



UltraTemp Insulated Panels for Chilled Storage
Applications with a Temperature Range of 0°C to +5°C
KS1100 CS

Applications

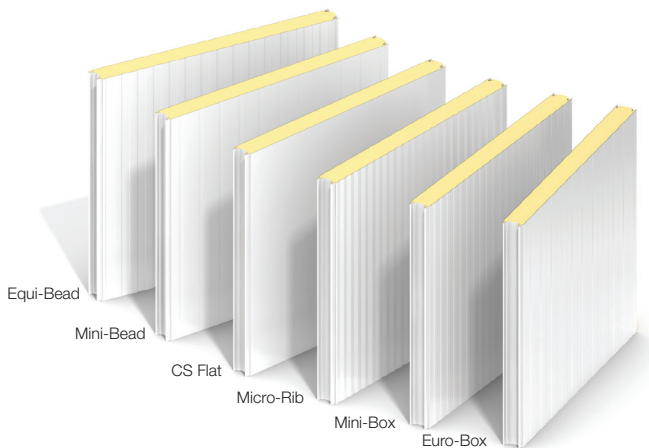
UltraTemp insulated roof, wall and ceiling panels can be laid vertically or horizontally, and are suitable for internal and external applications.

Available Lengths

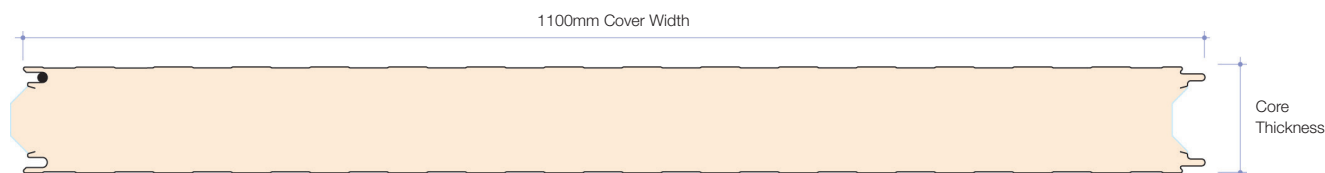
Standard Lengths	1.8m - 14.5m
Longer Lengths*	14.5m - 19.7m
Shorter Lengths*	Below 1.8m

Notes:

* Non-standard lengths. Additional costs and transport restrictions may apply for non-standard lengths. All lengths may change for export (outside of the UK).

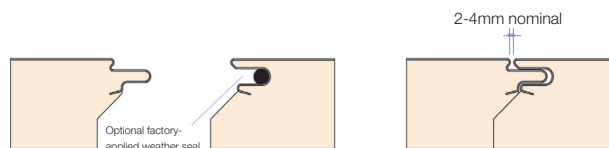


KS1100 CS



Panel Joint

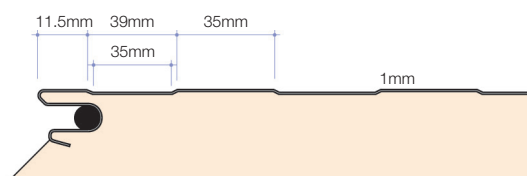
UltraTemp insulated panels feature a unique castellated and symmetrical tongue and groove joint which achieves excellent thermal and structural performance.



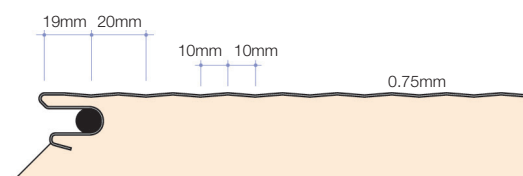
Profiles

UltraTemp insulated panels are available in a choice of six distinct profiles, offering a range of aesthetics to suit project-specific requirements.

