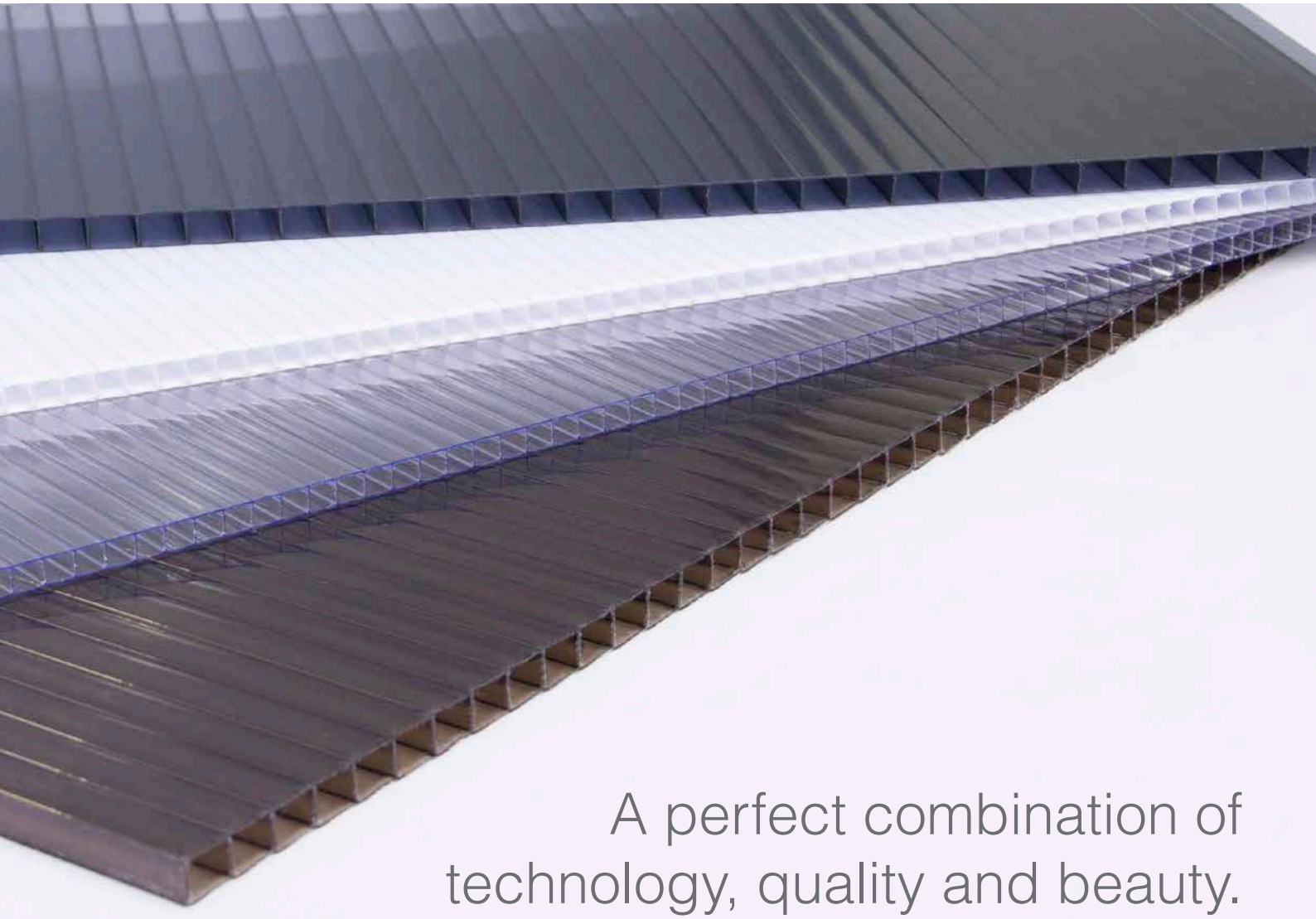
LASERLITE®
2000+ TWINWALL

Impack Pratama

PREMIUM QUALITY 15 YEARS WARRANTY



A perfect combination of technology, quality and beauty.

