

# KS1100CS Coldstore Panel Product Data Sheet



# Product Data Sheet

## KS1100CS Coldstore Panel

Kingspan Controlled Environment panels are designed for use within temperature controlled and hygiene safe environments where performance is critical, such as food processing, freezers, cold/chill store and clean rooms for the bio-technology and pharmaceutical industries.

### Applications

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

### Manufacture

Panels are manufactured in a Kingspan owned facility in Sydney, Australia.

### Available Lengths

Standard lengths are from 2m to 11.8m.

### Environmental

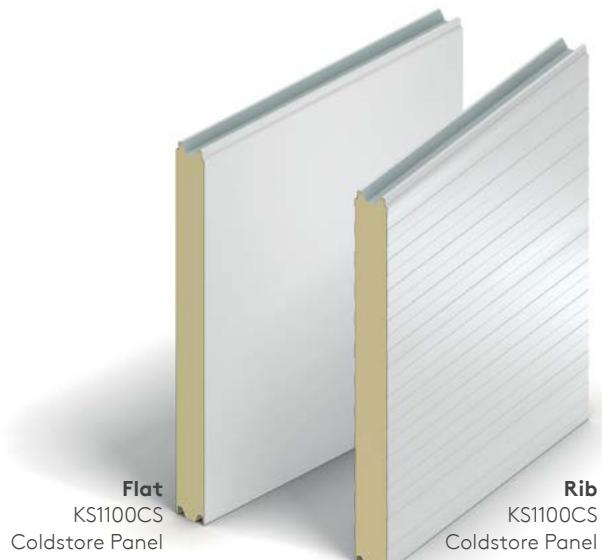
Kingspan Insulated Panels' manufacturing facility in Australia sources 100% certified renewable electricity and procures steel that is made from 15–25% recycled content.



KS1100CS Coldstore Panels (under the certified name 'KS1100/1200CS Coldstore Panel') have an Environmental Product Declaration in accordance with the requirements of ISO 14025 and EN 15804: 2012 + A2: 2019 for 50mm to 200mm thicknesses.

KS1100CS Coldstore Panels (under the certified name 'Kingspan Controlled Environment Panels') are certified with a Global GreenTag GreenRate™ Level A certification to Version 4.0 of the Global GreenTag International Product Certification Standard, under the certified name 'Kingspan Wall Panels'.

A GreenRate Level A certification is the highest-ranking level in GreenTag's GreenRate program. As a result, KS1100CS Coldstore Panels receive the maximum recognition by the New Zealand Green Building Council's Green Star® building rating tools scheme.



### Fixing Method

Through-fix.

### Synlait Milk Factory, Dunsandel

New build • Roof: KS1000 RW • Wall & Ceiling: KS1100 CS



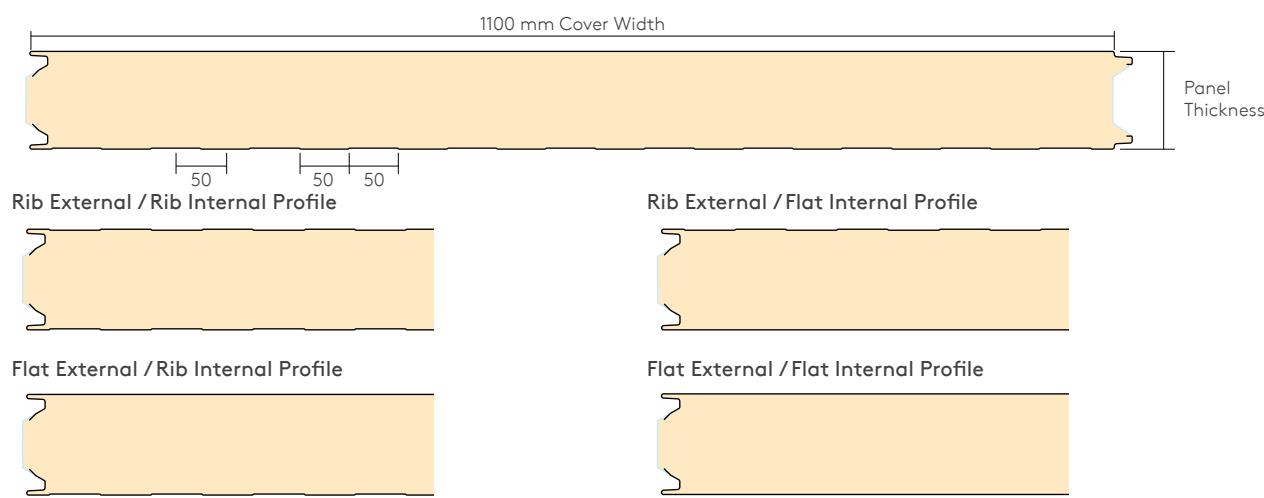
## Panel Performance

A - Core Thickness (mm)	50	75	100	125	150	200
Material R value (m <sup>2</sup> .K/W)*	2.33	3.59	4.80	6.02	7.23	9.66
Installed R value (m <sup>2</sup> .K/W)**	2.45	3.71	4.92	6.14	7.35	9.78
Weight (kg/m <sup>2</sup> ) 0.5/0.4 steel***	11.1	12.1	12.8	14.0	14.7	16.6

