



LYSAGHT[®] 360 SEAM[®]

For Beautiful
Homes That Last

MORE THAN JUST A ROOF
OVER YOUR HEAD...



THE PERFECT ROOF TO CROWN YOUR JOY

LYSAGHT® 360 SEAM® SERIES – Building homes that inspire

With flexibility and versatility that is second to none, LYSAGHT® 360 SEAM® SERIES is ideal for creating the home of your dreams. Roof design is important to determining the character and aesthetic appeal of your home, and this lightweight, yet durable standing seam profile can be customised to suit a variety of roofs, from pitched to curved and tapered designs.

At the same time, LYSAGHT® 360 SEAM® SERIES is imbued with a stunning, metallic sheen, boasting refined colour tones that blend beautifully in any cityscape or tropical surrounding. Produced using COLORBOND® – SPECTRUM SERIES, LYSAGHT® 360 SEAM® SERIES combines versatility, aesthetic allure and durability to achieve beautiful designs that last a lifetime.





YOUR HOME, YOUR ROOF

The ultimate roofing solution, LYSAGHT® 360 SEAM® SERIES is both durable and blessed with a remarkable talent for adapting to almost any design structure.

CHARACTERISTICS

The many benefits of using LYSAGHT® 360 SEAM® SERIES

- **Design adaptability** – accommodates any roof geometry
- **Aesthetic compatibility** – pleasing and elegant on any type of structure: residential, commercial or industrial
- **Excellent quality** – backed by standard warranty*
- **Weather-proof** – completely water-tight due to mechanical seaming process
- **Available in COLORBOND® SPECTRUM SERIES**
 - Highly resistant to dirt, fungal growth and staining
 - Superior durability against weathering and paint delamination for long-term colour stability
 - Stronger corrosion resistance compared to galvanised steel

“Ideal for homes that are as comfortable within as they are beautiful without.”



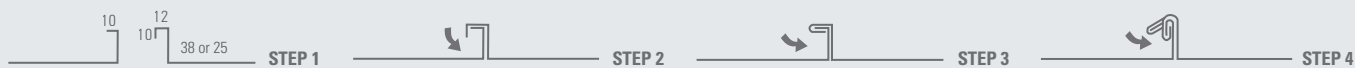
PROPERTY TABLE

LYSAGHT® 360 SEAM® SERIES is a standing seam roofing product with rib heights of either 38mm or 25mm.

LYSAGHT® 360 SEAM® SERIES	Cover width (mm)	Mass per unit area (kg/m²)	Minimum Roof pitch (°)	Height of Seam (rib) (mm)	Pre-curve radius (mm)		Natural-curve radius (mm)		Base Metal Thickness (BMT) (mm)
					Minimum	Maximum	Minimum	Maximum	
360 SEAM® 25	521	5.21	3	25	1,500	30,000	30,000	60,000	0.55
360 SEAM® 38	495	5.48	3	38	1,500	30,000	30,000	60,000	0.55
SELECT SEAM® 25	517	5.25	7.5	25	-	-	-	-	0.55

THE MECHANICAL SEAMING PROCESS

The seams are mechanically field seamed using the Double Lock (360) method, producing strong, watertight joints.



Mechanical Seaming Process

Note: Seaming process can be completed at step 3 or step 4.

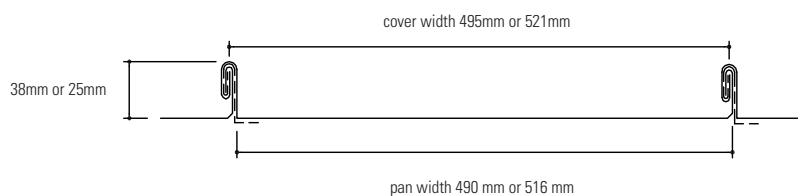
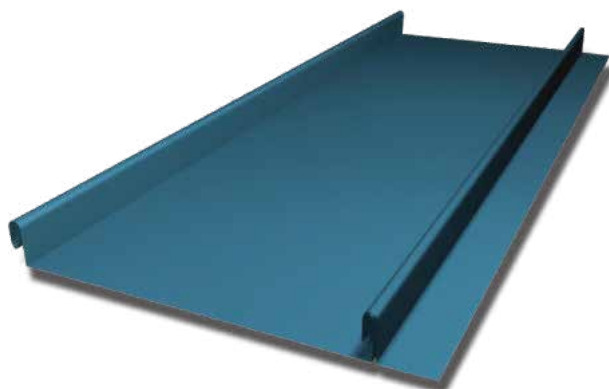
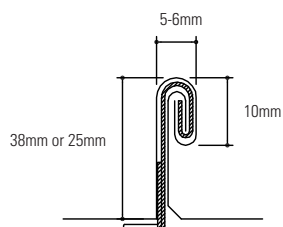
PROFESSIONAL ADVICE

BlueScope Lysaght provides personalised consultation to help bring your design concept to life.

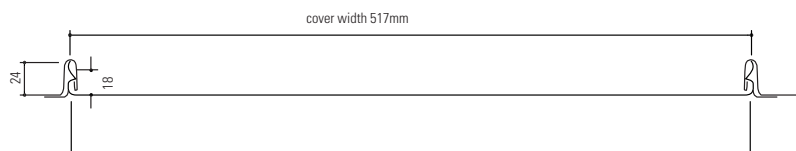
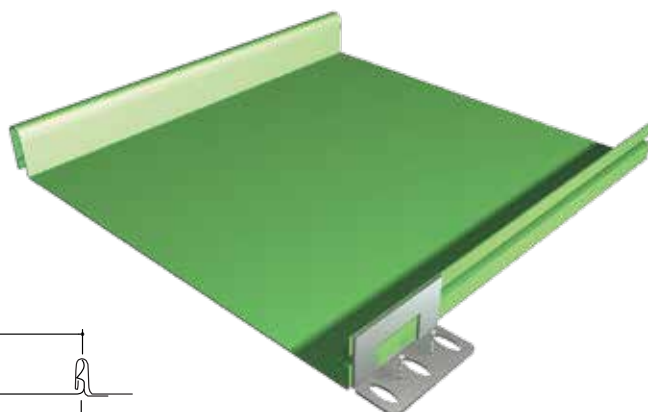
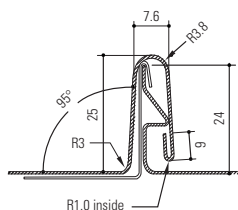
- Customised width
- Tailored solutions for your specific building requirements
- Technical support for design and installation matters
- Professional assistance from conception to completion
- Shop-drawings, including custom-designed trims and flashings
- Short lead times

* *Warranty subject to meeting eligibility criteria and BlueScope's standard terms and conditions.*

LYSAGHT® 360 SEAM® 25 or 38



LYSAGHT® SELECT SEAM® 25



NEAT STRAIGHT LINES



SMOOTH CURVES WITHOUT CRIMPED MARKS



TAPERED ENDS



MODERN AND CONTEMPORARY OUTLINES

ANY STYLE YOU WANT

Bend, fold and shape LYSAGHT® 360 SEAM® SERIES to fit any design geometry you wish.

OIL CANNING

The appearance of flatness depends on the distribution of the stresses across the surface of the metal sheet. These stresses will change as temperature changes. The ability of a metal to transfer the effect of these stresses across the surface without buckling or distorting out of plan, will determine the level of “oil canning” that will occur.

“Oil canning” is a metaphorical term used to describe the tendency of flat surfaces to show variations in reflectivity. For example, a curved mirror will show a stretched and distorted image of a person standing in front of it. A metal surface too,

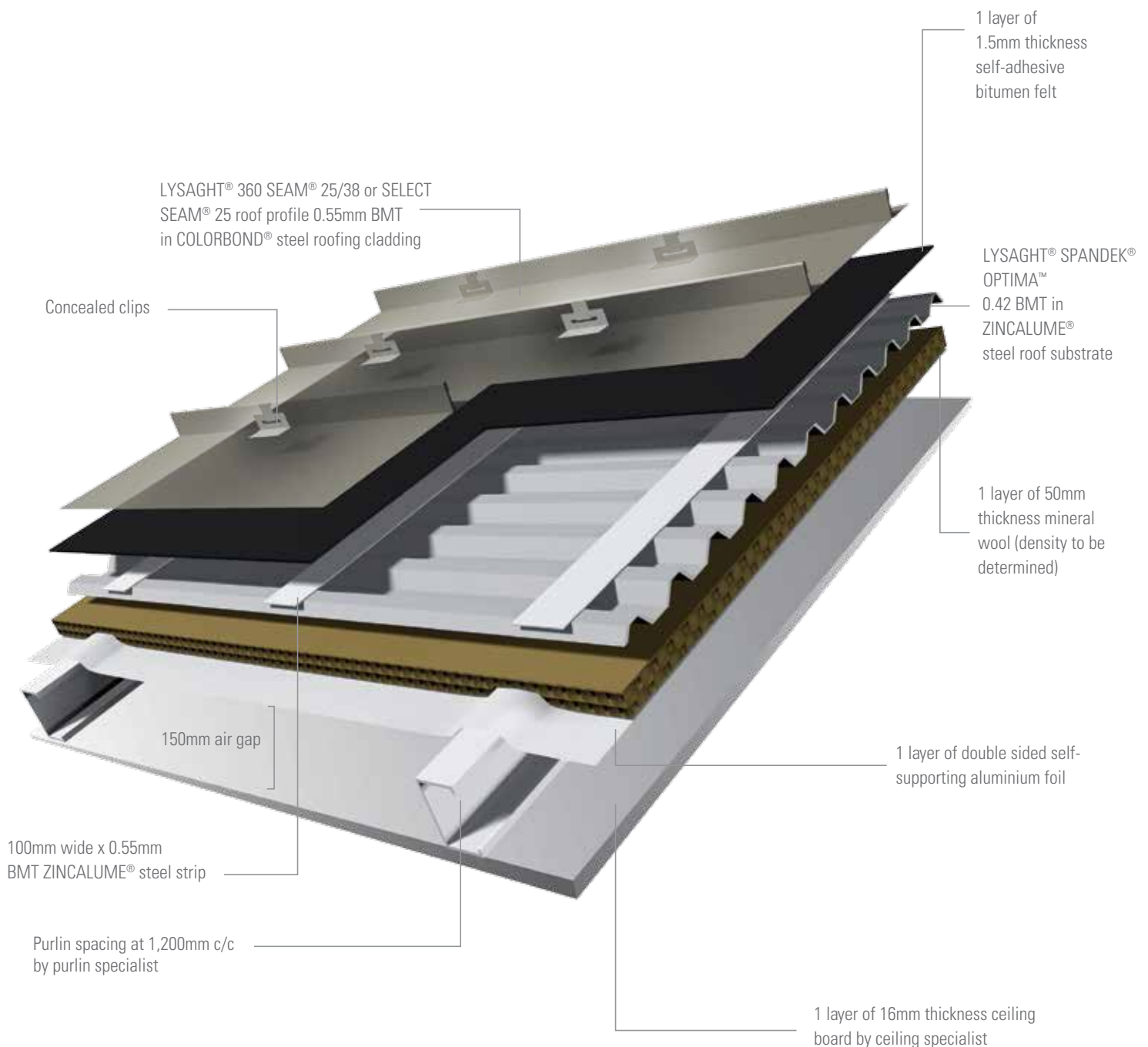
will distort the reflection of light if minor variations in and out of a level plane exist. The appearance of flatness is very much dependent on surface reflectivity. It is also caused by mill tolerances, variations in the substrate/decking and purlin alignment. Some paint finishes and metals that have high gloss index will exhibit highly apparent distortion. The visual effects of oil canning can be exacerbated by different light conditions and orientation. Darker colours visually accentuate oil canning to a greater extent than the lighter, more neutral colours.

There are several precautions that can be taken to reduce the oil canning effect. One is to use thicker material, because thicker metal tends to oil-can less than thinner metal. An alternative is to specify LYSAGHT® 360 SELECT SEAM® trays with stiffening ribs in the pan of the panels.

Oil canning is an inherent characteristic and not a defect of a standing seam profile. It is therefore not a cause for panel rejection.

ROOFING SOLUTION FOR INSPIRED LIVING

This illustration shows a typical roof built-up of LYSAGHT® 360 SEAM® 25/38 or SELECT SEAM® 25 based on certified sound transmission performance. Depending on your needs, we offer STC 37, STC 45 and STC 51 roof built-ups.



CONTEMPORARY LIVING WITH COLORBOND®

LYSAGHT® 360 SEAM® SERIES was created with your most prestigious and ambitious construction projects in mind. It is manufactured using COLORBOND® steel, a high-quality, exceptional material renowned for superior corrosion resistance and colour retention. The paint system is designed to resist dirt, thus preventing unsightly stains and fungal growth for a cleaner look over time. Stronger UV resistance also minimises colour fading and paint delamination, helping to provide any modern roof with long-lasting aesthetic beauty.

Opens up a
new world of
inspired living

Modern. Beautiful. Lasting.



Colorbond®

Offering a wide range of vibrant and exciting colours, COLORBOND® prepainted steel combines the superior strength of zinc/aluminium alloy-coated steel with proprietary paint system technology exclusive to BlueScope Steel. Enjoy peace of mind with the advantages of superior corrosion resistance, colour retention, dirt resistance and IR pigments to deflect heat.

Colorbond® SPECTRUM

Developed by BlueScope Steel for the ultimate solution in beauty and design flexibility without compromising durability. The distinctive metallic surface draws on the environment and surrounding structures to enhance the prestigious appearance of your building with subtle yet remarkable effects.



National Audit Department
of Terengganu

Roof that provide
peace of mind for
a lifetime.

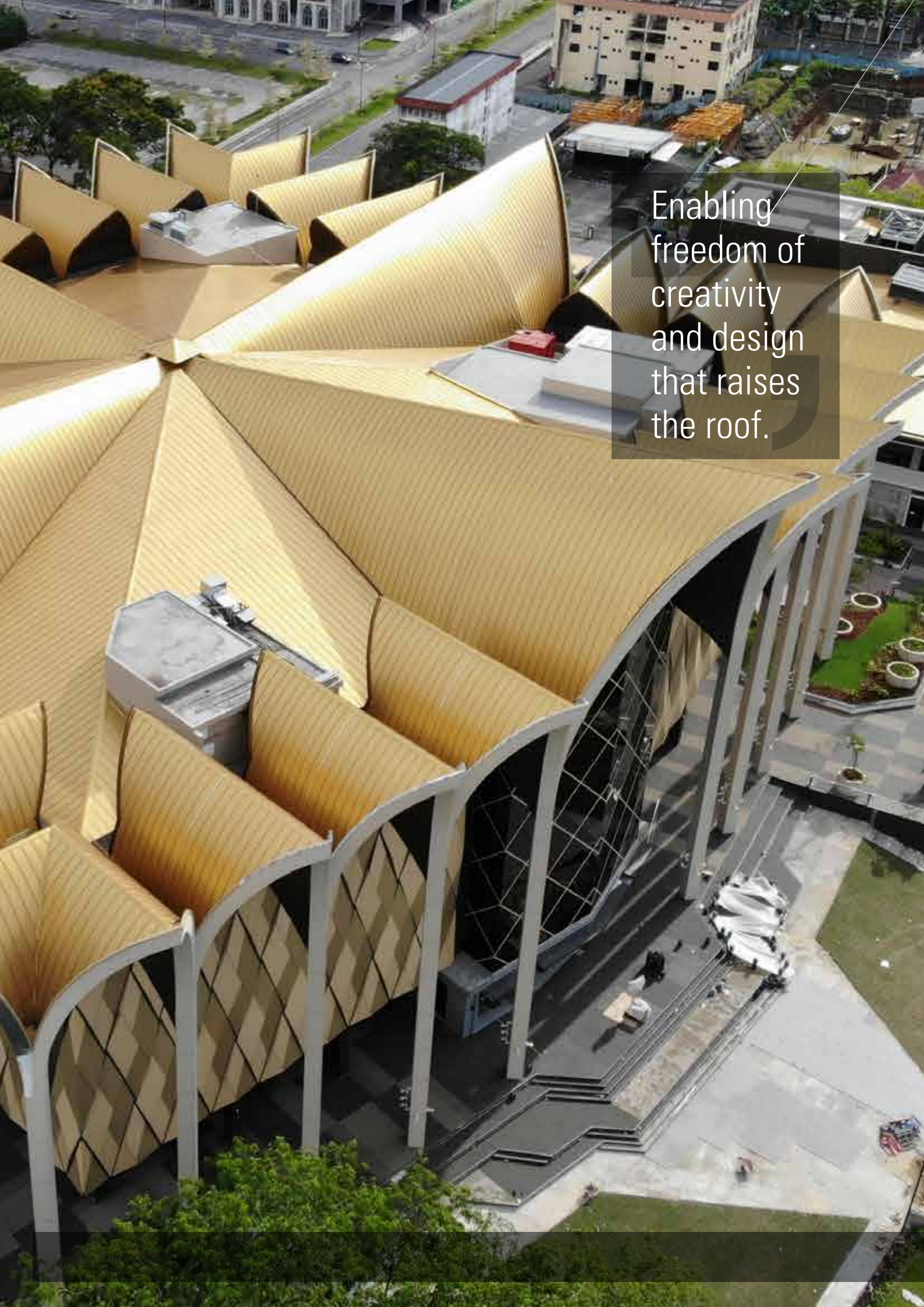
Ponderosa Vista Phase 2 Johor



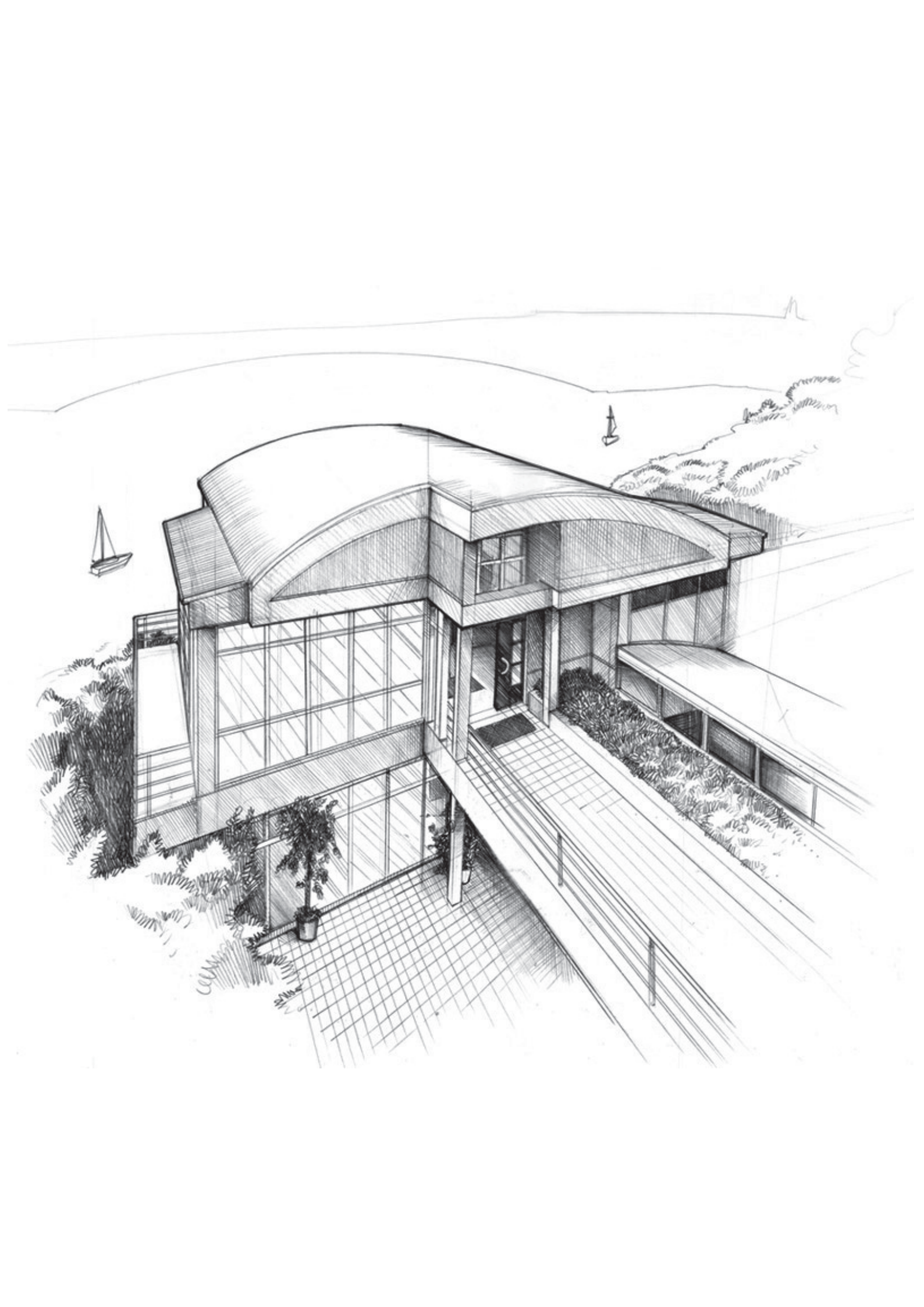
Malaysian Han Studies



Sarawak Museum

An aerial photograph of a modern building with a striking golden, ribbed roof that resembles a large, open umbrella or a series of overlapping shells. The roof is supported by a network of white, curved structural columns. The building is situated in an urban environment, with other buildings and greenery visible in the background. A semi-transparent text box is overlaid on the right side of the image.

Enabling
freedom of
creativity
and design
that raises
the roof.



