

Our Reference: S9875-RPT01

18 October 2017

Thermal Insulations  
Gate 2/25 Garling Road  
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**NON-CYCLONIC ENGINEERING SPAN TABLES FOR  
THERM-LOC AND THERM-FLAM INSULATED PANELS**

**1.0 Introduction**

Milanovic Neale consulting Engineers have been engaged by Thermal Insulations to produce allowable spans and allowable design pressures tables for 0.6mm & 0.4mm skin Therm-Loc panels and 0.4mm skin Therm-Flam panels.

The span tables are based on a combination of physical testing and theoretical analysis in accordance with AS1170.0:2002.

**Table 1.1 – Panel Range**

Prodct	Panel Skins	Panel Core	Panel Thicknesses
Therm-Loc	0.6 mm G300	EPS, SL Grade	50 to 250 mm
	0.4 mm G300	EPS, SL Grade	50 to 250 mm
Therm-Flam	0.4 mm G300	PIR	50 & 75 mm

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## 2.0 Allowable Wall and Ceiling Spans

**Table 2.1 – Allowable Spans for 0.6 mm Therm-Loc**

Therm-Loc Panel - 0.6mm thick steel skins bonded to SL grade EPS core Allowable Spans (m)					
Panel Thickness (mm)	R Value	Weight (kg/m <sup>2</sup> )	Internal, Non-loadbearing Walls		Ceiling Span
			Non-Freezer Applications	Freezer Applications	Non-Trafficable, maintenance access
50	1.3	11.7	5.85	N/A	3.76
75	1.9	12	7.21	N/A	5.12
100	2.6	12.4	8.32	N/A	5.89
150	4	13.1	10.19	9.69	7.18
200	5.3	13.8	11.77	11.77	8.25
250	6.7	14.5	13.16	13.16	9.18

**Table 2.2 – Allowable Spans for 0.4 mm Therm-Loc**

Therm-Loc Panel - 0.4mm thick steel skins bonded to SL grade EPS core Allowable Spans (m)					
Panel Thickness (mm)	R Value	Weight (kg/m <sup>2</sup> )	Internal, Non-loadbearing Walls		Ceiling Span
			Non-Freezer Applications	Freezer Applications	Non-Trafficable, maintenance access
50	1.3	8.4	4.54	N/A	2.47
75	1.9	8.7	5.56	N/A	3.06
100	2.6	9.1	6.42	N/A	4.63
150	4	9.8	7.87	7.87	5.67
200	5.3	10.5	9.09	9.09	6.51
250	6.7	11.2	10.16	10.16	7.24

**Table 2.3 – Allowable Spans for 0.4 mm Therm-Flam**

Therm-Flam Panel - 0.4mm thick steel skins bonded to PIR core Allowable Spans (m)					
Panel Thickness (mm)	R Value	Weight (kg/m <sup>2</sup> )	Internal, Non-loadbearing Walls		Ceiling Span
			Non-Freezer Applications	Freezer Applications	Non-Trafficable, maintenance access
50	2.3	10.2	5.39	N/A	3.35
75	3.4	11.5	6.47	N/A	4.57

**General Notes for Allowable Wall and Ceiling Span Charts:**

1. Span provided are for internal wall and ceilings, constructed within an external building envelope.
2. Panel building bracing and supports are to be provided by structural framing design by others.
3. Panels spans have been check for the following loading:
  - A distributed service loading of 0.25 kPa (25 kg per square metre).
  - A concentrated service loading of 1.4 kN (140 kg).
  - An internal differential wind loading of 0.45 kPA, suitable for wind regions A and B.
4. Panels spans have not been checked for wind, snow, earthquake, foot traffic, storage, or other loading.
5. A deflection limit of Span/150 has been used for horizontal and vertical load deflection and thermal bowing.
6. Non-Freezer applications are applicable for a maximum temperature difference of 40 °C between skins.
7. Freezer applications and ceiling spans are applicable for a maximum temperature difference of 75°C between skins.
8. Adequate thermal stress relief at supports, panel corners and junctions, connections to structural supports, and other points of restraint, shall be provided.
9. Adequate pressure relief ports or other ventilation systems designed to equalise differential pressures are to be provided.
10. Selection of panel thickness for thermal performance is to be assessed by others.
11. Panel configurations outside of the scope of the span charts are to be checked and certified by a qualified structural engineer.
12. Adequate fixings to support structures are to be provided.



