

# Custom Orb

# Custom Blue Orb

Traditional corrugated  
steel cladding



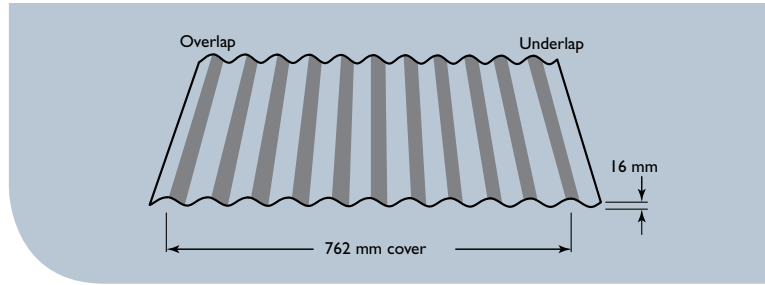
- CUSTOM ORB® is ideal for traditional or contemporary design and is the most popular LYSAGHT® profile
- CUSTOM BLUE ORB® is the identical corrugated profile made from special steel ideal for curving
- Both are long and wide, strong, lightweight and economical
- They can be fixed quickly and easily
- Versatile so they can be used for commercial, industrial and residential buildings.



# Lysaght Custom Orb

# Lysaght Custom Blue Orb

## Traditional corrugated steel cladding



LYSAGHT CUSTOM ORB® is the famous corrugated profile, equally at home with traditional and contemporary design. It is a wide, strong and lightweight profile that can be quickly and easily installed. Add up these features and you have a steel roof or wall cladding that simply offers outstanding value.

The gently curving shape of the classic Australian roof is reflected in some of today's most adventurous and dramatic designs. LYSAGHT CUSTOM BLUE ORB® is the corrugated profile for curving, allowing the expression of this quintessential Australian style. It is the perfect match to harmonise with our well-known, traditional LYSAGHT CUSTOM ORB.

### Simple, low-cost fixing

CUSTOM ORB can be fixed with hex head screws ensuring fast and simple installation. The standard overlap is one and a half corrugations.

### Curving

CUSTOM ORB is not intended for machine curving. For bullnosing use CUSTOM BLUE ORB®. Long, curved lengths of CUSTOM BLUE ORB can be easily placed and aligned. From the traditional bullnosed verandah, to the double curves and complex shapes of modern homes and offices, we offer a full range of curving styles to suit almost any building.

The extra ductility of CUSTOM BLUE ORB allows easy curving without distortion of its profile, and without damage to the finish. Ensure you order the appropriate profile for the job.

### Colours

Both CUSTOM ORB and CUSTOM BLUE ORB are available in an attractive range of colours in COLORBOND® pre-painted steel and in unpainted ZINCALUME® aluminium/zinc alloy coated steel.

ZINCALUME® steel provides a minimum of twice the life of conventional galvanised steel in the same environment.

### Minimum roof pitch

A special anti-capillary forming in the side lap allow you to use CUSTOM ORB (or CUSTOM BLUE ORB used on curved surfaces) for roof pitches as low as 5 degrees (1 in 12). Sheet lengths of up to 24m can be used before an expansion joint is required.

Peak rainfall intensity mm/hr	Roof slope					
	1°	2°	3°	5°	7.5°	10°
100	-	-	-	29	34	38
150	-	-	-	20	23	25
200	-	-	-	15	17	19
250	-	-	-	12	14	15
300	-	-	-	10	11	13
400	-	-	-	7	8	10
500	-	-	-	6	7	8

### Masses CUSTOM ORB

	BMT (mm)	kg/m	kg/m <sup>2</sup>	m <sup>2</sup> /t
ZINCALUME® steel	0.42	3.26	4.28	234
COLORBOND® steel	0.42	3.32	4.35	230
ZINCALUME® steel	0.48	3.70	4.86	206
COLORBOND® steel	0.48	3.76	4.93	203

### Masses CUSTOM BLUE ORB

	BMT (mm)	kg/m	kg/m <sup>2</sup>	m <sup>2</sup> /t
ZINCALUME® steel	0.60	4.59	6.02	166
COLORBOND® steel	0.60	4.64	6.09	164
ZINCALUME® steel	0.80*	6.06	7.96	126
COLORBOND® steel	0.80*	6.12	8.03	125

\*0.80 BMT CUSTOM BLUE ORB available in South Australia only.