A ROOF TALENTED ENOUGH TO
LOOK AFTER ITSELF



Trusted Partner for Building Systems

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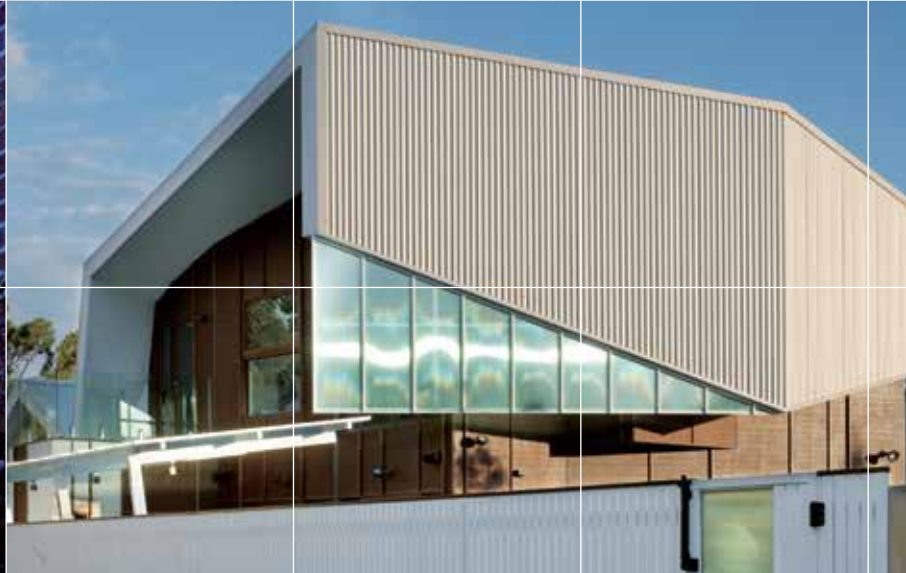
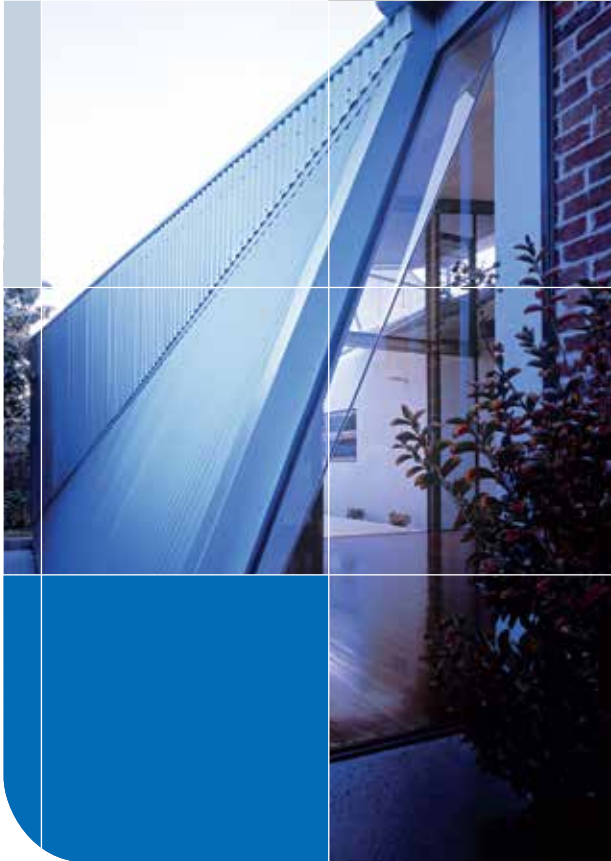
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* Warranty terms and conditions apply.

LYSAGHT® CUSTOM ORB® CUSTOM BLUE ORB®

NS BLUESCOPE LYSAGHT MALAYSIA

Traditional corrugated
steel cladding



Structural Solutions



Roofing & Walling Solutions



Truss

LYSAGHT® CUSTOM ORB® CUSTOM BLUE ORB®



LYSAGHT® CUSTOM ORB® and LYSAGHT® CUSTOM BLUE ORB® are the famous corrugated profiles, 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.

SIMPLE, LOW-COST FIXING

LYSAGHT® CUSTOM ORB® and LYSAGHT® CUSTOM BLUE ORB® can be fixed with hex head screws ensuring fast and simple installation with the recommended side lap (one and half corrugateds).

CURVING

LYSAGHT® CUSTOM ORB® is not intended for machine curve. For bullnosing we recommend LYSAGHT® CUSTOM BLUE ORB®. The long, curved lengths of LYSAGHT® CUSTOM BLUE ORB® can be easily placed and aligned. From the traditional 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 LYSAGHT® CUSTOM BLUE ORB® allows easy curving without distortion of its profile, and without damage to the finish.

COLOURS

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

MINIMUM ROOF PITCH

A special anti-capillary forming in the lap allow you to use LYSAGHT® CUSTOM ORB® (or LYSAGHT® CUSTOM BLUE ORB® for curved surfaces) for roof pitches as low as 5 degrees (1 in 12).

RAINFALL CAPACITIES

Peak rainfall intensity mm/hr	Roof slope		
	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

	BMT (mm)	kg/m	kg/m²
LYSAGHT® CUSTOM ORB®			
ZINCALUME® steel	0.42	3.26	4.28
	0.48	3.70	4.86
COLORBOND® steel	0.42	3.32	4.35
	0.48	3.76	4.93
LYSAGHT® CUSTOM BLUE ORB®			
ZINCALUME® steel	0.60	4.59	6.02
	0.80	6.06	7.96
COLORBOND® steel	0.60	4.64	6.09
	0.80	6.12	8.03

MATERIAL SPECIFICATIONS

LYSAGHT® CUSTOM ORB®

- ZINCALUME® aluminium/zinc alloy-coated steel complying with AS1397:2001 G550, AZ150 (550 mPa minimum yield stress, 150g/m² minimum coating mass); or
- Stainless steel standard grade designation is AISI/ASTM Type 430; UNS No. S4300
- COLORBOND® prepainted steel complies with AS/NZS2728:1997.

LYSAGHT® CUSTOM BLUE ORB®

- ZINCALUME® aluminium/zinc alloy-coated steel complying with AS1397:2001 G300, AZ150 (300 mPa minimum yield stress, 150g/m² minimum coating mass);
- COLORBOND® prepainted steel complies with AS/NZS2728:1997.

LENGTH

Sheets are supplied custom cut.

TOLERANCES

Length: + 10mm, -10mm

Width: + 4mm, -4mm

LYSAGHT® CUSTOM ORB® MAXIMUM SUPPORT SPACINGS (mm)

Type of span BMT (mm)	0.42	0.48
Roofs		
Single span	700	800
End span	900	1300
Internal span	1200	1700
Unstiffened eaves overhang	200	250
Stiffened eaves overhang	300	350
Walls		
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 LYSAGHT® 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 LYSAGHT® CUSTOM ORB® for the straight sections.

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

TURNING-UP LYSAGHT® CUSTOM ORB OR LYSAGHT® 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 OF LYSAGHT® CUSTOM BLUE ORB®

Straight vertical min. (SV) = 100 mm

(80mm in Victoria)

Radius min. (R) = 300 mm

LYSAGHT® CUSTOM BLUE ORB® MAXIMUM SUPPORT SPACINGS (mm)

Type of span BMT (mm)	0.60	0.80
Roofs including bullnosed roofs		
Single span	1600	1800
End span	1600	1800
Internal span	1800	2600
Unstiffened eaves overhang	200	400
Stiffened eaves overhang	300	600
Walls		
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 LYSAGHT® CUSTOM BLUE ORB® FOR CURVES

CURVING RADII

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

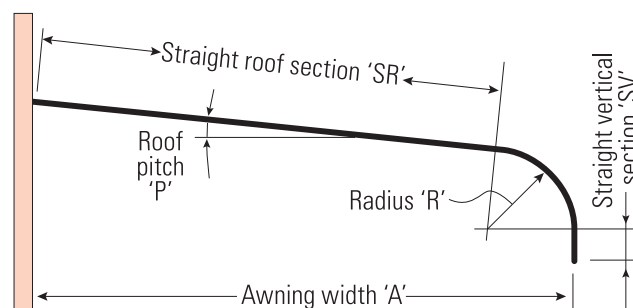
SPRING CURVE

The minimum radii for convex spring curving is 9m.

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

Supports must be not less than 1 mm BMT.

LIMIT STATES WIND PRESSURE

LYSAGHT® 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 (span/120) + (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 do not 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

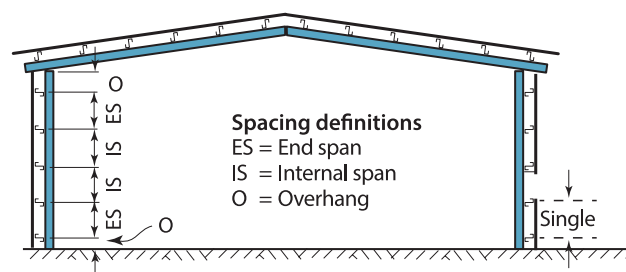
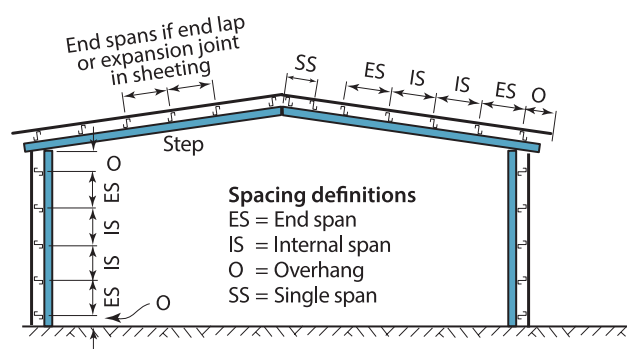
For cutting thin metal on site, we recommend a circular saw with a metal-cutting blade because it produces fewer damaging hot metal particles and leaves less resultant burr than does a carbonrondum disc.

Cut materials over the ground and not over 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	
Base metal thickness 0.6 mm														
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	0.10	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
Base metal thickness 0.8 mm														
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

Supports must be not less than 1 mm BMT.



Installation

FASTENERS WITHOUT INSULATION

	Fix to Steel Single & lapped steel thickness ≥0.55 up to 1.0mm BMT	Fix to Steel Single thickness steel ≥1.0mm BMT up to 3.0mm BMT	Fix to Steel Total lapped thickness of ≥1.0mm BMT up to 3.8mm BMT	Fix to Timber Hardwood J1-J3	Fix to Timber Softwood J4
Crest Fixed	RoofZips M6-11x50	12-14x35, Metal Tek's HG, HH or AutoTek's M5.5-14x39	12-14x35, Metal Tek's HG, HH or AutoTek's M5.5-14x39	12-11x50, Type 17 HG, HH	12-11x50, Type 17 HG, HH or RoofZips M6-11x50 HG, HH
Pan Fixed	10-16x16, Metal Tek's, HH or M5-16x25 Designer Head RoofZips M6-11x25	10-16x16, Metal Tek's, HH or M5-16x25 Designer Head	10-16x16, Metal Tek's, HH	10-12x25, Type 17, HH M5-16x25 Designer Head 12-11x25, Type 17, HH	10-12x30, Type 17, HH 12-11x25, Type 17, HH M5-16x25 Designer Head or RoofZips M6-11x25
Side laps (If required) 10-16x16, Metal Tek's, HH or Roof Zips M6-11x25 or M5-16x25 Designer Head or Sealed blind rivet ø4.8mm aluminium					

Notes: 1) For other steel thickness not specified please seek advice from screw manufacturer.
2) Values given are: gauge/threads per inch/lengths (mm). HH = Hex. Head, WH = Wafer Head, HG = Hi-Grip
3) Care is required during installation to prevent stripping of thin material. (Single ply.)
4) Screw specification as above or equivalent fastener.
5) All screws with EPDM sealing washer.

Crest: 3 fasteners†



Valley: 3 fasteners†



Crest: 5 fasteners†



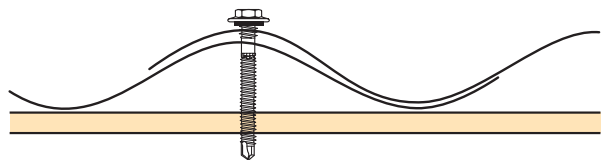
Valley: 5 fasteners†



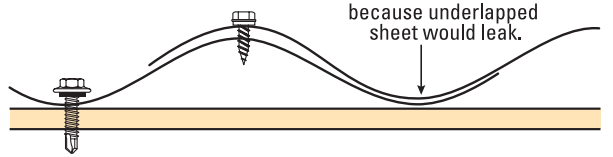
† Fasteners per sheet per support.

Most common practice is: 3 fasteners for internal spans and 5 fasteners for single and end spans.

Crest fixing for roof or walls



Valley fixing for walls only



FASTENING SHEETS TO SUPPORTS

LYSAGHT® CUSTOM ORB® and LYSAGHT® 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.

Do not place fasteners less than 25 mm from the ends of sheets.

SIDE-LAPS

LYSAGHT® CUSTOM ORB® (and LYSAGHT® 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 LYSAGHT® CUSTOM ORB® and LYSAGHT® 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.

If you intend to end-lap LYSAGHT® CUSTOM ORB® and LYSAGHT® 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 sheets to overlap into gutters by about 50 mm. The valleys of sheets should be tuned-down at lower ends, and turned-up at upper ends.

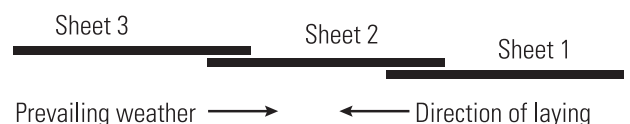
LAYING PROCEDURE

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.





COLORBOND® steel



ZINCALUME® steel

ZINCALUME® steel and COLORBOND® steel

Strong brands, quality materials

LYSAGHT® PRODUCTS ARE MANUFACTURED FROM HIGH QUALITY ZINCALUME® STEEL AND COLORBOND® STEEL, WHICH ARE LEADING BRANDS WITH A WIDE RANGE OF APPLICATIONS. THESE PRODUCTS HAVE BEEN USED WITH STRIKING EFFECT BY LEADING ARCHITECTS TO CREATE THE LATEST IN MODERN BUILDING DESIGNS, THROUGH TO CLASSIC ROOFING STYLES FOR RESIDENTIAL PROJECTS.

Zincalume®

ZINCALUME® steel is a premium metallic coated steel product that is composed of 55% aluminium, 43.5% zinc and 1.5% silicon. The zinc/aluminium alloy coating on ZINCALUME® steel imparts corrosion resistance of up to four times the life of galvanised steel.

ZINCALUME® steel is backed by a material warranty of up to 25 years*

Typical applications featuring ZINCALUME® steel include roofing, wall cladding and gutters.

Product Attributes

- Durable and strong.
- Superior corrosion resistance and has an excellent combination of physical and cut edge protection.
- Lightweight for easy handling.
- Thermally efficient roofing.
- Excellent flexibility in design, can be curved, for truly individual designs.
- Weather tight and secure when installed to manufacturer's specifications.
- Clear resin coating resists scuffing and handling marks.

*Warranty terms and conditions apply

Colorbond®

COLORBOND® pre-painted steel combines the superior strength of steel, the corrosion resistance and protection of a zinc/aluminium alloy (ZINCALUME® steel) coating that maintain its long lasting beauty with excellent colour retention.

It has been developed as a "Defence System Against Tropical Staining." Its unique oven-cured paint system prevents surface staining common to tropical environments caused mainly by temperature, moisture and air-borne contaminants.

COLORBOND® steel is backed by a material warranty of up to 25 years*

Product Attributes

- Available in a range of attractive colours.
- The zinc/aluminium alloy coating on ZINCALUME® steel, plus the oven-baked, prepainted finish on COLORBOND® steel provide superior corrosion resistance for long life.
- Thermally efficient. Roofs made from COLORBOND® steel absorb less heat, thus cools very quickly.
- Light weight compared to concrete and clay tiles (on a per area basis) - reduced load on supporting structures.
- Excellent flexibility in design, can be curved, for truly individual designs.
- Flexibility of design allows for both traditional straight roof sheeting as well as innovative curved roofing designs.
- Resists cracking, chipping and peeling.

LEAD, COPPER and STAINLESS STEEL are not compatible with COLORBOND® steel and ZINCALUME® steel. Direct contact should therefore, be avoided. Where inside condensation conditions are likely, coated steel girts should be used so that any ZINCALUME® steel to bare steel contact is avoided.

Stainless steel fasteners are not recommended for ZINCALUME® and COLORBOND® steel.



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COATING



COLOUR CHOICES



DESIGN FLEXIBILITY



DURABILITY / SECURITY



HI-TECH PRODUCTION



RECYCLING



TERMITE PROOF



THERMAL EFFICIENCY



WARRANTY

www.lysaght.com.my
mysupport@bluescope.com
Customer Hotline:
1700-81-8688



Web:



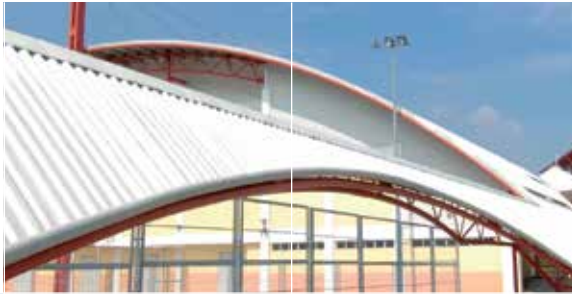
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LYSAGHT® HR-29® SERIES

High Rib Roofing & Walling Profile
For Optimized Spanning Capability



Structural Solutions



Roofing & Walling Solutions

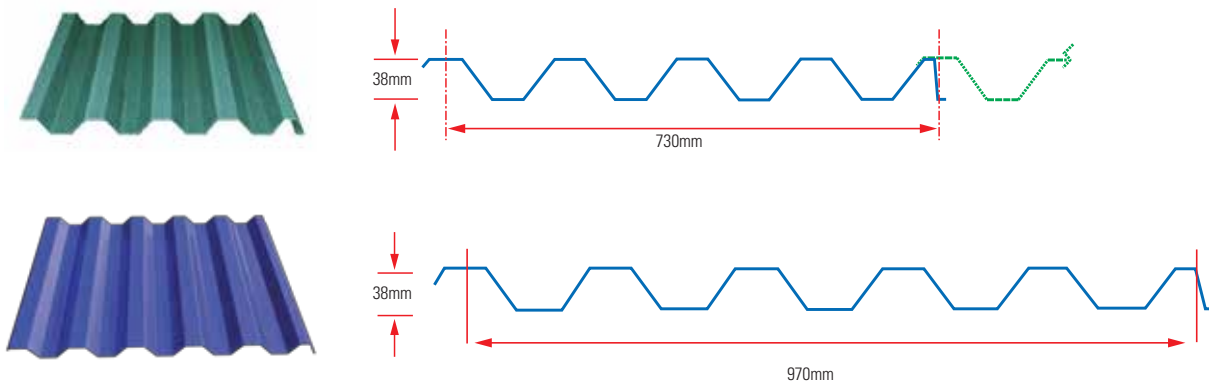


House Framing Solutions

LYSAGHT

LYSAGHT® HR-29® SERIES

Steel Roofing & Walling Profile



LYSAGHT® HR-29® profile is a pierce-fastened roofing and walling system that is suitable for classical or contemporary architecture. It is available in cover width of either 730mm or 970mm.

LYSAGHT® HR-29® can be rollformed to fit building designs that are either pitched or sprung curved. As an added feature, it can also be sprung curved to accommodate large span roofs.

Due to its pierce-fastened system, LYSAGHT® HR-29® profile is fast and easy to install therefore providing savings in construction time and installation cost. Its on-site rollforming option enables ease of installation and allows longer lengths to be produced.

The high rib depth of LYSAGHT® HR-29® provides excellent stiffness and hence, optimises the purlins spanning capacity while reducing the number of purlins used.

PHYSICAL PROPERTIES

Steel Grade (MPa)	Cover Width (mm)	Rib Depth (mm)	Min Roof Pitch	Base Metal Thickness (BMT/ mm)	Total Coated Thickness (TCT/ mm)	Mass (kg/m ²)
G550 (550MPa minimum yield stress)	730	38	2° (1 in 30 approx.)	0.42	0.47	4.54
				0.75	0.80	7.88
	970	38	2° (1 in 30 approx.)	0.42	0.47	4.43
				0.75	0.80	7.69

- High ribs with 38mm depth provide excellent stiffness and enables greater spanning capacity
- Custom cut lengths with the option of on-site rollforming allow longer spans
- Excellent rainwater drainage capacity
- Able to be sprung curve to accommodate complicated roof designs



PRODUCT PROFILE

MATERIAL SPECIFICATIONS

LYSAGHT® HR-29® is available in both COLORBOND® and in unpainted ZINCALUME® aluminium/zinc alloy-coated steel.

- ZINCALUME® steel complying with AS-1379 – 2001 G550, AZ150 (550MPa minimum yield stress, 150g/m² minimum coating mass).
The ZINCALUME® steel provides a minimum of twice the life of conventional galvanised steel in the same environment.
- COLORBOND® steel complies with AS/NZS2728:1997. The standard COLORBOND® steel offers a full range of contemporary colours suitable for all building projects.

LENGTH

Sheets are supplied custom cut

TOLERANCES

Length : +/- 15mm
Cover Width : +/- 2mm
Thickness : +/- 0.05mm

PERFORMANCE

SUPPORT SPACING

The maximum recommended support spacing are based on testing in accordance with AS1562.1, AS4040.0 and AS4040.1. Roof spans consider both resistance to wind pressure and light foot traffic (traffic arising from incidental maintenance). Wall spans consider resistance to wind pressure only.