\* Material R value = the aged thermal value @ 15°C, as independently tested and calculated to AS/NZS4859 parts 1&2: 2018 before installation Note this is for the product only before installation.

\*\* Installed R value = the thermal resistance of the installed product and includes air films as per NZS 4214

\*\*\* other steel thicknesses both external and internal are available and could alter the weight. Actual weight subject to vary ±10% due to manufacturing and raw material tolerances



## Materials

### Exterior Weather Sheet:

- Substrate to be Z275 Zincform G300S coated steel in accordance with AS1397:2021.
- Paint coating in accordance with AS/NZS 2728:2013
- Standard Colour – Coolroom White - 25 microns thick
- Other colours available on extended lead time and price

### Insulation Core:

- Non-hygroscopic polyisocyanurate (PIR), with zero Ozone Depletion Potential (Zero ODP).
- PIR foam is a thermosetting material. It does not melt, flow or drip when exposed to fire. It forms a strong char that helps protect the foam core and prevent flame spread within the panels.

### Internal Liner Sheet:

- Substrate to be Z275 Zincform G300S coated steel in accordance with AS1397:2021.
- Standard Colour – Coolroom White - 25 microns thick
- Other colours available on extended lead time and price

### Fasteners

All fixings (screws, rivets or bolts) to be either carbon or stainless steel.

### Flashings

All flashings to be 0.5mm coil coated steel. No aluminium to be used in order to achieve group ratings.

### Structure

The panel is considered a cladding element which is connected to a supporting structure.

## Acoustic Performance

KS1100CS Coldstore Panels have a single figure weighted sound reduction index of  $R_w = 24\text{dB}^*$ . Results are based on panels with a similar profile and core material.

Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Rw
SRI (dB)	20	18	20	24	20	29	39	46	24

\* Please contact Technical Services for project specific support and product specification.

## Masterspec

For specifications refer to Masterspec CBI 4257KC.



The KS1100CS Coldstore Panel is listed in [Masterspec's product database](#) and [online specifications tool](#).

## NZBC Compliance

The KS1100CS Coldstore Panel has been used around New Zealand, on many building types for in excess of 15 years.

When designed, used, installed and maintained in accordance with Kingspan standard details, the KS1100CS Coldstore Panel is compliant with the applicable sections of the NZBC:

- B1 Structure – B1.3.1; B1.3.2; B1.3.3(a, c, f, g, h, j); B1.3.4
- B2 Durability – B2.3.1(b)
- C3 Fire Affecting Areas Beyond the Fire Source – C3.4(a); C3.5; C3.7
- E2 External Moisture – E2.3.2; E2.3.7
- E3 Internal Moisture – E3.3.5
- F2 Hazardous Building Materials – F2.3.1
- H1 Energy Efficiency – H1.3.1

## Sprinkler Code NZS 4541:2020

The Sprinkler Standard NZS 4541:2020 contains levels of sprinkler protection required for buildings constructed with "Approved" and "Not Approved" panels - refer to clause 2.12 and Appendix K.

Kingspan's PIR-cored KS1100CS Coldstore Panels are classed as "Approved" as they have FM Global approval.

## Fire Performance

The KS1100 CS panel has been rigorously tested to both NZ and international building standards and the standards expected of the insurance industry.

### Internal Surface Finish (NZBC C.4.17.1) (to ISO 9705)

Standard Details
Group 2S

### External Radiation (NZBC C.5.8) (to ISO 5660-1)

Building Code Document	Cladding Material Type
NZBC Acceptable Solutions C/AS1 Table 5.1	<100kW/m <sup>2</sup> and < 25 MJ/m <sup>2</sup>
NZBC Acceptable Solutions C/AS2 Table C1.3	Type A

### Foam Plastic Core (NZBC C.4.17.2)

Core meets the fire requirements of AS 1366.2

## Insurance

Kingspan KS1100CS Coldstore Panels are approved by FM Global to the following Approval Standards:

- **FM4880 - Class 1 Internal wall and ceiling panels without height restriction (All thicknesses: 50, 75, 100, 125, 150 and 200 mm)**  
(certified name: KS1100 CS)
- **FM4881 - Class 1 External Wall Panel System without height restriction (All thicknesses: 50, 75, 100, 125, 150 and 200 mm)**  
(certified name: KS1100 CS)



Insurer approvals are large scale testing regimes that provide objective third party testing, which is underpinned by quarterly, half-yearly and yearly factory surveillance audits (depending on the region) to verify compliance. Insurer approvals are subject to panel thickness, width, orientation, method of assembly, steel coating and manufacturing facility. Please contact Kingspan for project specific details.