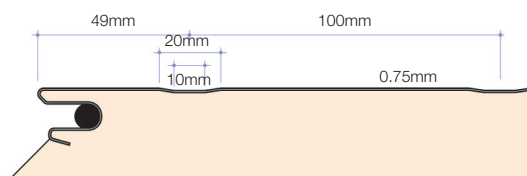
Equi-Bead



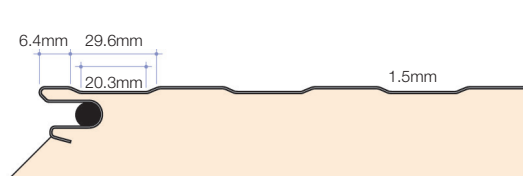
Micro-Rib



Mini-Bead



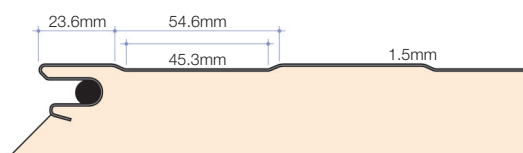
Mini-Box



CS Flat



Euro-Box



Dimensions, Weight and Thermal Performance

Core Thickness (mm)	50	60	80	100	125	150	175	200	220
Weight (0.5 / 0.5) (kg/m²)	10.6	11.0	11.8	12.6	13.6	14.6	15.6	16.6	17.4
U-value (W/m²K)	0.40	0.33	0.25	0.20	0.16	0.13	0.11	0.10	0.09

Notes:

These U-values are in accordance with BS EN 14509, calculated using Finite Element Analysis, and take into account any thermal bridging through the longitudinal joint.
Shaded area denotes typical thicknesses for chilled storage applications (0°C to +5°C).

Insulation Core

UltraTemp insulated roof, wall and ceiling panels are manufactured with an ECOsafe and FIREsafe polyisocyanurate (PIR) core.

Fire

The external and internal faces of the panel to be Class 0 in accordance with the Building Regulations when tested to BS 476: Part 6: 2009 and Part 7: 1997.

This FIREsafe system has passed all the requirements of:

- LPS 1181: 2014: Part 1: Issue 1.2, series of fire growth tests for LPCB approval and is certified to LPS 1181 Grade EXT-B;
- LPS 1208: 2014: Issue 2.2, LPCB fire resistance requirements for elements of construction used to provide compartmentation providing: FR30 & FR60 – Wall & Ceiling;
- FM approval to FMRC 4880, 4881 Class 1 fire classification, unlimited height;
- Reaction to fire classification according to BS EN 13501-1: 2007 + A1: 2009: B-s1,d0.

Notes:

Certificates and specifications are available upon request. Please contact Kingspan envirocare Technical Services for more information.



LPS 1208: Issue 2
Cert No: 260b



Air Tightness

UltraTemp insulated panel joints achieve an air tightness of 0.02m³/hr/m² at 50Pa in accordance with BS EN 14509 (based on sealed panel joint performance).

Water Tightness

UltraTemp insulated panels are watertight to 1200Pa (class A) according to BS EN 14509.

Acoustics

Sound Reduction Index (SRI)

Frequency (Hz)	SRI (dB)
63	20
125	15
250	17
500	23
1000	18
2000	25
4000	40
8000	46

UltraTemp insulated panels have a predicted single figure weighted sound reduction of $R_w = 24\text{dB}$.

Biological

UltraTemp insulated 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.

Environmental

UltraTemp insulated panels can achieve a Green Guide A+ rating as per the BRE Global "The Green Guide to Specification".

Materials

Substrate

- Kingspan XL Forté, Kingspan Spectrum, Kingspan AQUAsafe, Kingspan AQUAsafe 55: Metallic protected steel to BS EN 10346: 2009. Standard external sheet thickness 0.5mm.
- Kingspan CLEANsafe 15, 25, 55 and 120: Metallic protected steel to BS EN 10346: 2009. Standard internal steel thickness 0.5mm.
- Kingspan CLEANsafe 304: Austenitic Grade 304 stainless steel to BS EN 10088: Part 2: 2014, thickness 0.5mm.
- Aluminium: Please contact Kingspan envirocare Technical Services for details.

Coatings - External Weather Sheet

- Kingspan XL Forté: Consists of a multi-layer organic coating, embossed with a traditional leather-grain finish.
- Kingspan Spectrum: Consists of a coated semi-gloss finish with slight granular effect.

Coatings - Internal Sheet

- CLEANsafe 15: The coating has been developed for use as the internal lining of insulated panels. Standard colour is "bright white" with an easily cleaned surface.