TABLE 1 – MAXIMUM ROOF SUPPORT SPACING

Type of Span	BASE METAL THICKNESS (BMT) in mm/TOTAL COATED THICKNESS (TCT) in mm	
	0.42/ 0.47	0.75/ 0.80
Single	Not suitable	2100
End Span	1700	3800
Internal Span	2200	4600
Unstiffened Overhang	150	250
Stiffened Overhang	300	400

TABLE 2 – MAXIMUM WALL SUPPORT SPACING

Type of Span	BASE METAL THICKNESS (BMT) in mm/TOTAL COATED THICKNESS (TCT) in mm	
	0.42/ 0.47	0.75/ 0.80
Single	3600	3600
End Span	3900	3900
Internal Span	4500	4500

* The above tables are based on supports of 1mm

* 0.80mm (TCT) is non-standard thickness

* These spacing may vary for particular projects, or areas of high wind speeds

WIND PRESSURE

Table 3 provides the capacities of allowable wind pressure for serviceability and strength limit state design. The wind pressure capacities are based on tests conducted at BlueScope Steel's NATA registered testing laboratory at Lysaght Technology in Sydney, Australia.

Testing was conducted in accordance to AS1562.1-1992, "Design and Installation of Sheet Roof and Wall Cladding", and AS4040.2 1992, "Resistance to Wind Pressure for Non-Cyclonic Regions".

The serviceability limit state is based on a deflection limit of: $(\text{span}/120) + (p/30)$, where p is the maximum fastener pitch.

The pressure capacities for strength limit state have been determined by testing the product to failure (ultimate load capacity). These pressures are applicable to the cladding being fixed to materials of a minimum of 1.0mm in thickness

TABLE 3 – WIND PRESSURE CAPACITIES (kPa)

Thickness (mm) TCT	Type of Span	Fasteners Per Sheet Per Support	Limit States	Span (mm)													
				900	1200	1500	1800	2100	2400	2700	3000	3300	3600	3900	4200	4500	
0.47	Single	4	Serviceability Strenght	4.27 6.60	3.56 5.50	2.89 4.60	2.29 3.50	1.76 2.70	1.33 2.10	1.00 1.65	0.77 1.40	0.60 1.25	0.46 1.20	- -	- -	- -	
	End	4	Serviceability Strength	4.70 7.30	4.03 5.75	3.39 4.50	2.79 3.55	2.25 2.80	1.80 2.30	1.43 1.90	1.15 1.70	0.93 1.60	0.75 1.55	0.60 1.50	- -	- -	
	Internal	4	Serviceability Strenght	6.20 8.10	5.31 6.85	4.44 5.70	3.64 4.65	2.92 3.75	2.32 3.10	1.85 2.65	1.49 2.45	1.24 2.30	1.05 2.20	0.90 2.00	0.79 1.75	0.69 1.50	
0.80	Single	4	Serviceability Strenght	10.04 12.00	8.15 12.00	6.38 9.90	4.79 7.85	3.44 6.15	2.39 4.80	1.67 3.80	1.23 3.20	0.97 2.80	0.80 2.50	- -	- -	- -	
	End	4	Serviceability Strenght	10.90 11.00	9.15 9.35	7.48 8.00	5.92 6.85	4.56 5.85	3.46 5.10	2.46 4.40	2.08 2.85	1.72 3.40	1.47 2.95	1.30 2.60	- -	- -	
	Internal	4	Serviceability Strenght	12.00 12.00	10.10 10.60	8.27 9.20	6.60 7.95	5.14 6.80	3.99 5.80	3.17 4.95	2.63 4.30	2.28 3.80	2.03 3.50	1.79 3.25	1.57 3.10	1.35 3.00	

RAINWATER RUN OFF

LYSAGHT® HR-29® has better water drainage capacity due to its profile featuring high rib depth. As a guide, Table 4 shows the maximum recommended length for roofing using this profile (based on roof slopes and rainfall intensities). These recommended lengths are based on CSIRO and BlueScope Lysaght testing of LYSAGHT® roofing profiles under peak rainfall conditions.

TABLE 4 – MAXIMUM ROOF SUPPORT SPACING

Rainfall Intensity (mm/hr)	Roof Slope (degress)					
	2°	3°	4°	5°	7.5°	10°
150	136	155	172	187	216	243
200	102	117	129	140	162	182
250	82	93	103	112	130	146
300	68	78	86	93	108	121
400	51	58	64	70	81	91

INSTALLATION METHOD

STEP 1



Locate the first roof sheet and make sure the female rib is close to the barge.

STEP 2



Check the end of roof sheet in relation to overhang for gutter.

STEP 3



Fasten screws on each rib for single and end spans and every alternate rib for internal spans.

STEP 4



Place the second sheet with the female rib over-lapping the male rib of the first sheet. The sheets are snugly nested at the lap.

STEP 5



Vice grips are clamped on two ends. Fasten screws on the lap of every rib.

STEP 6



Make periodic check on alignment after every 10 sheets.

FASTENING METHODS AND RECOMMENDED FASTENERS

RECOMMENDED FASTENERS

Location	Type of Fixing	Details	Type of Fastener	Drilling Capacity	Maximum Attachment
Roof	Crest Fixing		12 - 14 X 55 HGS 12 - 14 X 68 HGS	6.5mm 6.5mm	Maximum 40mm Maximum 53mm
Wall	Valley Fixing		12 - 14 X 20 HWFS 12 - 14 X 30 HWFS	6.5mm 6.5mm	<6mm <16mm
	Side Lap Fixing		10 - 16 X 16 HWFS	4.5mm	1.2 - 4.5mm

*recommended fastener to conform to AS3566 Class 3

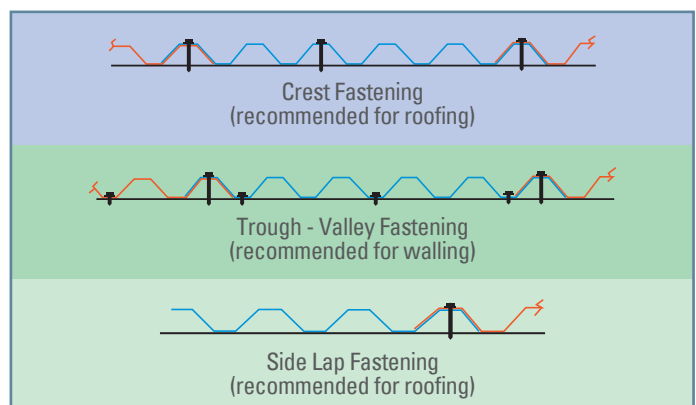
IDENTIFICATION OF FASTENERS

The format of the number code is:

12 - **14** x **55**
 Screw gauge (Thread outside diameter) Thread pitch (Thread per inch) Overall length of the screw measured from under the head (mm)



FASTENERS SPACING





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ZINCALUME® steel

ZINCALUME® steel and COLORBOND® steel

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PROJECT REFERENCES



IKEA Cheras, Batu Kawan Penang & Tebrau Johor



Universiti Malaysia Pahang



Perodua Sentral Petaling Jaya



Rakan Muda Complex Selangor



Consolidated Farms Berhad's Liquid Egg Factory Selangor



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COATING



COLOUR CHOICES



DESIGN FLEXIBILITY



DURABILITY / SECURITY



HI-TECH PRODUCTION



RECYCLING



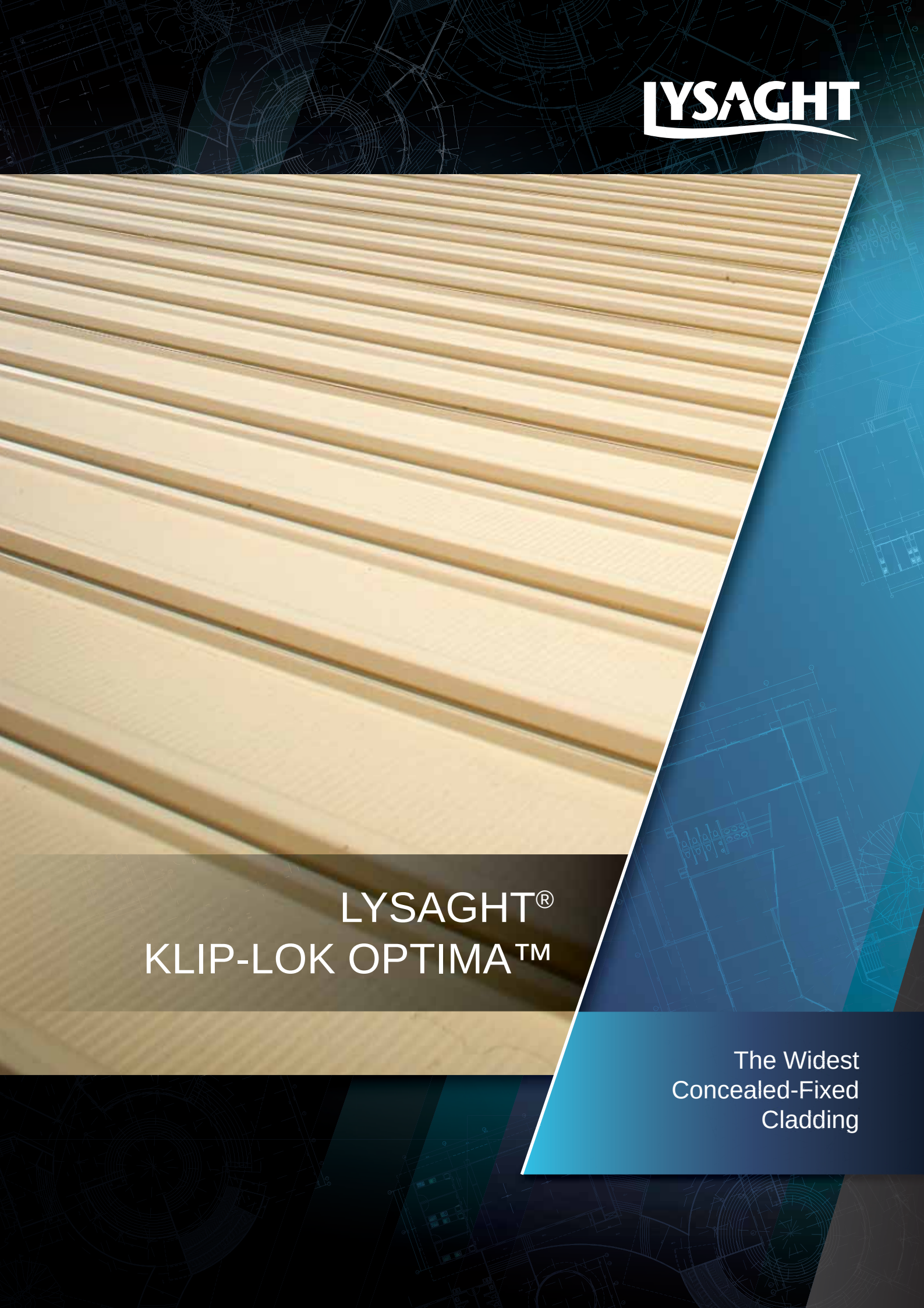
TERMITE PROOF



THERMAL EFFICIENCY



WARRANTY

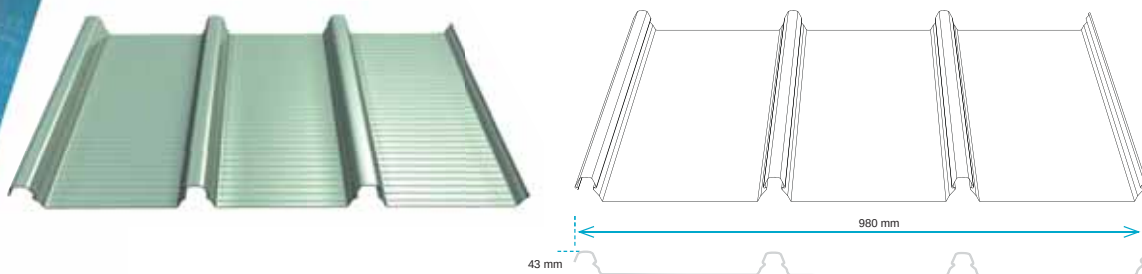
The background of the entire page is composed of various architectural drawings, including floor plans, elevations, and circular technical diagrams, rendered in a light blue or white line weight against a dark background.

LYSAGHT

A large, close-up photograph of the LYSAGHT KLIP-LOK OPTIMA cladding. The image shows multiple horizontal panels with a light-colored, wood-grain-like texture. The panels are arranged in a staggered, overlapping fashion, highlighting the 'clip-and-lock' joint system. The lighting creates soft shadows that emphasize the three-dimensional profile of the cladding.

**LYSAGHT®
KLIP-LOK OPTIMA™**

The Widest
Concealed-Fixed
Cladding



WIDER SPANNING BETTER EFFICIENCY

LYSAGHT® KLIP-LOK OPTIMA™ is the new generation of high-strength cladding that spans wider and offers better uplift performance than other comparable profiles. Our extensive research shows that its concealed fixed system and long lengths make it the best profile for controlling thermal expansion and contraction. A patented innovation, the wide-cover LYSAGHT® KLIP-LOK OPTIMA™ ensures economy as well as ease of installation and is suitable for both general and coastal environments.

SIMPLE. LOW-COST, CONCEALED-FIXING

With no exposed fasteners, the long, straight lines of LYSAGHT® KLIP-LOK OPTIMA™ remain clean and smooth.

At the heart of our system is our fixing clip, which can be laid in place and fixed simpler and faster than ever before. This is because the KL98 clip is fixed with hex. head screws, which are easier to drive.

The clip gives roofers the ability to accommodate up to 50mm of insulation.

TRANSVERSE FLUTING

Our patented transverse fluting significantly adds to the performance of this revolutionary product, making it superior to any other concealed-fixed cladding.

Longitudinal fluting is also available from the mobile rollformer for long length spring-curved applications.

PHYSICAL PROPERTIES

	STANDARD		NON-STANDARD
Base Metal Thickness (mm)	0.42	0.48	0.60
Total Coated Thickness (mm)	0.47	0.53	0.65
Mass per Unit Area – COLORBOND® Steel (kg/m ²)	4.39	4.98	6.15
Mass per Unit Area – ZINCALUME® Steel (kg/m ²)	4.32	4.90	6.08
Coating Class (min)	AZ150		
Grade of Steel (MPa)	G550 (550MPa minimum yield stress)		
Effective Cover Width	980mm		
Rib Depth	43mm		
Min Recommended Roof Pitch/ Slope	2° (1 in 30)		
Tolerances	Length +0.0mm, -15.0mm / Width ± 4.0mm		
Custom Cut Lengths	Any measurement to a maximum transportable length. Long length is available for roll on site.		

PRODUCT BENEFITS

- Concealed fastening offers excellent water tightness and control of thermal expansion.
- Visually, a bold rib makes a strong statement rising from flat pans which are transverse micro-fluted.
- We have patented this outstanding innovation. LYSAGHT® KLIP-LOK OPTIMA™ is truly a superior product.

PERFORMANCE

MAXIMUM ALLOWABLE SUPPORT SPACING

Type of Span	Without Edge Stiffeners			With Edge Stiffeners		
	BMT (mm)			BMT (mm)		
	0.42	0.48	0.60	0.42	0.48	0.60
Roofs (mm)						
Single Span	850	1000	1500	850	1000	1500
End Span	900	1200	1500	1050	1200	1500
Internal Span	1450	2200	3000	1450	2200	3500
Unstiffened Eaves Overhang	150	200	250	150	200	250
Stiffened Eaves Overhang	450	500	550	450	500	550
Walls (mm)						
Single Span	1550	2000	2500	1900	2400	2500
End Span	1550	2300	2700	1900	2500	2700
Internal Span	2700	3600	3600	3075	3600	3600
Overhang	150	200	250	150	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.
Basic wind speed (Strength Limit State) = 57m/sec
Terrain category co-efficient = 0.83
Shielding factor = 0.85
Topography factor = 1
Design wind speed Strength Limit State (with above factors) = 40.2m/sec
Basic wind speed (Strength Limit State) = 40m/sec
Terrain category co-efficient = 1
Shielding factor = 1
Topography factor = 1
Design wind speed Strength Limit State (with above factors) = 40m/sec

Walls

$C_{pe} = -0.65$, $K_1 = 2$ for single and end spans, $K_1 = 1.5$ for internal spans
 $C_{pi} = +0.2$

Roofs

$C_{pe} = -0.9$, $K_1 = 2$ for single and end spans, $K_1 = 1.5$ for internal spans
 $C_{pi} = +0.2$

These spacings may vary by Serviceability and Strength Limit States for particular projects.

MAXIMUM ROOF LENGTHS FOR DRAINAGE MEASURED FROM RIDGE TO GUTTER (m)

Peak Rainfall Intensity (mm/hr)	Roof Slope (degrees)					
	2	3	4	5	8	10
100	502	588	663	732	873	1003
150	334	392	442	488	582	669
200	251	294	331	366	436	502
250	201	235	265	293	349	401
300	167	196	221	244	291	334
400	125	147	166	183	218	251
500	100	118	133	146	175	201

Penetrations will alter the flow of water on a roof. For assistance in design of roofs with penetrations, please seek advice from Lysaght representative.

LIMIT STATE WIND PRESSURE CAPACITIES (kPa) – WITHOUT EDGE STIFFENER

0.42mm BMT											
TYPE OF SPAN	LIMIT STATE	SPAN (mm)									
		900	1200	1500	1800	2100	2400	2700	3000	3300	3600
Single	Serviceability	0.96	0.85	0.75	0.66	0.56	0.49	0.41	0.34	0.28	-
	Strength*	2.02	1.85	1.69	1.52	1.36	1.21	1.07	0.92	0.78	-
End	Serviceability	0.85	0.83	0.80	0.76	0.71	0.64	0.57	0.50	0.43	0.35
	Strength*	1.86	1.73	1.58	1.39	1.20	1.04	1.00	0.97	0.94	0.91
Internal	Serviceability	0.78	0.76	0.74	0.72	0.68	0.64	0.59	0.54	0.50	0.45
	Strength*	1.91	1.76	1.61	1.45	1.31	1.19	1.10	1.05	1.00	0.98
0.48mm BMT											
TYPE OF SPAN	LIMIT STATE	SPAN (mm)									
		900	1200	1500	1800	2100	2400	2700	3000	3300	3600
Single	Serviceability	1.11	1.00	0.89	0.79	0.69	0.59	0.50	0.41	0.32	-
	Strength*	2.40	2.12	1.85	1.61	1.40	1.25	1.13	1.04	0.97	-
End	Serviceability	1.20	1.18	1.14	1.05	0.94	0.82	0.71	0.62	0.53	0.45
	Strength*	2.34	2.29	2.25	2.01	1.68	1.39	1.33	1.27	1.22	1.16
Internal	Serviceability	1.18	1.17	1.15	1.10	0.99	0.87	0.77	0.69	0.64	0.58
	Strength*	2.21	2.15	2.03	1.79	1.52	1.30	1.28	1.27	1.26	1.24
0.60mm BMT											
TYPE OF SPAN	LIMIT STATE	SPAN (mm)									
		900	1200	1500	1800	2100	2400	2700	3000	3300	3600
Single	Serviceability	1.72	1.53	1.34	1.16	0.99	0.83	0.67	0.53	0.38	-
	Strength*	3.74	3.39	3.05	2.73	2.41	2.11	1.82	1.53	1.25	-
End	Serviceability	1.77	1.76	1.69	1.54	1.33	1.12	0.95	0.81	0.70	0.60
	Strength*	3.58	3.05	2.57	2.20	1.90	1.67	1.46	1.30	1.20	1.10
Internal	Serviceability	2.03	1.94	1.82	1.67	1.49	1.32	1.16	1.00	0.86	0.72
	Strength*	3.25	3.21	3.06	2.73	2.30	1.90	1.63	1.48	1.40	1.36

* A capacity reduction factor of 0.9 is applied to strength capacities.

These capacities are based on tests conducted at BlueScope Steel's NATA registered testing laboratory using a direct pressure testing rig.

LIMIT STATE WIND PRESSURE CAPACITIES (kPa) – WITH EDGE STIFFENER

0.42mm BMT											
TYPE OF SPAN	LIMIT STATE	SPAN (mm)									
		900	1200	1500	1800	2100	2400	2700	3000	3300	3600
Single	Serviceability	2.05	1.65	1.29	0.96	0.70	0.52	0.39	0.32	0.26	-
	Strength*	5.16	4.70	4.25	3.83	3.44	3.10	2.81	2.53	2.27	-
End	Serviceability	1.44	1.20	1.01	0.87	0.79	0.72	0.64	0.55	0.45	0.34
	Strength*	3.64	2.79	2.07	1.60	1.32	1.17	1.09	1.05	1.04	1.05
Internal	Serviceability	0.97	0.85	0.74	0.71	0.69	0.67	0.64	0.59	0.53	0.46
	Strength*	2.92	2.26	1.74	1.48	1.40	1.38	1.33	1.24	1.12	0.99

0.48mm BMT											
TYPE OF SPAN	LIMIT STATE	SPAN (mm)									
		900	1200	1500	1800	2100	2400	2700	3000	3300	3600
Single	Serviceability	2.57	2.07	1.60	1.19	0.85	0.62	0.46	0.36	0.29	-
	Strength*	7.13	6.07	5.07	4.19	3.51	3.07	2.81	2.68	2.63	-
End	Serviceability	1.73	1.54	1.36	1.18	1.03	0.89	0.77	0.66	0.56	0.47
	Strength*	3.78	3.26	2.74	2.24	1.81	1.48	1.40	1.33	1.26	1.18
Internal	Serviceability	1.43	1.19	1.02	1.01	0.98	0.94	0.89	0.81	0.69	0.56
	Strength*	3.65	2.76	2.10	2.00	1.90	1.80	1.76	1.65	1.29	1.29

0.60mm BMT											
TYPE OF SPAN	LIMIT STATE	SPAN (mm)									
		900	1200	1500	1800	2100	2400	2700	3000	3300	3600
Single	Serviceability	3.56	2.78	2.05	1.42	1.03	0.71	0.53	0.43	0.38	-
	Strength*	8.80	7.34	5.96	4.78	3.90	3.71	3.53	3.33	3.15	-
End	Serviceability	2.54	2.33	2.09	1.79	1.46	1.17	0.95	0.80	0.69	0.61
	Strength*	4.63	3.85	3.14	2.54	2.06	1.70	1.45	1.30	1.19	1.12
Internal	Serviceability	2.08	1.81	1.61	1.58	1.56	1.54	1.44	1.26	1.04	0.78
	Strength*	4.29	3.81	3.33	2.88	2.48	2.15	1.92	1.76	1.64	1.55

* A capacity reduction factor of 0.9 is applied to strength capacities.

