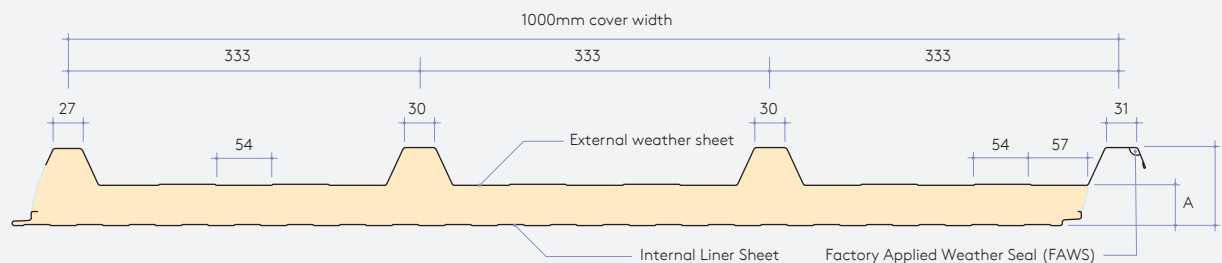


# Trapezoidal Roof Panel (KS1000 RW) Data Sheet



## Product overview

Kingspan roof panel systems present a superior solution compared to conventional multi-part site assembled systems. Kingspan KS1000 RW is manufactured with an ECOsafe and FIREsafe core. They are quicker to install, require less manual labour and are designed to meet thermal building regulations compliance. This product is supplied with a Factory Applied Weather Seal (FAWS).



Note: Dimensions are nominal. Actual dimensions will vary due to manufacturing tolerances. Precise dimensions must always be measured from actual samples. All dimensions in millimetres.

## Panel Properties

A – Core Thickness (mm)	40	60	70	100	120
B – Overall dimension (mm)	75	95	105	135	155
Weight kg/m <sup>2</sup> 0.5mm Ext. Steel / 0.4 Int. Steel	9.9	10.7	11.1	12.3	13.1



## Application

The Kingspan Trapezoidal roof panel system is suitable for most new build and refurbishment building applications as a roofing element. It is a through fixed system which can be used for building applications with roof slopes of 3° or more after deflection. Specifications are available for roof slopes less than 3° on request from Kingspan Technical Services. A choice of exterior and interior finishes caters for a range of colours and coatings in standard and high humidity environments.

## Insulation Core

The core of the KS1000 RW panel is an environmentally sustainable ECOsafe and FIREsafe Polyisocyanurate (PIR) insulation which is not-deleterious with zero Ozone Depletion Potential. The rigid PIR insulation is closed cell and CFC/HCFC-free.

The core is auto adhesively bonded to the external and internal faces during manufacture providing strength and rigidity to the panels.

## Thermal Performance

Panel Nominal Thickness (mm)	Total R-Value (m <sup>2</sup> K/W)	
	Heat Flow Out (Winter)	Heat Flow In (Summer)
40	2.15	2.03
60	3.15	2.96
70	3.67	3.43
100	5.16	4.81
120	6.13	5.71

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. KS1000 RW is manufactured, tested and packaged in conformance with AS/NZS 4859.1:2018

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## Declared Thermal Performance

Declared Thermal Conductivity ( $\lambda$  Value) 0.023 W/m.K at 23°C  
(Insulant Thickness 40mm)

Declared Thermal Conductivity ( $\lambda$  Value) 0.022 W/m.K at 23°C  
(Insulant Thickness  $\leq$  60mm)

Panel Nominal Thickness (mm)	Product R-Value (m <sup>2</sup> K/W)	Product U-Value (W/m <sup>2</sup> K)
40	1.91	0.52
60	2.87	0.35
70	3.36	0.30
100	4.79	0.21
120	5.73	0.17

Declared Product R-Value is calculated in accordance with AS/NZS 4859.1:2018 as required for compliance to the National Construction Code 2019.