LYSAGHT CUSTOM ORB is stylish and versatile

### CUSTOM ORB Material specifications

- ZINCALUME® aluminium/zinc alloy-coated steel complying with AS1397—2001 G550, AZ150 (550MPa minimum yield stress, 150g/m<sup>2</sup> minimum coating mass); or
- Stainless steel standard grade designation is AISI/ASTM Type 430; UNS No. S43000

COLORBOND® steel base metal thickness is 0.42 or 0.48mm. The COLORBOND® prepainted steel complies with AS/NZS2728:1997. COLORBOND® Metallic steel base metal thickness is 0.48mm.

LYSAGHT CUSTOM BLUE ORB for curving

### CUSTOM BLUE ORB Material specifications

CUSTOM BLUE ORB is made from:

- ZINCALUME® aluminium/zinc alloy-coated steel complying with AS 1397—2001 G300, AZ150 (300 MPa minimum yield stress, 150 g/m<sup>2</sup> minimum coating mass);
- ZINCFORM® zinc coated (galvanised) steel complying with AS 1397—2001 G300, Z600 (300 MPa minimum yield stress, 600 g/m<sup>2</sup> minimum coating mass);

All the materials cover either 608mm or 762mm.

The base metal thickness is 0.60 or 0.80 mm. The COLORBOND® prepainted steel complies with AS/NZS 2728:1997.

### Lengths

Sheets are supplied custom cut.

### Tolerances (CUSTOM ORB & CUSTOM BLUE ORB) - flat

Length: + 10 mm, - 10 mm

Width: + 4 mm, - 4 mm

### New COLORBOND® steel with THERMATECH™ technology

The next generation COLORBOND® steel incorporates THERMATECH® technology, which provides a new level of thermal protection by absorbing less heat. Average reduction in solar absorption across all colours is 5%.

Now 14 of the 20 COLORBOND® steel colours are 'medium to light' under the BASIX colour classification, which means reflective foil at the roof is not required. It also means a drop of R0.5 for roof insulation.



## LYSAGHT CUSTOM ORB

### Maximum support spacings (mm)

Type of span BMT (mm)	0.42	0.48
<b>Roofs</b>		
Single span	700	800
End span	900	1300
Internal span	1200	1700
Unstiffened eaves overhang	200	250
Stiffened eaves overhang	300	350
<b>Walls</b>		
Single span	1800	1800
End span	2500	2700
Internal span	2700	2700
Overhang	200	250

- For roofs: the data are based on foot-traffic loading.
- For walls: the data are based on pressures (see wind pressures table).
- Table data are based on supports of 1mm BMT.

### Maximum Support Spacings

The maximum recommended support spacings are based on testing in accordance with AS1562.1-1992, AS4040.1-1992 and AS4040.2-1992.

Roof spans consider both resistance to wind pressure and light roof traffic (traffic arising from incidental maintenance). Wall spans consider resistance to wind pressure only.

The pressure considered is based on buildings up to 10m high in Region B, Terrain Category 3,  $M_s=0.85$ ,  $M_t=1.0$ ,  $M_r=1.0$  with the following assumptions made:

#### Roofs:

$C_{pi}=+0.20$ ,  $C_{pe}=-0.90$ ,  $K_f=2.0$  for single and end spans,  $K_f=1.5$  for internal spans.

#### Walls:

$C_{pi}=+0.20$ ,  $C_{pe}=-0.65$ ,  $K_f=2.0$  for single spans,  $K_f=1.5$  for internal spans.