These capacities are based on tests conducted at BlueScope Steel's NATA registered testing laboratory using a direct pressure testing rig.

LIMIT STATES WIND PRESSURES

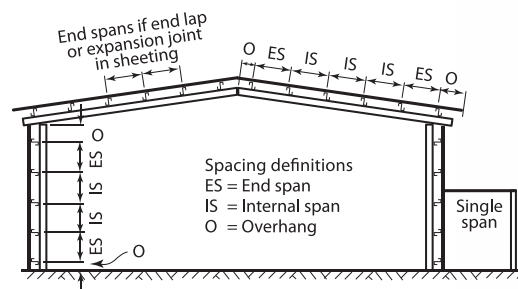
LYSAGHT® KLIP-LOK OPTIMA™ offers the full benefits of the latest methods for modelling wind pressures. The wind pressure capacity table is determined by full scale tests conducted at BlueScope Lysaght's NATA-registered testing laboratory, using the direct pressure-testing rig.

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 Lysaght representative.



METHOD STATEMENT AND GENERAL NOTES

WALKING ON ROOFS

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.

Be careful when moving between supports. Do not walk in the pan immediately adjacent to flashings or translucent sheeting. Walk at least one pan away.

ADVERSE CONDITIONS

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

METAL & TIMBER COMPATIBILITY

Lead, copper, free carbon, bare steel and green or some other chemically treated timbers are not compatible with this product. Don't allow any contact of the product with those materials, nor discharge of rainwater from them onto the product. Supporting members should be coated to avoid problems with underside condensation. If there are doubts about the compatibility of other products being used, ask for advice from Lysaght representative.

MAINTENANCE

Optimum product life will be achieved if all external walls 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

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

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

TURN UP-DOWN TOOLS

On all roofs of pitches less than 15 degrees, the high end of all sheets must be turned up to stop water from being driven under the flashing and into the building.

Similarly, the pans at the gutter end must be turned down to stop water running back along the underside of the sheets.

Tools are available for both applications.

NOTCHING TOOL

A tool is available for on-site notching of transverse flashings and cappings.

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 a carborundum disc does.

Cut materials over the ground and not over other materials.

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.

FASTENERS

Fasteners without insulation		
Fixing to steel up to 0.75mm BMT	Fixing to steel > 0.75mm to 3mm BMT	Fixing to timber
Self-drilling, self-tapping screws 12 - 14 x 30 OR Type 17 Self screws with hex & washer-head 12 – 11 x 25	Self-drilling, self-tapping screws with hex & washer-head 12 - 14 x 30	Self-drilling, self-tapping wood screws with hex & washer-head Softwood: 12 – 11 x 40 Hardwood: 12 – 11 x 25
Note: Use two screws per clip.		

Where insulation is to be installed, you may need to increase the length of the screws given below, depending on the density and thickness of the insulation.

When the screw is properly tightened:

- into metal: there should be at least three threads protruding past the support you are fixing to, but the Shankguard must not reach that support;
- into timber: the screw must penetrate the timber by the same amount that the recommended screw would do if there were no insulation;
- Fasteners should comply to AS3566, Class 3 or Class 4.

SEALED JOINTS

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

END LAPS/ EXPANSION JOINTS

LYSAGHT® KLIP-LOK OPTIMA™ is designed to minimize water penetration, and therefore, highly not recommended for end-lapping. If you are designing for more than maximum transportable length, LYSAGHT® KLIP-LOK OPTIMA™ can be rolled on-site. Please contact your nearest BlueScope Lysaght office for more information.

EXTRA VERSATILITY OF MOBILE ROLLFORMING

The mobile rollformer delivers on-site rolling for extra long lengths. In some cases, the mobile rollformer has the unique ability to 'roll-to-roof' saving you time and money for transport and craneage.

INSTALLATION

PREPARATION

Before starting work ensure that:

- The supports for your cladding are truly in the same plane;
- The minimum roof slopes conform to our recommendations; and
- The overhangs of sheets from the top and bottom supports don't exceed our recommendations.
- The first and last supports and clips should be at least 75mm from each end of the sheet to keep maximum holding power.

Make any necessary adjustments before you start laying sheets, because they will be difficult to rectify later.

ORIENT SHEETS BEFORE LIFTING

Consider which end of the building is best to start from. For maximum weather-tightness, start laying sheets from the end of the building that will be downwind of the worst-anticipated or prevailing weather (Figure 1).

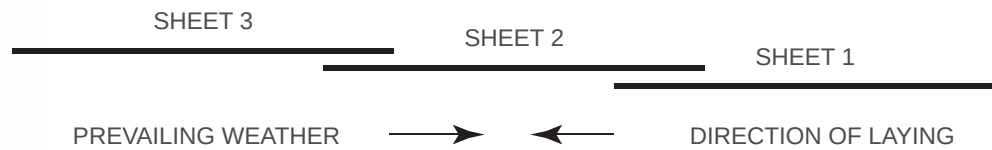


Figure 1
Lay sheets towards prevailing weather

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.

STEPS FOR INSTALLATION

1. Lay and fix wire mesh to the supports in accordance with the appropriate building requirements. (Figure 2)
2. Position the first clips on each support by placing onto the support nearest the gutter. (Figure 3)
3. Fix the first clip on the support so they point in the direction of laying. Ensure the clip is 90 degrees to the edge of the sheet.
4. Align the clips with the spacer using a string line (or the first sheet as a straight edge) to align the clips as you fix a clip to each support working towards the high end of the roof.
5. Drive hex-head screws through the top of the clip, into the support.
6. Work along the edge of the gutter, ensuring it aligns correctly at its ends in relation to the gutter and ridge (or parapet or transverse wall).
7. Place the glass wool insulation between the supports.
8. Measure the distance from the gutter end of the sheet to the support.
9. Position the first sheet so that it overhangs the desired amount (usually 50mm) to the gutter. It is important to ensure this first sheet is placed square to adjacent edges. (Figure 4.)
10. Engage the sheet with clips using vertical foot pressure on all the ribs over each clip. (Figure 5)
11. Fix the next row of clips, one to each support with the slots and tabs engaged. Be sure the clip is 90 degrees to the edge of the sheet.
12. As before, place the next sheet over its clips ensuring you also engage the edge of the preceding sheet.
13. Accurately position the sheet so that it overhangs the desired amount into the gutter. It is important that you keep the gutter-end of all sheets in a straight line.
14. Fully engage the two sheets along the overlapping rib. You can do this by walking along the full length of the sheet with one foot in the center pan of the previous sheet and the other foot applying vertical pressure to the top of the interlocking ribs at regular intervals. It is important that you don't walk in the unsupported pan beside the overlap (Figure 5)
15. Similarly, engage all the clips by applying vertical foot pressure to the top of the other two ribs over each clip.

It is essential that the sheets interlock completely. It is important that your weight is fully on the sheet you are installing.

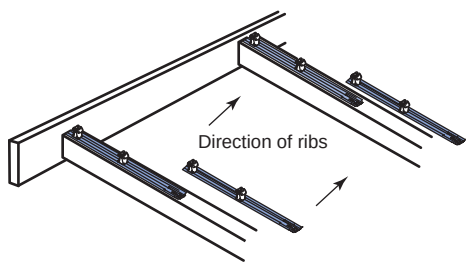


Figure 2
Fix the first rows of clips. Fix the next (and subsequent) clips and sheets.

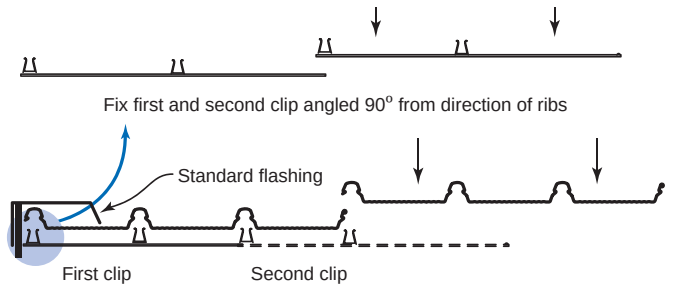


Figure 3
Place first sheet on clip and snap onto clip. Add subsequent clips and sheets as required.

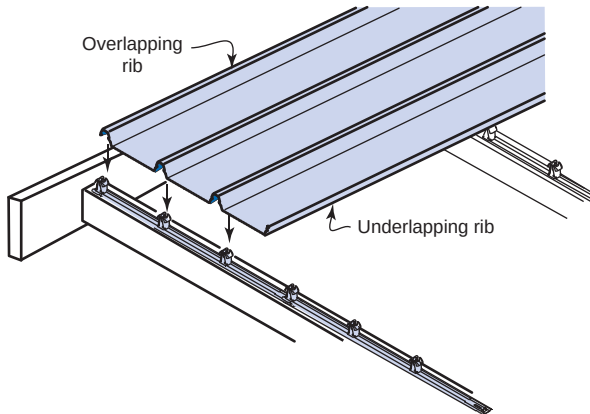


Figure 4
Placing the first sheet

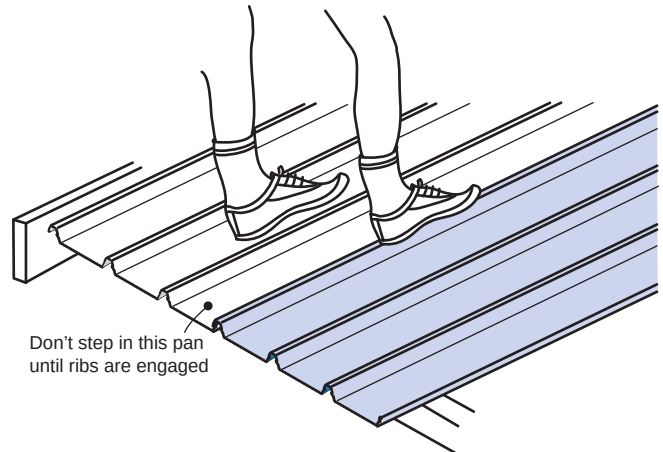


Figure 5
Engaging the lapping ribs

CHECK ALIGNMENT OCCASIONALLY

Occasionally check that the sheets are still parallel with the first sheet, by taking two measurements across the width of the fixed sheeting.

At about halfway through the job, perform a similar check but take the measurements from the finishing line to aim for the final sheet to be parallel with the end of the roof. If the measurements are not close enough, lay subsequent sheets very slightly out of parallel to gradually correct the error. (Figure 6) To allow this to happen, flatten the tabs on the base of subsequent clips - the slot in the clip will allow the clips to be fixed out of standard pitch.

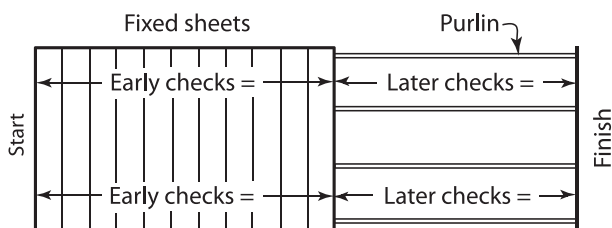


Figure 6
Check alignment occasionally

FIX THE LAST SHEET

If the final space is less than the full width of a sheet, you can cut a sheet along its length and shorten the clips as appropriate. It is desirable to fix the sheet at one end.

INSTALLING LYSAGHT® KLIP-LOK OPTIMA™ WALLS

The installation procedure for walls is similar to that described for roofs. To prevent LYSAGHT® KLIP-LOK OPTIMA™ from sliding downward in the fixing clips, you should pierce-fix through each sheet under the flashing or capping, along the top of the sheets.

INSTALLING TRANSLUCENT SHEETS WITH LYSAGHT® KLIP-LOK OPTIMA™

Because of its greater thermal expansion, translucent cladding should be fixed using oversized holes and sealing washers recommended by the cladding manufacturer. When used with concealed fixed claddings, ensure the fasteners do not penetrate the steel cladding. There are translucent products available that easily accommodate this.

Note: Don't exceed the maximum support spacing specified by the translucent cladding manufacturer. Use of translucent sheeting may result in lower limit state capacities.

LYSAGHT® RAINWATER GOODS

Whether you're searching for a distinctive look for a new home or looking for an economic solution for a large commercial project BlueScope Lysaght offer an extensive range of rainwater solutions.

Our domestic rainwater goods are manufactured from ZINCALUME® steel with COLORBOND® steel colours available, so they'll stand up to years of the harshest Australian climate.

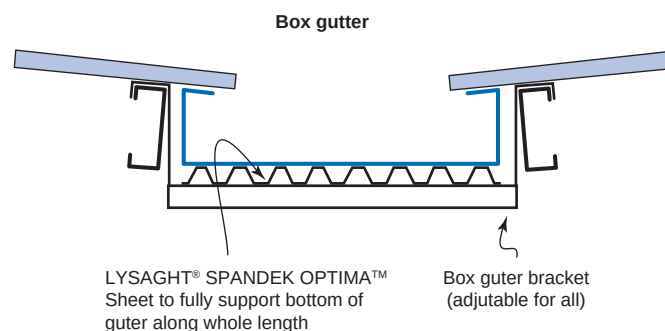
The choice of colours and styles is extensive, covering everything you could need from gutters and downpipes, to fascia, flashings and cappings, as well as fasteners and fixing clips.

COMMERCIAL/INDUSTRIAL DRAINAGE SYSTEMS

There is a standard procedure for designing the drainage of a roof using an eaves & gutter system. It is assumed that the gutters will have a gradient steeper than 1:500. Box gutter systems can be more complex and are thoroughly treated in AS/NZS 3500.3.2:1998.

We manufacture the perfect guttering system for your structure, whichever type is appropriate.

All designs can be complemented with our complete range of square and round downpipes and rainwater accessories. To ensure quick and easy installation there is also a full range of matching fixing clips.



A TOTAL SOLUTION

NS BlueScope Lysaght provides a broad range of roofing and rainwater products for industrial building solutions which complement long length LYSAGHT® KLIP-LOK OPTIMA™. Our gutter systems can be tailor-made for your project.

WHY YOU SHOULD ALWAYS INSIST ON BLUESCOPE LYSAGHT

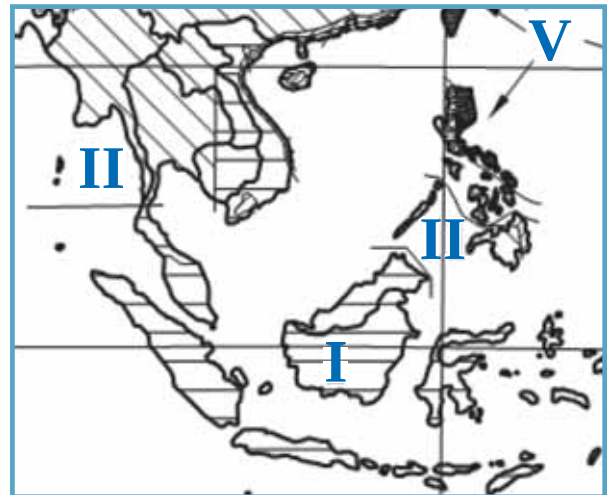
When you specify LYSAGHT® products you have the added advantage of dealing with a company whose expertise and experience with steel stretches back for well over a century. A company with a reputation for consistently producing top quality products at competitive prices.

Our products are backed by a performance warranty* for up to 25 years. When a NS BlueScope Lysaght warranty* is granted, it guarantees in writing that your products will perform exactly to specifications when installed and maintained in accordance with our recommendations.

* Warranty terms and conditions apply.

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. Map and table (below) taken from HB212-2002.



Wind speeds versus return period (3 s gust, 10 m height, open country terrain)				
Handbook Level	Description	Equation for V_R	V_{50}	V_{500}
I	Strong thunderstorms and monsoon winds	$70 - 56R^{-0.1}$	32	40
II	Moderately severe thunderstorms and extra-tropical gales	$67 - 41R^{-0.1}$	39	45
III	Severe thunderstorms and moderate or weakening typhoons/tropical cyclones	$106 - 92R^{-0.1}$	44	57
IV	Strong typhoons/ tropical cyclones	$122 - 104R^{-0.1}$	52	66
V	Very strong typhoons/ tropical cyclones	$156 - 142R^{-0.1}$	60	80

Table summarises the proposed relationships between 3 s gust wind speed and return period for the five levels in the handbook (see map). The values are for 50 years and 500 years return periods.

COLORBOND® STEEL AND ZINCALUME® STEEL

STRONG BRANDS, QUALITY MATERIALS

LYSAGHT® products are made of highest quality material, namely COLORBOND® steel and ZINCALUME® steel which are the leading materials for external cladding application. COLORBOND® steel and ZINCALUME® steel have been used on countless buildings to portray modern architecture works of art, ranges from the classic roofing to advance façade for industrial, commercial and residential buildings.

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COLORBOND® steel is a pre-painted finished product with ZINCALUME® steel substrate to deliver both superior corrosion resistance and excellent colour performance.

It comes with the THERMATECH® solar reflectance technology and Clean technology to minimize tropical dirt staining while lowering urban heat island effect, delivering longevity and minimal maintenance to your external cladding.

COLORBOND® steel is backed by a material warranty of up to 25 years*

Product Attributes

- Pre-painted finish on top of ZINCALUME® steel substrate to deliver superior corrosion resistance.
- Superior primer technology which prevents paint delamination.
- Proprietary super polyester paint system proven to provide excellent colour performance.
- Clean technology incorporated to resist against tropical dirt staining.
- THERMATECH® solar reflectance technology to allow for lower temperature cladding.
- Wide varieties of colours and finishes to cater for your building design needs.

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Product Attributes

- Superior corrosion resistance due to the minimum coating class of AZ150.
- Initial resistance to surface marking and wet storage corrosion due to the proprietary clear resin coating.
- Better aesthetics compared to generic alternatives (Al-Zn) due to less surface darkening, afforded by the proprietary clear resin coating.
- Lightweight and thermally efficient compared to conventional roofing materials (e.g. concrete and clay tiles)
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If condensation on the reverse side of roofing sheet is likely, vapour barrier should be installed to shield COLORBOND® steel or ZINCALUME® steel from prolonged exposure to the condensation (moisture).

REFERENCES



CJ Bio Malaysia



Emporium Apartment Kuching



Design Village Outlet Mall, Penang



IJM Seremban 2 Residential



Hershey Chocolate Factory, Johor

REFERENCES



The New Kota Kinabalu High Court Complex



Mapletree Logistic Hub Shah Alam



Tenery Residence at Kuching





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COATING



COLOUR CHOICES



DESIGN FLEXIBILITY



DURABILITY / SECURITY



HI-TECH PRODUCTION



RECYCLING



TERMITE PROOF



THERMAL EFFICIENCY



WARRANTY

NS BLUESCOPE LYSAGHT (SARAWAK) SDN BHD

Company No: 197701002868 (33837-P)

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www.lysaghtasean.com

The background features a dark blue and black color scheme with faint, intricate architectural line drawings of various structures, including circular and rectangular forms. A large, prominent image of a trapezoidal steel cladding panel with visible fasteners is positioned diagonally across the center. The LYSAGHT logo is located in the top right corner.

LYSAGHT

LYSAGHT®
SPANDEK OPTIMA™

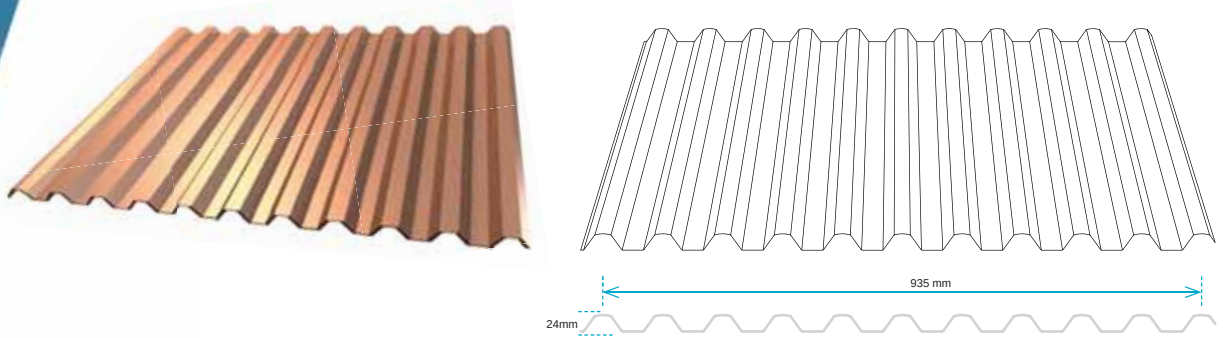
Trapezoidal Steel
Cladding with Longer
Spanning Capability

LYSAGHT® SPANDEK OPTIMA™

LYSAGHT® SPANDEK OPTIMA™ is a contemporary-looking, trapezoidal profile which is ideal where a stronger, bolder, more modern corrugated appearance is required.

LYSAGHT® SPANDEK OPTIMA™ was originally designed as a strong attractive roofing material for industrial and commercial construction - however SPANDEK OPTIMA™ has proved equally popular for homes and public buildings, underlining its versatility and pleasing appearance.

LYSAGHT® SPANDEK OPTIMA™ combines strength with lightness, rigidity and economy.



PHYSICAL PROPERTIES

STANDARD		
Base Metal Thickness (BMT) (mm)	0.42	0.48
Total Coated Thickness (TCT) (mm)	0.47	0.53
Mass per Unit Area - COLORBOND® Steel (kg/m²)	4.60	5.21
Mass per Unit Area - ZINCALUME® Steel (kg/m²)	4.52	5.13
Coating Class (min)	AZ150	
Grade of Steel (MPa)	G550 (550MPa minimum yield stress)	
Effective Cover Width	935mm	
Rib Depth	24mm	
Min Recommended Roof Pitch/ Slope	3° (1 in 20)	
Tolerances	Length +0.0mm, -15.0mm / Width ± 4.0mm	
Custom Cut Lengths	Any measurement to a maximum transportable length.	

