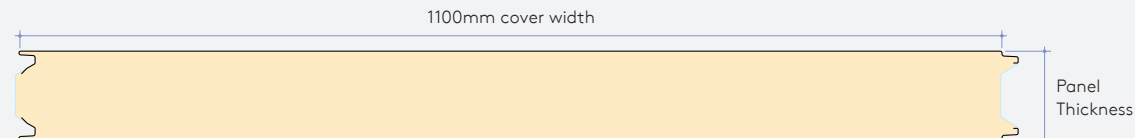


Controlled Environments Ceiling Application (KS1100 CS) Data Sheet

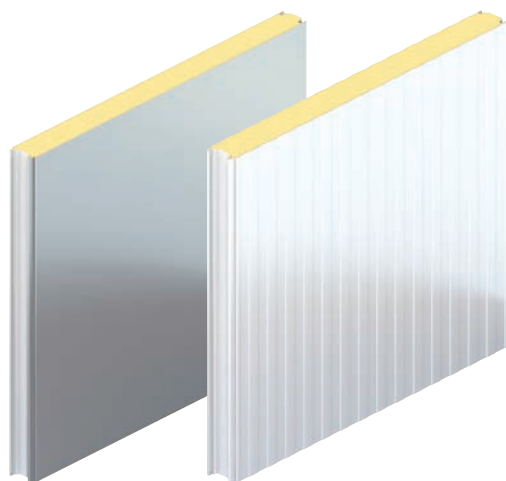


Product overview

Kingspan controlled environment panel systems are designed for use within temperature controlled and hygiene safe environments such as food processing, freezers, cold/chill store and clean rooms for the bio-technology and pharmaceutical industries. The controlled environment panel range is available in Flat and Ribbed profiles.



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.



Flat KS1100 CS

Rib KS1100 CS

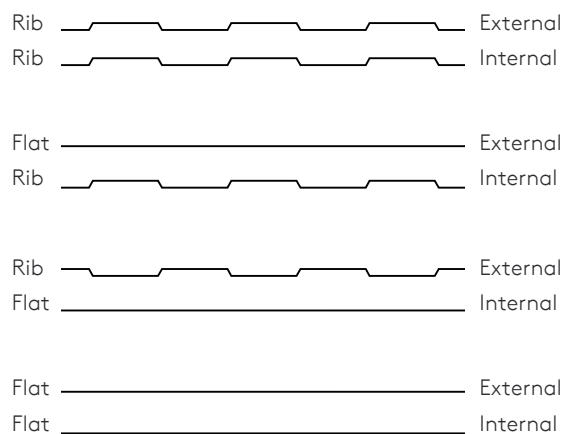
Panel Properties

Core Thickness (mm)	50	75	100	125	150	200
Weight kg/m ² 0.5 / 0.5 Steel	10.0	11.0	12.0	13.0	14.0	16.0

Application

These FIREsafe, hygienic and fibre-free insulated panel systems are suitable for internal and external walls and ceilings, including internal 'box within a box' applications.

Standard External and Internal Facing Combinations



Declared Thermal Performance

Declared Thermal Conductivity (λ Value) 0.022 W/m.K @23°C

Panel Nominal Thickness (mm)	Product R-Value (m ² K/W) at 23°C	Product U-Value (W/m ² K) at 23°C
50	2.23	0.45
75	3.43	0.29
100	4.60	0.22
125	5.76	0.17
150	6.92	0.14
200	9.25	0.11

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

Controlled Environments Ceiling Application (KS1100 CS) Data Sheet



Thermal Performance

Declared Thermal Conductivity (λ Value) 0.022 W/m.K @23°C

Panel Nominal Thickness (mm)	Total R-Value (m ² K/W)	
	Heat Flow Out (Winter)	Heat Flow In (Summer)
50	2.48	2.34
75	3.74	3.50
100	4.95	4.62
125	6.17	5.74
150	7.38	6.86
200	9.81	9.09

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. Controlled Environments panels is manufactured, tested and packaged in conformance with AS/NZS 4859.1:2018

Fire Performance

When tested to AS/NZS 1530.3, Kingspan panels achieved the fire hazard results.

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

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

FM Panel System Approval

Kingspan controlled environment panel systems are available with FM Global FMRC 4880 Approved Unlimited Height and FM Global 4881 Approved Class 1 Exterior Wall System Certifications.

Fire Credentials Results

AS1530.4/BS476-22:1987 Clause 9 (Ceiling)*

Thickness (mm)	Integrity (mins)	Insulation (mins)	Kingspan model specification number
100	58	32	KSFW 05
125	58	32	KSFW 05
150	58	32	KSFW 05
200	148	67	KSFW 08

Notes: Specifications available on request.

Fire tests on building materials and structures.

Methods for determination of the fire resistance of non-loadbearing elements of construction Clause 9: Determination of the fire resistance of ceiling membranes.

Biological

Kingspan Controlled Environment Ceiling panels 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.

Acoustic Performance

For sound transmission reduction, Kingspan panels typically have a single figure weighted sound reduction index (SRI) of $R_w = 24$ dB. For specific acoustic solutions contact Kingspan Technical Services.

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

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.

Internal Ceiling Spans

Core Thickness (mm)	50	75	100	125	150	200
Ceiling Span (m)*	3.0	4.6	6.1	7.5	8.8	10.6

Notes: * Typical spans for ceilings with no temperature difference across the panels. For other temperatures or internal conditions contact Kingspan. Imposed loads are in accordance with the requirements of AS/NZS 1170.

