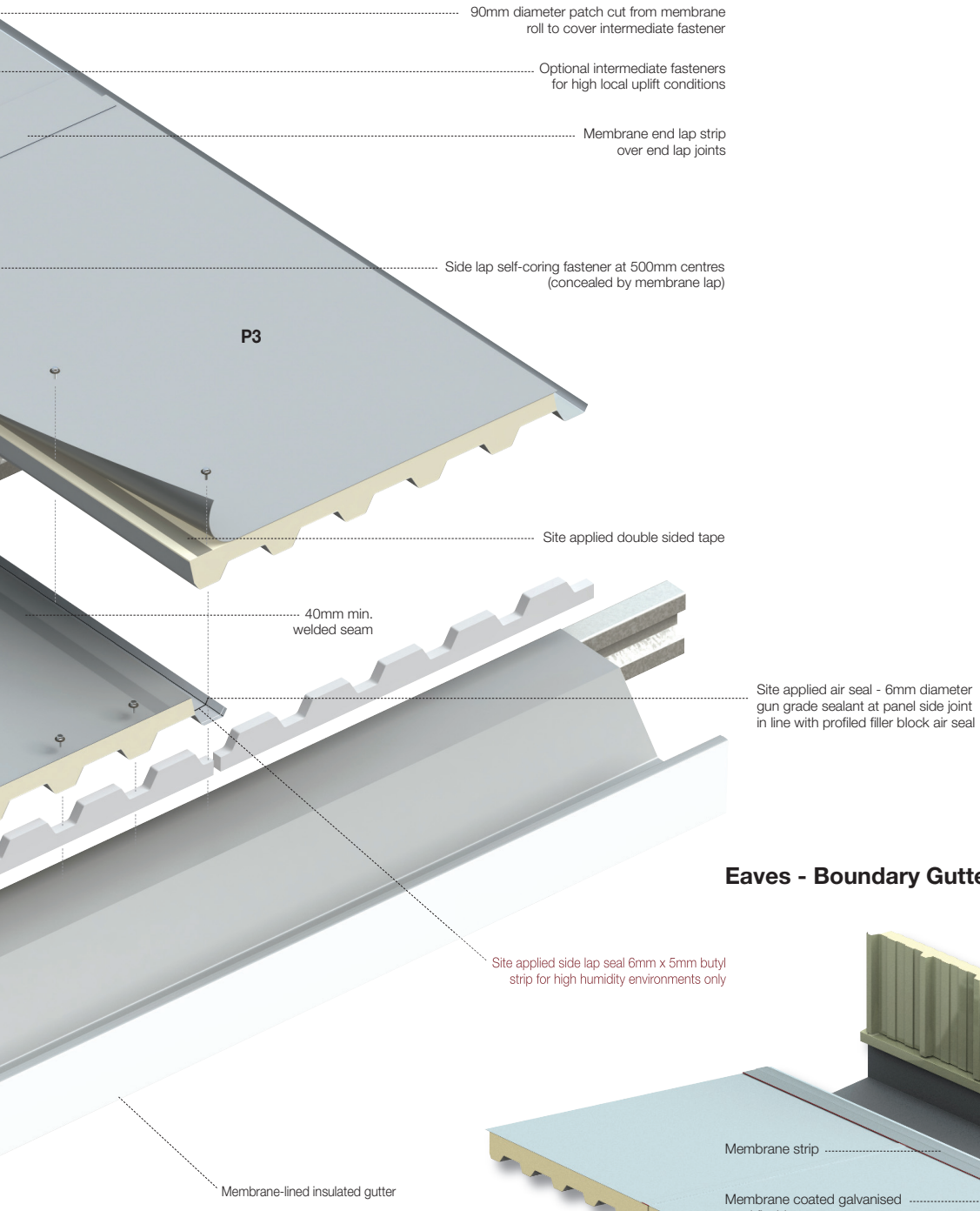


Note: Panel sequence of lay P1 - P4

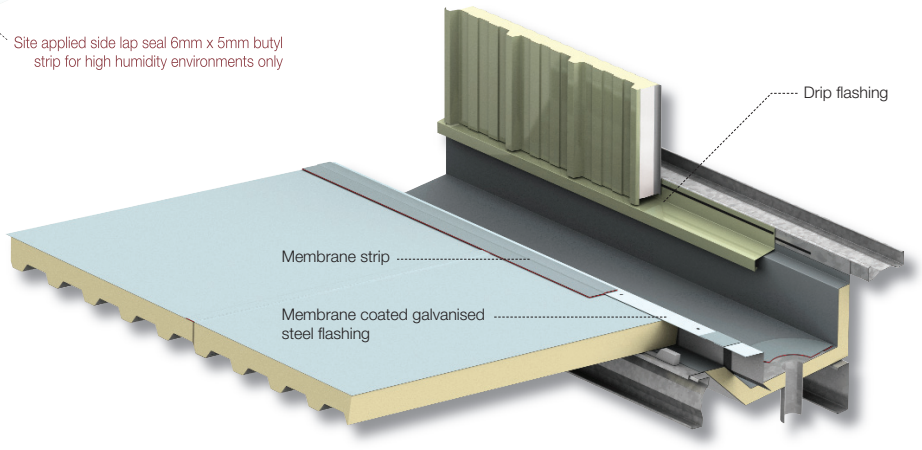
Installation Training

Kingspan Field Service Engineers offer full installation training however, prior to Topdek training, all attendees must have undergone membrane welding training from the supplying membrane manufacturer and provide a copy of the certificate from the supplier, i.e Sika.

Installation



Eaves - Boundary Gutter



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KS1000 TD
Roof Span Tables

Roof Span Tables

Outer Sheet membrane, Inner Sheet 0.7mm (Steel)

Single Span Condition 

Load Type	Span L in metres						
	1.0	1.2	1.4	1.6	1.8	2.0	
	Uniformly distributed loads kN/m²						
	Ultimate Limit State (ULS)						
Pressure	7.87	5.43	3.95	2.99	3.42	1.87	
Suction - One Fastener	5.05	4.23	3.64	3.04	2.42	1.98	
Suction - Two Fasteners	7.64	5.34	3.95	3.04	2.42	1.98	
Suction - Three Fasteners		7.64	5.34	3.95	3.04	2.42	1.98
	Serviceability Limit State (SLS)						
Pressure	5.19	2.96	1.82	1.18	0.80	0.55	
Suction	7.87	5.43	3.83	2.60	1.85	1.38	

Double Span Condition 

Load Type	Span L in metres						
	1.0	1.2	1.4	1.6	1.8	2.0	2.2
	Uniformly distributed loads kN/m²						
	Ultimate Limit State (ULS)						
Pressure	5.92	4.34	3.31	2.60	2.09	1.71	1.42
Suction - One Fastener	2.09	1.76	1.52	1.34	1.21	1.10	1.01
Suction - Two Fasteners	4.07	3.41	2.93	2.58	2.31	2.09	1.75
Suction - Three Fasteners	6.04	5.05	4.18	3.22	2.56	2.09	1.75
	Serviceability Limit State (SLS)						