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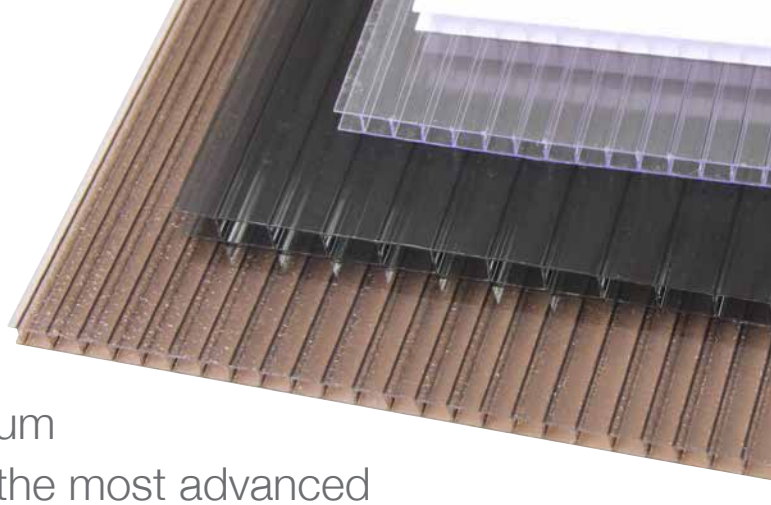
LASERLITE®
2000+ TWINWALL



Laserlite® 2000+ Twinwall is a premium multi-wall polycarbonate sheet,with the most advanced and proven technology to date. Laserlite® 2000+ Twinwall polycarbonate sheet is an ideal combination, offering a lightweight glazing panel with excellent impact resistance and has an industry leading 15 year warranty against loss of light transmission.

Manufactured by PT Impack Pratama Industri TBK, a global leader in the design and manufacture of thermoformed polymers, Laserlite® 2000+ Twinwall polycarbonate sheet offers superior clarity, durability and unmatched design flexibility and structural integrity that surpasses other glazing material.

Laserlite® 2000+ Twinwall is the first choice for almost any demanding glazing application. Offering excellent thermal and acoustical properties as well as being aesthetically pleasing, Laserlite® 2000+ Twinwall will meet most architectural requirements and is available in a range of attractive colour tint options.

clear | bronze tint | grey tint | opal

Laserlite 2000+ Twinwall is available in thicknesses of 6mm and 8mm, in 1.220m widths and 5.8m lengths.

Stock lengths are cut from these to suit each individual project requirement.

Advantages of Laserlite® 2000+ Twinwall Polycarbonate

- NZBC Fire group 1-S
- Reduces heat without sacrificing light
- Absorbs almost 100% of sunlight UV radiation
- 250 times stronger than glass and 20 times stronger than acrylic
- Very light, very strong and virtually unbreakable
- Capable of withstanding temperature fluctuations from -20ºC to 120ºC
- 15 year limited warranty against loss of light transmission

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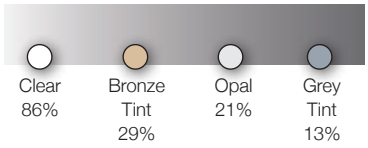
Light & Heat Transmission

	clear	bronze tint	grey tint	opal
Light Transmission %	86%	29%	13%	21%
Heat Transmission % ‡	73%	63%	45%	11%
Shading Co-efficient	0.91	0.79	0.66	0.32
Solar Heat Gain Co-efficient	0.78	0.68	0.57	0.28

*Above data applies for Laserlite® 2000+ Twinwall 8mm only

Light Transmission (LT)

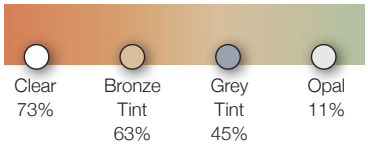
More Light — Less Light



Light Transmission (LT): % of visible light transmission (400-700nm) that passes through the sheet. **The lower the figure the less light passes through the sheet.**

Heat Transmission (HT)

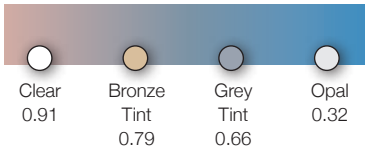
Warmest — Coolest



Heat Transmission (HT): % of total solar radiation transmission (300-2800nm). This value describes the ability of the sheet to conduct heat. **The lower the figure the greater the heat resistance, the cooler it is under the sheet.**