PERFORMANCE

MAXIMUM ALLOWABLE SUPPORT SPACING

Type of Span	BMT (mm)	
	0.42	0.48
Roofs (mm)		
Single Span	1500	2200
End Span	2100	2400
Internal Span	2300	3300
Unstiffened Eaves Overhang	200	250
Stiffened Eaves Overhang	450	500
Walls (mm)		
Single Span	2200	2300
End Span	3100	3200
Internal Span	3300	3300
Overhang	150	150

- 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.
 Basic wind speed (Strength Limit State) = 57m/sec
 Terrain category co-efficient = 0.83
 Shielding factor = 0.85
 Topography factor = 1
 Design wind speed Strength Limit State (with above factors) = 40.2m/sec
 Basic wind speed (Strength Limit State) = 40m/sec
 Terrain category co-efficient = 1
 Shielding factor = 1
 Topography factor = 1
 Design wind speed Strength Limit State (with above factors) = 40m/sec

Walls

$C_{pe} = -0.65$, $K_i = 2$ for single and end spans, $K_i = 1.5$ for internal spans
 $C_{pi} = +0.2$

Roofs

$C_{pe} = -0.9$, $K_i = 2$ for single and end spans, $K_i = 1.5$ for internal spans
 $C_{pi} = +0.2$

These spacings may vary by Serviceability and Strength Limit States for particular projects.

MAXIMUM ROOF LENGTHS FOR DRAINAGE MEASURED FROM RIDGE TO GUTTER (m)

Peak Rainfall Intensity (mm/hr)	Roof Slope (degrees)			
	3	5	7.5	10
100	122	147	170	191
150	82	98	113	127
200	61	73	85	95
250	49	59	68	76
300	41	49	57	64
400	31	37	43	48
500	24	29	34	38

Penetrations will alter the flow of water on a roof. For assistance in design of roofs with penetrations, please seek advice from Lysaght representative.

LIMIT STATE WIND PRESSURE CAPACITIES (kPa)

0.42mm BMT										
TYPE OF SPAN	LIMIT STATE	FOR ROOFS (c/c) SPAN (mm)								
		900	1200	1500	1800	2100	2400	2700	3000	3300
Single	Serviceability	3.46	2.67	1.94	1.29	0.80	0.48	0.32	0.24	-
	Strength*	10.85	8.70	6.70	4.98	3.68	2.92	2.58	2.53	-
End	Serviceability	3.12	2.71	2.31	1.93	1.58	1.27	0.99	0.74	-
	Strength*	7.94	6.46	5.08	3.88	2.95	2.36	2.04	1.92	-
Internal	Serviceability	3.47	2.99	2.54	2.13	1.76	1.46	1.21	0.99	0.79
	Strength*	9.09	7.53	6.08	4.79	3.78	3.11	2.69	2.48	2.34

0.48mm BMT										
TYPE OF SPAN	LIMIT STATE	FOR ROOFS (c/c) SPAN (mm)								
		900	1200	1500	1800	2100	2400	2700	3000	3300
Single	Serviceability	3.97	3.07	2.21	1.42	0.91	0.55	0.35	0.27	0.24
	Strength*	11.07	9.53	8.06	6.72	5.57	4.65	3.93	3.33	2.80
End	Serviceability	4.11	3.49	2.89	2.34	1.85	1.44	1.09	0.79	0.52
	Strength*	9.00	7.42	5.93	4.64	3.64	2.99	2.63	2.46	2.39
Internal	Serviceability	4.28	3.59	2.93	2.33	1.83	1.44	1.15	0.93	0.73
	Strength*	10.28	8.49	6.80	5.32	4.15	3.36	2.87	2.54	2.41

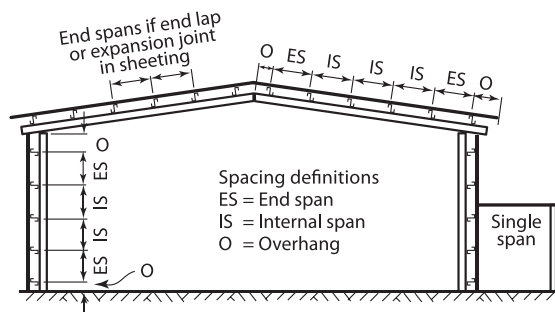
* A capacity reduction factor of 0.9 is applied to strength capacities. These capacities are based on tests conducted at BlueScope Steel's NATA registered testing laboratory using a direct pressure testing rig. Supports must not be less than 1mm BMT.

LIMIT STATES WIND PRESSURES

The wind pressure capacities are based on tests conducted at BlueScope Lysaght's NATA-registered testing laboratory. 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.



METHOD STATEMENT AND GENERAL NOTES

WALKING ON ROOFS

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.

When waling across the width of the roof, walk over, or close to, the roof supports.

ADVERSE CONDITIONS

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

METAL & TIMBER COMPATIBILITY

Lead, copper, free carbon, bare steel and green or some other chemically treated timbers are not compatible with this product. Don't allow any contact of the product with those materials, nor discharge of rainwater from them onto the product. Supporting members should be coated to avoid problems with underside condensation. If there are doubts about the compatibility of other products being used, ask for advice from our Lysaght representative.

MAINTENANCE

Optimum product life will be achieved if all external walls 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.

SAFETY, STORAGE AND HANDLING

LSYAGHT's 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 off the ground. If stacked or bundled product becomes wet, separate it, wipe it with a clean cloth to dry thoroughly.

Handle materials carefully to avoid damage: don't drag materials over rough surfaces or each other; don't drag tools over material; 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 a carborundum disc does.

Cut materials over the ground and not over other materials. 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.

FASTENERS

Fasteners without insulation			
	Fixing to steel up to 0.75mm BMT	Fixing to steel >0.75mm to 3mm BMT	Fixing to timber
Crest fixed	Self-drilling screws with hex. washer-head & EPDM seal, 12 - 11 x 50 (M5.5 – 11 x 50)	Self-drilling screws with hex. washer-head & EPDM seal, 12 - 14 x 50 (M5.5 – 14 x 50) or 12 - 14 x 55 (M5.5 – 14 x 55)	Type 17 Self drilling screws with hex. washer-head & EPDM seal, Softwood: 12 – 11 x 65 (M5.5 – 11 x 65) Hardwood: 12 – 11 x 50 (M5.5 – 11 x 50)
Valley fixed	Self-drilling screws with hex. washer-head & EPDM seal, 10 - 12 x 20 (M4.8 – 12 x 20) or Self-drilling screws with hex. washer-head & EPDM seal, 10 - 16 x 16 (M4.8 – 16 x 16)	Self-drilling screws with hex. washer-head & EPDM seal, 12 - 14 x 20 (M5.5 – 14 x 20) or 12 - 14 x 30 (M5.5 – 14 x 30)	Type 17 Self drilling screws with hex. washer-head & EPDM seal Softwood: 10 – 12 x 30 (M4.8 – 12 x 30) Hardwood: 10 – 12 x 20 (M4.8 – 12 x 20)
Side lap & accessories	Self-drilling screws with hex. washer-head & EPDM seal	10 – 16 x 16 or EPDM seal: 8 – 15 x 15	

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Valley fixed	Self-drilling screws with hex. washer-head & EPDM seal, 10 - 12 x 20 (M4.8 - 12 x 20) or Self-drilling screws with hex. washer-head & EPDM seal, 10 - 16 x 16 (M4.8 - 16 x 16)	Self-drilling screws with hex. washer-head & EPDM seal, 12 - 14 x 30 (M5.5 - 14 x 30)	Type 17 Self drilling screws with hex. washer-head & EPDM seal Softwood: 10 - 12 x 30 (M4.8 - 12 x 30) Hardwood: 10 - 12 x 20 (M4.8 - 12 x 20) Softwood: 12 - 14 x 30 (M5.5 - 14 x 30) Hardwood: 12 - 14 x 20 (M5.5 - 14 x 20)
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LYSAGHT® SPANDEK OPTIMA™ requires 5 fasteners per sheet per support as shown below. Fastener should comply to AS3566, Class 3 or Class 4.

Roof - Screw fix through rib

Crest - 5 fixing



Wall - Screw fix through pan

Valley - 5 fixing



FASTENING SHEETS TO SUPPORTS

LYSAGHT® SPANDEK OPTIMA™ profile is pierced-fixed to timber or steel supports. This means that fastener screws pass through the sheeting.

You can place fasteners for LYSAGHT® SPANDEK OPTIMA™ through the crests or in the pans. To maximize watertightness, always place roof fasteners through the crests.

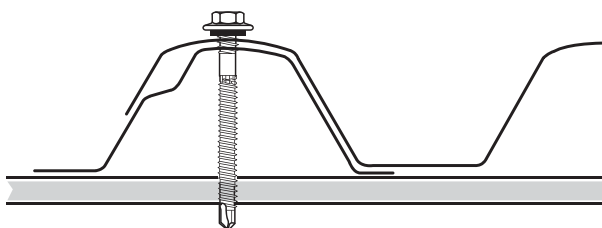
Always drive the fasteners perpendicular to the sheeting, and in the center of the corrugation or rib. Don't place fasteners less than 25mm from the ends of sheets.

SEALED JOINTS

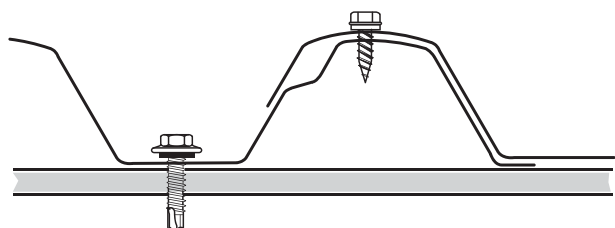
For sealed joints use screws or rivets and neutral-cure silicone sealant branded as suitable for use with galvanized or ZINCALUME® steel.

SIDE-LAPS

The side of LYSAGHT® SPANDEK OPTIMA™ with the anti-capillary groove is always the underlap (see figures below). 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.



Crest fixing for roof or walls



Valley fixing for walls only

END LAPS

End-laps are not usually necessary because LYSAGHT® SPANDEK OPTIMA™ is available in long lengths. If you want end-laps, seek advice from our Lysaght representative on the sequence of laying and the amount of overlap.

END OF SHEETS

It is usual to allow roof sheets to overlap into gutters by about 50mm. If the roof pitch is less than 25° or extreme weather is expected, the pans of sheets should be turned-down at lower ends and turned-up at upper ends by about 80°.

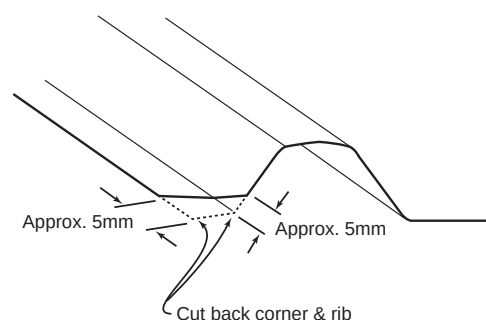
LAYING PROCEDURE

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

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.

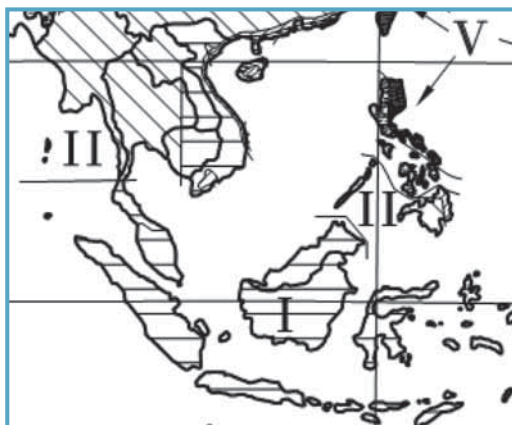


SHEET-ENDS ON LOW SLOPES

When LYSAGHT® SPANDEK OPTIMA™ is laid on slopes of 5 degrees or less, cut back the corner of the under-sheet, at the downhill end of the sheet, to block capillary action.

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. Map and table (below) taken from HB212-2002.



Wind speeds versus return period
(3 s gusts, 10 m height, open country terrain)

Handbook Level	Description	Equation for V_R	V_{50}	V_{500}
I	Strong thunderstorms and monsoon winds	$70 - 56R^{-0.1}$	32	40
II	Moderately severe thunderstorms and extra-tropical gales	$67 - 41R^{-0.1}$	39	45
III	Severe thunderstorms and moderate or weakening typhoons/tropical cyclones	$106 - 92R^{-0.1}$	44	57
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If condensation on the reverse side of roofing sheet is likely, vapour barrier should be installed to shield COLORBOND® steel or ZINCALUME® steel from prolonged exposure to the condensation (moisture).

REFERENCES



Hap Seng Business Park, Shah Alam



Stinis Factory @ Nusajaya, Johor



ONE°15 Estuari Sports Centre, Johor

REFERENCES



A&A at Ngee Ann Polytechnic, Singapore



The Seed Residential @ Sutera, Skudai, Johor



The Seed Residential @ Sutera, Skudai, Johor





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DURABILITY / SECURITY



HI-TECH PRODUCTION



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WARRANTY

NS BLUESCOPE LYSAGHT (SARAWAK) SDN BHD

Company No: 197701002868 (33837-P)

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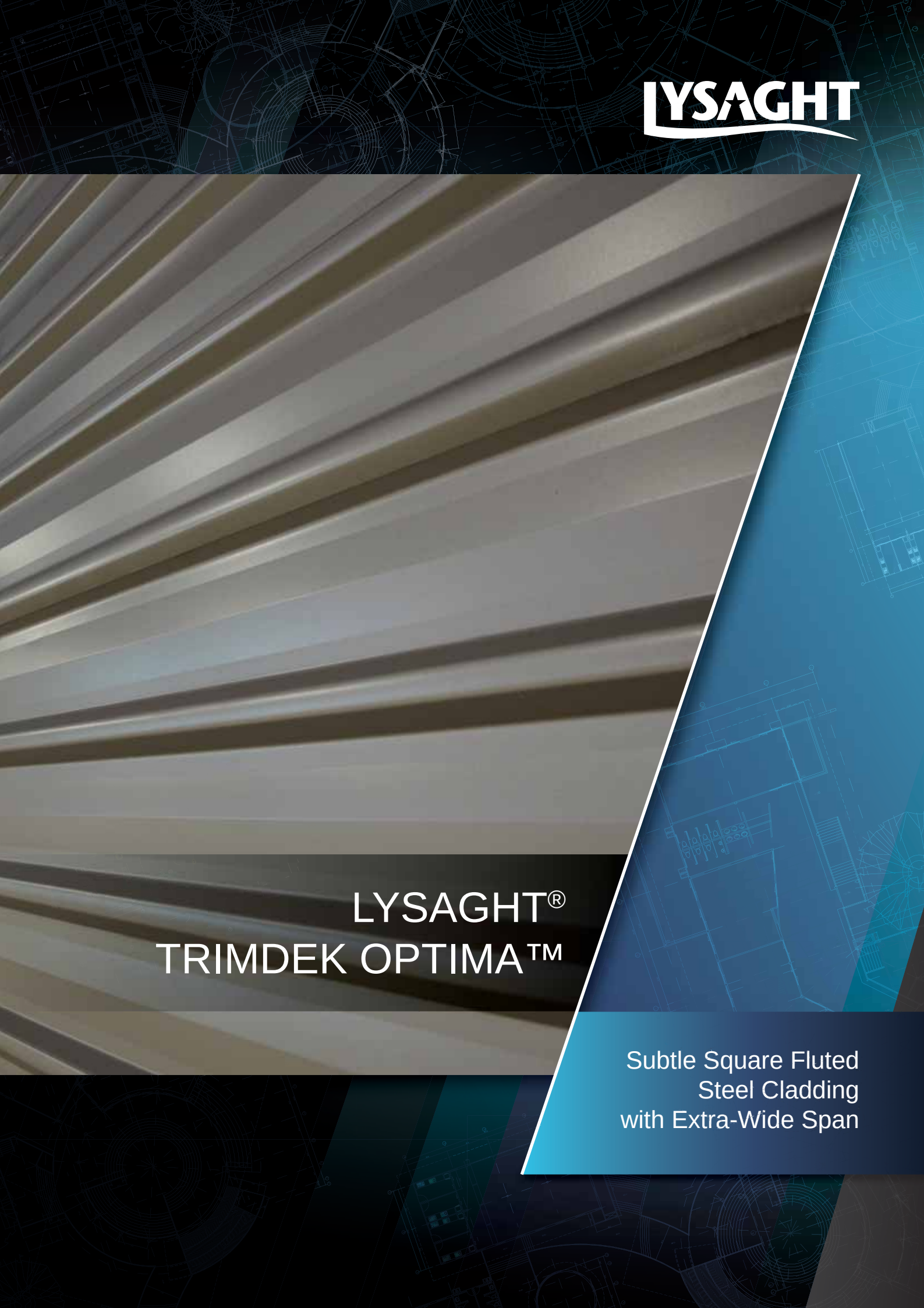
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www.lysaghtasean.com

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May 2021



LYSAGHT

LYSAGHT®
TRIMDEK OPTIMA™

Subtle Square Fluted
Steel Cladding
with Extra-Wide Span

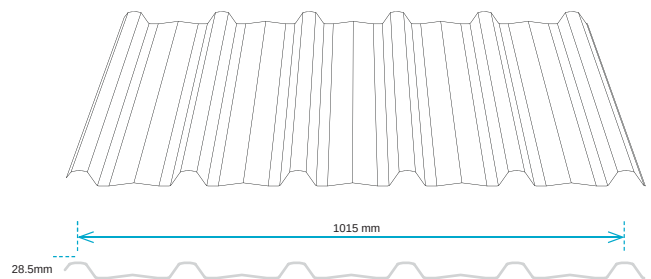
LYSAGHT® TRIMDEK OPTIMA™

LYSAGHT® TRIMDEK OPTIMA™ is a subtle square-fluted steel cladding, available in long lengths, so on most jobs you can have one sheet from ridge to gutter or full wall height without end laps.

LYSAGHT® TRIMDEK OPTIMA™ is made of high strength steel and despite its lightness, provides excellent spanning capacity.

The strength, spanning ability, lightness and rigidity of LYSAGHT® TRIMDEK OPTIMA™ means wide support spacings can be used with safety.

Long, straight lengths of LYSAGHT® TRIMDEK OPTIMA™ can be lowered into place and aligned easily. Fixing with hexagon headed screws is simple and fast.



PHYSICAL PROPERTIES

STANDARD		
Base Metal Thickness (BMT) (mm)	0.42	0.48
Total Coated Thickness (TCT) (mm)	0.47	0.53
Mass per Unit Area - COLORBOND® Steel (kg/m ²)	4.24	4.80
Mass per Unit Area - ZINCALUME® Steel (kg/m ²)	4.16	4.73
Coating Class (min)	AZ150	
Grade of Steel (MPa)	G550 (550MPa minimum yield stress)	
Effective Cover Width	1015mm	
Rib Depth	28.5mm	
Min Recommended Roof Pitch/ Slope	3° (1 in 20)	
Tolerances	Length +0.0mm, -15.0mm / Width ± 4.0mm	
Custom Cut Lengths	Any measurement to a maximum transportable length.	

PERFORMANCE

MAXIMUM ALLOWABLE SUPPORT SPACING

Type of Span	BMT (mm)	
	0.42	0.48
Roofs (mm)		
Single Span	1200	1600
End Span	1900	2100
Internal Span	2500	3000
Unstiffened Eaves Overhang	150	150
Stiffened Eaves Overhang	250	250
Walls (mm)		
Single Span	2200	2300
End Span	2500	2700
Internal Span	3300	3300
Overhang	150	150

- 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.
 Basic wind speed (Strength Limit State) = 57m/sec
 Terrain category co-efficient = 0.83
 Shielding factor = 0.85
 Topography factor = 1
 Design wind speed Strength Limit State (with above factors) = 40.2m/sec
 Basic wind speed (Strength Limit State) = 40m/sec
 Terrain category co-efficient = 1
 Shielding factor = 1
 Topography factor = 1
 Design wind speed Strength Limit State (with above factors) = 40m/sec

Walls

$C_{pe} = -0.65$, $K_i = 2$ for single and end spans, $K_i = 1.5$ for internal spans
 $C_{pi} = +0.2$

Roofs

$C_{pe} = -0.9$, $K_i = 2$ for single and end spans, $K_i = 1.5$ for internal spans
 $C_{pi} = +0.2$

These spacings may vary by Serviceability and Strength Limit States for particular projects.

MAXIMUM ROOF LENGTHS FOR DRAINAGE MEASURED FROM RIDGE TO GUTTER (m)

Peak Rainfall Intensity (mm/hr)	Roof Slope (degrees)				
	3	4	5	7.5	10
100	275	310	342	408	469
150	183	207	228	272	313
200	138	155	171	204	235
250	110	124	137	163	188
300	92	103	114	136	156
400	69	78	86	102	117
500	55	62	68	82	94

Penetrations will alter the flow of water on a roof. For assistance in design of roofs with penetrations, please seek advice from Lysaght representative.