These spacings may vary by serviceability and strength limit states for particular projects.

### Use CUSTOM ORB for long straight stretches

On most jobs one sheet will cover from ridge to gutter without end-laps. Where there are long straight lengths, you may like to use CUSTOM ORB for the straight sections.

If you have a design where CUSTOM BLUE ORB laps with CUSTOM ORB, it is recommended both should be ordered together to ensure perfect lapping.

### Turning-up CUSTOM ORB or CUSTOM BLUE ORB

With pliers, multi-grips or a shifting spanner closed down to approximately 2mm, grip the valley corrugations 20mm in from the end of the sheet and turn up as far as possible. Be careful not to tear the sheet.

### Curving Tolerances CUSTOM BLUE ORB

Straight vertical min. (SV) = 100 mm

(80 mm in Victoria)

Radius min. (R) = 300 mm

(See Page 7 for definitions of SV and R.)

## LYSAGHT CUSTOM BLUE ORB

### Maximum support spacings (mm)

Type of span BMT (mm)	0.60	0.80
<b>Roofs including bullnosed roofs</b>		
Single span	1600	1800
End span	1600	1800
Internal span	1800	2600
Unstiffened eaves overhang	200	400
Stiffened eaves overhang	300	600
<b>Walls</b>		
Single span	2400	2400
End span	3000	3200
Internal span	3300	3600
Overhang	200	400

- For roofs: the data are based on foot-traffic loading.
- For walls: the data are based on pressures (see wind pressures table).
- Table data are based on supports of 1mm BMT.

### Use CUSTOM BLUE ORB for curves

#### Curving radii

The minimum curving radius is 300mm (400mm in Victoria). At the end of a curve, there must be a straight vertical section of at least 100mm (80mm in Victoria)

#### Curved flashings

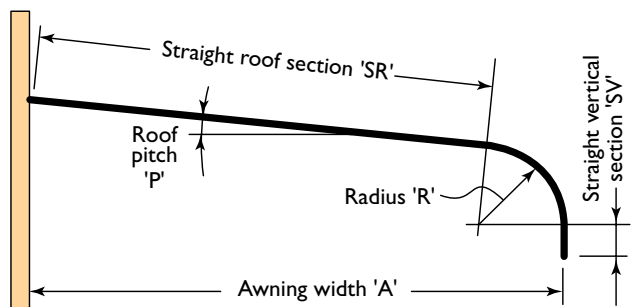
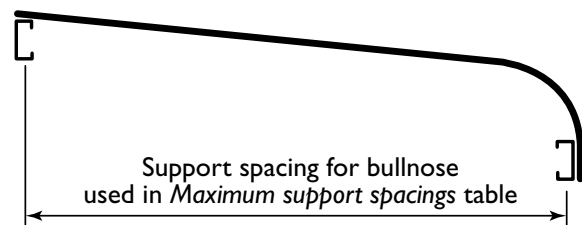
Curved flashings and cappings are made in fibreglass, plastic and steel in standard COLORBOND® steel colours.

Straight flashings and cappings are also made to match. Different states stock different materials and different lengths—ask your local supplier.

#### Maximum roof lengths for drainage measured from ridge to gutter (m)

Penetrations will alter the flow of water on a roof.

For assistance in design of roofs with penetrations, please seek advice from our information line.



$$\left. \begin{array}{l} \text{Span to be used in determining} \\ \text{wind pressure capacities of bullnoses} \end{array} \right\} = SR + (\text{arc of radius } R) = \frac{A - R(1 - \sin P)}{\cos P} + \frac{R\pi(90 - P)}{180}$$