Pressure	5.92	4.34	3.31	2.60	2.09	1.48	1.09
Suction	Use ULS as default suction based on number of fixings being used						

Notes:

- Values have been calculated in accordance with AS/NZS 1170.0, and also take into account the methods described in EN 14509:2006.
- The serviceability limit state is defined by local buckling, bending or crushing failure at an intermediate support or the exceedance of a specified deflection limit.
- A deflection limit of $L/100$ was used.
- The allowable steelwork tolerance between bearing panels of adjacent supports is +/- 5mm, or $L/600$ whichever is the less.
- The actual wind suction load resisted by the panel is dependant on the number of fasteners used and the support width as well as the fastener material. This table is based on a support width of 60mm and 1.5mm thick steel purlins.
- Load span tables for the panel specifications not shown are available from Kingspan Technical Services.
- A minimum of three fixings must be used at all end laps.

Case Studies

Tawa Pool, Wellington NZ

- **Refurbishment · Roof:** KS1000 TD

Land Rover Dealership, UK

- **New build · Roof:** KS1000 TD

Kingspan Insulated Panels

Kingspan Insulated Panels
15 Ron Guthrey Road, Christchurch, New Zealand
Freephone (0800) 12 12 80
t: +64 (03) 358 7536 f: +64 (03) 358 7539 e: info@kingspanpanels.co.nz www.kingspanpanels.co.nz

For the product offering in other markets please contact your local sales representative or visit www.kingspanpanels.com

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