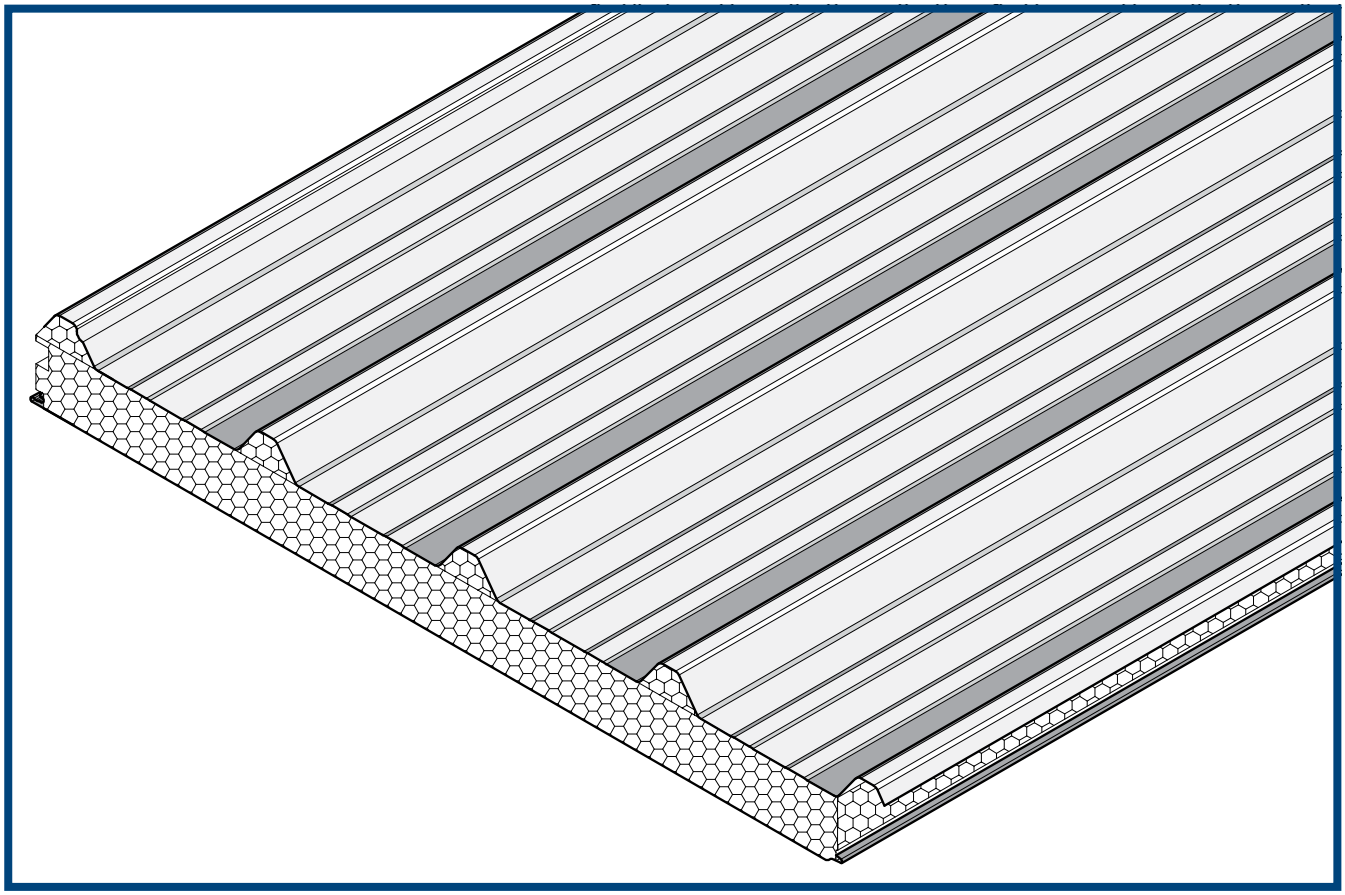
Solaris® Roof Panel

2.0 Construction and Applications

solaris®
Insulated Roofing Panels by Retracom



Solaris® roof panel is a long spanning, insulated, all-in-one roof product.
Solaris® roof panel is energy efficient, hygienic, durable, aesthetically pleasing, fast and easy to install.