LIMIT STATE WIND PRESSURE CAPACITIES (kPa)

0.42mm BMT											
TYPE OF SPAN	LIMIT STATE	FOR ROOFS (c/c) SPAN (mm)									
		600	900	1200	1500	1800	2100	2400	2700	3000	3300
Single	Serviceability	4.89	3.88	2.91	2.04	1.30	0.75	0.41	0.24	0.19	-
	Strength*	9.94	8.08	6.29	4.69	3.36	2.39	2.11	1.93	1.81	-
End	Serviceability	6.57	5.24	3.99	2.85	1.88	1.16	0.71	0.48	0.40	-
	Strength*	9.40	8.08	6.80	5.60	4.52	3.60	2.87	2.29	1.81	-
Internal	Serviceability	4.13	3.55	2.98	2.45	1.97	1.57	1.25	1.01	0.81	0.64
	Strength*	10.18	8.69	7.25	5.90	4.71	3.71	3.09	2.53	2.00	1.49

0.48mm BMT											
TYPE OF SPAN	LIMIT STATE	FOR ROOFS (c/c) SPAN (mm)									
		600	900	1200	1500	1800	2100	2400	2700	3000	3300
Single	Serviceability	6.69	5.28	3.93	2.72	1.69	0.93	0.47	0.25	0.19	-
	Strength*	11.27	9.04	6.91	5.02	3.47	2.39	2.35	2.30	2.24	-
End	Serviceability	7.79	6.25	4.79	3.46	2.33	1.47	0.93	0.64	0.52	0.49
	Strength*	11.34	9.79	8.29	6.88	5.59	4.49	3.59	2.87	2.25	1.69
Internal	Serviceability	5.93	4.99	4.08	3.24	2.51	1.91	1.48	1.17	0.95	0.78
	Strength*	11.84	10.41	9.03	7.69	6.43	5.27	4.23	3.29	2.42	1.58

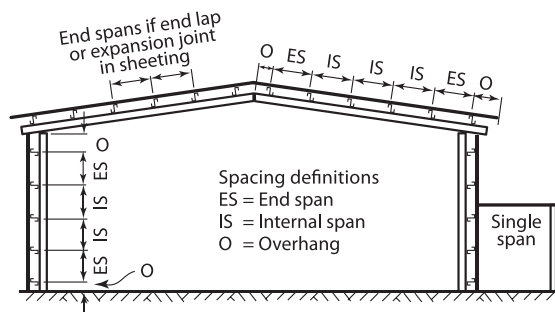
* A capacity reduction factor of 0.9 is applied to strength capacities. These capacities are based on tests conducted at BlueScope Steel's NATA registered testing laboratory using a direct pressure testing rig. Supports must not be less than 1mm BMT.

LIMIT STATES WIND PRESSURES

The wind pressure capacities are based on tests conducted at BlueScope Lysaght's NATA-registered testing laboratory. 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 (span/120) + (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.



METHOD STATEMENT AND GENERAL NOTES

WALKING ON ROOFS

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.

Whatever direction you walk, always walk in the pans. When waling across the width of the roof, walk over, or close to, the roof supports.

ADVERSE CONDITIONS

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

METAL & TIMBER COMPATIBILITY

Lead, copper, free carbon, bare steel and green or some other chemically treated timbers are not compatible with this product. Don't allow any contact of the product with those materials, nor discharge of rainwater from them onto the product. Supporting members should be coated to avoid problems with underside condensation. If there are doubts about the compatibility of other products being used, ask for advice from our Lysaght representative.

MAINTENANCE

Optimum product life will be achieved if all external walls 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.

SAFETY, STORAGE AND HANDLING

LSYAGHT's 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 off the ground. If stacked or bundled product becomes wet, separate it, wipe it with a clean cloth to dry thoroughly.

Handle materials carefully to avoid damage: don't drag materials over rough surfaces or each other; don't drag tools over material; 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 a carborundum disc does.

Cut materials over the ground and not over other materials. 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.

FASTENERS

Fasteners without insulation			
	Fixing to steel up to 0.75mm BMT	Fixing to steel >0.75mm to 3mm BMT	Fixing to timber
Crest fixed	Self-drilling screws with hex. washer-head & EPDM seal, 12 - 11 x 50 (M5.5 – 11 x 50)	Self-drilling screws with hex. washer-head & EPDM seal, 12 - 14 x 50 (M5.5 – 14 x 50) or 12 - 14 x 55 (M5.5 – 14 x 55)	Type 17 Self drilling screws with hex. washer-head Softwood: 12 – 11 x 65 (M5.5 – 11 x 65) Hardwood: 12 – 11 x 50 (M5.5 – 11 x 50)
Valley fixed	Self-drilling screws with hex. washer-head & EPDM seal, 10 - 12 x 20 (M4.8 – 12 x 20) or Self-drilling screws with hex. washer-head & EPDM seal, 10 - 16 x 16 (M4.8 – 16 x 16)	Self-drilling screws with hex. washer-head & EPDM seal, 12 - 14 x 20 (M5.5 – 14 x 20)	Type 17 Self drilling screws with hex. washer-head & EPDM seal Softwood: 10 – 12 x 30 (M4.8 – 12 x 30) Hardwood: 10 – 12 x 20 (M4.8 – 12 x 20)
Side lap & accessories	Self-drilling screws with hex. washer-head & EPDM seal	10 – 16 x 16 or EPDM seal: 8 – 15 x 15	

Fasteners with insulation			
	Fixing to steel up to 0.75mm BMT	Fixing to steel >0.75mm to 3mm BMT	Fixing to timber
Crest fixed	Self-drilling screws with hex. washer-head & EPDM seal, 12 - 11 x 50 (M5.5 - 11 x 50)	Self-drilling screws with hex. washer-head & EPDM seal, 12 - 14 x 65 (M5.5 - 14 x 65) or 12 - 14 x 68 (M5.5 - 14 x 68)	Type 17 Self drilling screws with hex. washer-head Softwood: 12 - 11 x 65 (M5.5 - 11 x 65) Hardwood: 12 - 11 x 50 (M5.5 - 11 x 50)
Valley fixed	Self-drilling screws with hex. washer-head & EPDM seal, 10 - 12 x 20 (M4.8 - 12 x 20) or Self-drilling screws with hex. washer-head & EPDM seal, 10 - 16 x 16 (M4.8 - 16 x 16)	Self-drilling screws with hex. washer-head & EPDM seal, 12 - 14 x 30 (M5.5 - 14 x 30)	Type 17 Self drilling screws with hex. washer-head & EPDM seal Softwood: 10 - 12 x 30 (M4.8 - 12 x 30) Hardwood: 10 - 12 x 20 (M4.8 - 12 x 20) Softwood: 12 - 14 x 30 (M5.5 - 14 x 30) Hardwood: 12 - 14 x 20 (M5.5 - 14 x 20)
Side lap & accessories	Self-drilling screws with hex. washer-head & EPDM seal	10 - 16 x 16 or EPDM seal: 8 - 15 x 15	

LYSAGHT® TRIMDEK OPTIMA™ requires 5 fasteners per sheet per support as shown below. Fastener should comply to AS3566, Class 3 or Class 4.

Roof - Screw fix through rib



Wall - Screw fix through pan



FASTENING SHEETS TO SUPPORTS

LYSAGHT® TRIMDEK OPTIMA™ profile is pierced-fixed to timber or steel supports. This means that fastener screws pass through the sheeting.

You can place fasteners for LYSAGHT® TRIMDEK OPTIMA™ through the crests or in the pans. To maximize watertightness, always place roof fasteners through the crests.

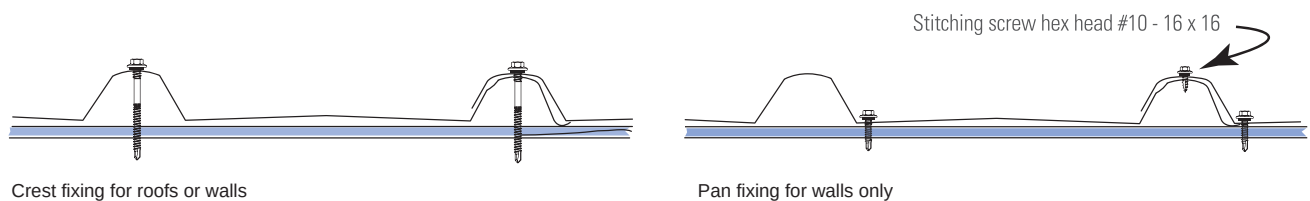
Always drive the fasteners perpendicular to the sheeting, and in the center of the corrugation or rib. Don't place fasteners less than 25mm from the ends of sheets.

SEALED JOINTS

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

SIDE-LAPS

The side of LYSAGHT® TRIMDEK OPTIMA™ with the anti-capillary groove is always the underlap (see figures below). 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 LAPS

End-laps are not usually necessary because LYSAGHT® TRIMDEK OPTIMA™ is available in long lengths. If you want end-laps, seek advice from our Lysaght representative on the sequence of laying and the amount of overlap.

END OF SHEETS

It is usual to allow roof sheets to overlap into gutters by about 50mm. If the roof pitch is less than 25° or extreme weather is expected, the pans of sheets should be turned-down at lower ends and turned-up at upper ends by about 80°.

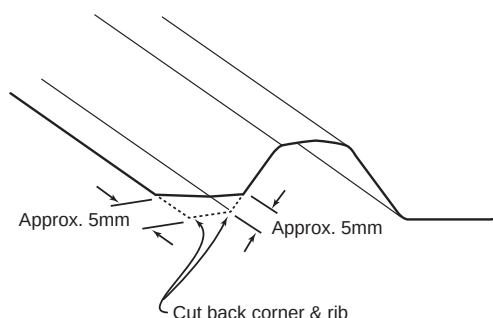
LAYING PROCEDURE

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

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.



SHEET-ENDS ON LOW SLOPES

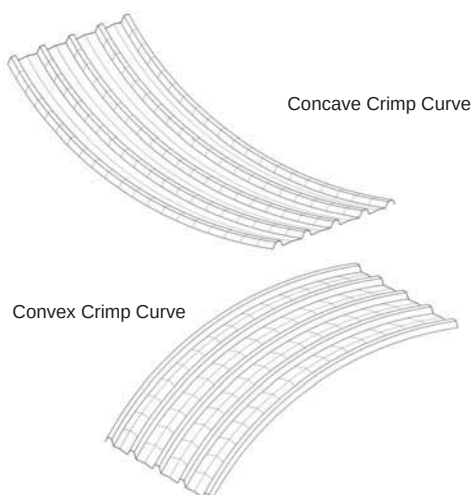
When LYSAGHT® TRIMDEK OPTIMA™ is laid on slopes of 5 degrees or less, cut back the corner of the under-sheet, at the downhill end of the sheet, to block capillary action.

CURVING

CRIMP CURVED ROOF

Crimp curved LYSAGHT® TRIMDEK OPTIMA™ steel cladding is designed to provide versatility and creativity to bring new and refreshing designs to commercial, industrial, civic and domestic building. This design freedom has resulted in significant cost savings in construction, mainly due to: -

- Less supporting framework required for fascias, parapets and roofs.
- Simplified and reduced work involved in installation of fascia cladding.
- Reduction or elimination of many flashings and cappings.
- Less cladding material required to cover a given curve.



Sheet Profile	Min Radius (mm)	Max Radius (mm)
Concave Crimp Curve		
0.42mm BMT	550	2000
0.48mm BMT	560	2000
Convex Crimp Curve		
0.42mm BMT	450	2000
0.48mm BMT	470	2000

SUPPORT SPACINGS FOR CRIMP CURVED LYSAGHT® TRIMDEK OPTIMA™ PROFILE (NON-CYCLONIC AREAS)

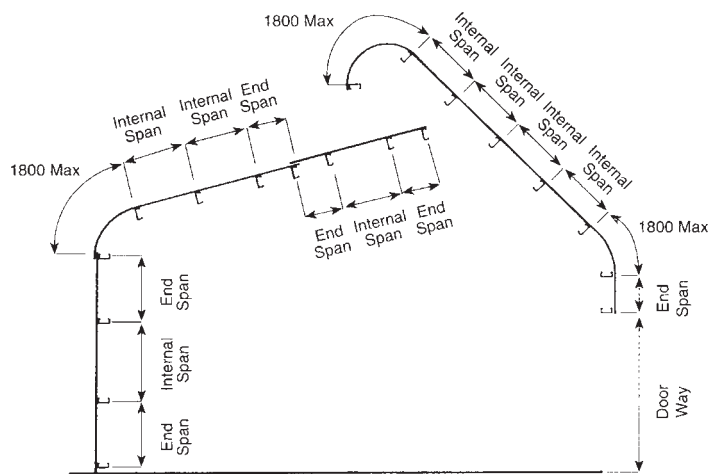
STRAIGHT PORTION

- Maximum allowable spacings for the straight portion of crimp curved LYSAGHT® TRIMDEK OPTIMA™ profile should follow the recommendations given at Maximum Support Spacing table.
- End spans refer to the spacing between the first and second supports from any free end of a sheet, except where that end of the sheet is crimp curve.
- The spacing between the supports either side of an end lap should be that as recommended for end spans.

CRIMP CURVED PORTION

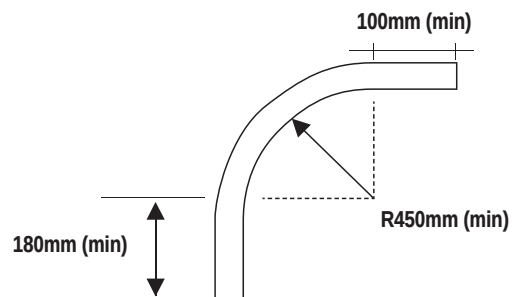
This will depend on the radius of curvature, but the following guidelines are recommended:

- For sheets curved to a radius of curvature not more than 3000mm, supports should be placed at centres not greater than 2100mm measuring around the arc of the curve.
- Where a curve of small included angle occurs (up to approximately 15°, for example at a ridge), support spacing should not exceed 1200mm.

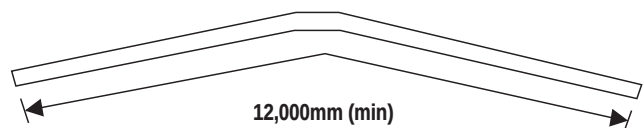


REQUIREMENTS FOR CRIMP CURVED LYSAGHT® TRIMDEK OPTIMA™ PROFILE

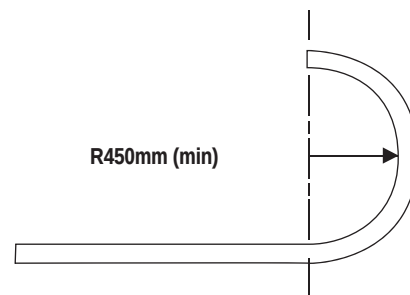
- Minimum curvature radius for convex is 450mm and 500mm for concave to underside or pan of sheet, minimum straight length of sheet at one end of curve is 180mm.



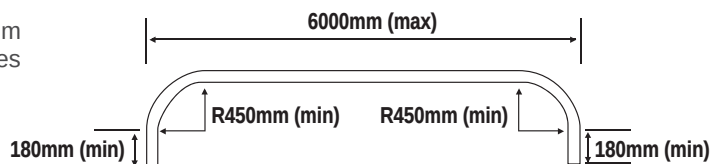
- Maximum length of sheet that can be crimp curved for ridge application is approximately 12000mm. The curve can either be convex or concave.



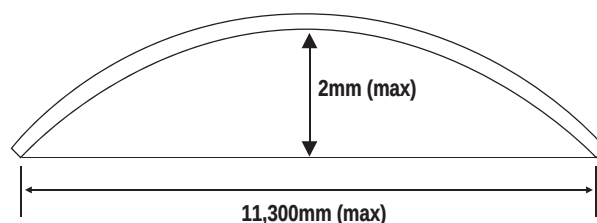
- The sheet can be crimp curved to three quarters of full circle but to facilitate side lapping, semi-circle maximum is recommended



- When both ends are crimp curved, the maximum recommended straight distance between the two curves should be 6000mm.

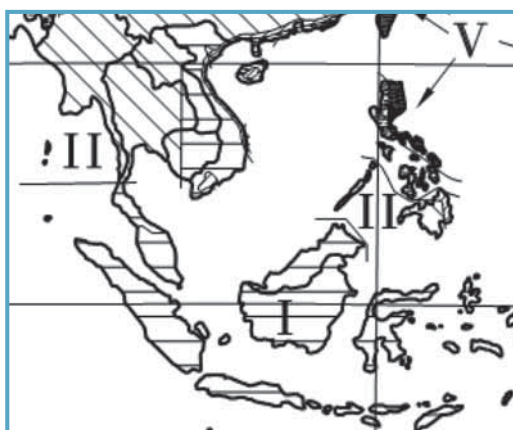


- For lengths exceeding 12000mm, please consult Lysaght representative for more information.
- For easy transportation and maximum protection for the crimp curved sheets, the maximum height and length of the sheeting should be 2000mm and 11300mm respectively.



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. Map and table (below) taken from HB212-2002.



Wind speeds versus return period (3 s gusts, 10 m height, open country terrain)				
Handbook Level	Description	Equation for V_R	V_{50}	V_{500}
I	Strong thunderstorms and monsoon winds	$70 - 56R^{-0.1}$	32	40
II	Moderately severe thunderstorms and extra-tropical gales	$67 - 41R^{-0.1}$	39	45
III	Severe thunderstorms and moderate or weakening typhoons/tropical cyclones	$106 - 92R^{-0.1}$	44	57
IV	Strong typhoons/ tropical cyclones	$122 - 104R^{-0.1}$	52	66
V	Very strong typhoons/ tropical cyclones	$156 - 142R^{-0.1}$	60	80

Table summarises the proposed relationships between 3 s gust wind speed and return period for the five levels in the handbook (see map). The values are for 50 years and 500 years return periods.

COLORBOND® STEEL AND ZINCALUME® STEEL

STRONG BRANDS, QUALITY MATERIALS

LYSAGHT® products are made of highest quality material, namely COLORBOND® steel and ZINCALUME® steel which are the leading materials for external cladding application. COLORBOND® steel and ZINCALUME® steel have been used on countless buildings to portray modern architecture works of art, ranges from the classic roofing to advance façade for industrial, commercial and residential buildings.

Colorbond®

COLORBOND® steel is a pre-painted finished product with ZINCALUME® steel substrate to deliver both superior corrosion resistance and excellent colour performance.

It comes with the THERMATECH® solar reflectance technology and Clean technology to minimize tropical dirt staining while lowering urban heat island effect, delivering longevity and minimal maintenance to your external cladding.

COLORBOND® steel is backed by a material warranty of up to 25 years*

Product Attributes

- Pre-painted finish on top of ZINCALUME® steel substrate to deliver superior corrosion resistance.
- Superior primer technology which prevents paint delamination.
- Proprietary super polyester paint system proven to provide excellent colour performance.
- Clean technology incorporated to resist against tropical dirt staining.
- THERMATECH® solar reflectance technology to allow for lower temperature cladding.
- Wide varieties of colours and finishes to cater for your building design needs.

Zinalume®

ZINCALUME® steel is a metallic coated steel product composed of 55% aluminium, 43.5% zinc and 1.5% silicon (aluminium-zinc alloy coating) that can provide superior corrosion resistance for your external cladding, with expected lifespan that's four times the life of generic alternatives (GI).

ZINCALUME® steel is backed by a material warranty of up to 25 years*

Product Attributes

- Superior corrosion resistance due to the minimum coating class of AZ150.
- Initial resistance to surface marking and wet storage corrosion due to the proprietary clear resin coating.
- Better aesthetics compared to generic alternatives (Al-Zn) due to less surface darkening, afforded by the proprietary clear resin coating.
- Lightweight and thermally efficient compared to conventional roofing materials (e.g. concrete and clay tiles)
- Excellent flexibility in design as steel can be bent and curved to form truly unique designs.

**Warranty terms and conditions apply*

This material warranty may vary to buildings nearer to marine or industrial environment and is subjected to prior agreement by BlueScope. For full terms and conditions and to determine the eligibility of your project for the warranty, please contact your Key Account Manager.

There are different internal and external environments affecting the longevity of COLORBOND® steel and ZINCALUME® steel, hence feel free to consult our material experts for more specialized recommendations.

Examples of recommendations:

- Direct contact between COLORBOND® steel or ZINCALUME® steel with copper, lead and stainless steel should be avoided.

If condensation on the reverse side of roofing sheet is likely, vapour barrier should be installed to shield COLORBOND® steel or ZINCALUME® steel from prolonged exposure to the condensation (moisture).

REFERENCES





NS BLUESCOPE LYSAGHT MALAYSIA SDN BHD

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COATING



COLOUR CHOICES



DESIGN FLEXIBILITY



DURABILITY / SECURITY



HI-TECH PRODUCTION



RECYCLING



TERMITE PROOF



THERMAL EFFICIENCY



WARRANTY

NS BLUESCOPE LYSAGHT (SARAWAK) SDN BHD

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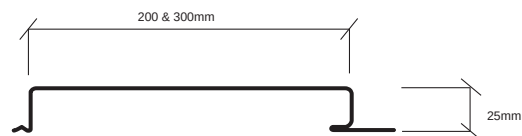
May 2021

The Lysaght logo is positioned in the top right corner. It features the word "LYSAGHT" in a bold, white, sans-serif font. A white swoosh underline is positioned beneath the letters "AGHT". The background of the entire page is a dark blue architectural blueprint with various geometric lines and patterns. A large, light beige trapezoidal shape is positioned on the left side, and a blue triangular shape is on the right side.

LYSAGHT

LYSAGHT® X-VERGE™

Elegant Contemporary
Profile for Modern and
Minimalist Architectural



SEAMLESS, SLEEK, SOPHISTICATED

Your best design is incomplete without a sleek and versatile facade to add exciting visual dimensions and complement the shape and form of the building.

Crisp, clean, and versatile, LYSAGHT® X-VERGE™ opens up the geometric possibilities of the facade with sweeping planes. Flexible in long length running vertically or horizontally, or in shorter lengths to create the block effect, the folded planes, and shadowed channels of X-VERGE™ subtly enhances the modern minimalist effect just the way you want it.