### 3.0 Allowable Design Pressures

**Table 3.1 – Allowable ULS pressures for 0.6mm Therm-Loc**

Therm-Loc Panel - 0.6mm thick steel skins bonded to SL grade EPS core																	
Allowable ULS Pressures (kPa)																	
Panel Thickness	Span (m)																
	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
<b>50</b>	3.90	2.49	1.73	1.27	0.97	0.77	0.62	0.51	0.43	0.36	0.31	0.27	-	-	-	-	-
<b>75</b>	5.86	3.75	2.60	1.91	1.46	1.15	0.93	0.77	0.65	0.55	0.47	0.41	0.36	0.32	0.28	0.25	-
<b>100</b>	7.80	4.99	3.46	2.54	1.95	1.54	1.24	1.03	0.86	0.73	0.63	0.55	0.48	0.43	0.38	0.34	0.31
<b>150</b>	11.70	7.48	5.20	3.82	2.92	2.31	1.87	1.54	1.30	1.10	0.95	0.83	0.73	0.64	0.57	0.51	0.46
<b>200</b>	15.60	9.98	6.93	5.09	3.90	3.08	2.49	2.06	1.73	1.47	1.27	1.10	0.97	0.86	0.77	0.69	0.62
<b>250</b>	19.50	12.48	8.66	6.36	4.87	3.85	3.12	2.57	2.16	1.84	1.59	1.38	1.21	1.07	0.96	0.86	0.78

**Table 3.2 – Allowable SLS pressures for 0.6mm Therm-Loc**

Therm-Loc Panel - 0.6mm thick steel skins bonded to SL grade EPS core																	
Allowable SLS Pressures (kPa) for deflection of Span/150																	
Panel Thickness	Span (m)																
	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
<b>50</b>	1.73	1.23	0.91	0.68	0.52	0.41	0.32	0.26	0.21	0.17	0.14	0.12	-	-	-	-	-
<b>75</b>	2.81	2.06	1.56	1.21	0.95	0.76	0.61	0.50	0.41	0.34	0.29	0.24	0.21	0.18	0.15	0.13	-
<b>100</b>	3.90	2.92	2.25	1.78	1.42	1.15	0.95	0.78	0.65	0.55	0.47	0.40	0.34	0.29	0.25	0.22	0.19
<b>150</b>	6.10	4.65	3.67	2.96	2.43	2.01	1.68	1.42	1.21	1.03	0.89	0.77	0.67	0.58	0.51	0.45	0.40
<b>200</b>	8.31	6.41	5.12	4.18	3.47	2.92	2.47	2.11	1.82	1.57	1.37	1.19	1.05	0.92	0.82	0.72	0.64
<b>250</b>	10.52	8.17	6.58	5.42	4.54	3.85	3.29	2.84	2.46	2.15	1.88	1.66	1.47	1.30	1.16	1.03	0.93

**Table 3.3 – Allowable ULS pressures for 0.4mm Therm-Loc**

Therm-Loc Panel - 0.4mm thick steel skins bonded to SL grade EPS core																	
Allowable ULS Pressures (kPa)																	
Panel Thickness	Span (m)																
	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
<b>50</b>	1.90	1.48	1.03	0.75	0.58	0.45	0.37	0.30	0.25	-	-	-	-	-	-	-	-
<b>75</b>	1.91	1.52	1.27	1.09	0.87	0.68	0.55	0.46	0.38	0.32	0.28	-	-	-	-	-	-
<b>100</b>	2.55	2.04	1.70	1.45	1.16	0.91	0.74	0.61	0.51	0.43	0.37	0.32	0.29	0.25	-	-	-
<b>150</b>	3.82	3.05	2.54	2.18	1.74	1.37	1.11	0.92	0.77	0.66	0.56	0.49	0.43	0.38	0.34	0.30	0.27
<b>200</b>	5.10	4.08	3.40	2.91	2.32	1.83	1.48	1.22	1.03	0.88	0.75	0.66	0.58	0.51	0.45	0.41	0.37
<b>250</b>	6.37	5.09	4.24	3.64	2.90	2.29	1.85	1.53	1.29	1.10	0.94	0.82	0.72	0.64	0.57	0.51	0.46


