DeltaCool EPS and TPC Panels

Hygrothermal Assessments
Performance Solution
Delta Panels Pty Ltd

Ref: 0275 (00)
Darren O'Dea (Director) I 03.12.25

1.0 Scope & Summary

Speckel Consulting has been appointed by Delta Panels Pty Ltd to undertake 10-year hygrothermal assessments of DeltaCool EPS and TPC Panels.

The scope of this Performance Solution is to address the requirements of 10.8.1 External wall constructions, where 'except for single skin masonry or single skin concrete, where a pliable building membrane is not installed in an external wall, the primary water control layer must be separated from water sensitive materials by a drained cavity.

To address the NCC 2022 Vol 2 Performance Requirements H4P7 Condensation and water vapour management, hygrothermal modelling has been undertaken in line with the Verification Method H4V5 Verification of condensation management .

Under H4P7, risks associated with water vapour and condensation must be managed to minimise their impact on the health of occupants.

Compliance is verified by the acceptance criteria set forth in Section 6 of AIRAH DA07 (NCC 2022 Vol 1 - F8V1 Condensation management), where the proposed wall assemblies have a mould index > 3, it does not occur on the interior surface of the water control layer or the surfaces of building fabric components interior to the water control layer.

Climate Zones 1, 2 and 3 are in scope for this this assessment, with Darwin, Alice Spring and Brisbane chosen to assign climate assumptions for the simulations.

Drawings and specifications have been provided by Delta Panels Pty Ltd. See Section 2.1 and Appendix. 1 for more details. They have been modelled exclusively modelled within this Performance Solution.

DeltaCool EPS and TPC Panels - 0.4 mm steel, 50 mm Expanded Polystyrene with Fire Retardant (EPS-FR) or Thermosetting Phenolic Composite (TPC) and 0.4 mm steel.

In all cases, for both insulation cores and in Climate Zones 1, 2 and 3, the acceptance criteria set forth in Section 6 of AIRAH DA07 (NCC 2022 Vol 1 - F8V1 Condensation management) has been met, where the mould index of 3 is not met or exceeded over 10 years under worst-case confitions.

Comments

DeltaCool EPS and TPC panels present minimal condensation risk when assessed in warm climates (1, 2, and 3).

The steel exterior acts as a vapour barrier. Condensation risk would only occur if this barrier were deliberately penetrated, which falls outside the scope of this assessment.

Consequently, this worst-case assessment using a 50 mm core applies to all panel thicknesses in the DeltaCool range.

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2.0 Background + Methodology

As well as accounting for the thermal response of buildings and building components, it is necessary also to understand the moisture conditions and the effects of humidity as buildings are better insulated.

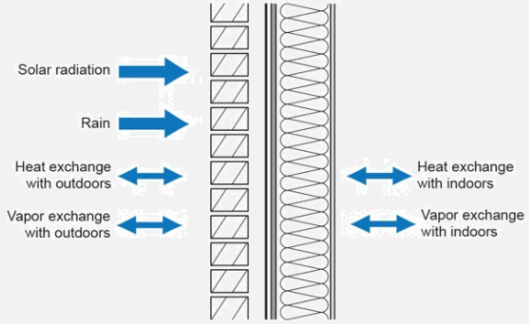
Long-term exposure to high moisture conditions can cause damage to building components, and significant health problems result from mould growth on surfaces exposed to high moisture conditions.

The thermal and moisture conditions and transport in buildings and building components are coupled. It is accepted that high moisture levels result in higher heat losses, and the temperature conditions in building components influence moisture transport. Analysis of heat and moisture coupling is known as “hygrothermics.”

To explore these effects within this study, WUFI® hygrothermal analysis has been undertaken. WUFI® Pro, based on 1D vapour diffusion and liquid transport in building materials, performs dynamic simulations of coupled heat and moisture transfer. The methods have been validated worldwide and provide a realistic simulation of hygrothermal conditions in building components and buildings under actual climate conditions. This, of course, is directly dependent on the accuracy of the materials inputs, and thus fundamental to this study.

WUFI® Pro is the standard program for evaluating moisture conditions in building components, taking into account (where appropriate):

- built-in moisture,
- driving rain,
- solar radiation,
- long-wave radiation,
- capillary transport, and:
- summer condensation.



Other programs and traditional methods, like the Glaser-Method, need to consider these effects and are thus limited to only evaluating winter condensation effects and not the annual cycle of drying. As such, WUFI® Pro determines the hygrothermal performance of building components under real climate conditions.

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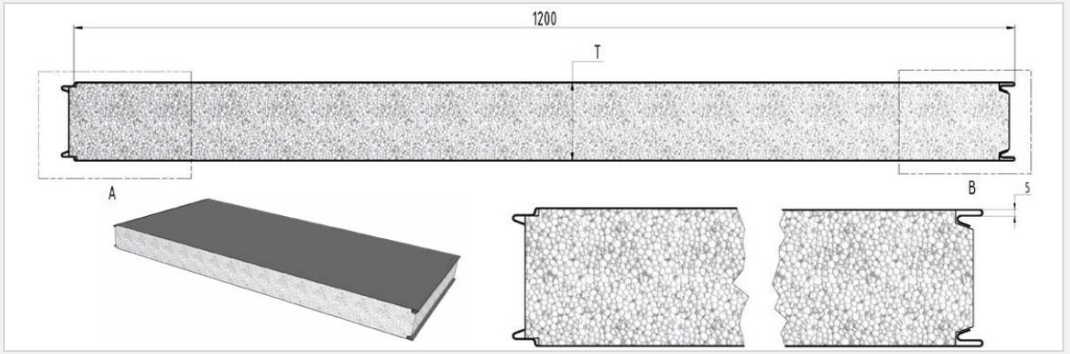
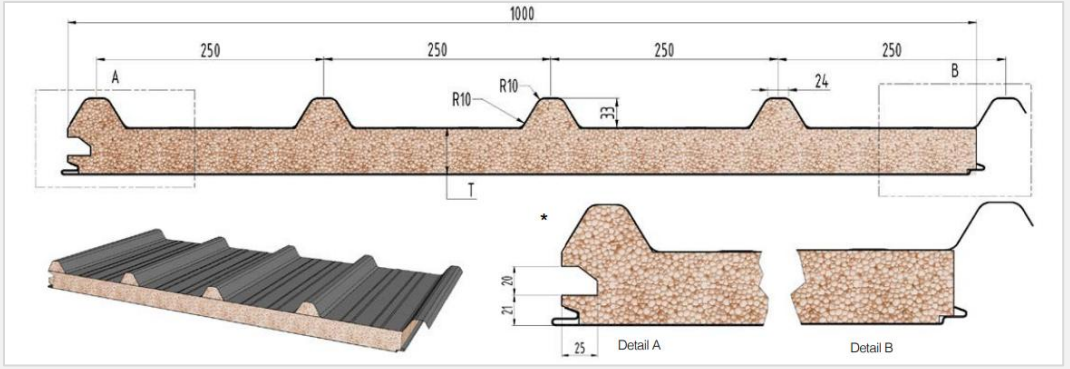
2.1 Background + Methodology

The following systems have been modelled within this Performance Solution.