Shading Co-efficient Ratio (SC)

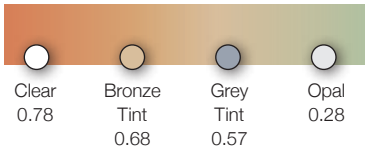
Warmest — Coolest



Shading Co-efficient (SC): A ratio of the warming effect of the sun's rays through a sheet divided by the sun's warming effect through 3mm float glass (300-2500nm). **The lower the figure the cooler it is under the sheet.**

Solar Heat Gain Co-efficient (SHGC)

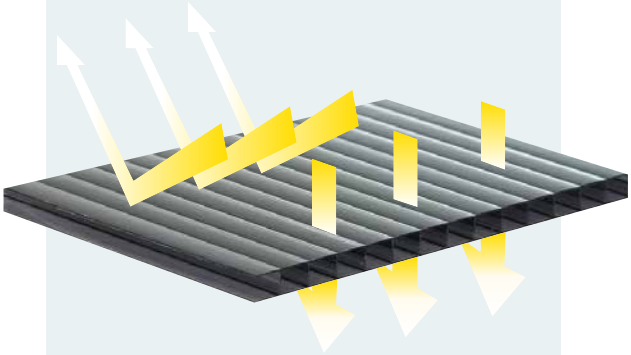
Warmest — Coolest



Solar Heat Gain Coefficient (SHGC): Total solar energy transmitted or absorbed and re-radiated under the sheet (300-2500nm). **The lower the figure the cooler it is under the sheet.**

How it Works

Being a multiwall product Laserlite® 2000+ Twinwall offers reduced thermal buildup under the sheet as compared to single skin products. Whilst allowing sufficient light transmittance Laserlite® 2000+ Twinwall should be considered where heat reduction is a design consideration.



NZBC FIRE GROUP 1-S RATING

BRANZ
Technical Opinion FAR 4580-TO [2016]

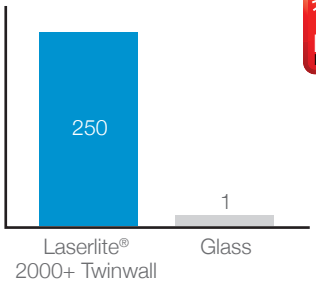
NZBC Fire Group 1-S Rating

Extensively tested using the full scale ISO 9705 room test. This extensive testing utilises a gas burner exposing the sheeting to 100kw fire for 10 minutes, and then an increase to 300kw for a further 10 minutes. Laserlite® Twinwall Polycarbonate acheives a NZBC 1-S Rating as flashover is not reached.

Comparison to Glass

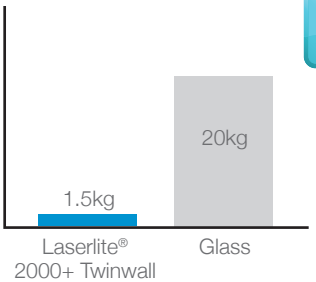
Based on 6mm clear Laserlite® 2000+ Twinwall vs 8mm clear standard glass

IMPACT RESISTANT



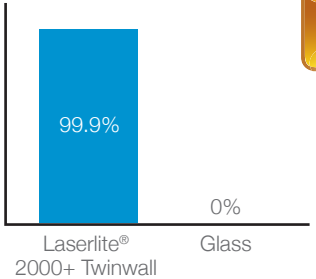
LIGHT WEIGHT

WEIGHT (per m²)



99.9% UV PROTECTION

UV PROTECTION



Technical Data

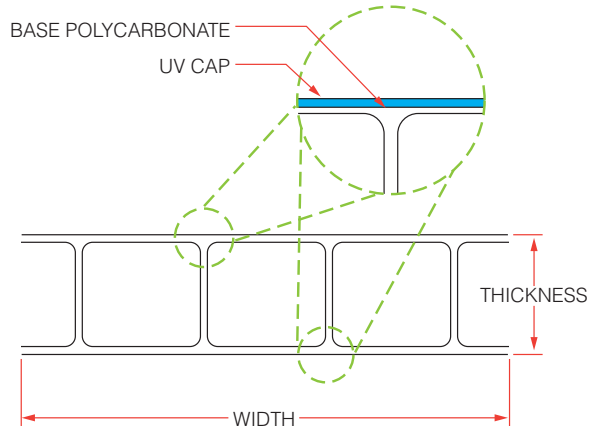
PRODUCT OVERVIEW

Laserlite® Twinwall is a twinwall hollow structured flat lightweight polycarbonate glazing sheet