## LYSAGHT CUSTOM ORB®: Limit State wind pressure capacities (kPa)

Span type	Fasteners per sheet per support		Span (mm)							
			600	900	1200	1500	1800	2100	2400	2700
<b>Base metal thickness 0.42 mm</b>										
SINGLE	3	Serviceability	1.91	1.46	1.08	0.77	0.49	-	-	-
		Strength*	12.00	8.60	5.80	4.65	4.50	-	-	-
	5	Serviceability	5.39	3.20	1.75	0.94	0.45	-	-	-
		Strength*	12.00	12.00	10.15	8.10	7.40	-	-	-
END	3	Serviceability	1.66	1.40	1.18	1.00	0.83	0.67	0.52	0.38
		Strength*	9.15	7.55	5.90	4.50	3.40	2.70	2.30	2.00
	5	Serviceability	6.08	4.27	2.79	1.59	1.02	0.65	0.42	0.30
		Strength*	12.00	12.00	9.90	7.55	5.75	4.50	3.60	3.05
INTERNAL	3	Serviceability	1.91	1.67	1.45	1.23	1.03	0.85	0.69	0.56
		Strength*	11.35	9.25	7.45	6.00	4.85	3.90	3.20	2.70
	5	Serviceability	7.00	4.92	3.32	2.21	1.49	1.05	0.78	0.59
		Strength*	12.00	12.00	12.00	10.80	8.85	7.10	5.65	4.50
<b>Base metal thickness 0.48 mm</b>										
SINGLE	3	Serviceability	2.12	1.47	1.03	0.77	0.60	-	-	-
		Strength*	12.00	9.80	6.55	5.30	5.10	-	-	-
	5	Serviceability	7.48	3.74	2.23	1.26	0.57	-	-	-
		Strength*	12.00	12.00	10.75	8.65	8.10	-	-	-
END	3	Serviceability	1.92	1.66	1.48	1.35	1.19	1.01	0.81	0.60
		Strength*	11.70	9.05	6.80	4.95	4.10	3.45	3.00	2.65
	5	Serviceability	8.00	4.75	2.86	1.97	1.39	0.97	0.66	0.44
		Strength*	12.00	12.00	12.00	10.60	8.00	6.20	5.00	4.25
INTERNAL	3	Serviceability	1.98	1.96	1.84	1.62	1.36	1.07	0.82	0.62
		Strength*	12.00	10.15	8.50	7.10	5.70	4.55	3.60	2.90
	5	Serviceability	9.00	5.42	4.34	3.31	2.37	1.57	0.95	0.54
		Strength*	12.00	12.00	12.00	12.00	11.00	8.65	6.75	5.25

\* A capacity reduction factor of  $\phi = 0.9$  has been applied to strength capacities. Supports must be not less than 1 mm BMT.

### Limit states wind pressures

CUSTOM ORB offers the full benefits of the latest methods for modelling wind pressures. The Wind Pressure capacity table is determined by full scale tests conducted at BLUESCOPE LYSAGHT's NATA-registered testing laboratory, using the direct pressure-testing rig.

Testing was conducted in accordance with AS 1562.1—1992 Design and Installation of Sheet Roof and Wall Cladding—Metal, and AS 4040.2—1992 Resistance to Wind Pressure for Non-cyclonic Regions.

The pressure capacities for serviceability are based on a deflection limit of  $(\text{span}/120) + (\text{maximum fastener pitch}/30)$ .

The pressure capacities for strength have been determined by testing the cladding to failure (ultimate capacity). These pressures are applicable when the cladding is fixed to a minimum of 1.0mm, G550 steel. For material less than 1.0mm thick, seek advice from our information line.

### Walking on roofs

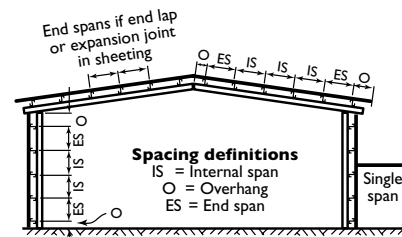
Always walk on or near the rafters. Generally, keep your weight evenly distributed over the soles of both feet to avoid concentrating your weight on either heels or toes. Always wear smooth soft-soled shoes; avoid ribbed soles that pick up and hold small stones, swarf and other objects.