Applications

Typical applications are:

- Industrial and Commercial roofing
- Home improvement patios
- Room enclosures
- Residential roofing

Commercial and industrial applications—Part J compliant energy efficient product:

- Air-conditioned offices
- Warehouses
- Factories
- Schools
- Shops
- Public buildings
- Food processing facilities and clean rooms.

Features

- **Quick and easy** installation
- **Economical**
- **Low pitch** design with anti-capillary groove.
- **Long Spanning** panel, reducing structural support requirements.
- **Fire-retardant** treated core, BCA materials Group 2.
- **Void Filled Profile** for improved vermin proofing and insulation.

Warranty

To the original purchaser, Retracom warrants for a period of fifteen (15) years, Solaris® insulated roofing panels (as supplied by Retracom) against de-lamination. Retracom shall provide free replacement (at our factory), product(s) deemed faulty by Retracom. This warranty expressly excludes parts or components not manufactured by Retracom*. Such parts or components will be subject to their manufacturer's warranty.

*Up to 15 years architectural panel roofing warranty - by application to BlueScope. The BlueScope warranties and application forms are downloadable on their website.

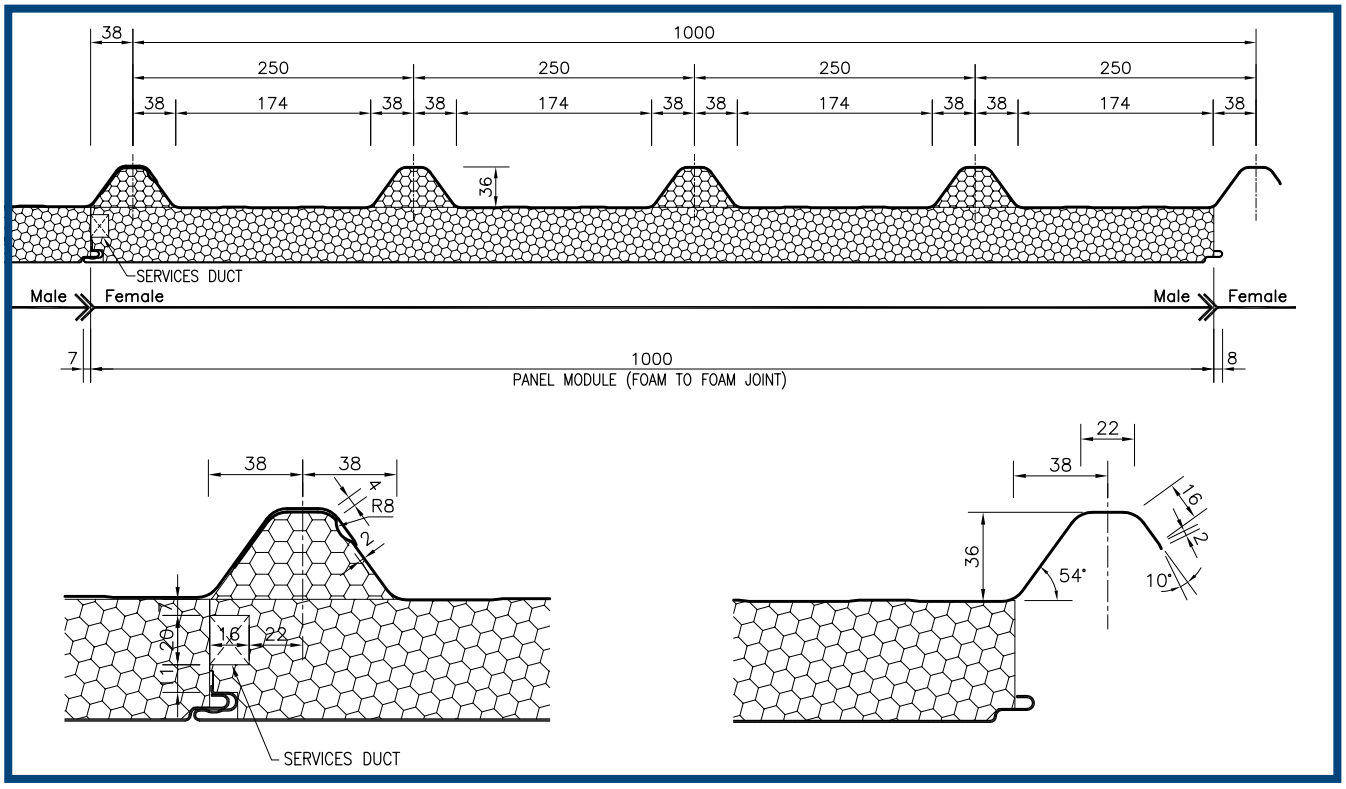
firesmart foodsmart ecosmart fibresmart

EPSA Inc. Expanded Polystyrene Panel Manufactures Group EPSA CERTIFIED PRODUCTS

Manufactured with Colorbond® Steel

Solaris® Roof Panel

2.1 Specification



Specification

- **Width of module:** 1000mm
- **Thickness**
  Standard:
  50mm,
  75mm,
  100mm,
  125mm,
  150mm