- CLEANsafe 25: The coating has been developed for use as the internal lining of insulated panels in chilled storage environments.
- CLEANsafe 55: The coating has been developed for use as the internal lining of insulated panels in humid and aggressive internal environments.
- CLEANsafe 120: The coating has been developed for use as the internal lining of insulated panels where a high level of cleanliness and hygiene is required, and the panels are to be cleaned on a regular basis.
- CLEANsafe 304: The stainless steel liner has been developed for use as the internal lining of insulated panels in buildings with a very aggressive/corrosive internal environment.
- Kingspan AQUAsafe: The coating has been developed for use as the internal lining of insulated panels to suit high humidity internal environments.
- Kingspan AQUAsafe 55: The coating has been developed for use as the internal lining of insulated panels to swimming pool internal environments.

Heat Transmission

Thermal Conductivity (λ) 0.0195W/mK

Panel Thickness (mm)	50	60	80	100	125	150	175	200	220
U-value (W/m²K)	0.40	0.33	0.25	0.20	0.16	0.13	0.11	0.10	0.09
Temp. Difference (°C)									
10	3.90	3.25	2.44	1.95	1.56	1.30	1.11	0.09	0.89
15	5.85	4.88	3.66	2.93	2.34	1.95	1.67	1.46	1.33
20	7.80	6.50	4.88	3.90	3.12	2.60	2.23	1.95	1.77
25	9.75	8.13	6.09	4.88	3.90	3.25	2.79	2.44	2.22
30	11.70	9.75	7.31	5.85	4.68	3.90	3.34	2.93	2.66
35	13.65	11.38	8.53	6.83	5.46	4.55	3.90	3.41	3.10
40	15.60	13.00	9.75	7.80	6.24	5.00	4.46	3.90	3.55
45	17.55	14.63	10.97	8.78	7.02	5.85	5.01	4.39	3.99
50	19.50	16.25	12.19	9.75	7.80	6.50	5.57	4.88	4.43
55	21.45	17.88	13.41	10.73	8.58	7.15	6.13	5.36	4.88
60	23.40	19.50	14.63	11.70	9.36	7.80	6.69	5.85	5.32
65	25.35	21.13	15.84	12.68	10.14	8.45	7.24	6.34	5.76
70	27.30	22.75	17.06	13.65	10.92	9.10	7.80	6.83	6.20
75	29.25	24.38	18.28	14.63	11.70	9.75	8.36	7.31	6.65
80	31.20	26.00	19.50	15.60	12.48	10.40	8.91	7.80	7.09

Notes:

The heat gain by conduction should be limited to 10W/m² (see Code of Practice for the Design of Coldstore Envelopes). For enhanced energy performance, the heat gain by conduction should be limited to 8W/m². Shaded area denotes typical thicknesses for chilled storage applications (0°C to +5°C).

UltraTemp KS1100 CS

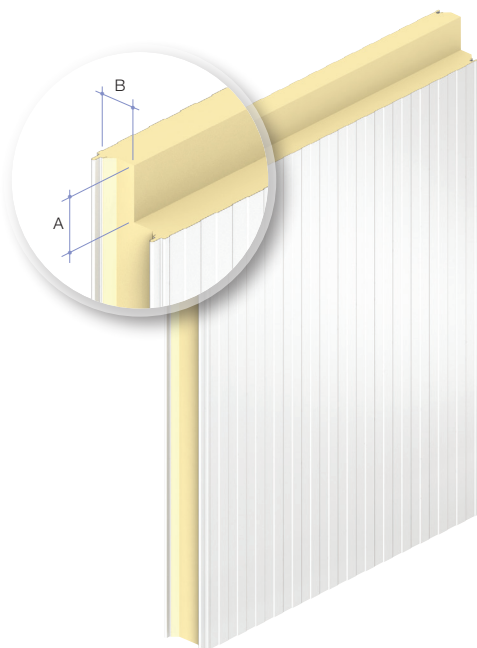
Product Data Sheet

Product Tolerances

Length (≤ 3m)	+ 5mm	- 5mm
Length (> 3m)	+ 10mm	- 10mm
Width	+ 2mm	- 2mm
Thickness (≤ 100mm)	+ 2mm	- 2mm
Thickness (> 100mm)	+ 2%	- 2%
Flatness (per metre)	+ 1.5mm	- 1.5mm
End Squareness	+ 3mm	- 3mm

Factory Engineered Options

UltraTemp insulated wall panels can be manufactured with part or fully formed rebates and thermal breaks to the following dimensions:



Dim A: To suit ceiling panel thickness (50mm, 60mm, 80mm, 100mm, 125mm, 150mm, 175mm, 200mm and 220mm).