DeltaCool EPS and TPC Panels - 0.4 mm steel, 50 mm Expanded Polystyrene with Fire Retardant (EPS-FR) or Thermosetting Phenolic Composite (TPC) and 0.4 mm steel.





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3.0 Material Properties

The following material properties have been used in this assessment. See Appendix 2 for supporting material data.

Specific Category Values	Bulk Density (kg/m³)	Porosity (m³/m³)	Specific Heat Capacity (J/kgK)	Thermal Conductivity (W/mK)	Vapour Diffusion Resistance Factor	Typical Built-in Moisture (kg/m³)
Steel (0.4 mm)	8050	0.001	510	160	100000	0
Expanded Polystyrene with Fire Retardant (EPS-FR) (50 mm)	13.9	0.95	1500	0.041	30	1.79
Thermosetting Phenolic Composite (TPC) (50 mm)	39	0.95	1500	0.039	30	1.79

Bulk Density (kg/m³) - converts the specific heat by mass to the specific heat by volume.

Porosity [m³/m³] - determines the maximum water content.

Specific Heat Capacity (J/kgK) - the heat needed to raise the temperature of one kilogram of mass by 1 kelvin by mass of the dry material.

Thermal Conductivity (W/mK) - the heat conductivity of the material in dry conditions and at 23°C.

Vapour Diffusion Resistance Factor - the material's diffusion resistance factor (μ-value) in dry conditions. The μ-value states by how much the diffusion resistance of the material in question is higher than that of stagnant air.

Typical Built-in Moisture – assumed installation water content under dry site conditions. If materials are allowed to get physically wet, these values must reflect the actual moisture values.

4.0 Assumptions | Inputs

The table on the right allows for a detailed review of the inputs required for a complete hygrothermal assessment.

The inputs are deemed 'worst case' and have been agreed upon with clients in all cases.

The project assumes a 'worst case' wall construction is exposed to high winter internal moisture loads.

WUFI Settings	Assumptions	Notes
Grid	Fine (90 x 90)	Fine = Highest quality assessment
Orientation	South	Worst-case direction based on least drying potential
Inclination	90 º	-
Driving Rain Coefficients	AIRAH DA07	Rain exposure factor (FE) = 1.4 (10 – 20 meters high, severe exposure), Rain deposition factor (FD) = 1 (subject to runoff)
Ext Heat Resistance	0.058 m²K/W + 0.0526 m²K/W (Ceiling / Roof)	The heat transfer coefficient governs the heat exchange between the component and the surroundings.
Ext Short-Wave Radiation Absorptivity	0.80 + 0.80 (Ceiling / Roof)	Assumes a medium colour finish.
Ext Long-Wave Radiation Emissivity	0.9	
Int Heat Resistance	0.125 m²K/W	The heat transfer coefficient governs the heat exchange between the component and the surroundings.
Initial Relative Humidity	80 %	Conservative assumption that all materials across the assessment have high water content (kg/m³)
Initial Temp	12.9º C	Assumes average yearly DBT for Hobart
Outdoor Climate	Brisbane, Darwin and Alice Spring	Meteonorm 7.2
Indoor Climate	AIRAH DA07	142.5 m³, 2 bedroom home. Air exchange rate 0.20.
Calculation Period	1/5/2024 (12am) – 1/5/2034 (12am)	Calculation start in winter to increase moisture loading to represent worst case assessment.

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4.1 Assumptions | Additional Definitions

Driving Rain Coefficients - driving rain coefficients are used to estimate the driving rain load on the building component. The rain load on a wall is determined by the driving rain rather than the normal rain.

Air Change Source (ACH) - the behaviour of air change sources is controlled by specifying the air change rate,. Guided by the desired air change rate, an air change source exchanges a certain amount of air from the source's location in the component with outdoor or indoor air. Depending on the temperature and humidity conditions in the component and in the outdoor or indoor air, this process may transport heat and humidity into the component or out of the component.

Infiltration - allows to estimate the amount of indoor air moisture driven into the component by convective air flows. It depends on the airtightness of the building envelope, on the height of the contiguous indoor air space, the structure of the component with its possible flow paths and the current transient climatic outdoor and indoor conditions.

Ext Short-Wave Radiation Absorptivity - indicates the fraction of the total (i.e., visible and non-visible) solar radiation incident on the component surface which is absorbed.

Ext Long-Wave Radiation Emissivity- describes the efficiency of long-wave emission, i.e. the heat loss by thermal radiation emitted by the surface of the component.

Sd-value - The sd-value of a surface 'coating' (if present), such as a paint coat, wallpaper, vapour retarder, weathered surface zone etc. This allows accounting for the diffusion-retarding effect of such a 'coating' without the need to explicitly include the possibly very thin layer in the component assembly.