## Fonterra Whareroa, Hawera

New build • Walls (Internal & External): KS1100CS Coldstore Panel



## 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, fire wall options, 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 will provide product guarantees on an individual project basis.

Up to 10 years for a coldstore/processing application. Refer to Kingspan for further details. All guarantees are subject to a maintenance regime. Specialist coatings are available for marine and other more corrosive areas.

## Product Tolerances

Length < 3 m	±5 mm
Length > 3 m	±10 mm
Cover Width	±2 mm
Thickness < 100 mm	±2 mm
Thickness > 100 mm	±2%
Squareness	≤0.6% of width
Flatness*	
L = 200 mm	0.6 mm
L = 400 mm	1.0 mm
L > 700 mm	1.5 mm
Bowing	2 mm per metre length up to maximum 20 mm

\*Flatness shall be measured at least 100 mm from the edge of panel and 200 mm from the end of the panel.

## 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

KS1100CS Coldstore Panels are manufactured from the highest quality materials using state-of-the-art production equipment to rigorous quality control standards, complying with ISO 9001 standard, ensuring long-term reliability and service life. The panels are also being manufactured under Environmental Management System Certification ISO 14001 and Occupational Health and Safety Certification ISO 45001.

## Delivery & Packing

### Standard Packing

Protective film is applied to the external face.

Kingspan 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.



# Span Tables

## Internal Walls and Ceilings

Panel Thickness (mm)	Temperature Delta Range (1) (°C)	Internal Walls (2)		Trafficable Ceilings (3)	
		Ambient (m)	Freezer (m)	Ambient (m)	Freezer (m) (5)
50	25	6.29	N/A	3.01	N/A
75	35	8.27	N/A	4.69	N/A
100	50	10.04	7.68	6.19	8.64
125	60	11.67	9.11	7.56	10.40
150	75	11.80*	10.46	8.81	11.72
200	100	11.80*	11.80*	10.65	11.80*

(1) Based on heat flow of 10W/m<sup>2</sup>/hr - as per following table.

(2) Internal wall spans based on +/- 0.5 kPa ULS. Deflection limit L/100.

(3) Ceilings based on either 1.4kN or 0.25 kpa loads. Deflection limit L/200 short term or L/100 long term.

(4) Ambient = 0°C to 0°C and Freezer = -25°C to 20°C (change in temperature Δt).

(5) Consideration should be made of the need for additional supports to the ceiling during construction

**Notes:**

- Values have been calculated in accordance with AS/NZS1170.0 and also take into account the method described in EN 14509:2011 titled 'Self-supporting double skin metal face insulating panels (Light coloured) - Factory made products - Specifications', taking imposed loads and temperature into account.
- The fastener calculation should be carried out in accordance with the appropriate standards. For further advice please contact Kingspan Technical Services.
- The allowable steelwork tolerance between bearing panels of adjacent supports is +/- 5mm or L/600.
- \* Max panel length is 11.80m.
- Load span tables for the panel specifications not shown are available from Kingspan Technical Services.
- Additional permanent loads on ceilings need to be considered separately.
- Opening in ceilings greater than 300mm diameter require additional support.

**Heat Transmission**

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

Panel selection should be based on the worst case result from both tables. The recommended minimum insulation value for Coldstores is 10 W/m<sup>2</sup> heat gain. (See IACSC Code of Practice for the Design of Coldstore Envelopes).