- **Length:**
  Minimum:
  2400mm
  Maximum:
  16,000mm
- **Rib profile:**
  Trapezoidal 36mm profile height.
- **Pitch** (minimum):
  Single span:1.5º
  Multi span: 5º
  (See Roof Drainage Chart.)
- **Skins:**
  Roof: 0.42mm Hi-Tensile pre painted COLORBOND® steel.
- Ceiling: 0.5mm pre painted Colorbond® steel.
- **Stocked Colours:**
  Roof side
  Surfmist®
  Paper Bark®
  Classic Cream™
  Dune®
  Headland®
  Pale Eucalypt®
  Ceiling side
  Surfmist®
- **Flatness:**
  The core sheets ar
  finger jointed and e
  drum sanded to giv e
  the flattest surface possible.
- **Standard ceiling finish:**
  Strippable film to underside 'Smooth' with commercial flatness.
- **Core:**
  SL grade expanded polystyrene (EPS) with void filled profile.
- **Gutter cut back:**
  60mm,
  80mm,
  100mm
- **BCA Materials Group Classification:**
  Group 2
  (Group 1 is available with additional fixings.)
- **Spans:** Up to 9700mm (150mm Solaris® at 0.5kpa Ultimate design wind pressure.)
- **Jointing System:**
  Tongue and groove Retracom Flushline MkII joints.
- **Expansion joints:**
  Required as per roof installation code. See Solaris® drawing. Required every 16 metres max. Overhang 250mm at 5º minimum pitch.
- **Temperature:**
  Maximum skin temperature: 80ºC.

Notes

* Flatness appearance—'Commercial': Surface deformations are faintly detactable to the eye when observed in artificial or direct light and are apparent to the eye when observed in low incident light.

** Subject to minimum quantities

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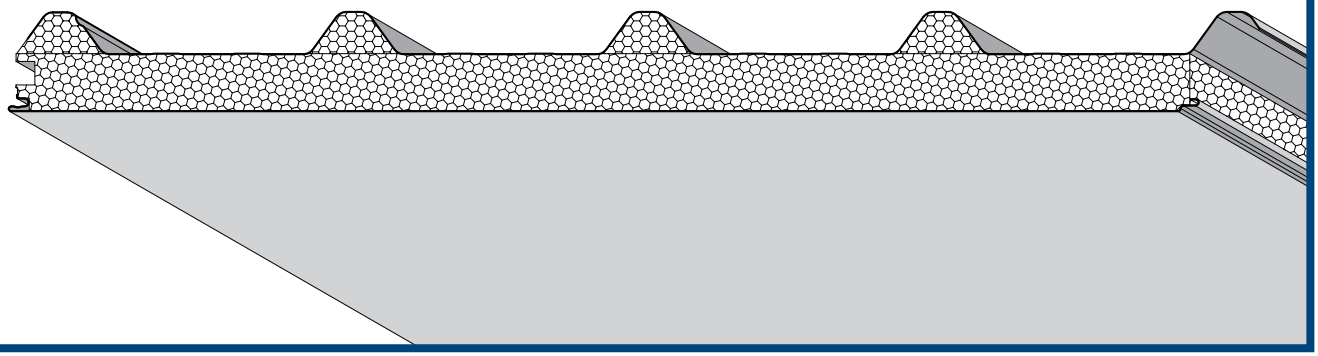
2.2 Profile Type and Colours