Thickness	Width (metres)	Length (metres)	Area Weight (kg/m²)	U-Value (W/m² °C)
6 mm	1.220 m	1.8 to 5.8m	1.3 kgm²	3.5
8 mm	1.220 m	1.8 to 5.8m	1.5 kgm²	3.3
10 mm*	1.050 m	1.8 to 5.8m	1.7 kgm²	2.9

*10mm is available in Clear only.

* Other sizes are available upon request, subjected to minimum order quantity



TYPICAL PROPERTIES

Laserlite® Twinwall prevents the transmission of more than 99.9% of harmful UV radiation and is suitable for use in high and very high wind zones.

Laserlite Twinwall is BRANZ fire tested meeting NZBC fire group classification 1-S changes to the building code clauses c1 - c6.

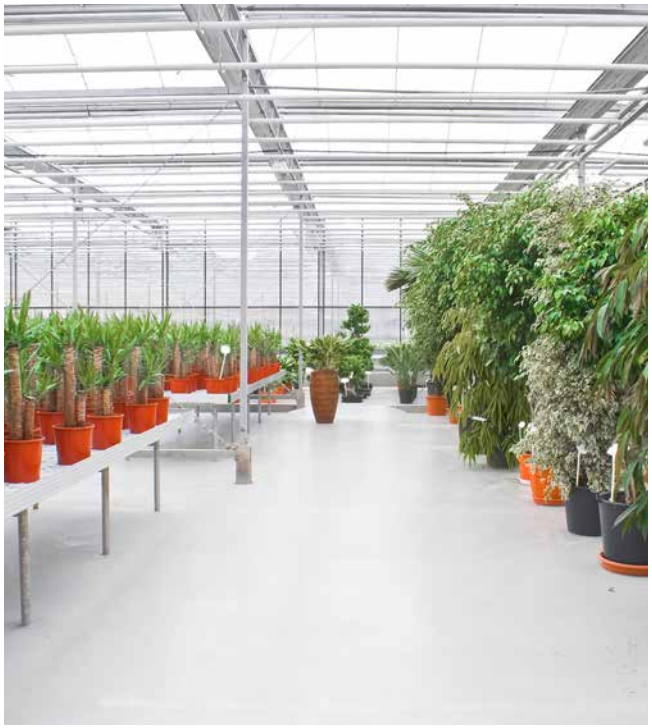
NZBC FIRE GROUP 1-S RATING

BRANZ Technical Opinion FAR 4580-TO [2016]

CHEMICAL RESISTANCE

Laserlite® Twinwall may be affected by certain subtances that may cause surface cracks. For general guidance, Laserlite® Twinwall is affected by: Benzine, Petrol, Ketones, Acetone, Phenols, Chlorinated and aromatic Hydrocarbons and petroleum based paints, abrasive cleaners and solvents.

For more information please contact Supreme Plastic Roofing.



TYPICAL PROPERTIES

Property	Method	Unit	Value
MECHANICAL			
Tensile Strength at Yield	ASTM D638	MPa	64
Elongation at break	ASTM D638	%	90
Flexural Strength	ASTM D790	MPa	93
Impact falling weight	ASTM D5420	J	40
THERMAL			
Coefficient of thermal expansion	ISO 6946	mm/m/ °C	0.065
Service temperature	-	°C	-20 to 120
FLAMMABILITY			
Horizontal burn	UL94	mm	<2.54
Vertical burn	UL94	-	V1 Class
Ignition temperature, flash	ASTM D1929	°C	440

Technical Data

WIND LOAD

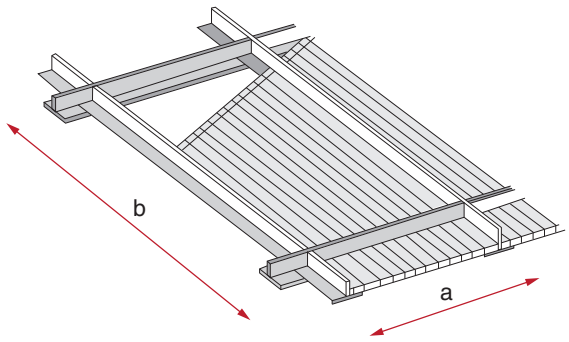
For high and very high wind zones it is necessary to decrease the purlin spans, please refer to the below graph for recommendations.