Panel Thickness (mm)	Operating Temperature (°C)															
	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95
50	8.4	10.5	12.6	14.7	16.8	18.9	21	23.1	25.2	27.3	29.4	31.5	33.6	35.7	37.8	39.9
75	5.6	7	8.4	9.8	11.2	12.6	14	15.4	16.8	18.2	19.6	21	22.4	23.8	25.2	26.6
100	4.2	5.25	6.3	7.35	8.4	9.45	10.5	11.55	12.6	13.65	14.7	15.75	16.8	17.85	18.9	19.95
125	3.36	4.2	5.04	5.88	6.72	7.56	8.4	9.24	10.08	10.92	11.76	12.6	13.44	14.28	15.12	15.96
150	2.8	3.5	4.2	4.9	5.6	6.3	7	7.7	8.4	9.1	9.8	10.5	11.2	11.9	12.6	13.3
200	2.1	2.625	3.15	3.675	4.2	4.725	5.25	5.775	6.3	6.825	7.35	7.875	8.4	8.925	9.45	9.975

External Ambient Temperature (°C)	Operating Temperature (°C)																
	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50	-55
50	✓	✓	✓	✓	✓												
75	✓	✓	✓	✓	✓	✓	✓										
100	✓	✓	✓	✓	✓	✓	✓	✓	✓								
125	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓						
150	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
200	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

(using 30°C as an external temperature)

# Span Tables – External Wall Chiller (0°C Internal)

## Single Span Condition

Panel Thickness (mm)	Load Type	Span L in metres										
		3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0
		Uniformly distributed loads kN/m <sup>2</sup>										
50	Pressure	2.07										
	Suction	2.05										
75	Pressure	3.16	2.32	1.78	1.40							
	Suction	3.05	2.24	1.71	1.35							
100	Pressure	4.25	3.12	2.39	1.89	1.53	1.27	1.06				
	Suction	4.02	2.95	2.26	1.79	1.45	1.20	1.01				
125	Pressure	5.41	3.98	3.05	2.41	1.95	1.61	1.35	1.15	0.99	0.87	
	Suction	5.03	3.69	2.83	2.23	1.81	1.50	1.26	1.07	0.92	0.80	
150	Pressure	6.23	4.86	3.72	2.94	2.38	1.97	1.65	1.41	1.21	1.06	0.93
	Suction	5.97	4.39	3.36	2.66	2.15	1.78	1.49	1.27	1.10	0.96	0.84
200	Pressure	6.80	5.83	5.09	4.02	3.26	2.69	2.26	1.93	1.66	1.45	1.27
	Suction	6.8	5.8	4.44	3.51	2.84	2.35	1.97	1.68	1.45	1.26	1.11
Serviceability Limit State (SLS)												
50	Pressure	1.58										
	Suction	0.88										
75	Pressure	3.14	2.24	1.63	1.22							
	Suction	2.50	1.70	1.14	0.68							
100	Pressure	4.25	3.12	2.39	1.86	1.53	1.27	1.06				
	Suction	4.02	2.95	2.26	1.58	1.17	0.83	0.55				
125	Pressure	5.41	3.98	3.05	2.41	1.95	1.61	1.35	1.15	0.99		
	Suction	5.03	3.69	2.83	2.23	1.81	1.46	1.13	0.89	0.65		
150	Pressure	6.23	4.86	3.72	2.94	2.38	1.97	1.65	1.41	1.21	1.06	0.93
	Suction	5.97	4.39	3.36	2.66	2.15	1.78	1.49	1.27	1.10	0.88	0.70
200	Pressure	6.80	5.83	5.09	4.02	3.26	2.69	2.26	1.93	1.66	1.45	1.27
	Suction	6.80	5.80	4.44	3.51	2.84	2.35	1.97	1.68	1.45	1.26	1.11

For span parameters, refer to notes at the bottom of page 9.

# Span Tables – External Wall Chiller (0°C Internal)

## Double Span Condition

Panel Thickness (mm)	Load Type	Span L in metres						
		3.0	3.5	4.0	4.5	5.0	5.5	5.9
		Uniformly distributed loads kN/m <sup>2</sup>						
50	Pressure	2.07	1.52					
	Suction	2.05	1.51					
75	Pressure	3.16	2.32	1.78	1.40			
	Suction	3.05	2.24	1.71	1.35			
100	Pressure	4.25	3.12	2.39	1.89	1.53		
	Suction	4.02	2.95	2.26	1.79	1.45		
125	Pressure	5.41	3.98	3.05	2.41	1.95	1.61	
	Suction	5.03	3.69	2.83	2.23	1.81	1.50	
150	Pressure	6.23	4.86	3.72	2.94	2.38	1.97	
	Suction	5.97	4.39	3.36	2.66	2.15	1.78	
200	Pressure	6.80	5.83	5.09	4.02	3.26	2.69	2.26
	Suction	6.80	5.80	4.44	3.51	2.84	2.35	1.97
Ultimate Limit State (ULS)								
Maximum length for containerisation is 11.8m (2 x 5.9m = 11.8m)								
Serviceability Limit State (SLS)								
50	Pressure	1.58	1.12					
	Suction	0.88	0.75					
75	Pressure	2.64	1.77	1.27	0.96			
	Suction	2.57	1.43	0.87	0.56			
100	Pressure	3.74	2.46	1.73	1.29	1.00		
	Suction	3.55	2.35	1.40	0.89	0.59		
125	Pressure	3.87	3.17	2.21	1.63	1.25	0.99	
	Suction	3.50	2.99	2.04	1.28	0.84	0.57	
150	Pressure	3.88	3.29	2.69	1.96	1.49	1.17	
	Suction	3.46	2.94	2.55	1.55	0.99	0.65	
200	Pressure	4.22	3.56	3.09	2.60	1.95	1.52	1.21
	Suction	3.71	3.14	2.74	2.13	1.28	0.78	0.48