Dim B: Unless otherwise stated, width will be half of the panel thickness (excluding 50mm and 60mm panel thicknesses).

Notes:

Rebates to internal face only.

Part refers to vertical cut only. Fully refers to vertical and horizontal cut but are subject to additional surcharge.

Seals

An optional factory applied weather seal (FAWS) can be supplied by Kingspan on request (this must be specified at order stage and is subject to additional charge).

Quality & Durability

UltraTemp insulated panels are manufactured from the highest quality materials using state-of-the-art production equipment to rigorous quality control standards, complying with BS EN ISO 9001 standard, ensuring long-term reliability and service life. The panels are also being manufactured under Environmental Management System Certification BS EN 14001. Compliant to BS OHSAS 18001 Occupational Health and Safety.

UltraTemp insulated panels are CE marked to BS EN 14509: 2013.



Guarantee

Kingspan Ultimate Panel Guarantee covering the following:

- 25-year thermal performance;
- 25-year structural performance;
- Up to 40-year external coating guarantee, subject to project-specific information.

Please contact Kingspan envirocare Technical Services for more information.

Packing

UltraTemp insulated panels are stacked horizontally with facing sheets upward. The top, bottom, sides and ends are protected with foam and timber packing, and the entire pack is wrapped in plastic.

Core Thickness (mm)	50	60	80	100	125	150	175	200	220
Panels per Pack	25	21	16	13	10	8	7	6	5

Notes:

Applies to UK pack sizes, please contact the Kingspan Customer Services Department for export information.

Sea Freight

Fully timber crated packs are available on projects requiring delivery by sea freight shipping, at additional cost. Alternatively, steel containers can be used. Special loading charges apply.

Delivery

All deliveries (unless indicated otherwise) are by road transport, to project site. Off loading is the responsibility of the client.

Site Installation

Site assembly instructions are available from Kingspan envirocare Technical Services. Kingspan recommend that the appointed cladding sub-contractor attends the appropriate product installation training course at our offices in Holywell prior to commencing installation on site.

Internal Insulated System Self-Supporting

Applications:

Chilled Storage

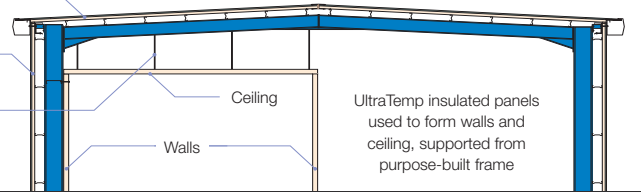
Main Structure:

Portal or Truss Construction

Kingspan insulated roof panels

Kingspan insulated wall panels

Kingspan suspension system



Internal Insulated System with Partial External Wall Cladding

Applications:

Chilled Storage

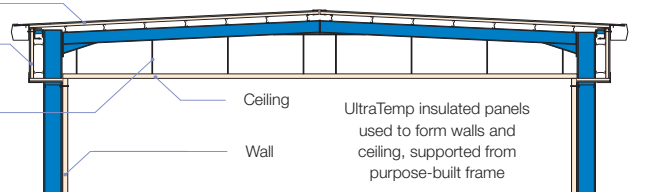
Main Structure:

Portal or Truss Construction

Kingspan insulated roof panels

Kingspan insulated wall panels

Kingspan suspension system



External Insulated System

Applications:

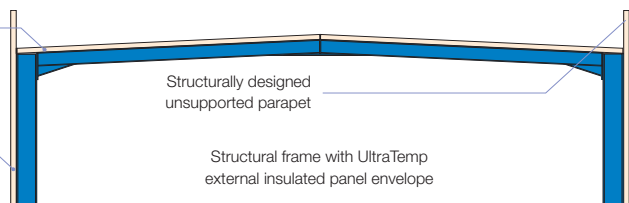
Chilled Storage

Main Structure:

Portal or Truss Construction

UltraTemp insulated panels and single ply membrane external weathering system

UltraTemp insulated panels



External Insulated System - Cladrack

Applications:

Chilled Storage

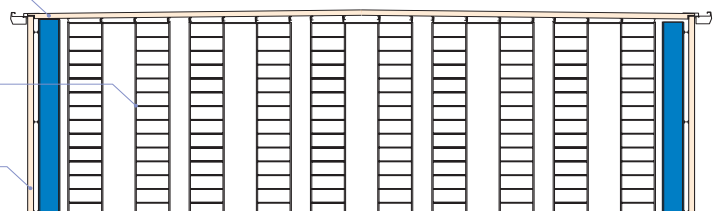
Main Structure:

Portal or Truss Construction

UltraTemp insulated panels and single ply membrane external weathering system

Structural frame with racking

UltraTemp insulated panels



Internal Ceilings Design

Definitions

Dead load - the load due to the self weight of permanent services.

Imposed load - the load assumed to be produced by the intended occupancy or use, including distributed, concentrated loads but excluding wind loads.

Uniformly distributed load - a uniformly distributed service load per square metre (kN/m^2), providing for situations such as the stacking of materials used during maintenance.

Concentrated load - the load that acts as a point on the ceiling over an area of 125mm x 125mm, such as the action of walking on the upper surface of the ceiling panels by the full weight of a person plus any carried items.

Structural elements - for ceilings, structural elements comprise of suspension systems and elements providing support, such as internal angles.

This section and the accompanying load / span tables are to be used for the design of insulated ceiling panels that are classified as "ceilings accessible for installation, occasional inspection and maintenance, minor repairs and cleaning" only.

The load / span tables are designed for concentrated loads of 0.9kN, 1.2kN or 1.5kN.

The project engineer shall specify the imposed load requirements for the project based on the knowledge of the planned use and each identified design situation, sufficient to facilitate all the necessary analysis of the effects on the ceiling panels and associated structural elements.

The designer shall select the appropriate load / span table that meets the specified imposed loads.

The maximum ceiling spans are governed by a uniformly distributed service load.

In the absence of any specified imposed loads, a conservative recommendation would be that the ceiling panels and associated structural elements are designed for a concentrated load of 0.9kN and a uniformly distributed service load of 0.25kN/m^2 in accordance with BS EN 1991-1-1: 2002.

The following assumptions have been made in the calculation of the load / span tables, and designers should ensure that these assumptions are valid for their project requirements.

They are only for ceilings without openings or access hatches. Where openings occur, please contact Kingspan envirocare Technical Services for further guidance.

The spans are designed assuming one concentrated load at a time per 1100mm wide panel per span placed mid span, unless where it has been designed for specific usages and the imposed loads should be replaced by the specified loads.

The load / span tables apply to short term imposed loads on simply supported panels (supported at each end of the panel) generally used for ceilings. For continuous loads, these must be considered separately.

If different loading parameters (deflection, loads and temperatures) are appropriate for the project, please contact Kingspan envirocare Technical Services.

Structural Load / Span Tables - Internal Wall & Partition

Chilled Storage Internal Applications 0°C to +5°C

Span L in Metres	Uniformly Distributed Loads (kN/m ²)								
	Panel Thickness (mm)								
	50	60	80	100	125	150	175	200	220
3.0	1.29	1.58	2.14	2.73	3.50	4.30	5.10	3.56	3.91
3.5	0.95	1.16	1.57	2.00	2.57	3.16	3.75	3.05	3.35
4.0	0.69	0.89	1.21	1.53	1.97	2.42	2.87	2.67	2.93
4.5	0.51	0.70	0.95	1.21	1.55	1.91	2.27	2.37	2.61
5.0	0.38	0.55	0.77	0.98	1.26	1.55	1.84	2.13	2.35
5.5	0.29	0.42	0.64	0.81	1.04	1.28	1.52	1.78	1.99
6.0	0.22	0.33	0.54	0.68	0.87	1.08	1.28	1.49	1.67
6.5	0.17	0.26	0.46	0.58	0.74	0.92	1.09	1.27	1.42
7.0	0.14	0.21	0.38	0.50	0.64	0.79	0.94	1.10	1.23
7.5		0.17	0.31	0.44	0.56	0.69	0.82	0.96	1.07
8.0		0.14	0.26	0.38	0.49	0.61	0.72	0.84	0.94
8.5			0.21	0.34	0.44	0.54	0.64	0.74	0.83
9.0			0.18	0.29	0.39	0.48	0.57	0.66	0.74
9.5			0.15	0.25	0.35	0.43	0.51	0.60	0.67
10.0				0.21	0.31	0.39	0.46	0.54	0.60
10.5				0.18	0.29	0.35	0.42	0.49	0.54
11.0				0.16	0.26	0.32	0.38	0.44	0.50
11.5				0.14	0.23	0.29	0.35	0.41	0.45
12.0					0.20	0.27	0.32	0.37	0.42
12.5					0.17	0.25	0.29	0.34	0.38
13.0					0.15	0.23	0.27	0.32	0.36
13.5					0.14	0.21	0.25	0.29	0.33
14.0						0.18	0.23	0.27	0.31
14.5						0.16	0.22	0.26	0.29
15.0						0.15	0.20	0.24	0.27
15.5							0.19	0.22	0.25
16.0							0.17	0.21	0.23
16.5							0.15	0.20	0.22
17.0							0.14	0.18	0.21
Max. Height Unsupported (m)									
	5.40	6.20	7.50	8.90	10.20	11.30	12.20	13.30	14.20