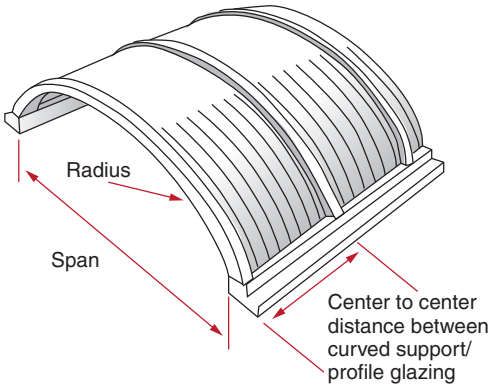
Four Sides Clamped Flat Glazing

Thickness (mm)	Wind Load (Kg/m²)	Centre to Centre Distance (mm) between shorter span according to a:b* ratio		
		1:1	1:1.5	1:>1.5
6	50	900	700	500
	80	700	500	350
	100	500	400	-
	120	40	300	-
8	50	1,150	900	600
	80	1,000	800	480
	100	900	650	450
	120	750	600	-
10	50	1,250	1,000	750
	80	1,200	900	550
	100	1,100	800	500
	120	950	700	450

*a = represents the center to center distance of glazing profiles on the short glazing side i.e. width of the sheet.

*b = represents the center to center distance of glazing profiles on the long glazing side i.e. Length of sheet.



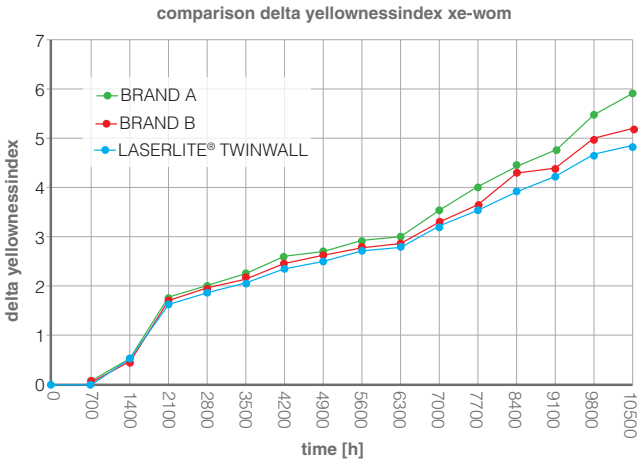


Two Sides Clamped Arched Glazing

Thickness (mm)	Sheet Arched-Curvature Radius (mm)	Centre to Centre Distance (mm) between supporting arches according to wind loads (Kg/m²)			
		50	80	100	120
6	1,050	2,000	1,730	1,420	1,020
	1,500	1,470	1,090	890	660
	1,800	1,140	860	690	580
	2,200	810	690	-	-
	2,800	500	350	-	-
	4,000	500	350	-	-
	6,000	500	350	-	-
8	1,400	1,650	1,450	1,320	1,170
	1,800	1,420	1,270	1,070	890
	2,200	1,090	890	710	600
	2,800	840	620	450	-
	4,000	600	500	-	-
	6,000	570	480	-	-
10	1,750	69	1,420	1,170	1,020
	2,200	88	960	810	660
	2,800	110	650	600	550
	4,000	600	500	-	-
	6,000	236	520	500	420

PRODUCT PERFORMANCE WARRANTY

Laserlite® Twinwall UV cap is co-extruded on both sides [UV2], this UV cap provides excellent protection against degradation and discoloration caused by UV radiation after years of exposure [evaluated according to ASTM D1925] the sheet shall not be ruptured due to loss of impact strength as a result of weathering or as a result of hail measuring up to 25mm in diameter attaining a velocity of up to 21 m/s.