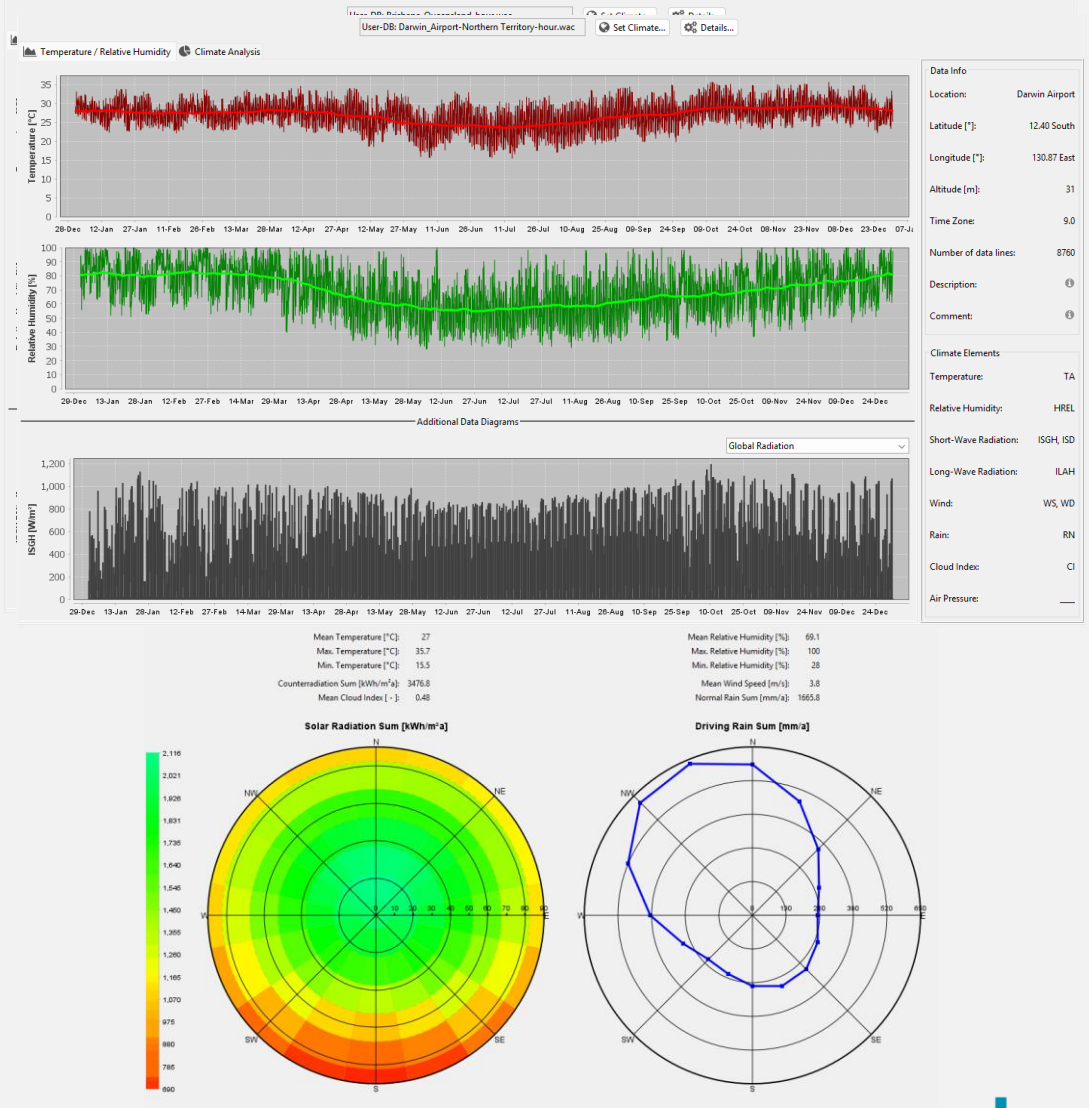
Sensitivity Class – Only the proposed insulation has been sampled within this study, with a corresponding ASHRAE 160 sensitivity class of ‘Medium resistant’ (Glass wool).

Material Class – Only the proposed insulation has been sampled within this study, with a corresponding ASHRAE 160 Material Class of ‘Almost no decline = 0.1’.

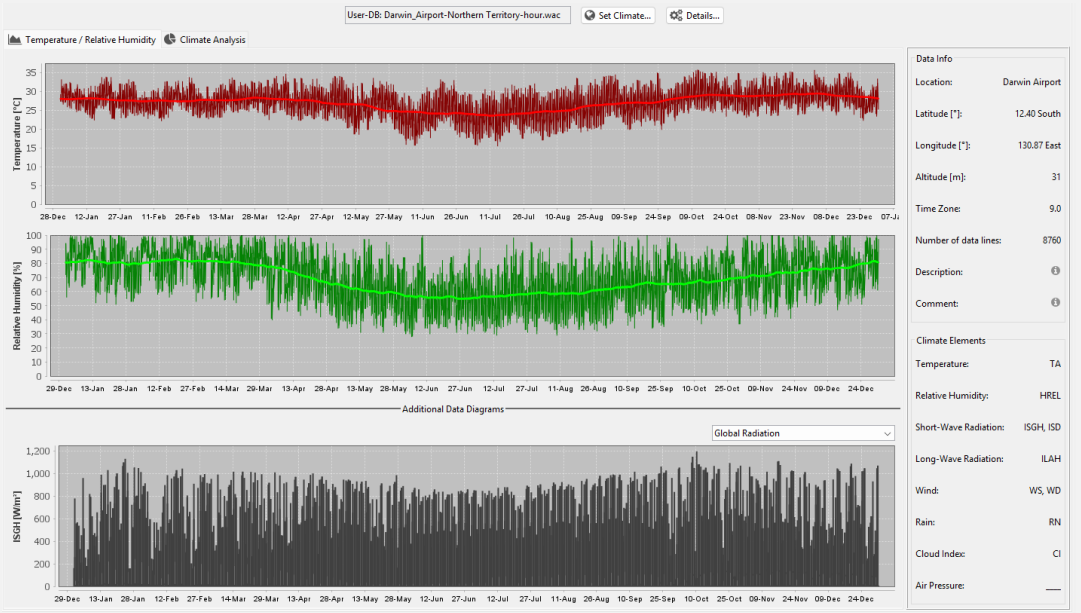
5.0 Climate | Exterior | Brisbane

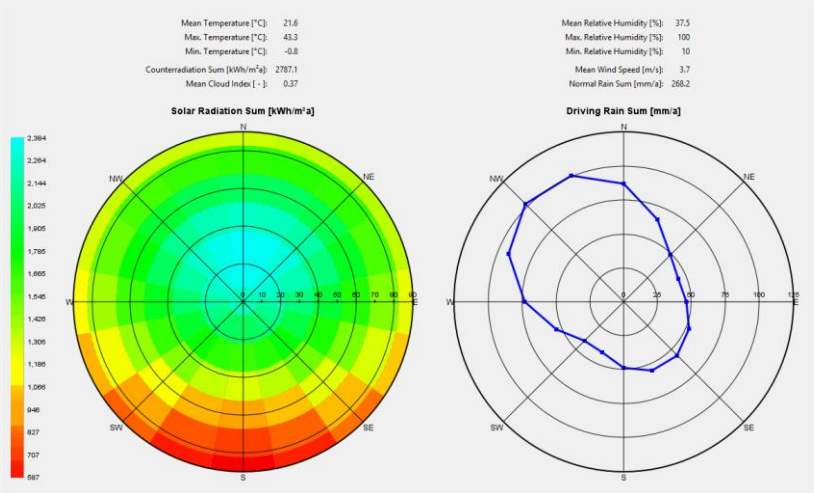
Starting from specified initial conditions, WUFI computes the temporal evolution of the temperature and moisture distributions in the building component. WUFI needs the following climate data for each time step:

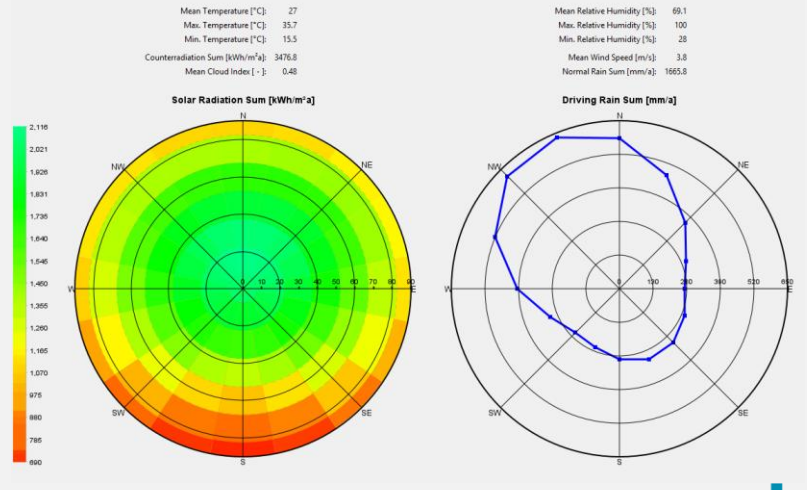
- the rain load vertically incident on the exterior surface in [Ltr/m²h].
- the solar radiation vertically incident on the exterior surface in [W/m²]. For the determination of the amount of radiation, the inclination and orientation of the surface must be taken into account.
- the temperature of the exterior air in [°C]
- the relative humidity of the exterior air (%)
- the temperature of the interior air in [°C]
- the relative humidity of the interior air (%)
- the barometric pressure in [hPa]. Since the barometric pressure has only a minor effect on the calculation, specification of a mean value over the calculation period can be sufficient.
- the long-wave atmospheric counter radiation [W/m²], if radiation cooling is to be accounted for during the night.



5.1 Climate | Exterior | Alice Spring & Darwin







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5.2 Climate I Interior I All Climates

AIRAH DA07 – 2019 – Criteria for Moisture-Control Design Analysis in Buildings has been used for all internal moisture profiles and for ascertaining moisture risk.

WUFI generates a moisture profile based on:

- The exterior climate in each model
- Indoor design temperature
- Indoor design humidity (without dehumidification or air conditioning) based on the volume and number of bedrooms. Construction quality

A 2-bedroom unit of 200 m³ has been assumed. 21.1°C is assumed to be the default internal temperature based on external temperatures as per DA07 requirements. Any variation from this standard volume and moisture generation will vary the results.

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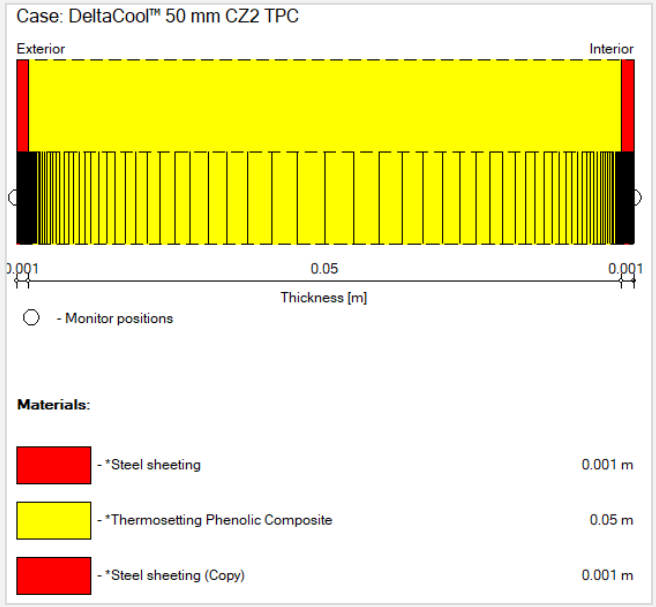
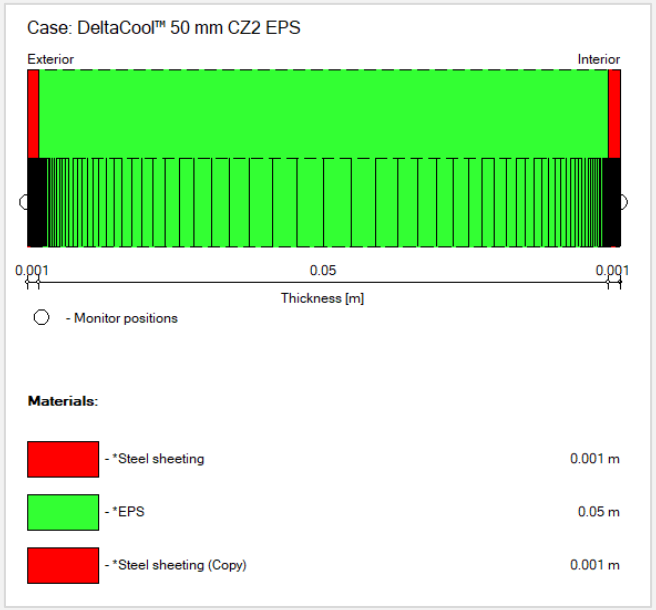
5.3 Models

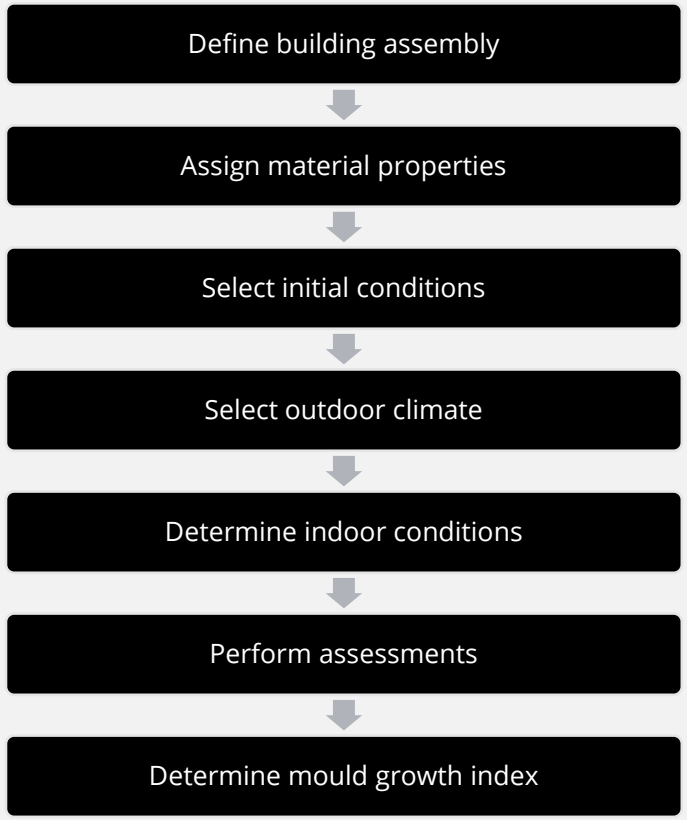
The following models are the focus of this study, with the lines (red) identified as the surfaces at highest risks of water vapour and/or condensation risk.