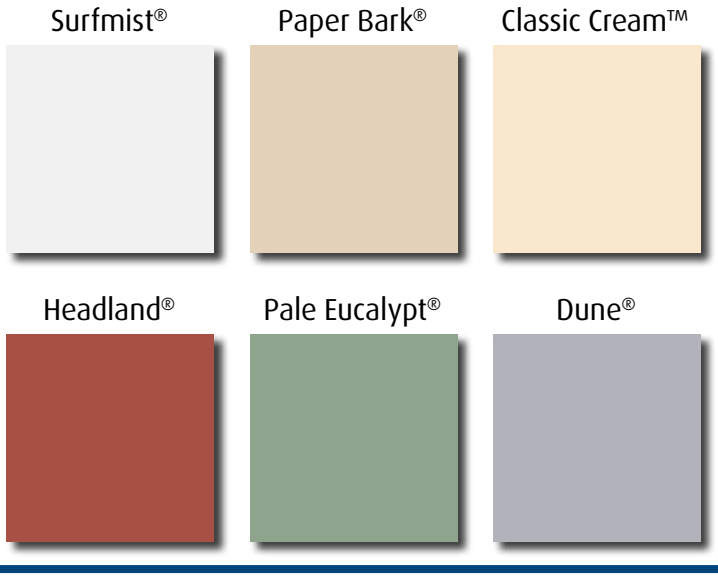
2.2.1 Profile Type

'Smooth'
Standard profile

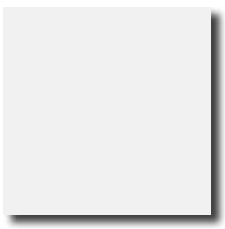


2.2.2 Colour Range

Roof Side



Ceiling Side



Notes
- COLORBOND®, BlueScope and ® colour names are registered trade marks and ™ colour names are trade marks of BlueScope Steel Limited.
- The COLORBOND® steel colours shown have been reproduced to represent actual product colours as accurately as possible. However, we recommend checking your chosen colour against an actual sample of the product before purchasing, as light conditions and limitations of the printing process may affect colour tones.

Last updated 09/05/11

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2.3 Wind Pressures for General Structures (kPa)

Region A

	Terrain Category 2			Terrain Category 2.5			Terrain Category 3		
	Wall	Roof		Wall	Roof		Wall	Roof	
		H/W<0.5	H/W>1.0		H/W<0.5	H/W>1.0		H/W<0.5	H/W>1.0
5m high	1.01	1.21	1.51	0.92	1.10	1.38	0.84	1.00	1.26
10m high	1.22	1.46	1.82	1.02	1.22	1.53	0.84	1.00	1.26
15m high	1.34	1.61	2.01	1.14	1.37	1.71	0.96	1.15	1.44

Region B

	Terrain Category 2			Terrain Category 2.5			Terrain Category 3		
	Wall	Roof		Wall	Roof		Wall	Roof	
		H/W<0.5	H/W>1.0		H/W<0.5	H/W>1.0		H/W<0.5	H/W>1.0
5m high	1.61	1.94	2.42	1.48	1.77	2.21	1.34	1.61	2.01
10m high	1.95	2.34	2.92	1.63	1.96	2.45	1.34	1.61	2.01
15m high	2.15	2.58	3.22	1.83	2.20	2.75	1.54	1.85	2.32