Internal Wall and Ceiling Spans

Internal wall spans are based on the following:

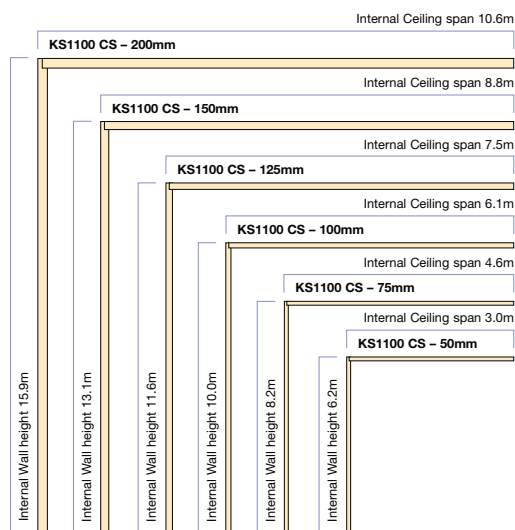
Pressure or Suction Load of 0.3kN/m². Temperature difference across the panel is 0°. Deflection limit L/100 short term.

Internal ceiling spans are based on the following:

Imposed load of either 0.25kN/m² or a 1.4kN concentrated load as per ASI 170.1:2002. Imposed loads are taken as short term only. Temperature difference across the panel is 0°. Deflection limit L/200 short term and L/100 long term.

General

Spans have been calculated using methods described in ASI170 as well as EN14509:2006 – ‘Self-supporting double skin metal faced insulating panels - Factory made products’. For all other temperature differential situations, please contact Kingspan Technical Services.



Please note that for orders outside of Australia maximum lengths are 11.8m

Panel Rebate

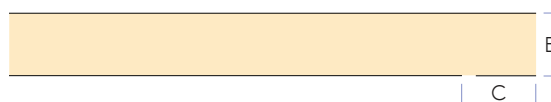
For panel wall to ceiling and wall to wall junctions, panels can be manufactured with a rebate cut to one side at one end if required (refer to order forms).

Dimension B

The depth will be 50% of the panel thickness (i.e. for 100mm panel = 50mm).

Dimension C

The depth can be 50mm; 75mm; 100mm; 125mm; 150mm and 200mm.



Note: Rebates are subject to Kingspan manufacturing tolerances. Details available upon request.

Panel Joint

The tongue and groove joint achieves excellent thermal performance. The panel side joint can accommodate vapour or hygiene safe seals.

Packing

Standard Packing

KS1100 CS panel systems are stacked horizontally. The entire pack is shrink wrapped. The number of panels in each pack depends on panel length, weight and thickness. Typical pack height is 1200mm.

Delivery

All deliveries (unless indicated otherwise) are by flatbed road transport to project site. Off loading is the responsibility of the client. Export orders are transported in shipping containers.

Materials and Coatings

Internal liner and external sheet

Substrate to be 0.50mm thick Z275 Zincform G300S coated steel to AS1397.

Coating

Antibacterial White – 25 microns thick specifications available on request.

Note: For other colours and coatings, please contact your local Area Sales Manager.

Insulation Core

The core of KS1100 CS is an environmentally sustainable PIR insulation which is non-deleterious with zero Ozone Depletion Potential (ODP).

Supplied in thicknesses of 50, 75, 100, 125, 150 and 200 mm the rigid PIR insulation is closed cell and CFC/HCFC free.

The auto adhesive properties of the core bond and the internal and external panel faces together control the panel thickness achieved during manufacture.

Accreditations



Controlled Environments Ceiling Application (KS1100 CS) Data Sheet



Panel Selection

A useful guide for panel selection based on the operating temperatures is given below.

Panel selection should be based on the worst minimum insulation value for Coldstores is 10W/m² heat gain. (See IACSC Code of Practice for the Design of Coldstore Envelopes).

Panel Thickness mm	Declared Product R-Value (m ² K/W) at 23°C	Temp Difference (C)															
		10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	
50	2.24	4.4	6.6	8.8	11	13.2	15.4	17.6	19.8	22	24.2	26.4	28.6	30.8	33	35.2	
75	3.44	2.93	4.40	5.87	7.33	8.80	10.27	11.73	13.20	14.67	16.13	17.60	19.07	20.53	22.00	23.47	
100	4.6	2.20	3.30	4.40	5.50	6.60	7.70	8.80	9.90	11.00	12.10	13.20	14.30	15.40	16.50	17.60	
125	5.77	1.76	2.64	3.52	4.40	5.28	6.16	7.04	7.92	8.80	9.68	10.56	11.44	12.32	13.20	14.08	
150	6.93	1.47	2.20	2.93	3.67	4.40	5.13	5.87	6.60	7.33	8.07	8.80	9.53	10.27	11.00	11.73	
200	9.26	1.10	1.65	2.20	2.75	3.30	3.85	4.40	4.95	5.50	6.05	6.60	7.15	7.70	8.25	8.80	

Notes: Panel selection should be based on the worst minimum insulation value for Coldstores is 10W/m² heat gain. (See IACSC Code of Practice for the Design of Coldstore Envelopes).

External Ambient Temp 20°C	Operating Temperature (°C)																
	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50	-55
KS 1100 CS - 50mm	•	•	•	•	•												
KS 1100 CS - 75mm	•	•	•	•	•	•	•	•	•								
KS 1100 CS - 100mm	•	•	•	•	•	•	•	•	•	•							
KS 1100 CS - 125mm	•	•	•	•	•	•	•	•	•	•	•	•					
KS 1100 CS - 150mm	•	•	•	•	•	•	•	•	•	•	•	•	•	•			
KS 1100 CS - 200mm	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