6.0 Results I Interpreting Results

AIRAH DA07 Criteria for Moisture Control Design Analysis in Buildings (2020) is a modified text adoption of ANSI/ASHRAE 160-2016. This study has used its moisture performance evaluation criteria and reporting requirements as per the process below.



To minimise problems associated with mould growth on the surfaces of components of building envelope assemblies, the mould index, calculated following AIRAH DA07 - Criteria for Moisture Control Design: Equations 6-1 through 6-7, shall not exceed a value of 3 and not continue to grow after the study period of 10 years.

The building material surface under analysis, has been assigned to one of the following four sensitivity classes:

Very Sensitive - Untreated wood; includes lots of nutrients for biological growth

Sensitive (Timber) - Planed wood, paper-coated products, wood-based boards

Medium Resistant (insulation) - Cement or plastic-based materials, mineral fibres

Resistant - Glass and metal products, materials with efficient protective compound treatments

The decline factor for the material class is assumed to be 0.1 has been used throughout this research.

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6.1 Results I EPS

The graph on the right shows a ten - year study representing the risk of mould growth for the internal 1 mm of insulation for the wall.

Over the study, the mould growth index (MGI) records compliant results, being less than 3.0, cycling year on year and with a peak of and 0.00095 (red) in Climate Zone 2.

Based on a maximum MGI of 3, all wall system have managed the risks associated with water vapour and condensation to minimise their impact on the health of occupant.

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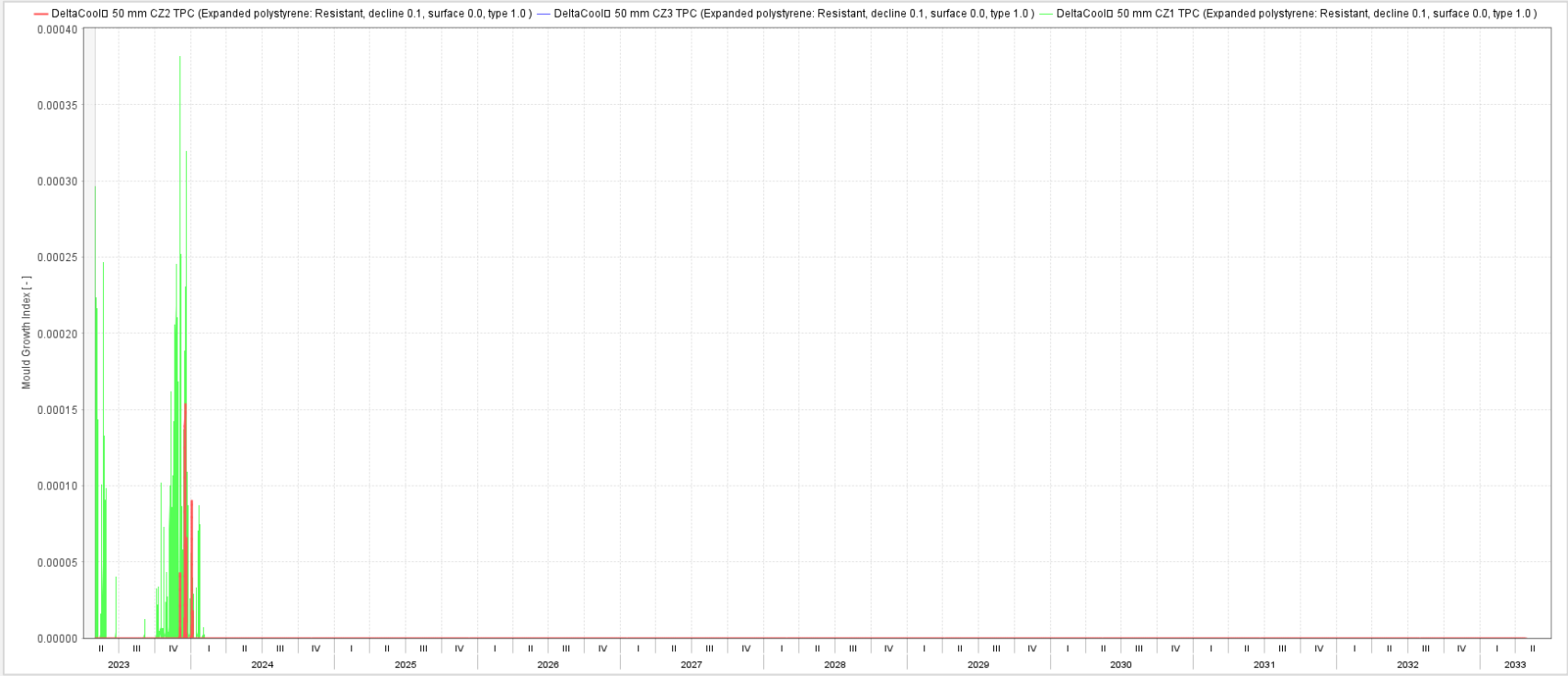
6.2 Results I TPC

The graph on the right shows a ten - year study representing the risk of mould growth for the internal 1 mm of insulation for the wall.

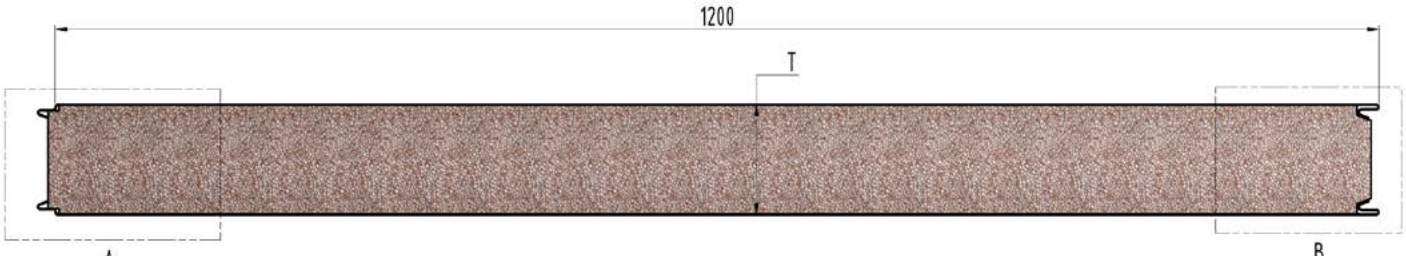
Over the study, the mould growth index (MGI) records compliant results, being less than 3.0, cycling year on year and with a peak of and 0.00038 (green) in Climate Zone 1.