Region C

	Terrain Category 2			Terrain Category 2.5			Terrain Category 3		
	Wall	Roof		Wall	Roof		Wall	Roof	
		H/W<0.5	H/W>1.0		H/W<0.5	H/W>1.0		H/W<0.5	H/W>1.0
5m high	3.51	4.16	5.20	2.98	3.53	4.41	2.49	2.95	3.69
10m high	3.89	4.61	5.76	3.47	4.12	5.15	3.08	3.65	4.56
15m high	4.45	5.28	6.60	3.97	4.70	5.88	3.51	4.16	5.20

Region D

	Terrain Category 2			Terrain Category 2.5			Terrain Category 3		
	Wall	Roof		Wall	Roof		Wall	Roof	
		H/W<0.5	H/W>1.0		H/W<0.5	H/W>1.0		H/W<0.5	H/W>1.0
5m high	5.66	6.71	8.39	4.80	5.69	7.11	4.01	4.76	5.95
10m high	6.27	7.43	9.29	5.60	6.64	8.30	4.97	5.89	7.36
15m high	7.18	8.51	10.64	6.40	7.58	9.48	5.66	6.71	8.39

2.4 Wind Load Conversions (non-cyclonic)

Wind Classification (Domestic)	Region & Category (Commercial/Industry)
N1 (W28)	Reg A, Cat 3
N2 (W33)	Reg A, Cat 2.5 - Reg B, Cat 3
N3 (W41)	Reg A, Cat 2, Reg B, Cat 2.5
N4 (W50)	Reg B, Cat 2

Notes

- Pressures are for interlocking sandwich panels used for external cladding of a base structure.
- H/W is the reaction of the average roof height to the minimum width of the building.
- For values of h/d between 0.5 and 1.0, use linear interpolation.
- Full in.
- Assumptions:

  Md = 1.0 - Sandwich Panel is not an critical element of the base structure.
  Ms = Mt = 1.0 - Relatively flat and unshielded site.
  Kl = 1.0 - Panel is interlocked to distribute pressures, and is a structural element.
  Ka = Kc = 1.0
  External Pressures - Walls: Cpe = +0.7, -0.5, Roof: Cpe = +0.2, -0.9 (h/d0.5), -1.5(h/d>1.0)
  Internal Pressure - Region A & B - Cpi = +0.2, -0.3, Region C & D: Cpi = +0.7, -0.65

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2.5 Allowable Panel Spans (mm)

	Panel Thickness				
Pressure (kPa)	50mm	75mm	100mm	125mm	150mm
0.5	5600	7700	8500	9250	9700
0.75	5600	6650	7300	7550	7900
1	5250	5750	6300	6550	6850
1.25	4700	5150	5650	5850	6100
1.5	4300	4700	5150	5350	5600
1.75	4000	4350	4750	4950	5150
2	3650	4050	4450	4600	4850
2.5	2900	3650	4000	4150	4300
3	2450	3300	3650	3750	3950
3.5	2100	3050	3350	3500	3650
4	1800	2750	3150	3250	3400
4.5	1600	2450	2950	3050	3200
5	1450	2200	2800	2900	3050
6	1200	1800	2450	2650	2800
7	1050	1550	2100	2450	2550
8	900	1350	1800	2300	2400

2.6 Design Pressure (kPa)

	Panel Thickness				
Panel Span (mm)	50mm	75mm	100mm	125mm	150mm
2000	3.6	5.5	-	-	-
2500	2.9	4.4	5.8	6.5	-
3000	2.4	3.6	4.4	4.8	5.2
3500	2.1	2.7	3.2	3.5	3.8
4000	1.7	2.1	2.5	2.7	2.9
4500	1.3	1.6	1.9	2.1	2.3
5000	1.1	1.3	1.6	1.7	1.8
5500	0.9	1.1	1.3	1.4	1.5
6000	-	0.9	1.1	1.2	1.3
6500	-	0.7	0.9	1	1.1
7000	-	0.6	0.8	0.8	0.9
7500	-	0.5	0.7	0.7	0.8
8000	-	-	0.6	0.6	0.7
8500	-	-	0.5	0.5	0.6
9000	-	-	-	-	0.5