## Fire Performance

Kingspan products have an extensive fire testing background, which covers both insurance and regulatory areas. When tested to AS/NZS 1530.3 for fire hazards, Kingspan panels achieved the fire hazard results as outlined in the below table.

Ignitability Index	0
Spread of Flame Index (SFI)	0
Heat Evolved Index	0
Smoke Development Index (SDI)	2

The Kingspan Trapezoidal Roof Panel meets the requirements of the BCA Specification C1.10 AS 5637.1 as a Group 2 product, when tested to ISO 9705.

## Bushfire

Kingspan KS1000 RW Roofing system has been tested in accordance with AS1530.8.1 2007 for full scale bushfire roofs and is suitable for use in Bushfire locations up to BAL 40 (AS 3959-2018). Please contact Kingspan Technical Services for further information.

## FM Approval

Kingspan KS1000 RW Roof systems are FM Global FMRC 4880 Approved. Kingspan Trapezoidal roof panels (KS1000 RW) are FM Global 4471 certified roofing product.

## Acoustic Performance

For a sound transmission reduction, Kingspan panels have a weighted sound reduction index (SRI) of RW =24-26. For specific acoustic information contact Kingspan Technical Services.

Frequency (Hz)	SRI (dB)
63	13
125	17
250	21
500	26
1000	26
2000	26
4000	42
8000	52
Rw	24

## Product Tolerances

Length	<6m	6-12m	>12m
Length	±4mm	±6mm	±8mm
Width	±3mm	±3mm	±3mm
Thickness	<40mm	60mm-100mm	
Thickness	±2mm	+3mm/-2mm	
Squareness	±0.5%mm of width		±0.5%mm of width

## Available Lengths

Standard Lengths	2.0m – 13.7m
Longer Lengths*	13.7m – 16.1m
Shorter Lengths*	0.5m – 1.99m
Transported by Rail	12.0m
Export of Australia	11.8m

Notes: \* Additional costs and transport restrictions will apply for non-standard lengths.

## Panel Cut Backs

Minimum Cut Back	50mm
End Lap	150mm
Eaves Cut Back	75mm
Maximum Cut Back*	200mm

Notes: \* For panels that exceed 13.7m and/or for cut backs larger than 150mm the core material and the steel at the cut back will not be removed and will have to be carried out on site by the installer.

# Trapezoidal Roof Panel (KS1000 RW) Data Sheet



## Environmental

Kingspan has undertaken a Life Cycle Assessment of the Trapezoidal roof system (KS1000RW), and have published an Environmental Product Declaration (EPD) on their performance. The result documents that the KS1000RW insulated panels are listed as a Type 3 Ecolabel with the Australian EPD Programme.

## Biological

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

## Quality & Durability

Kingspan Trapezoidal roof panels are manufactured from the highest quality materials, using state of the art production equipment to rigorous quality standards, ensuring long-term reliability and service life. The manufacturing plant where the product is made is fully compliant with ISO 9001(Quality), ISO 14001(Environmental) and OHSAS 18001 (Health and Safety).

## Seals

All panel joints have a factory applied weather seal fitted on the under side of the side-lap to automatically seal the joint between panels.

## Cyclonic Applications

A significant part of the Australian coastline is deemed to be in cyclonic regions. As a result of this, Kingspan have carried out testing on the KS1000 RW in accordance with the requirements of the BCA B1.2 for low-high-low performance requirements. For further details please contact Kingspan Technical Services.

## Site Installation Procedure

Site assembly instructions are available from Kingspan Technical Services. Kingspan recommend that the appointed contractor attend the product installation training course prior to installation, which is provided by Kingspan Field Services.

## Materials

### Exterior Weather Sheet

Substrate to be minimum 0.5mm thick coated steel to AS 1397.

### Internal Liner Sheet

Substrate to be minimum 0.4mm thick coated steel to AS 1397.