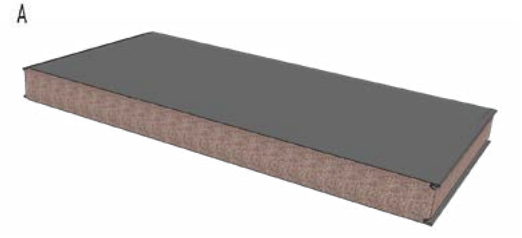
Based on a maximum MGI of 3, all wall system have managed the risks associated with water vapour and condensation to minimise their impact on the health of occupant.



Appendix. 1: Specifications

DeltaCool-TPC
SPECIFICATIONS





Detail A Detail B

DeltaCool-TPC is an Insulated Wall Panel System, comprising of two pre-painted, roll-formed steel skins, bonded to a Thermosetting Phenolic Composite core.

Both skins have a roll-formed tongue and groove edge.

Skins are coated with an anti-bacterial paint that inhibits the growth of bacteria.

CodeMark

CodeMark Australia Certificate CM40365 certifies that DeltaCool-TPC complies with the stated performance provisions of the NCC2022. Please refer to the certificate as displayed on our web page for the exact details of the compliance.

Profiles Available

- Smooth
- Ribbed
- MicroRibbed
- 5V
- SingleV

Recommendations

- Cold Stores
- Commercial Kitchens
- Food Processing Areas
- Portable Buildings
- Home Extensions
- Spray Booths
- Wineries
- Commercial Buildings
- Residential Buildings
- Growing Rooms

Bushfire Attack Level - BAL 29

DeltaCool-TPC achieved a Bushfire Attack Level (BAL) of AA29, as per CSIRO report Number FSZ2373 issued 9 June 2023, when tested in accordance with the test method AS 1530.8.1

Fire Test Certificate - AS ISO 9705

Group 1 Classification in accordance with NCC Volume One Specification BCA2022 C2D11 & Specification 7, Fire Hazard Properties, Clause S7C4 determined in accordance with AS 5637.1:2015 as per BRANZ test report FI6323-01-2 issued 23rd February 2021

Early Fire Hazard Properties AS 1530.3:1999

AWTA Test Report 23-000591 20-02-2023

Index	Test Range	External Top Skin
Ignitability	0-20	0
Spread of Flame	0-10	0
Heat Evolved	0-10	0
Smoke Developed	0-10	1

Steel Skin Details	Top Skin	0.40mm / 0.60mm / G300 Z275	
	Bottom Skin	0.40mm / 0.60mm / G300 Z275	
Max. Skin Temperature	78°C Dry Heat		
Core Material Details	Thermosetting Phenolic Composite (TPC)		
Thermal Conductivity AS 1366.2/ASTM C 518	Average 0.039 W/mK @23°C		
Core Density	36kgs/m³ +/- 4 kgs		
Panel Weight (kgs/m²) based on 0.6mm steel skins	50mm Panel	11.70	
	75mm Panel	12.06	
	100mm Panel	12.43	
	150mm Panel	13.15	
	200mm Panel	13.84	
External Wall R Value (m².K/W) AS/NZS 4859 Parts 1 & 2:2018	Thickness	Winter (15°C)	Summer (23°C)
	50mm Panel	1.46	1.41
	75mm Panel	2.11	2.01
	100mm Panel	2.76	2.61
	150mm Panel	4.06	3.86
	200mm Panel	5.41	5.16
Factory Mutual	FM Approval Class 4880, 4881 & 4882		
Certificate of Conformity	CodeMark Australia Certificate - CM40365		
Sheet Coverage (mm)	1200mm		
Length (mm)	Cut to length. Minimum of 1800mm +/-5mm		
Thickness (mm)	50, 75, 100, 150, 200		
Flatness Standards	0.40mm 0.60mm	Surface deformations can be apparent to the naked eye when observed in certain lighting conditions	
Patent Application No.	AU2023266264		

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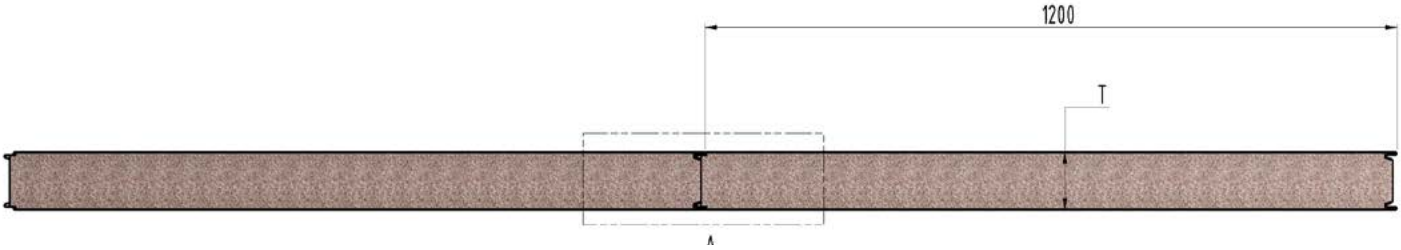
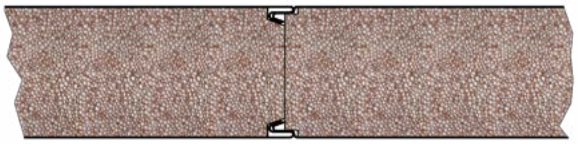
Version Date: 2024-10-23

DeltaCool-TPC
SPECIFICATIONS





Detail A

0.60mm DeltaCool-TPC Bracing Capacity			
Panel Height (m)	2.4	1.2*	4.8*
Kn/m	5.0	10.0	2.5
Bracing Units (BU)	100	200	50

* Figures for 1.2m & 4.8m high panels are extrapolated. It is acceptable to extrapolate Bracing Capacity heights between 1.2m & 4.8m. For heights outside of this dimension range, Diaphragm Analysis is required to establish Bracing Capacity.

Shear Load Transference - Shear load is transferred by rivets into the floor / ground surface or the perpendicular walls, ceiling & roof at a rate of 1.21 kN per 4.0 mm diameter rivet.

Fixing rivets at 200mm centres complies with the 20-minute flame barrier requirements and delivers 14.5 kN of shear capacity transfer per panel (6 on each side) horizontally, and 12.1 kN per metre in vertical joints. Limited by the ability of the panel to transfer the shear.