Notes

- Table 1 shows the maximum allowable spacing of roof supports, and table 2 shows maximum design pressures, for single span or continuous span Solaris® roofing panel.
- Pressures in table 1 and 2 are for ultimate design wind pressure with 1:500 year return period, applied in either direction. Permanent, long-term, snow, and other loadings are not allowed for. Pressure do not include the self weight of the panel.
- Maximum deflections of span/150 for a 1:20 year return period are used for wind loading, in regions A, B, C or D, as per AS1170.1.
- Largest spans are checked for deflections of span/200, and structural capacity, for self weight and 0.25kPa/1.1kN live load as per AS1170.1.
- Largest spans may develop thermal bowing of up to span/180, for a 35°C temperature gradient (-10°C to 60°C external, 25°C internal). Thermal effects are not taken into acocunt for panel spans.
- Expansion joints are to be included as required, but at no more that 16m spacing.
- Panels are to be fixed to supports with 14kg tek screws with washers to each rib. The pullout capacity of the screws shall be checked.
- Table 3 shows the allowable bearing capacity of the Solaris Panel, for design pressure acting towards the support, per metre of support length.

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2.7 Bearing Capacity (kN/m)

Thickness (mm)	Support Location	Bearing Width						
		50mm	70mm	90mm	100mm	150mm	200mm	250mm
50	internal	4.2	5.3	6.4	7.0	9.8	12.6	15.4
	external	3.5	4.6	5.7	6.3	9.1	11.9	14.7
75	internal	4.9	6.0	7.1	7.7	10.5	13.3	16.1
	external	3.9	5.0	6.1	6.7	9.5	12.3	15.1
100	internal	5.6	6.7	7.8	8.4	11.2	14.0	16.8
	external	4.2	5.3	6.4	7.0	9.8	12.6	15.4
125	internal	6.3	7.42	8.54	9.1	11.9	14.7	17.5
	external	4.55	5.67	6.79	7.35	10.15	12.95	15.75
150	internal	7	8.12	9.24	9.8	12.6	15.4	18.2
	external	4.9	6.02	7.14	7.7	10.5	13.3	16.1

Notes

- Table 2.5 shows maximum allowable spacing of roof supports, and table 2 shows maximum design pressures, for single span or continuous span Solaris® roofing panel.
- Pressures in table 2.5 and 2.6 are for ultimate design wind pressure with 1:500 year return period, applied in either direction. Permanent, long-term, snow, and other loadings are not allowed for. Pressure does not include the self weight of the panel
- Maximum deflections of span/150 for a 1:20 year return period are used for wind loading, in regions A, B, C or D, as per AS1170.2
- Largest spans are checked for deflections of span/200, and structural capacity, for self weight and 0.25kPa/1.1kN live load as per AS1170.1
- Largest spans may develop thermal bowing of up to span/180, for a 35°C temperature gradient (-10°C to 60°C external, 25°C internal). Thermal effects are not taken into account for panel spans.
- Expansion joints are to be included as required, but at no more that 16m spacing.
- Panels are to be fixed to supports with 14kg tek screws with washers to each rib. The pullout capacity of the screws shall be checked.
- Table 2.7 shows the allowable bearing capacity of the Solaris® Panel, for design pressure acting towards the support, per metre of support length.

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2.8 Spans and overhangs (mm) Domestic awnings only

- Select the Solaris® panel thickness from the span table below for the wind condition on site (refer building inspector if required.
- Refer to drawings PR–09–008–01 to 09 for complete configuration and engineering of the patio roof system.