### Adverse conditions

If this product is to be used in marine, severe industrial, or unusually corrosive environments, ask for advice from our information line.

### Metal & timber compatibility

Lead, copper, bare steel and green or some chemically-treated timber are not compatible with this product; thus don't allow any contact of the product with those materials, nor discharge of rainwater from them onto the product. If there are doubts about the compatibility of products being used, ask for advice from our information line.



### Maintenance

Optimum product life will be achieved if all external surfaces are washed regularly. Areas not cleaned by natural rainfall (such as the tops of walls sheltered by eaves) should be washed down every six months.

### Storage and handling

Handling Safety - LYSAGHT product may be sharp and heavy. It is recommended that heavy-duty cut resistant gloves and appropriate manual handling techniques or a lifting plan be used when handling material.

Keep the product dry and clear of the ground. If stacked or bundled product becomes wet, separate it, wipe it with a clean cloth and stack it to dry thoroughly.

Handle materials carefully to avoid damage: don't drag materials over rough surfaces or each other; carry tools, don't drag them; protect from swarf.

### Cutting

For cutting thin metal on site, we recommend a circular saw with a metal-cutting blade because it produces fewer damaging hot metal particles and leaves less resultant burr than does a carborundum disc.

Cut materials over the ground and not over other materials.

## LYSAGHT CUSTOM BLUE ORB®: Limit State wind pressure capacities (kPa)

Span type	Fasteners per sheet per support	Span (mm)											
		600	900	1200	1500	1800	2100	2400	2700	3000	3300	3600	
<b>Base metal thickness 0.6 mm</b>													
SINGLE	3	Serviceability	3.32	2.58	1.94	1.48	1.08	0.73	0.39				
		Strength*	12.00	10.55	7.25	5.85	5.05	4.55	4.30				
	5	Serviceability	10.50	6.03	2.62	1.30	0.62	0.36	0.32				
		Strength*	12.00	12.00	12.00	10.00	8.35	7.25	6.35				
END	3	Serviceability	2.85	2.41	1.99	1.62	1.29	1.01	0.78	0.58	0.41	0.26	
		Strength*	12.00	12.00	9.10	6.75	5.25	3.60	4.05	3.60	3.15	2.70	
	5	Serviceability	11.00	7.72	4.80	2.62	1.40	0.89	0.73	0.58	0.41	0.23	
		Strength*	12.00	12.00	12.00	9.05	7.35	6.55	6.20	5.70	5.05	4.30	
INTERNAL	3	Serviceability	3.05	2.55	2.11	1.75	1.48	1.25	1.05	0.84	0.63	0.42	0.21
		Strength*	12.00	12.00	9.15	6.80	5.65	5.15	4.95	4.55	4.00	3.30	2.60
	5	Serviceability	10.94	7.43	4.51	2.59	1.55	1.07	0.88	0.72	0.54	0.37	0.19
		Strength*	12.00	12.00	12.00	9.95	8.30	7.70	7.45	7.00	6.25	5.35	4.40
	<b>Base metal thickness 0.8 mm</b>												
	SINGLE	3	Serviceability	5.26	3.92	2.80	2.08	1.49	0.99	0.53			
Strength*			12.00	12.00	9.15	7.45	6.30	5.50	4.95				
5		Serviceability	12.00	8.63	3.44	1.54	0.64	0.40	0.50				
		Strength*	12.00	12.00	12.00	11.50	9.70	8.55	7.70				
END	3	Serviceability	5.91	4.61	3.43	2.46	1.77	1.31	1.00	0.75	0.54	0.36	
		Strength*	12.00	12.00	11.50	8.55	6.80	6.00	5.45	4.80	4.00	3.15	
	5	Serviceability	12.00	9.67	5.86	3.06	1.60	1.10	1.01	0.86	0.62	0.33	
		Strength*	12.00	12.00	12.00	12.00	9.85	8.80	8.25	7.00	6.20	4.85	
INTERNAL	3	Serviceability	5.49	4.53	3.66	2.94	2.38	1.93	1.56	1.24	0.96	0.70	0.46
		Strength*	12.00	12.00	12.00	9.00	7.25	6.35	5.85	5.25	4.65	3.95	3.20
	5	Serviceability	12.00	12.00	6.86	3.23	1.61	1.45	1.37	1.36	1.15	0.80	0.40
		Strength*	12.00	12.00	12.00	12.00	12.00	10.45	9.05	7.40	6.30	5.65	5.20