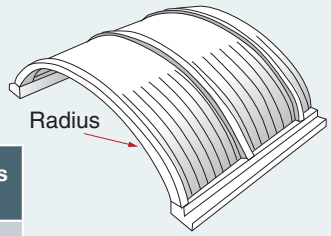


Information contained herein is intended only for evaluation by technically skilled persons, with any use thereof to be at their discretion. While we believe such information is reliable, Supreme Plastic Roofing or its agents shall have no liability for result obtained or damages resulting from such use. Nothing in this document should be contrued as a warranty or guarantee by Supreme Plastic Roofing. The only applicable warranty will be those issued in writing by Supreme Plastic Roofing based on the product and usage environment specified.

INSTALLATION GUIDE

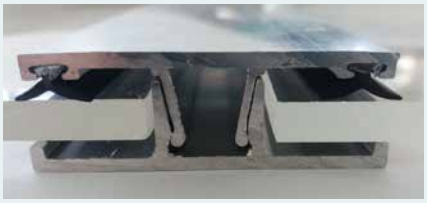
1. Measure the distance (length) for the 2 piece joiner. Then cut them to the required size. With the fixings screw, attach the bottom joiner to the rafter or purlin running in the direction of the sheet length. Please note that you will need to allow for the joiner gain. Aluminium has a gain of 35mm on the outside and 20mm on the inside joiners. Polycarbonate has a gain which is 45mm on the outside and 27mm on the inside joiner. To fix in place, drill through the bottom joiner at 400mm intervals (300mm high wind areas) and screw to rafter.
2. On the rafters or purlins that do not have a joiner run the anti-noise tape along the centre to keep the sheet flat. Please ensure the sticky side goes against the rafter and the smooth side facing up.
3. Always install the sheet with the flutes vertidally. Allow at least a 5° slope to allow for water flow.
4. Measure and cut (if required) the Laserlite® 2000+ Twinwall to length and width. If you have to cut the width of the sheet, make sure you cut down the middle of the flute to keep the flutes sealed. (note: Clamp the sheet to support to cut.) Sheets can be cut with a Stanley knife.
5. Slide the Butterfly Rubber into the two side channels on the top aluminium joiner. If you are using a joiner for an outside edge you do not need a Butterfly Rubber on the outside edge. This will be replaced with a Butt Rubber.
6. Before placing the sheets into position, remove 50mm of the top film at each end and totally remove the bottom film. Seal both ends of the sheet with the Anti-Dust tape to prevent the penetration of dust and insects. Place the sheets into position and place the top joiner onto the base. Please note that you must place sheets on both sides of the joiner (or Butt rubber for outside edges) before placing the top joiner down. The Aluminium top may require a tap down with a rubber mallet to secure. We would recommend for high wind areas that a fixing at the top, middle and bottom of the joiner be fixed all the way through both top and bottom joiners for added security.
7. For the rafters or purlins that do not have a joiner, please drill an oversize hole through the Laserlite® 2000+ Twinwall sheet and secure with a Stainless Steel fixings and bonded washers. (Ensure holes are 2mm larger than shaft of screws to allow for thermal expansion).
8. Once all your sheet is installed remove the protection film.
9. Along the gutter end place the polycarbonate capping over the anti-dust tape and sheet. The wide edge is on the top. Please note that this capping butts up to the joiner it does not go under the joiner.
10. Now sit back and enjoy the great outdoors.

For bending installation, please see the below radius table:

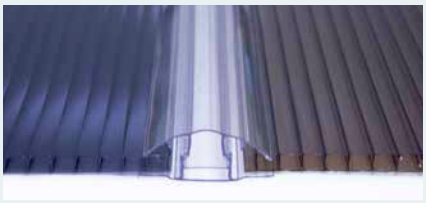


Thickness (mm)	Min. Radius (mm)
6 mm	750 mm
8 mm	900 mm
10 mm	1500 mm

Aluminium 2-Piece Joiner



Polycarbonate 2-Piece Joiner



99.9% UV PROTECTION · WIND LOAD AREAS · HAIL IMPACT RESISTANT · SUSTAINABLE MATERIAL · FIRE RESISTANT · SAI GLOBAL Certified System ISO 9001 · NZBC FIRE GROUP 1-S RATING · BRANZ Technical Opinion FAR 4580-TO [2016]

15 YEARS PREMIUM QUALITY WARRANTY

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