- Strong and versatile for exterior and interior walls, ceiling, soffit, and fascia applications.
- Weather-tight and securely conceal-fixed, uninterrupted by any piercings or connections.
- Easy and fast installation

PHYSICAL PROPERTIES OF LYSAGHT® X-VERGE™

	Malaysia	Singapore
Base Metal Thickness (BMT)	0.55mm	
Finishes	COLORBOND® Steel	COLORBOND® ULTRA Steel
Coating Class (min.)	AZ150	AZ200
Total Coated Thickness (TCT)	0.60mm	0.61mm
Cover Width	200 & 300mm (Non-standard 400 & 500mm width available upon request)	200 & 300mm
Mass per unit area	200mm – 6.08kg/m ² 300mm – 6.03kg/m ²	200mm – 6.85kg/m ² 300mm – 6.10kg/m ²
Panel Depth	25mm	
Length	L <6000mm (For Length longer than 6000mm, please contact Lysaght representative)	
Maximum support spacing		
Walling application		
Single Span	1200mm	
End Span	1200mm	
Internal Span	1500mm	
Overhang	100mm	
Tolerances	Length +0mm, -5mm Cover width ± 4mm Rib height ± 0.5mm	
Grade of Steel	G300 (300N/ mm ² yield strength)	

Delivery

Always check the material upon delivery. Check for damages and check material quantities against the delivery order. Note any damages or shortages at the time of delivery.

Handling

Handle panel bundles and individual panel with care to avoid damage that can result from buckling and or bending of panels.

- Lift the sheet bundles with crane directly from the delivery truck onto the designated location for large building projects.
- For long length sheets, the use of spreader bar and approved sling is recommended.
- For small to medium size projects without mechanical handling facilities, sheets can be unloaded by hand and passed up to the designated location one at a time. For personal safety and to preserve the surface finish, sheets should be handled wearing clean dry gloves.

Do not slide sheets over rough surfaces or over each other and do not drag tools or any other materials over sheets.

Care and storage prior to installation

Store the panels and other materials in a dry, well-ventilated area and away from traffic. Elevate one end of the bundles so that any moisture that may have accumulated during transportation can run-off.

Be sure that air can be circulated freely around the bundles to avoid build-up of moisture.

Never store the material in direct contact with the ground.

If packs become wet, sheets should be separated and wiped clean and allowed to dry.

Marking out

A pencil of any colour may be used except BLACK or so-called LEAD pencils because the graphite content in black pencils can create an electric cell when wet and thus cause deterioration of the finish.

Other recommended marking tools are a string line with chalk dusts and a fine, felt-tipped marker.

Cutting

Using a power saw with a metal cutting steel blade is the best way to cut sheets on site, because it generates larger and cooler particles than abrasive discs.

Where possible, cutting should be minimized by using factory supplied cut-to-length sheets.

Sheets cut on site should, where practical, be cut on the ground, with the exterior colour finish of the pre-painted sheet facing down. Care should be taken to ensure hot swarf does not come in contact with nearby COLORBOND® steel sheets.

DO NOT cut over the top of other coated products where debris may fall onto clean sheets.

Where cutting must be carried out near sheets already installed, the area around the cut must be masked and the stream of hot particles directed away from completed work.

Drilling

The area around the hole should be masked to shield the product from hot swarf.

Compatibility

Lead, copper and green or some chemically-treated timbers are not compatible with COLORBOND® steel and ZINCALUME® steel. Direct contact should therefore be avoided.

Where inside condensation conditions are likely, coated steel girts should be used so that any ZINCALUME® steel to bare steel contact is avoided.

Sealed Joints

Where sealed joints are required, use neutral-cure sealant in conjunction with mechanical fasteners. Soldering is not recommended as it is not practical to solder ZINCALUME® steel in the field.

Cleaning up

Ensure that metallic particles are swept off the sheet surfaces immediately following any cutting, drilling, etc.

INSTALLATION

1. Prior to commencement of fixing, the installer should ensure that girts are in place and properly aligned. Any adjustments should be made before fixing, as they will be difficult or impossible to rectify later.
2. Recommended spacing between supports for walls is 1200-1500mm for two or more span conditions.
3. LYSAGHT® X-VERGE™ steel cladding is designed to be fastened to the support member with fasteners (e.g. No. 10 – 16 x 16mm wafer head) on female rib. Then insert the male rib into female rib as per below figure and fasten the female rib again before proceeding with the next sheet.
4. The first layer of LYSAGHT® X-VERGE™ steel cladding shall be positioned with particular care before fastening it onto the support member. To ensure that it lies straight and square, it shall be checked against the member that is perpendicular to the LYSAGHT® X-VERGE™ orientation.
5. Each sheet shall be fully fastened before proceeding to the next sheet.

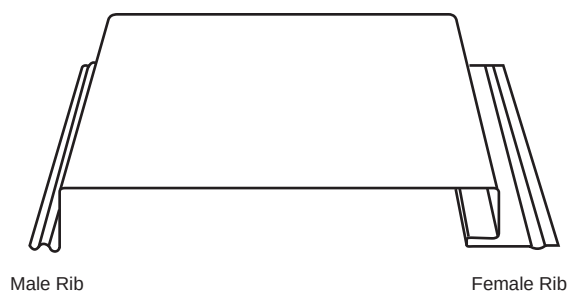
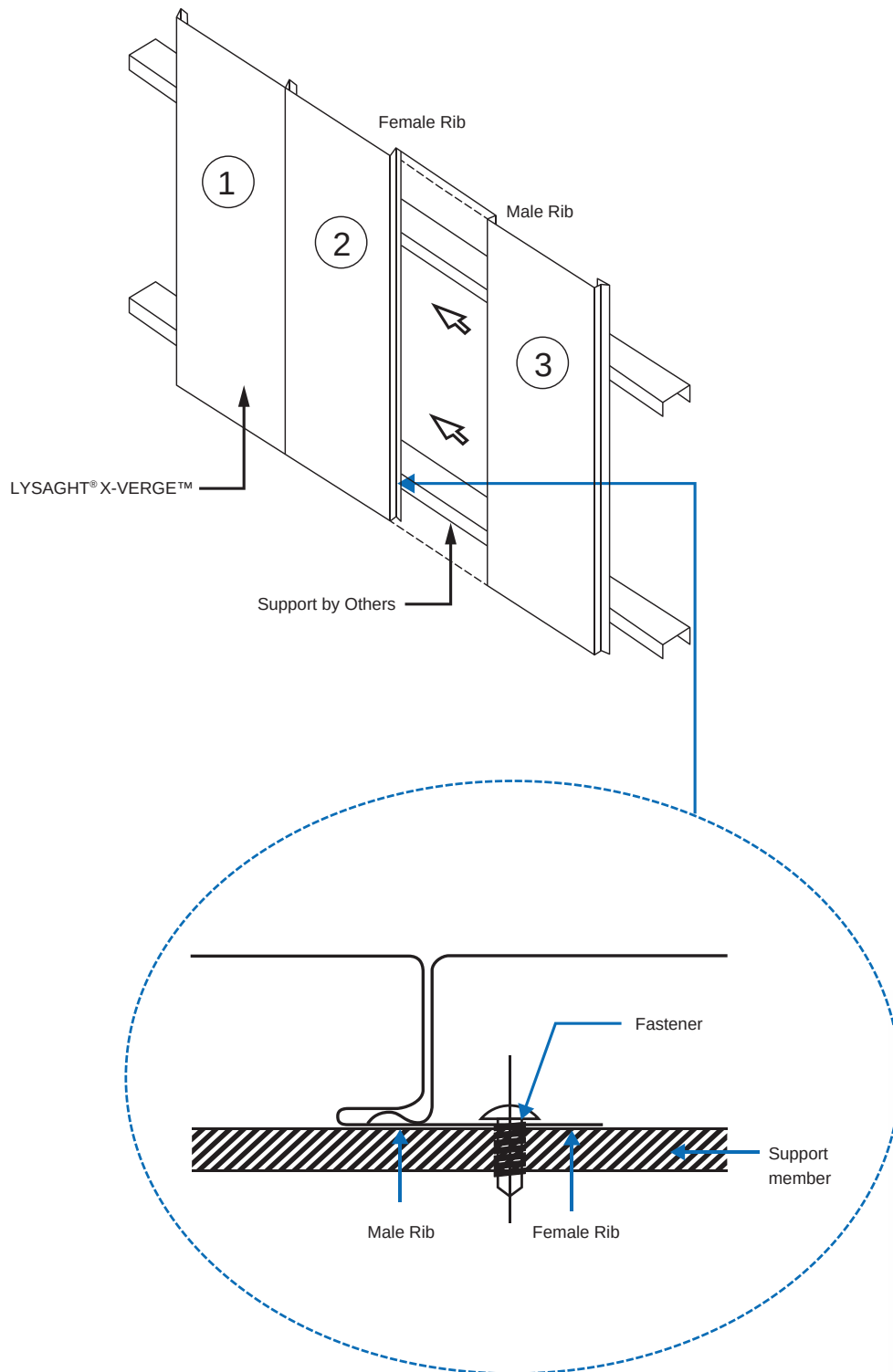


Figure 1.0: Location of female rib and male rib of LYSAGHT® X-VERGE™

Figure 2.0: Fastening to support of LYSAGHT® X-VERGE™



OIL CANNING

Flat metal surfaces (e.g. LYSAGHT® X-VERGE™) will display waviness commonly referred to as oil canning. This is caused by steel mill tolerances. Oil canning is a characteristic, not a defect, resulting from panels manufactured from light gauge metal. Panels are to be factory corrective levelled to minimize oil canning. Oil canning is not a valid reason for panel rejection.

ZINCALUME® STEEL AND COLORBOND® STEEL

STRONG BRANDS, QUALITY MATERIALS

LYSAGHT® products are made of highest quality material, namely COLORBOND® steel and ZINCALUME® steel which are the leading materials for external cladding application. COLORBOND® steel and ZINCALUME® steel have been used on countless buildings to portray modern architecture works of art, ranges from the classic roofing to advance façade for industrial, commercial and residential buildings.



COLORBOND® steel is a pre-painted finished product with ZINCALUME® steel substrate to deliver both superior corrosion resistance and excellent colour performance.

It comes with the THERMATECH® solar reflectance technology and Clean technology to minimize tropical dirt staining while lowering urban heat island effect, delivering longevity and minimal maintenance to your external cladding.

COLORBOND® steel is backed by BlueScope's material warranty*
Malaysia: Up to 25* Years of warranty
Singapore: Up to 10* Years of warranty

Product Attributes

- Pre-painted finish on top of ZINCALUME® steel substrate to deliver superior corrosion resistance.
- Superior primer technology which prevents paint delamination.
- Proprietary super polyester paint system proven to provide excellent colour performance.
- Clean technology incorporated to resist against tropical dirt staining.
- THERMATECH® solar reflectance technology to allow for lower temperature cladding.
- Wide varieties of colours and finishes to cater for your building design needs.



ZINCALUME® steel is a metallic coated steel product composed of 55% aluminium, 43.5% zinc and 1.5% silicon (aluminium-zinc alloy coating) that can provide superior corrosion resistance for your external cladding, with expected lifespan that's four times the life of generic alternatives (GI).

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- Superior corrosion resistance due to the minimum coating class of AZ150.
- Initial resistance to surface marking and wet storage corrosion due to the proprietary clear resin coating.
- Better aesthetics compared to generic alternatives (Al-Zn) due to less surface darkening, afforded by the proprietary clear resin coating.
- Lightweight and thermally efficient compared to conventional roofing materials (e.g. concrete and clay tiles)
- Excellent flexibility in design as steel can be bent and curved to form truly unique designs.

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Examples of recommendations:

- Direct contact between COLORBOND® steel or ZINCALUME® steel with copper, lead and stainless steel should be avoided.

If condensation on the reverse side of roofing sheet is likely, vapour barrier should be installed to shield COLORBOND® steel or ZINCALUME® steel from prolonged exposure to the condensation (moisture).

REFERENCES



Hap Seng Business Park @ Shah Alam



Lysaght Sarawak Pavilion



West Park BizCentral Singapore



Sengkang Sport Centre Singapore



Mukah Sports Complex Sarawak



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COATING



COLOUR CHOICES



DESIGN FLEXIBILITY



DURABILITY / SECURITY



HI-TECH PRODUCTION



RECYCLING



TERMITE PROOF



THERMAL EFFICIENCY



WARRANTY



www.lysaghtasean.com

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* Warranty terms and conditions apply.

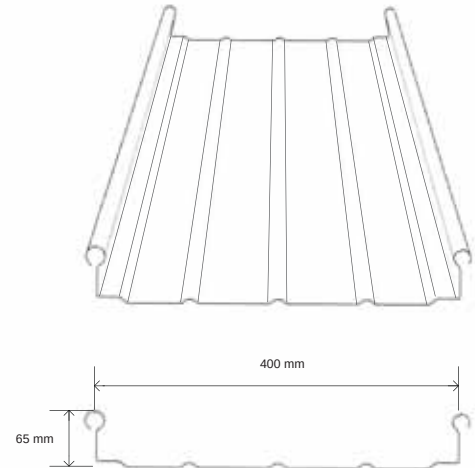
Mar 2021

The Lysaght logo is positioned in the top right corner. It features the word "LYSAGHT" in a bold, white, sans-serif font. A white swoosh underline is positioned beneath the letters "AGHT". The background of the entire page is a dark blue-grey with faint, light blue architectural line drawings of building plans and roof structures. A large, diagonal, close-up photograph of the Lysaght Zipdek roof profile, showing its high-ribbed standing seam, runs from the top left towards the bottom right, creating a strong sense of perspective and texture.

LYSAGHT

LYSAGHT® ZIPDEK®

Modern High-Ribbed
Standing Seam
Roof Profile



MORE THAN A STANDING SEAM

The architectural capabilities of LYSAGHT® ZIPDEK® are not restricted to conventional and simple roof configurations. LYSAGHT® ZIPDEK® standing seam profile with its bold line add a sophisticated and versatile feel to the roof design.

LYSAGHT® ZIPDEK® is a concealed fixed roofing profile and has an effective cover width of 400mm with a rib height of 65mm. The tray of the profile consists of 3 stiffening flutes along the length of the pans.

LYSAGHT® ZIPDEK®, with its high-ribbed standing seam roofing profile, is specifically created to meet the requirements and specifications of various building applications ranging from commercial, residential and industrial constructions to other diverse applications such as stadium, airports and long span exhibition halls.

LYSAGHT® ZIPDEK® standing seam system requires no substrate as it is profiled with structural strength to function as a single skinned roof. However, it can still be used in double skinned construction applications to cater for acoustic needs. In addition, LYSAGHT® ZIPDEK® can be customized to suit a variety of roofs, from pitched to curved (pre-curved and sprung-curved) and tapered designs to meet increasingly sophisticated roof geometries demanded of designers today. As such, it is the architect, engineer and contractor's ultimate choice for roofing solution.

LYSAGHT® ZIPDEK® can also be manufactured at site to cater for long length roof applications without end laps. This feature is made possible through our state-of-the-art light weight and mobile rollformer which can be easily transported and set up at virtually any construction site. Sheet lengths of up to 120m can be rollformed at site for long span structures.

PHYSICAL PROPERTIES OF LYSAGHT® ZIPDEK®

	STANDARD
Base Metal Thickness (mm)	0.55
Total Coated Thickness (mm)	0.60
Mass per Unit Area - COLORBOND® Steel (kg/m ²)	6.59
Mass per Unit Area - ZINCALUME® Steel (kg/m ²)	6.51
Coating Class (min)	AZ150
Grade of Steel (MPa)	G300 (300MPa minimum yield stress)
Effective Cover Width	400mm
Rib Depth	65mm
Min Recommended Roof Pitch/ Slope	1° (1 in 50)
Tolerances	Length ± 0.75 mm / Width ± 0.5 mm
Custom Cut Lengths	Any measurement to a maximum transportable length. Long length is available for roll on site.
Minimum Radius of Curvature for Spring Curved	60,000mm

PRODUCT BENEFITS

- Lightweight to strength ratio.
- Structural roofing strength.
- Excellent rainwater drainage capacity (high-ribbed profile).
- Lengths up to 120 metres (on site rollforming).
- Large spans can be bridged with a variety of shapes.
- Machined edges that ensure reliable connection.
- Can be used as a single skin roof.

PERFORMANCE

Table 1: MAXIMUM ALLOWABLE SUPPORT SPACING

Type of Span		Thickness 0.55mm BMT
Roof	End Span	1800mm
	Internal Span	2050mm
Wall	End Span	2050mm
	Internal Span	2500mm

- Table 1 is based on supports of minimum 1.0mm Base Metal Thickness (BMT)

The maximum recommended support spacing's are based on testing in accordance with AS1562.1, AS4040.0 and AS4040.1. Roof spans consider both resistance to wind pressure and light foot traffic (traffic arising from incidental maintenance). The pressure considered is based on ultimate wind speed of $V_u = 40\text{ms}^{-1}$ (as defined in HB 212-2002) and multiplying factors of; $M_{2\text{cat}} = 0.83$, $M_s = 0.85$, $M_i = 1.0$ and $M_t = 1.0$ with the following pressure coefficients considered.

Roofs: $C_{pi} = +0.20$, $C_{pe} = 0.90$, $K_1 = 1.5$ for internal spans

Table 2: WIND PRESSURE CAPACITIES (kPa)

Type of Span	Limit State	Span (mm)						
		900	1200	1500	1800	2100	2400	2700
Single	Serviceability	1.10	0.99	0.89	0.80	0.71	0.63	0.56
	Strength*	2.40	1.90	1.45	1.10	0.85	0.75	0.70
End	Serviceability	0.63	0.58	0.55	0.53	0.52	0.53	0.55
	Strength*	1.40	1.20	1.05	0.95	0.85	0.80	0.80
Internal	Serviceability	0.58	0.53	0.50	0.48	0.48	0.49	0.52
	Strength*	1.20	1.10	1.00	0.95	0.90	0.90	0.90

* A capacity reduction factor of $F = 0.9$ has been applied to strength capacities.

METAL SPECIFICATION

A variety of materials can be used to create individual, modern building facades and imaginative roof landscapes through the use of LYSAGHT® ZIPDEK®:

A. COLORBOND® Steel

- Coated sheet should be factory painted and oven baked to AS2728
- Top coat: Custom formulated PVDF polyester paint system with nominal thickness of 20µm over 5µm of universal corrosion inhibitive primer.
- Reverse coat: Custom formulated Shadow Grey with nominal thickness of 5µm over 5µm of universal corrosion inhibitive primer.

B. Prepainted Aluminium

The roofing system shall be aluminium standing seam roof system according to certification: Z-14.1-182 manufactured from aluminium alloy A1 Mn1 Mg0.5 in accordance to EN AW-3005 as specified in DIN EN 573-3; material thickness of 0.70mm, 0.80mm or 0.90mm and PVF2 finish on the exposed surface. The color is to be selected and approved by the architect. The material properties of the non-profiled coil are as follows:

- Ultimate tensile strength : minimum 215N/mm²
- 0.2% Proof Stress : minimum 195N/mm²
- Elongation at failure : 3%

CLIP SYSTEM

LYSAGHT® ZIPDEK® clips are extruded from structural grade aluminium. The shape of the clip has been carefully designed to maximize strength, in both upward (wind uplift) and downward (deadload) conditions. The head of the clip accurately matches the LYSAGHT® ZIPDEK® roof sheeting, to ensure the sheets slide freely during thermal movement.

Material Specification

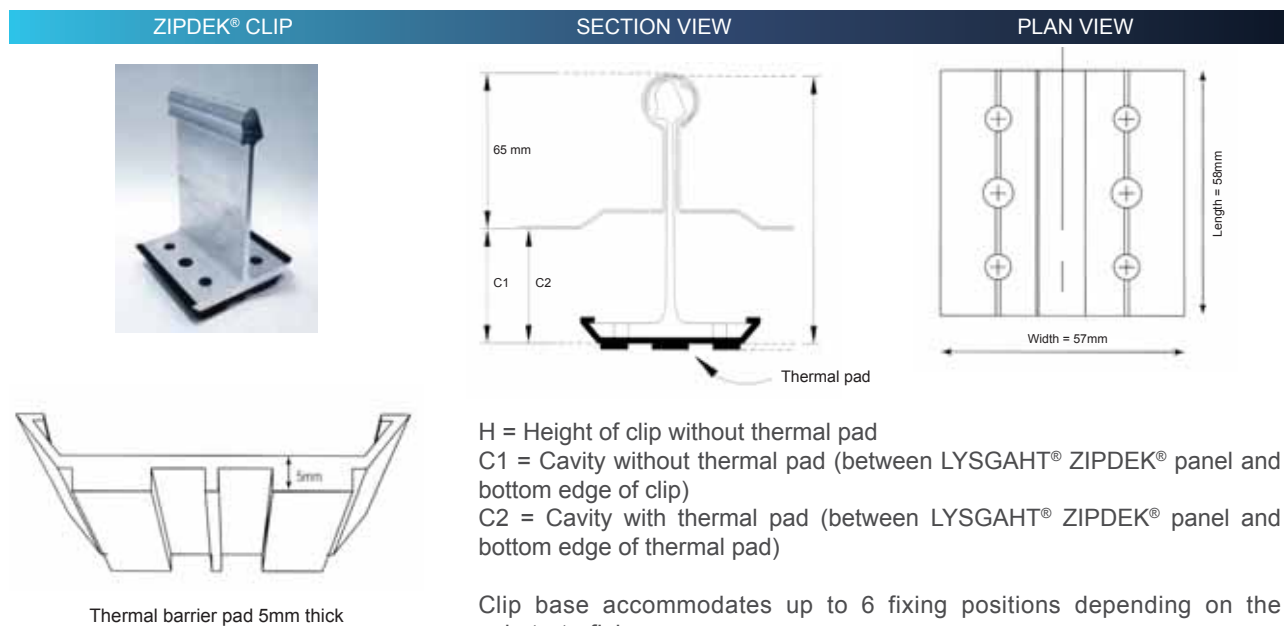
LYSAGHT® ZIPDEK® clip is made from Aluminium Alloy 6005.A to AS/NZS 1866 or Aluminium Alloy 6063-T5.