\* A capacity reduction factor of  $\phi = 0.9$  has been applied to strength capacities. Supports must be not less than 1 mm BMT.

### Swarf

Sweep all metallic swarf and other debris from roof areas and gutters at the end of each day and at the completion of the installation. Failure to do so can lead to surface staining when the metal particles rust.

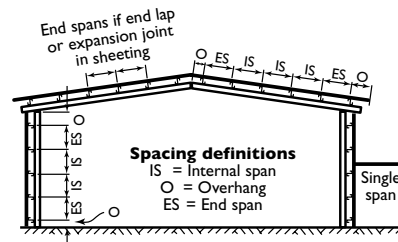
### Sealed joints

For sealed joints use screws or rivets and neutral-cure silicone sealant branded as suitable for use with galvanised or ZINCALUME® steel.

### Non-cyclonic areas

The information in this brochure is suitable for use only in areas where a tropical cyclone is unlikely to occur as defined in AS 1170.2—2002.

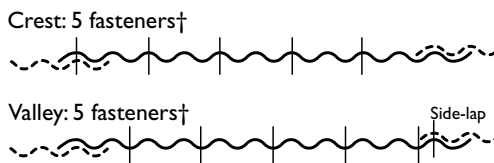
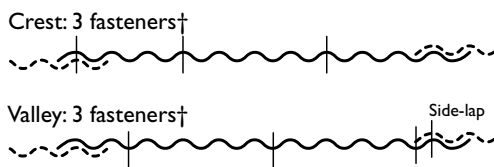
For information on the use of LYSAGHT products in cyclonic conditions, refer to the Design Capacities for Cyclonic Areas brochure (formerly Cyclonic Area Design Manual) which is available on our website: [www.lysaght.com](http://www.lysaght.com).



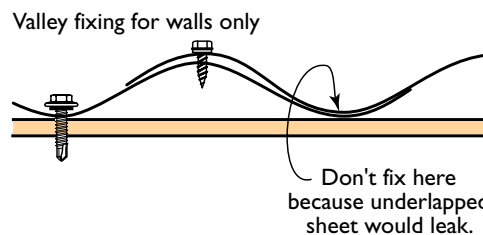
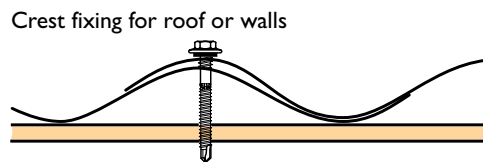
# Installation