Notes:

1. Values have been calculated using the method described in BS EN 14509: 2013 - self-supporting double skin metal faced insulated panels.
2. Load span tables are unfactored and based on KS1100 CS panels with 0.5mm metal internal and 0.5mm metal external facings.
3. All panel thicknesses have been calculated with a minimum support width of 50mm, larger support widths are available.
4. Maximum deflection: L/100.
5. Temperature: External +20°C and internal 0°C.
6. The ability of the panel to resist the imposed load, is dependent on the end support connection i.e. support bearing width, number of fasteners used and the support thickness, as well as the type of fastener.
7. The allowable steelwork tolerance between bearing planes of adjacent supports is +/- 5mm.
8. Shaded area denotes the maximum allowable span based on an imposed load of 0.3kN/m² in the absence of specified loads.
9. Load / span tables for the panel specifications not shown above are available from Kingspan envirocare Technical Services.

Structural Load / Span Tables - Internal Ceiling - 0.9kN (concentrated load)

Chilled Storage Internal Applications 0°C to +5°C

Span L in Metres	Uniformly Distributed Loads (kN/m ²)								
	Panel Thickness (mm)								
	50	60	80	100	125	150	175	200	220
3.0	0.61	0.88	1.47	2.09	2.90	2.72	3.82	3.81	3.80
3.5	0.34	0.60	1.06	1.55	2.20	2.87	3.25	3.17	3.23
4.0	0.13	0.40	0.77	1.16	1.69	2.25	2.82	2.58	2.80
4.5		0.20	0.55	0.88	1.31	1.78	2.26	2.12	2.42
5.0			0.40	0.66	1.02	1.41	1.82	1.75	2.02
5.5			0.28	0.50	0.80	1.13	1.47	1.46	1.69
6.0			0.15	0.37	0.63	0.90	1.20	1.21	1.41
6.5				0.27	0.49	0.73	0.98	1.01	1.19
7.0				0.18	0.38	0.58	0.80	0.85	1.00
7.5					0.29	0.47	0.65	0.71	0.85
8.0					0.22	0.37	0.53	0.59	0.71
8.5					0.15	0.29	0.43	0.49	0.60
9.0						0.23	0.35	0.41	0.50
9.5						0.17	0.28	0.33	0.42
10.0							0.22	0.27	0.35
10.5								0.22	0.29
11.0								0.17	0.24
11.5								0.13	0.19
12.0									0.15
Max. Allowable Span (m)									
	3.60	4.30	5.50	6.60	7.70	8.80	9.70	10.20	10.80

Structural Load / Span Tables - Internal Ceiling - 1.2kN (concentrated load)