If a higher level is required, it is necessary to stitch the joints, with each 4.0mm diameter rivet providing 1.21 kN in shear in the slip joint.

Delta Cool TPC Panel Span Tables (mm)							
		Freestanding	1 Wall	2 Walls	3 Walls	Enclosed	Walls
N1	50mm	5400	5300	5300	4300	5200	3700
	75mm	7100	7100	5400	5100	6300	4600
	100mm	7800	7500	7000	5600	7000	5500
	150mm	9600	9600	7600	6400	8000	8400
	200mm	10500	10500	8300	6900	8400	10500
N2	50mm	5000	5000	4600	3500	4300	3700
	75mm	7100	7100	5400	4100	5000	4600
	100mm	8000	8100	5800	4300	5400	5500
	150mm	9600	9600	6700	4900	6200	8400
	200mm	10500	10500	8300	6000	7100	10500
N3	50mm	4600	4600	3400	2750	3200	3700
	75mm	5400	5300	3900	2900	3600	4200
	100mm	6600	5700	4100	3050	3800	4500
	150mm	8700	6600	4600	3400	4300	5100
	200mm	10500	8700	5700	3900	5200	6600
N4	50mm	3600	3500	2700	2200	2500	2900
	75mm	5100	4000	3200	2200	2800	3200
	100mm	5400	4200	3000	2300	2800	3300
	150mm	6300	4900	3400	2500	3300	3800
	200mm	7800	6000	3400	2500	3300	4200

The above table lists the ultimate wind load pressure for strength design and the pressure corresponding to a Span/150 single span deflection ratio for 0.60mm G300 steel skins bonded to a Thermosetting Phenolic Composite. The designer shall determine if Span/150 deflection ratio is appropriate for intended use. Loads for a more stringent deflection ratio can be determined by linearly proportioning the loads provided. Differential thermal effects are not incorporated in the loads provided.

As at the stated Version Date all of the information contained in this document is correct. Please check on our WebPage to ensure that you're referencing the current version.

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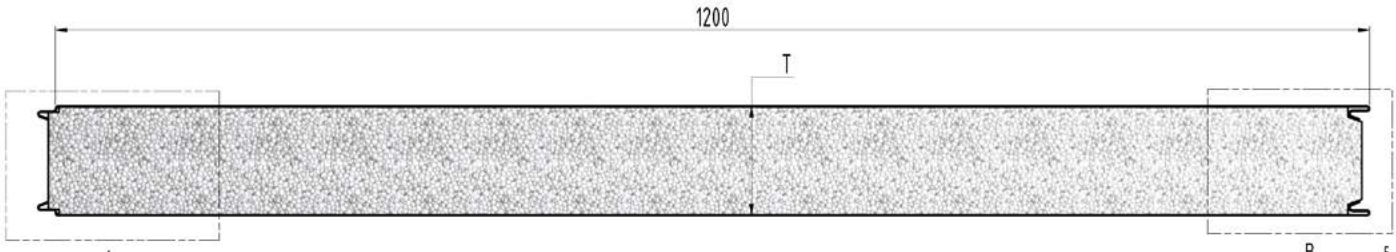
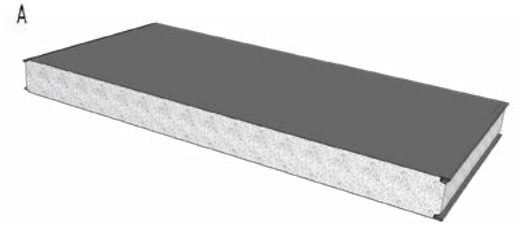
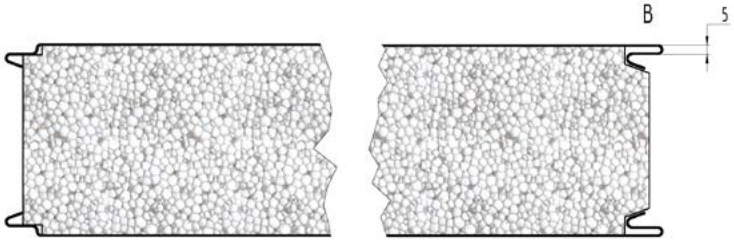
Version Date: 2024-10-23

DeltaCool-EPS-FR
SPECIFICATIONS







Detail A Detail B

Due to the nature of the manufacturing process the actual dimensions may vary. Please refer to the stated acceptable tolerances allowances.

DeltaCool-EPS-FR is an Insulated Wall Panel System, comprising of two pre-painted, roll-formed steel skins, bonded to a fire retardant grade expanded polystyrene insulating core.

Both skins have a roll-formed tongue and groove edge.

Skins are coated with an anti-bacterial paint that inhibits the growth of bacteria.

CodeMark

CodeMark Australia Certificate CM40365 certifies that DeltaCool-EPS-FR complies with the stated performance provisions of the NCC2022. Please refer to the certificate as displayed on our web page for the exact details of the compliance.

Profiles Available

- Smooth
- Ribbed
- MicroRibbed
- 5V
- SingleV

Recommendations

- Cold Stores
- Commercial Kitchens
- Food Processing Areas
- Portable Buildings
- Home Extensions
- Spray Booths
- Wineries
- Commercial Buildings
- Residential Buildings
- Growing Rooms

Bushfire Attack Level - BAL 29

DeltaCool-EPS-FR Wall up to 150mm thick has a BAL 29 rating as per the BRANZ Bushfire Report FC10893-001, 24 October 2018

Fire Test Certificate - AS ISO 9705

Group 1 Classification in accordance with NCC Volume One Specification BCA2022 C2D11 & Specification 7, Fire Hazard Properties, Clause S7C4 determined in accordance with AS 5637.1:2015 as per BRANZ test report 374 Issue 2 on 23rd February 2021

Early Fire Hazard Properties AS 1530.3:1999

AWTA Test Report 18-006076 14-11-2018

Index	Test Range	External Top Skin
Ignitability	0-20	0
Spread of Flame	0-10	0
Heat Evolved	0-10	0
Smoke Developed	0-10	2