## Fasteners without Insulation

	Fixing to steel up to 0.75 mm BMT	Fixing to steel >0.75 to 3 mm BMT	Fixing to timber
<b>Crest fixed</b>	Self drilling self tapping screws 13-13 x 41 OR Self drilling self tapping screws with hex. washer-head EPDM seal & Shankguard 12-11 x 40	Self drilling self tapping screws with hex. washer-head EPDM seal & Shankguard 12-14 x 35	Self drilling self tapping screws with hex. washer-head & EPDM seal  SOFTWOOD: 12-11 x 50 with Higrrip & Shankguard  HARDWOOD: 12-11 x 40 with Shankguard
<b>Valley fixed</b>	Self drilling self tapping screws with hex. washer-head & EPDM seal 10-16 x 16 OR Self drilling self tapping screws with hex. washer-head & EPDM seal 10-12 x 20	Self drilling self tapping screws with hex. washer-head & EPDM seal 10-16 x 16	Self drilling self tapping screws for wood with hex. washer-head & EPDM seal  SOFTWOOD: 10-12 x 30 HARDWOOD: 10-12 x 20
<b>Side lap &amp; accessories</b>	Self drilling needle point stitching screws with hex. slot-head & EPDM seal: 8-15 x 15 OR Self drilling screws with hex. washer-head & EPDM seal: 10-16 x 16 OR Sealed blind rivets: 4.8 mm diameter aluminium		



† Fasteners per sheet per support. Most common practice is:  
3 fasteners for internal spans and 5 fasteners for single and end spans.



### Fastening sheets to supports

CUSTOM ORB (and CUSTOM BLUE ORB) are pierce-fixed to timber or steel supports. This means that fastener screws pass through the sheeting.

You can place screws through the crests or in the valleys. To maximise watertightness, always place roof screws through the crests. For walling, you may use either crest or valley-fixing.

Always drive the screws perpendicular to the sheeting, and in the centre of the corrugation or rib.

Don't place fasteners less than 25 mm from the ends of sheets.

### Side-laps

CUSTOM ORB (and CUSTOM BLUE ORB) is overlapped at the sides not less than 1.5 corrugations. It is generally considered good practice to use fasteners along side-laps however, when cladding is supported as indicated in maximum support spacings, side-lap fasteners are not usually needed for strength.

### End lapping

End-laps are not usually necessary because CUSTOM ORB and CUSTOM BLUE ORB are available in long lengths.

If you want end-laps, seek advice from our information line on the sequence of laying and the amount of overlap.

### Sheet coverage

Width of roof (m)	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	30	40	50
Number of sheets	4	6	7	8	10	11	12	14	15	16	18	19	20	21	23	24	25	27	40	53	66

If you intend to end-lap CUSTOM ORB (and CUSTOM BLUE ORB), order the sheets at the same time and tell us you intend to lap them, to ensure a good fit of the profiles.

### Ends of sheets

It is usual to allow roof sheets to overlap into gutters by about 50 mm. The valleys of sheets should be turned-down at lower ends, and turned-up at upper ends.

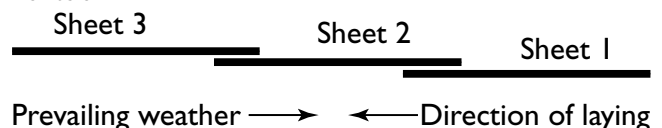
### Laying procedure

For maximum weather-tightness, start laying sheets from the end of the building that will be in the lee of the worst-anticipated or prevailing weather.