Wind Rating	Solaris® Thickness	3 sides open A		3 sides open B		2 sides open		1 side open		Enclosed	
		Span	Overhang	Span	Overhang	Span	Overhang	Span	Overhang	Span	Overhang
N1	50mm	7500	900	6900	900	5800	900	5300	900	5500	900
	75mm	8200	900	7600	900	6400	900	5800	900	6100	900
	100mm	8900	900	8300	900	6900	900	6300	900	6600	900
	125mm	9000	900	8600	900	7200	900	6600	900	6900	900
	150mm	9400	900	9000	900	7500	900	6900	900	7200	900
N2	50mm	6400	900	5900	900	4900	900	4500	900	4700	900
	75mm	7000	900	6500	900	5400	900	4900	900	5100	900
	100mm	7600	900	7000	900	5900	900	5400	900	5600	900
	125mm	7900	900	7300	900	6100	900	5600	900	5800	900
	150mm	8300	900	7700	900	6400	900	5800	900	6100	900
N3	50mm	5100	900	4700	900	3900	900	3600	900	3800	900
	75mm	5600	900	5200	900	4300	900	3900	900	4100	900
	100mm	6100	900	5600	900	4700	900	4300	900	4500	900
	125mm	6300	900	5900	900	4900	900	4500	900	4700	900
	150mm	6600	900	6100	900	5100	900	4700	900	4900	900
N4	50mm	4200	900	3900	900	3200	800	3000	800	3100	800
	75mm	4600	900	4200	900	3500	900	3200	900	3400	900
	100mm	5000	900	4600	900	3900	900	3500	900	3700	900
	125mm	5200	900	4800	900	400	900	3700	900	3800	900
	150mm	5400	900	5000	900	4200	900	3800	900	4000	900
N5	50mm	3400	850	3200	900	2700	700	2300	600	2500	600
	75mm	3800	900	3500	900	2900	700	2700	700	2800	700
	100mm	4100	900	3800	900	3200	800	2900	700	3000	700
	125mm	4300	900	4000	900	3300	800	3000	750	3200	800
	150mm	4500	900	4100	900	3500	850	3200	800	3300	800
C1	75mm	-	-	-	-	-	-	-	-	-	-
		5600	900	5200	900	4300	900	3900	900	3400	850
		-	-	-	-	-	-	-	-	-	-
C2	75mm	-	-	-	-	-	-	-	-	-	-
		4600	900	4200	900	3500	850	3200	800	2800	700
		-	-	-	-	-	-	-	-	-	-
C3	75mm	-	-	-	-	-	-	-	-	-	-
		3800	900	3500	875	2900	700	2700	650	-	-
		-	-	-	-	-	-	-	-	-	-
C4	75mm	-	-	-	-	-	-	-	-	-	-
		3200	800	3000	750	2200	550	-	-	-	-
		-	-	-	-	-	-	-	-	-	-

Notes to "3 Sides Open"

- Case "A" can be used for:
  - Roofs attached to or under the eaves level of a single–story residence elevated no more then 1.0m above ground.
  - Roofs at ground level attached to a double–story residences.
- Case "B" can be used for:
  - Elevated roofs for a single story residences.
  - Roofs attached to the eaves of a double–story residence.
  - Where the average height of the roofs is no more then 85% of the average height of the roof of the residence it is attached to.
- For situations that are outside of Case "B", use the span table for "Two Sides Open".

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2.9 Maximum roof lengths

	1.5°** roof slope	2.0°** roof slope	3.0°** roof slope	5.0° roof slope	7.5° roof slope	10.0° roof slope
150mm/hr*	16m	16m	16m	210m	250m	290m
200mm/hr*	16m	16m	16m	160m	190m	220m
250mm/hr*	15m	16m	16m	120m	160m	170m
300mm/hr*	14m	16m	16m	100m	120m	140m
400mm/hr*	12m	16m	16m	80m	95m	110m
450mm/hr*	10m	16m	16m	60m	70m	80m

* Peak rainfall intensity
** Continous sheet required from ridge to gutter

2.10 Stacking Information

Panel Thickness	Panel Quantity and Height (mm), Nominated by Length								
	4m	Height	6m	Height	10m	Height	12m	Height	Weight m²
50mm	17	1215	10	710	6	440	5	405	10.0 kg
75mm	12	1145	9	900	5	530	5	530	10.3 kg
100mm	10	1210	8	975	5	655	5	655	10.7 kg
125mm	8	1145	8	1145	5	740	5	740	11.0kg
(Average Max. Weight = 600kg)									

2.11 Panel Properties

Panel Thickness (mm)					
	50	**75**	**100**	**125**	**150**
Weight (Kg/m²)	10	10.3	10.7	11	11.3
R Value (m²K/W) Built up Systems: Roof	1.7	2.4	3.0	3.7	4.3