- **CLEANSafe15** – The coating has been developed for use as the internal lining of insulated panels. Standard colour is “bright white” with an easily cleaned surface.
- **AQUAsafe** – The Kingspan AQUAsafe range has been specifically developed for applications that require long term corrosion resistance and durability, in facilities such as washrooms / fabric manufacturing, agricultural and livestock facilities.
- **AQUAsafe55** – The Kingspan AQUAsafe55 range has been specially developed for swimming pools and leisure centres that require long term corrosion resistance and durability.
- Other finishes are available on a project specific basis.

## Accreditations



# Trapezoidal Roof Panel (KS1000 RW) Data Sheet



## Spans

Span capability of composite systems can depend on a number of external factors. The following table is based on light colour panels. For darker colours contact Kingspan Technical Services.

### NOTES:

1. The published span table is calculated using methods described in BS EN 14509:2013, taking imposed load (excluding snow), temperature and creep into account. Values are assessed for compliance with the loading requirements of AS/NZS 1170.0:2002, AS/NZS 1170.1:2002 and AS/NZS 1170.2:2011.
2. Uniform distributed load given in the span table refers to the wind load acting on the panel.
3. Values have been calculated for light coloured panels.
4. 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.
5. Deflection limit for pressure loading is L/200 and suction loading is L/150.
6. The allowable steelwork tolerance between bearing planes of adjacent supports is  $\pm 5$  mm.
7. The wind suction load resisted by the panel is also dependant on the number and type of fasteners used, and the supporting element. For further information contact Kingspan Technical Services.
8. Span table values have been calculated based on a support width of 60 mm.
9. When installed as per Kingspan recommendations, the panels are accessible for short term maintenance access with imposed load allowance of 0.25 kPa or 1.4 kN as specified in AS/NZS 1170.1:2002.

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## Australia

### Kingspan Insulated Panels Pty Ltd

38-52 Dunheved Circuit, St Marys  
NSW 2760 Australia

Tel +61 (02) 8889 3000

Fax +61 (02) 8889 3099

Email [info@kingspanpanels.com.au](mailto:info@kingspanpanels.com.au)

Web [kingspanpanels.com.au](http://kingspanpanels.com.au)

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## Span Table – External Sheet 0.5mm Steel/Internal Sheet 0.4mm