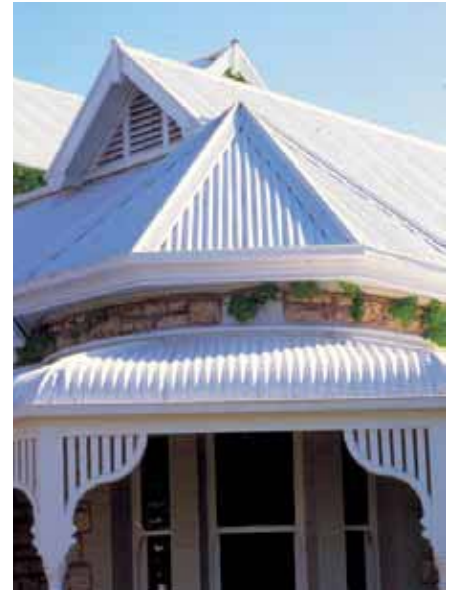
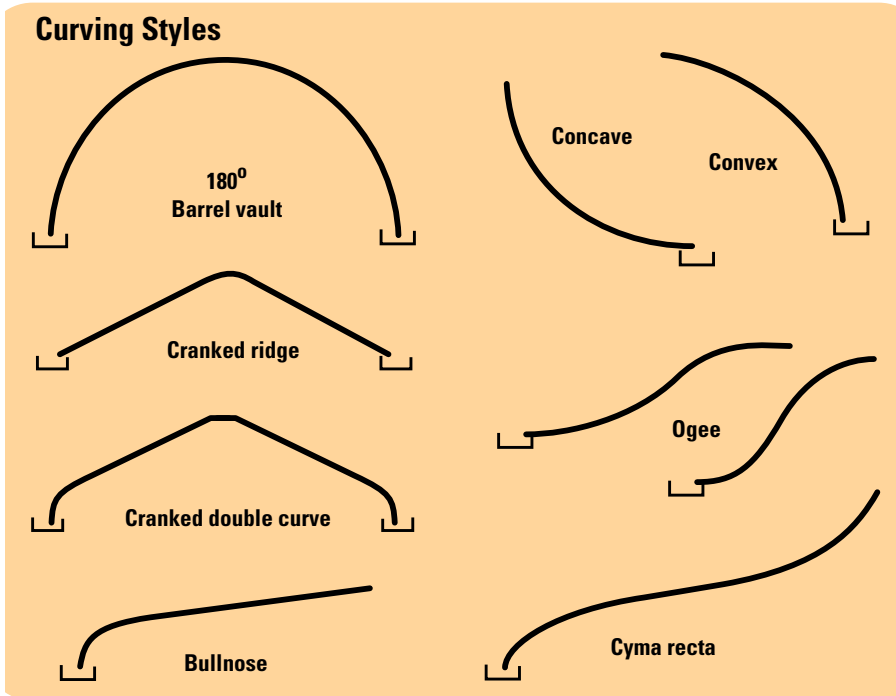
Lay sheets toward prevailing weather. Also, it is much easier and safer to turn sheets on the ground than up on the roof.

Before lifting sheets on to the roof, check that they are the correct way up and the overlapping side is towards the edge of the roof from which installation will start.

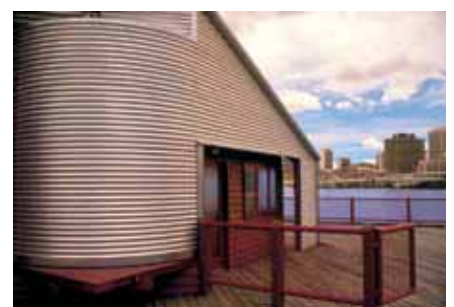
Place bundles of sheets over or near firm supports, not at mid span of roof members.

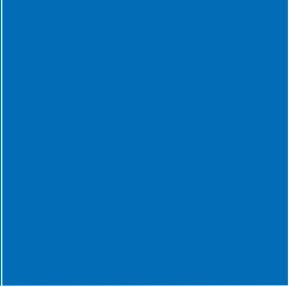
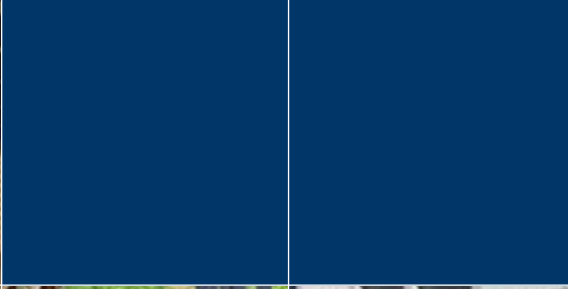


# The classic curves of Australian contemporary style



The finest expression of curves from the classic to the contemporary is our famous LYSAGHT CUSTOM BLUE ORB.





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[www.lysaght.com](http://www.lysaght.com)



For technical enquires: [steeldirect@bluescopesteel.com](mailto:steeldirect@bluescopesteel.com) or call 1800 641417

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