For span parameters, refer to notes at the bottom of page 9.

# Span Tables – External Wall Freezer (-25°C Internal)

## Single Span Condition

Panel Thickness (mm)	Load Type	Span L in metres										
		3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0
Uniformly distributed loads kN/m <sup>2</sup>												
100	Pressure	4.25	3.12	2.39	1.89	1.53						
	Suction	4.02	2.95	2.26	1.79	1.45						
125	Pressure	5.41	3.98	3.05	2.41	1.95	1.61	1.35	1.15	0.99	0.87	
	Suction	5.03	3.69	2.83	2.23	1.81	1.50	1.26	1.07	0.92	0.80	
150	Pressure	6.23	4.86	3.72	2.94	2.38	1.97	1.65	1.41	1.21	1.06	0.93
	Suction	5.97	4.39	3.36	2.66	2.15	1.78	1.49	1.27	1.10	0.96	0.84
200	Pressure	6.80	5.83	5.09	4.02	3.26	2.69	2.26	1.93	1.66	1.45	1.27
	Suction	6.80	5.80	4.44	3.51	2.84	2.35	1.97	1.68	1.45	1.26	1.11
Serviceability Limit State (SLS)												
100	Pressure	4.25	3.12	2.39	1.86	1.53						
	Suction	3.83	2.66	1.86	1.13	0.65						
125	Pressure	5.41	3.98	3.05	2.41	1.95	1.61	1.35				
	Suction	5.03	3.69	2.83	2.20	1.63	1.09	0.71				
150	Pressure	6.23	4.86	3.72	2.94	2.38	1.97	1.65	1.41	1.21	1.06	
	Suction	5.97	4.39	3.36	2.66	2.15	1.78	1.45	1.03	0.72	0.49	
200	Pressure	6.80	5.83	5.09	4.02	3.26	2.69	2.26	1.93	1.66	1.45	1.27
	Suction	6.80	5.80	4.44	3.51	2.84	2.35	1.97	1.68	1.45	1.26	1.11

### Notes

- Values have been calculated in accordance with AS/NZS 1170.0 and also take into account the methods described in EN 14509:2011 titled 'Self-supporting double skin metal face insulating panels (Light coloured) – Factory made products – Specifications', taking imposed loads and temperature into account.
- 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 table is for an internal temperature of 0°C for chiller and -25°C for freezer and an external surface temperature of 60°C.
- The actual wind suction load resisted by the panel is also 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.
- The fastener calculation should be carried out in accordance with the appropriate standards. For further advice please contact Kingspan Technical Services.
- The allowable steelwork tolerance between bearing panels of adjacent supports is +/- 5mm or L/600.
- Load span tables for the panel specifications not shown are available from Kingspan Technical Services.

# Contact Details

## New Zealand

Kingspan Limited

97 Montreal Street | Christchurch 8023

T: 0800 12 12 80 or +64 (0) 3 260 5530

E: info@kingspanpanels.co.nz

[www.kingspanpanels.co.nz](http://www.kingspanpanels.co.nz)

For the product offering in other markets please contact your local sales representative or visit  
[www.kingspanpanels.com](http://www.kingspanpanels.com)

Care has been taken to ensure that the contents of this publication are accurate, but Kingspan Limited and its subsidiary companies do not accept responsibility for errors or for information that is found to be misleading. Suggestions for, or description of, the end use or application of products or methods of working are for information only and Kingspan Limited and its subsidiaries accept no liability in respect thereof.

To ensure you are viewing the most recent and accurate product information, please visit:  
<https://www.kingspan.com/content/dam/kingspan/kip-west/coldstore/ks1100cs-coldstore-panel/kingspan-ks1100cs-coldstore-panel-data-sheet-en-nz.pdf>

® Kingspan and the Lion Device are Registered Trademarks of the Kingspan Group plc in the UK, Ireland and other countries. All rights reserved.