Single Span Condition															
Panel Thickness mm	Load Type	Span, L (m)													
		1.0	1.4	1.8	2.2	2.6	3.0	3.4	3.8	4.2	4.6	5.0	5.4	5.8	6.2
Uniformly distributed loads (kN/m <sup>2</sup> )															
Ultimate Limit State															
40	Pressure	8.67	5.45	3.72	2.67	2.00	1.53								
	Suction	11.00	7.04	4.94	3.54	2.51	1.88								
60	Pressure	10.59	7.19	5.19	3.89	2.97	2.33	1.86	1.50						
	Suction	14.15	9.81	6.90	4.52	3.20	2.40	1.88	1.52						
70	Pressure	11.21	7.83	5.78	4.40	3.41	2.71	2.18	1.78	1.48					
	Suction	15.39	10.99	7.58	4.97	3.52	2.64	2.07	1.67	1.37					
100	Pressure	13.08	9.75	7.55	5.94	4.74	3.83	3.12	2.60	2.18	1.83	1.56			
	Suction	19.11	14.54	9.63	6.32	4.49	3.36	2.63	2.12	1.74	1.47	1.26			
120	Pressure	12.99	9.93	7.86	6.27	5.07	4.14	3.42	2.85	2.37	2.01	1.71	1.47	1.26	1.11
	Suction	18.9	14.73	10.59	6.96	4.98	3.75	2.91	2.34	1.92	1.62	1.38	1.2	1.05	0.95
Serviceability Limit State															
40	Pressure	11.08	5.12	2.72	1.55	0.91	0.55								
	Suction	14.74	6.95	3.83	2.31	1.49	1.00								
60	Pressure	13.84	7.04	4.07	2.50	1.59	1.03	0.68	0.44						
	Suction	18.56	9.65	5.79	3.75	2.55	1.80	1.31	0.98						
70	Pressure	11.30	7.77	4.64	2.94	1.93	1.30	0.89	0.60	0.50					
	Suction	14.50	10.70	6.63	4.42	3.09	2.24	1.67	1.27	1.10					
100	Pressure	-	9.96	6.33	4.26	2.96	2.09	1.50	1.08	0.79	0.57	0.41			
	Suction	-	13.85	9.14	6.44	4.72	3.55	2.73	2.14	1.70	1.38	1.13			
120	Pressure	-	11.65	7.94	5.76	4.28	3.27	2.55	2.02	1.61	1.3	1.07	0.87	0.71	0.58
	Suction	-	11.85	8.05	5.98	4.56	3.5	2.8	2.26	1.86	1.55	1.3	1.1	0.95	0.83
Double Span Condition															
Panel Thickness mm	Load Type	Span, L (m)													
		1.0	1.4	1.8	2.2	2.6	3.0	3.4	3.8	4.2	4.6	5.0	5.4	5.8	6.2
Uniformly distributed loads (kN/m <sup>2</sup> )															
Ultimate Limit State															
40	Pressure	8.67	5.45	3.72	2.67	2.00	1.53	1.20	0.96	0.78	0.63				
	Suction	11.00	7.04	4.94	3.54	2.51	1.88	1.47	1.19	0.99	0.83				
60	Pressure	10.59	7.19	5.19	3.89	2.97	2.33	1.86	1.50	1.25	1.04	0.87			
	Suction	14.15	9.81	6.90	4.52	3.20	2.40	1.88	1.52	1.25	1.05	0.90			
70	Pressure	11.21	7.83	5.78	4.40	3.41	2.71	2.18	1.78	1.48	1.24	1.04			
	Suction	15.39	10.99	7.58	4.97	3.52	2.64	2.07	1.67	1.37	1.16	0.99			
100	Pressure	13.08	9.75	7.55	5.94	4.74	3.83	3.12	2.60	2.18	1.83	1.56			
	Suction	19.11	14.54	9.63	6.32	4.49	3.36	2.63	2.12	1.74	1.47	1.26			
120	Pressure	12.99	9.93	7.86	6.27	5.07	4.14	3.42	2.85	2.37	2.01	1.71	1.47	1.26	1.11
	Suction	18.9	14.73	10.59	6.96	4.98	3.75	2.91	2.34	1.92	1.62	1.38	1.2	1.05	0.95
Serviceability Limit State															
40	Pressure	6.89	3.90	2.57	1.83	1.38	1.07	0.86	0.70	0.56	0.40				
	Suction	5.07	2.87	1.94	1.45	1.14	0.94	0.80	0.69	0.61	0.54				
60	Pressure	7.59	4.42	2.96	2.15	1.64	1.30	1.05	0.87	0.73	0.61	0.50			
	Suction	5.86	3.40	2.33	1.76	1.41	1.17	1.00	0.87	0.78	0.70	0.60			
70	Pressure	7.84	4.60	3.10	2.26	1.73	1.38	1.12	0.93	0.78	0.66	0.53			
	Suction	6.20	3.63	2.50	1.90	1.52	1.27	1.08	0.95	0.85	0.76	0.66			
100	Pressure	8.57	5.15	3.53	2.60	2.01	1.61	1.32	1.10	0.93	0.80	0.61			
	Suction	7.21	4.33	3.02	2.30	1.85	1.55	1.33	1.17	1.05	0.95	0.84			
120	Pressure	9.0	5.45	3.85	2.83	2.22	1.78	1.46	1.23	1.04	0.89	0.77	0.67	0.59	0.52
	Suction	7.3	4.48	3.18	2.43	1.94	1.6	1.37	1.2	1.06	0.95	0.86	0.78	0.72	0.66