**Table 3.4 – Allowable SLS pressures for 0.4mm Therm-Loc**

Therm-Loc Panel - 0.4mm thick steel skins bonded to SL grade EPS core																	
Allowable SLS Pressures (kPa) for deflection of Span/150																	
Panel Thickness	Span (m)																
	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
<b>50</b>	1.56	1.07	0.76	0.55	0.41	0.31	0.24	0.19	0.15	-	-	-	-	-	-	-	-
<b>75</b>	2.60	1.85	1.36	1.02	0.78	0.61	0.48	0.39	0.31	0.26	0.21	-	-	-	-	-	-
<b>100</b>	3.67	2.68	2.01	1.55	1.21	0.96	0.77	0.62	0.51	0.42	0.35	0.30	0.25	0.21	-	-	-
<b>150</b>	5.85	4.38	3.38	2.67	2.14	1.73	1.42	1.18	0.98	0.83	0.70	0.60	0.51	0.44	0.38	0.33	0.29
<b>200</b>	8.05	6.11	4.80	3.85	3.13	2.58	2.15	1.80	1.52	1.30	1.11	0.96	0.83	0.72	0.63	0.55	0.49
<b>250</b>	10.25	7.86	6.23	5.05	4.16	3.47	2.92	2.47	2.11	1.81	1.57	1.36	1.19	1.04	0.91	0.81	0.72

**Table 3.5 – Allowable ULS pressures for 0.4mm Therm-Flam**

Therm-Flam Panel - 0.4mm thick steel skins bonded to PIR core												
Allowable ULS Pressures (kPa)												
Panel Thickness	Single Span (m)											
	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	
<b>50</b>	2.59	2.07	1.45	1.07	0.82	0.64	0.52	0.43	0.36	0.31	0.26	
<b>75</b>	4.00	3.02	2.09	1.54	1.18	0.93	0.75	0.62	0.52	0.44	0.38	

**Table 6 – Allowable SLS pressures for 0.4mm Therm-Flam**

Therm-Flam Panel - 0.4mm thick steel skins bonded to PIR core											
Allowable SLS Pressures (kPa) for deflection of Span/150											
Panel Thickness	Span (m)										
	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0
<b>50</b>	2.24	1.45	0.98	0.68	0.49	0.36	0.27	0.21	0.17	0.13	0.11
<b>75</b>	3.92	2.65	1.85	1.33	0.99	0.74	0.57	0.45	0.36	0.29	0.23

**General Notes for Allowable Design Pressure Charts:**

1. Ultimate Limit State (ULS) and Serviceability Limit State (SLS) are as defined in AS/NZS1170.0.
2. Therm-Loc & Therm-Flam panels are to be used in non-cyclonic regions for wall and ceiling applications only.
3. The allowable Serviceability Limit State pressures (SLS) are based on a deflection limit of span/150.
4. No allowance has been made for panel self-weight, service loads, or thermal bowing.
5. The applied loads on the panels are to be calculated in accordance with AS/NZS1170.0-2002, AS/NZS1170.1-2002 & AS1170.2-2011, plus all other relevant Australian Standards.
6. Adequate thermal stress relief at supports, panel corners and junctions, connections to structural supports, and other points of restraint, shall be provided.
7. Adequate pressure relief ports or other ventilation systems designed to equalise differential pressures are to be provided.
8. Selection of panel thickness for thermal performance is to be assessed by others.
9. Panel configurations outside of the scope of the span charts are to be checked and certified by a qualified structural engineer.
10. Adequate fixings to support structures are to be provided.



Should you have any queries please do not hesitate to contact our office.

Yours faithfully,

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