Steel Skin Details ColorBond®	Top Skin	0.40mm / 0.60mm / G300 Z275	
	Bottom Skin	0.40mm / 0.60mm / G300 Z275	
Max. Skin Temperature	78°C Dry Heat		
Core Material Details	Expanded Polystyrene - Fire Retardant Grade		
Thermal Conductivity AS 1366.2/ASTM C 518	Average result of 0.042 W/mK @ 23°C		
Adhesive	Thermosetting two-part adhesive		
Core Density	13.5kg/m³		
Panel Weight (kgs/m²) based on 0.6mm steel skins	50mm Panel	10.58	
	75mm Panel	10.94	
	100mm Panel	11.30	
	150mm Panel	12.02	
	200mm Panel	12.72	
External Wall R Value (m².K/W) AS/NZS 4859 Parts 1& 2:2018	**Thickness**	**Winter (15°C)**	**Summer (23°C)**
	50mm Panel	1.39	1.32
	75mm Panel	1.91	1.81
	100mm Panel	2.53	2.40
	150mm Panel	3.70	3.52
	200mm Panel	4.89	4.64
Certificate of Conformity	CodeMark Australia Certificate - CM40365		
Length Tolerance (mm)	5mm+/-		
Sheet Coverage (mm)	1200mm +/-5mm		
Length (mm)	Cut to Length Min of 1800mm		
Thickness (mm)	50,75,100,150, 200		
Flatness Standards	0.40mm 0.60mm	Surface deformations can be apparent to the naked eye when observed in certain lighting conditions	

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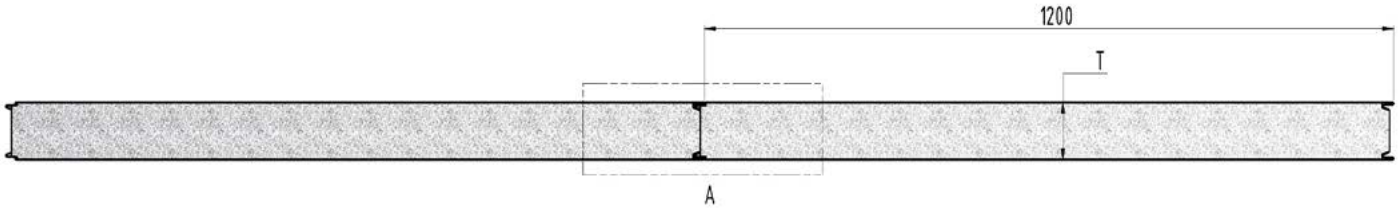
Version Date: 2025-01-16

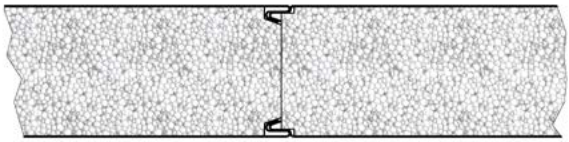
DeltaCool-EPS-FR
SPECIFICATIONS



0.60mm DeltaCool-EPS-FR Bracing Capacity

Panel Height (m)	2.4	1.2*	4.8*
Kn/m	5.0	10.0	2.5
Bracing Units (BU)	100	200	50

* Figures for 1.2m & 4.8m high panels are extrapolated. It is acceptable to extrapolate Bracing Capacity heights between 1.2m & 4.8m. For heights outside of this dimension range, Diaphragm Analysis is required to establish Bracing Capacity.



Detail A

EXTERNAL SPANS - ROOF & WALL

DeltaCool-EPS-FR Panel Span Tables (mm)

		Roof					Wall
		Freestanding	1 Wall	2 Wall	3 Wall	Enclosed	
N1	50mm	5300	5300	5300	4200	4700	3550
	75mm	7100	7100	6500	4500	5300	4400
	100mm	7800	7500	7000	4850	5500	5250
	150mm	9600	9600	7600	5600	7500	8050
	200mm	10500	10500	8300	6600	8200	10050
N2	50mm	5000	5000	4300	3450	4200	3550
	75mm	6500	6500	5300	3850	4700	4400
	100mm	7000	6700	5500	3950	4850	5250
	150mm	8600	8600	6300	4500	6100	8050
	200mm	9800	9800	7200	4800	7100	10050

		Roof					Wall
		Freestanding	1 Wall	2 Wall	3 Wall	Enclosed	
N3	50mm	4400	4400	3800	2750	3300	3550
	75mm	5400	5200	4200	2900	3600	4000
	100mm	5600	5400	4400	3050	3900	4300
	150mm	6900	6500	5000	3300	4900	4900
	200mm	7800	7800	5400	3700	5300	6300
N4	50mm	3600	3600	2500	2050	2400	2750
	75mm	4400	3900	2650	2150	2600	3050
	100mm	4600	4100	2800	2250	2700	3150
	150mm	5600	4800	3400	2450	3300	3650
	200mm	6800	5400	3600	2650	3500	4000

The Engineer's notations relating to the applied conditions of use of the table are fully displayed on our web page.

INTERNAL SPANS - CEILING, WALL & COLD STORAGE

DeltaCool-EPS-FR Panel Span Tables (mm)

			Single Span (mm)								Continuous Span (mm)							
Application		Maximum Pressure	50mm	75mm	100mm	125mm	150mm	175mm	200mm	250mm	50mm	75mm	100mm	125mm	150mm	175mm	200mm	250mm
Non Load Bearing Walls		0.25 kPa	5900	7900	9990	10808	11180	11600	12200	12840	5900	8140	9990	10880	11180	11600	12200	12840
Load Bearing Walls			4370	5850	7390	8050	8270	8580	9030	9500	4910	6020	7390	8050	8270	8580	9030	9500
Ceilings			3950	5290	6690	7290	7490	7770	8170	8600	4450	5450	6690	7290	7490	7770	8170	8600
Non Load Bearing Walls	Chiller >0°C	0.5 kPa	-	-	6990	7620	8940	9280	9760	10270	-	-	6990	7620	8940	9280	9760	10270
	Freezer <0°C		-	-	-	-	7830	8120	8540	8990	-	-	-	-	7830	8120	8540	8990
	Blast Freezer <-25°C		-	-	-	-	-	-	7810	8220	-	-	-	-	-	-	7810	8220
Load Bearing Walls	Chiller >0°C	0.5 kPa	-	-	6390	7510	7830	8120	8540	8990	-	-	6780	7660	7980	8280	8710	9170
	Freezer <0°C		-	-	-	-	7830	8120	8540	8990	-	-	-	-	7830	8120	8540	8990
	Blast Freezer <-25°C		-	-	-	-	-	-	7810	8990	-	-	-	-	-	-	7890	8270
Ceilings	Chiller >0°C	0.5 kPa	-	-	6190	7290	7490	7770	8170	8600	-	-	5880	6930	7120	7380	7770	8340
	Freezer <0°C		-	-	-	-	7490	7770	8170	8600	-	-	-	-	6830	7090	7450	8010
	Blast Freezer <-25°C		-	-	-	-	-	-	7690	8600	-	-	-	-	-	-	7070	7570

The Engineer's notations relating to the applied conditions of use of the table are fully displayed on our web page.

As at the stated Version Date all of the information contained in this document is correct. Please check on our WebPage to ensure that you're referencing the current version.

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