Chilled Storage Internal Applications 0°C to +5°C

Span L in Metres	Uniformly Distributed Loads (kN/m ²)								
	Panel Thickness (mm)								
	50	60	80	100	125	150	175	200	220
3.0	0.36	0.78	1.36	1.98	2.78	3.61	3.76	3.75	3.74
3.5		0.44	0.97	1.46	2.11	2.78	3.20	3.08	3.18
4.0		0.19	0.69	1.08	1.61	2.17	2.74	2.50	2.76
4.5			0.48	0.81	1.24	1.70	2.19	2.05	2.35
5.0			0.28	0.60	0.96	1.35	1.75	1.69	1.95
5.5			0.12	0.44	0.74	1.07	1.42	1.40	1.63
6.0				0.31	0.57	0.85	1.15	1.16	1.36
6.5				0.17	0.44	0.68	0.93	0.96	1.14
7.0					0.33	0.54	0.76	0.80	0.96
7.5					0.23	0.42	0.61	0.66	0.80
8.0					0.13	0.33	0.50	0.55	0.67
8.5						0.26	0.40	0.45	0.56
9.0						0.17	0.32	0.37	0.47
9.5							0.25	0.30	0.39
10.0							0.19	0.24	0.32
10.5								0.19	0.26
11.0								0.12	0.21
11.5									0.15
12.0									
Max. Allowable Span (m)									
	3.10	3.80	5.00	6.10	7.40	8.50	9.40	9.90	10.50

Notes:

1. Values have been calculated using the method described in BS EN 14509: 2013 - self-supporting double skin metal faced insulated panels.
2. Load span tables are unfactored and based on KS1100 CS panels with 0.5mm metal internal and 0.5mm metal external facings.
3. All panel thicknesses have been calculated with a minimum support width of 40mm, larger support widths are available.
4. Maximum deflection: Short-term is L/200 and long-term is L/100.
5. Temperature: External +20°C and internal 0°C.
6. The ability of the panel to resist the imposed load, is dependent on the end support connection i.e. support bearing width, number of fasteners used and the support thickness, as well as the type of fastener.
7. The allowable steelwork tolerance between bearing planes of adjacent supports is +/- 5mm.
8. Shaded area denotes the maximum allowable span based on an imposed load of 0.25kN/m² in the absence of specified loads.
9. Load / span tables for the panel specifications not shown above are available from Kingspan envirocare Technical Services.

Structural Load / Span Tables - Internal Ceiling - 1.5kN (concentrated load)

Chilled Storage Internal Applications 0°C to +5°C

Span L in Metres	Uniformly Distributed Loads (kN/m ²)								
	Panel Thickness (mm)								
	50	60	80	100	125	150	175	200	220
3.0		0.51	1.25	1.87	2.67	3.49	3.70	3.69	3.68
3.5		0.19	0.87	1.37	2.01	2.68	3.14	2.98	3.13
4.0			0.57	1.00	1.53	2.08	2.66	2.41	2.71
4.5			0.30	0.73	1.17	1.63	2.11	1.97	2.27
5.0			0.11	0.54	0.90	1.28	1.69	1.62	1.88
5.5				0.33	0.69	1.01	1.36	1.34	1.57
6.0				0.16	0.52	0.80	1.09	1.10	1.31
6.5					0.39	0.63	0.88	0.91	1.09
7.0					0.24	0.49	0.71	0.75	0.91
7.5					0.12	0.38	0.57	0.62	0.76
8.0						0.28	0.46	0.51	0.63
8.5						0.17	0.36	0.42	0.53
9.0							0.28	0.34	0.43
9.5							0.18	0.27	0.36
10.0							0.10	0.18	0.29
10.5								0.11	0.22
11.0									0.15
11.5									
12.0									
Max. Allowable Span (m)									
	2.70	3.30	4.60	5.70	6.90	8.10	9.10	9.50	10.30

Notes:

1. Values have been calculated using the method described in BS EN 14509: 2013 - self-supporting double skin metal faced insulated panels.
2. Load span tables are unfactored and based on KS1100 CS panels with 0.5mm metal internal and 0.5mm metal external facings.
3. All panel thicknesses have been calculated with a minimum support width of 40mm, larger support widths are available.
4. Maximum deflection: Short-term is L/200 and long-term is L/100.
5. Temperature: External +20°C and internal 0°C.
6. The ability of the panel to resist the imposed load, is dependent on the end support connection i.e. support bearing width, number of fasteners used and the support thickness, as well as the type of fastener.
7. The allowable steelwork tolerance between bearing planes of adjacent supports is +/- 5mm.
8. Shaded area denotes the maximum allowable span based on an imposed load of 0.25kN/m² in the absence of specified loads.
9. Load / span tables for the panel specifications not shown above are available from Kingspan envirocare Technical Services.

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