Thermal Pad

Specially engineered thermal pad slides neatly onto base of the clip which can reduce or eliminate thermal bridging effects.

Table 3: LYSAGHT® ZIPDEK® Clips

CLIP TYPE	CLIP HEIGHT (mm)	C1 (mm)	C2 (mm)
H85	85	20	25
H115	115	50	55
H140	140	75	80

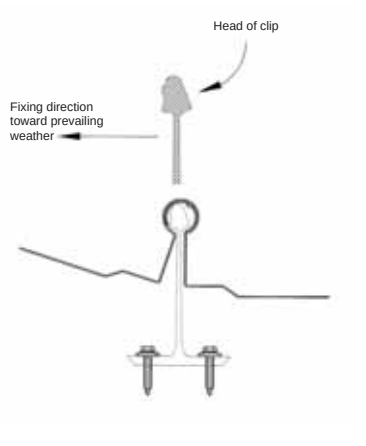


ORIENTATION OF CLIPS

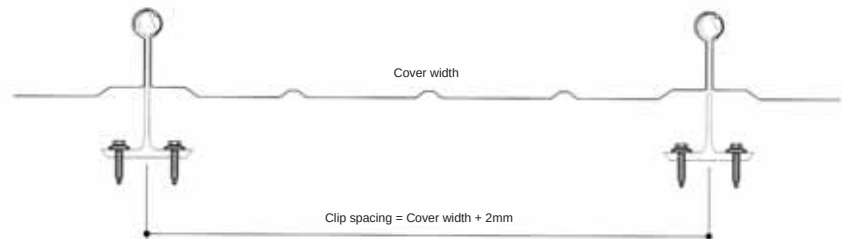
Wherever possible, the direction of installation should be towards the prevailing weather conditions to ensure that the overlap locates on the leeward side. The orientation of the ZIPDEK® clip shall be in accordance with the diagram shown i.e. the notch side of head faces in the direction of laying. Correct orientation of the clip ensures that the sheets will expand and contract smoothly during temperature changes.

LATERAL SPACING OF CLIPS

Lateral spacing of clips depends upon the LYSAGHT® ZIPDEK® profile being used. For best results, clips should be spaced at cover width plus 2.0mm.



Orientation of Clips

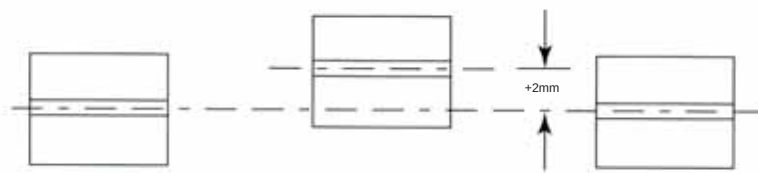


Clip Spacing = LYSAGHT® ZIPDEK® cover width +2mm (Tolerance +3mm/ -0mm).
The clip spacings for each individual panel should be the same.

Lateral Spacing of Clips

LONGITUDINAL SPACING OF CLIPS

Longitudinal spacing of clips to ensure the adequate thermal movement of the system is maintained, longitudinal spacing of clips must be carefully aligned during installation.



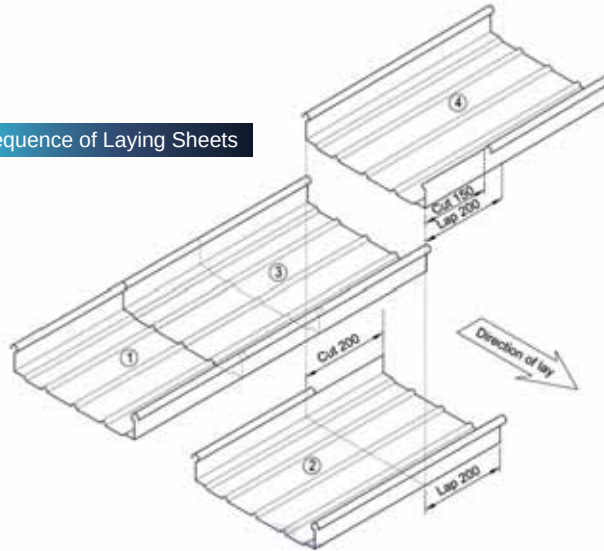
END LAPS

It is always preferred and desired to manufacture and install long continuous sheets of roofing. However, this is not feasible due to site conditions or building's geometry. In cases when sheets are factory made, the maximum sheet length is normally governed by transport.

Continuous eave to ridge runs can no longer be achieved with a single sheet. Instead, a series of shorter sheets are end lapped as required to make up the roof run.

End lapping is an extremely critical step to ensure water tightness. The illustration below describes the recommended method of end lapping the LYSAGHT® ZIPDEK® roof system.

Sequence of Laying Sheets



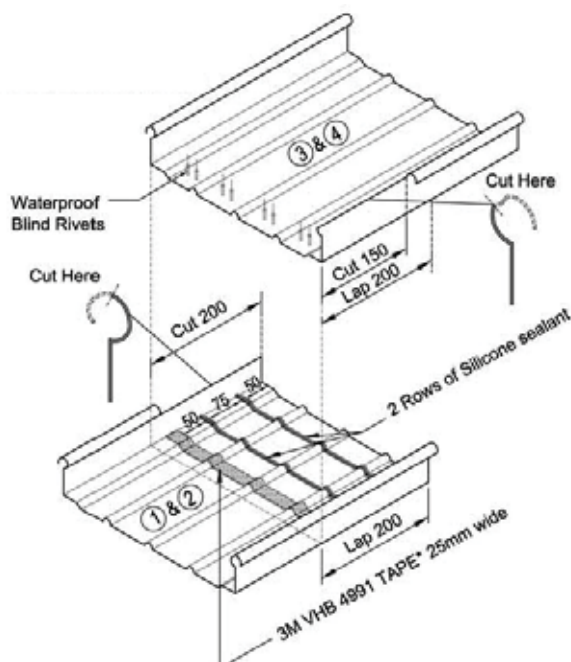
SEALED AND STITCHED LAPS

Sealed and stitched laps can only be installed on roof pitches of 3° or greater. The integrity of the lap is highly dependent on the workmanship, so care must be taken during installation.

The illustrated sequence should be followed for best result.

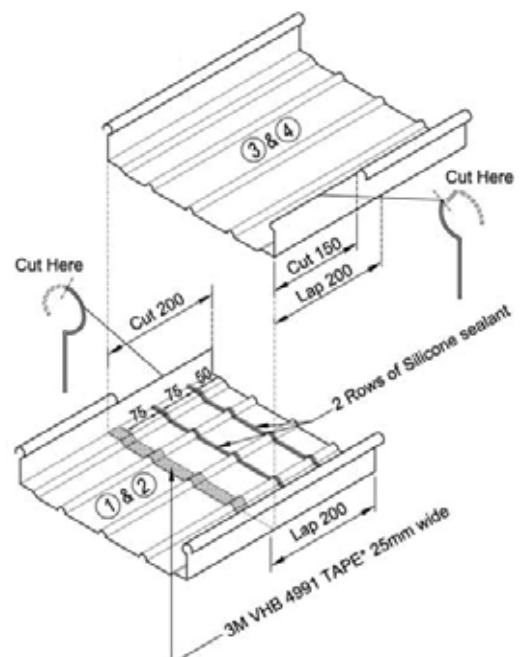
Stitched Lap

Sealed, riveted joint at end lap.
Rivets go through sealant type.



Sealed Lap

High strength tape at end lap.



SEAMER

LYSAGHT® ZIPDEK® roof system is seamed onto the clips using a mechanical seaming process. The seamer consists of two seaming rollers that are clamped onto the LYSAGHT® ZIPDEK® panel, and four-wheel guides to ensure the correct height is maintained.

HAND SEAMING TOOL

The first 200-300mm should be hand crimped to enable the seamer to be clamped onto the sheet, running along the ribs. The hand tool is used by squeezing the handles inward to close the seam.

SEAMING LYSAGHT® ZIPDEK® ROOF SHEETS

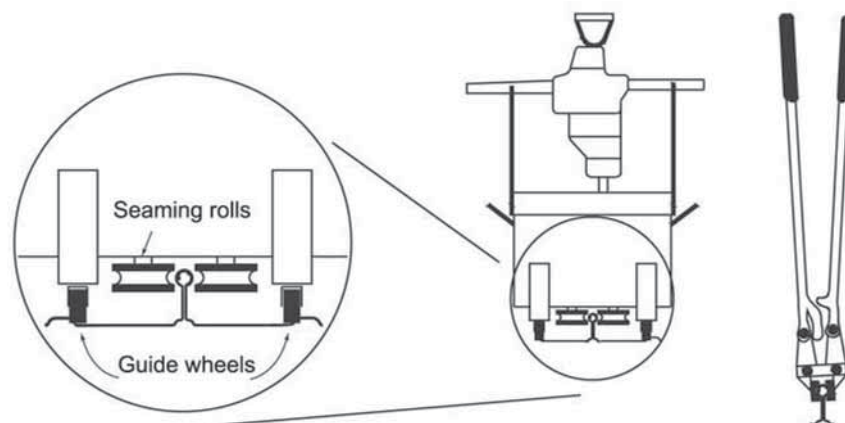
Prior to seaming, ensure the unit is set up for the correct material type and thickness. Some units have calibrated settings, while others require manual adjustment. For the latter, careful control should ensure that the seamed dimensions shown in Table 4 are achieved.

Table 4: Seamed Dimensions for Materials

Material	Thickness	Seam Size Dimension
Steel	0.55	20.0mm
Aluminium	0.90	22.0mm
	1.00	22.5mm

The seamer is clamped onto the end of the rib which has previously been hand crimped 200-300mm. The unit is tightened, and the button pressed. The seamer then travels along the lap, mechanically seaming it.

Only correctly seamed sheets will provide water tightness properties as well resistance to wind uplift and foot traffic.



Note:

Safe walking during installation

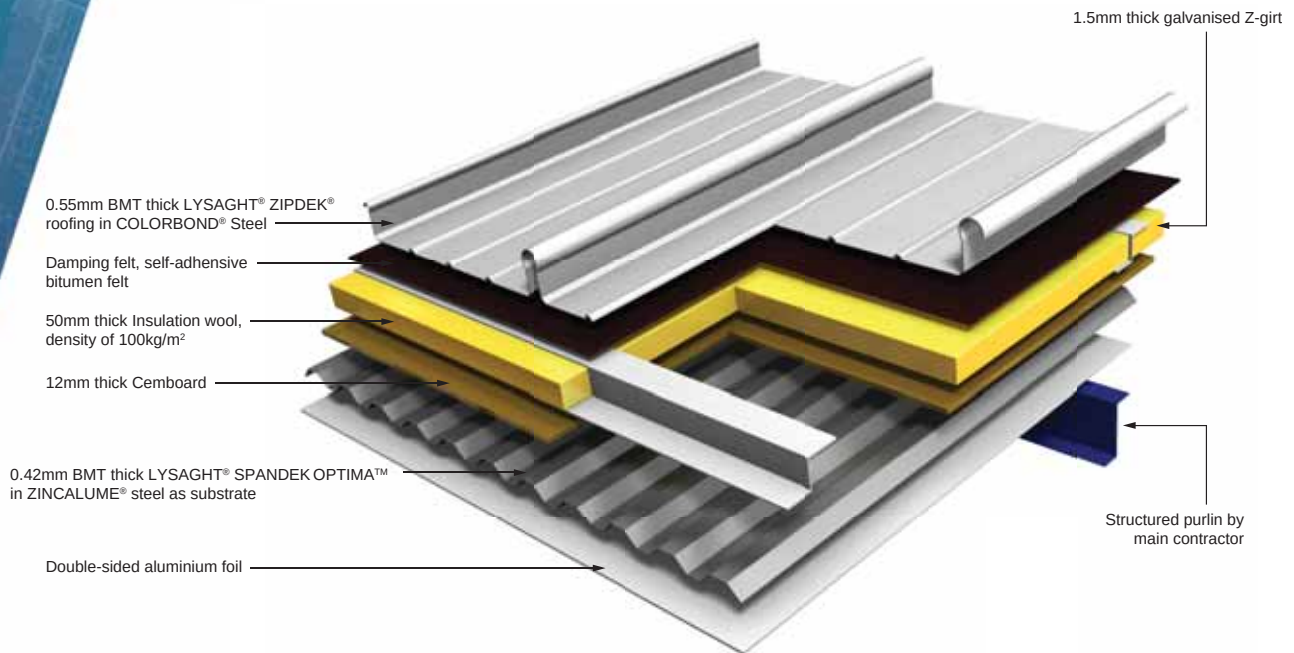
Avoid excessive concentrated point loads on the pan of the panel. The seams must be seamed before any unsupported roof traffic is permitted. The space between the brackets repeats in a cycle specified by manufacturer.

TYPICAL ACOUSTIC ROOF BUILD-UP

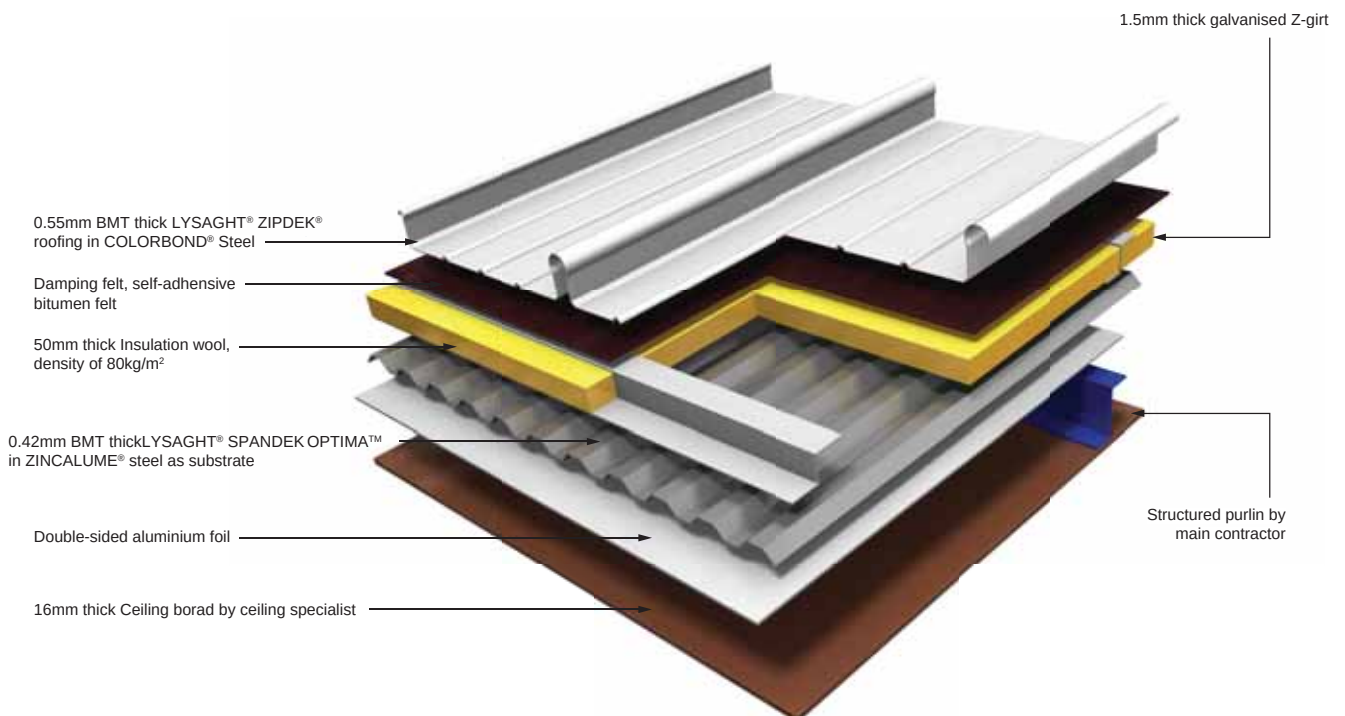
LYSAGHT® ZIPDEK® is acoustically proven and tested to meet Sound Transmission Classes (STC) of STC 45 and STC 51 from Spring Singapore.

LYSAGHT® ZIPDEK® acoustic roofing systems are suitable for construction applications with stringent acoustic requirements and have been used as such in residential houses, schools, auditorium, theatres, airports and other applications.

LYSAGHT® ZIPDEK® Roof System with STC 45



LYSAGHT® ZIPDEK® Roof System with STC 51



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REFERENCES



Siam Square One, Thailand

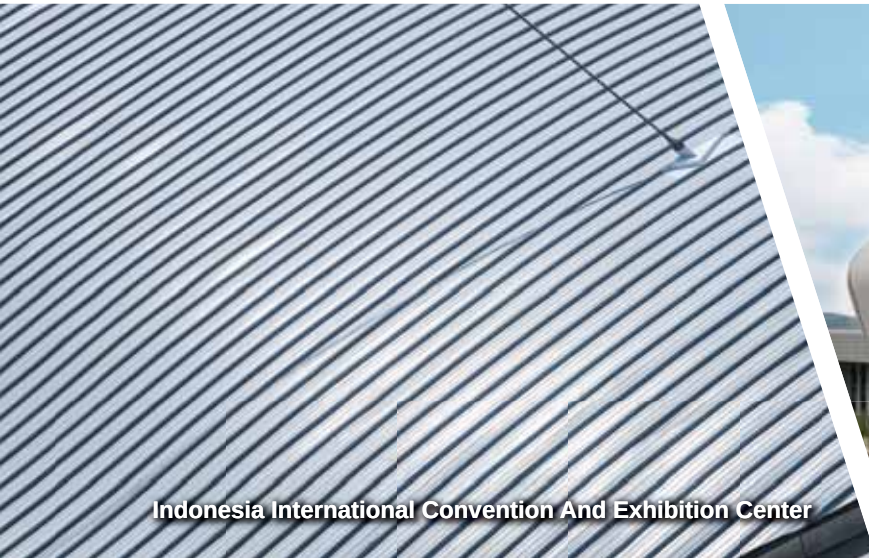


MRT Purple Line Station Thailand



The Promenade, Thailand

REFERENCES





NS BLUESCOPE LYSAGHT MALAYSIA SDN BHD

Company No: 196801000301 (7896-D)

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SOUTHERN

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88450 KOTA KINABALU,
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TEL: +6088-445 161 FAX: +6088-421 178



COATING



COLOUR CHOICES



DESIGN FLEXIBILITY



DURABILITY / SECURITY



HI-TECH PRODUCTION



RECYCLING



TERMITE PROOF



THERMAL EFFICIENCY



WARRANTY

NS BLUESCOPE LYSAGHT (SARAWAK) SDN BHD

Company No: 197701002868 (33837-P)

KUCHING

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* Warranty terms and conditions apply.

Apr 2021

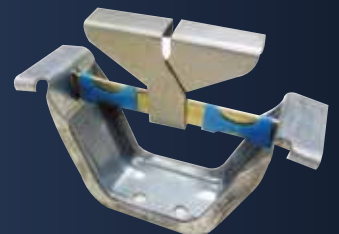
LYSAGHT® SMARTSEAM™

STANDING SEAM ROOF SYSTEM



RIB Height
75 mm

Coverage 473 mm



SMARTSEAM™ Clip

LYSAGHT®

SMARTSEAM™

is the new generation of standing seam roofing system developed by LYSAGHT. Its rib is as high as 75 mm after seaming. The unique design of the clip and online mastic application technology deliver excellent weather tightness performance. The system is the ideal choice for large industrial and commercial buildings, especially for buildings with big-span roofs.

✓ **360° Seaming Technology**
Improves water tightness performance

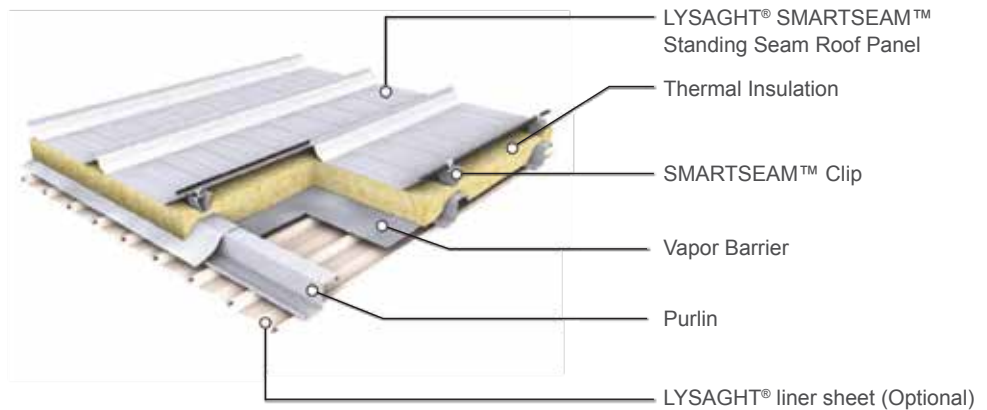
✓ **Customized Panel Length**
Meets projects requirements
On-site roll forming service available

✓ **Clips with Movable Tab**
Flexible toward thermal expansion and contraction

✓ **High Rib and Transverse Flute**
Reduces wind noise and improve anti-deformation

Steel Material	ZINCALUME® steel and COLORBOND® steel
Base Metal Thickness (BMT) (mm)	0.48, 0.55, 0.60
Total Coated Thickness (TCT) (mm)	0.53, 0.60, 0.65
Coverage Width (mm)	473
Rib Height (mm)	75
Transverse Fluting Spacing (mm)	150
Minimum Recommended Roof Pitch	2°
Grade of Steel (MPa)	G300 (300Mpa minimum yield stress)
Coating Mass	AZ150
Meets Australian Standard	AS1397-2001 AS/NZS 2728-2007

TYPICAL ROOF BUILDUP



RIGOROUS TESTING FOR RELIABLE RESULTS

FM Approval Wind Up Lift Test

LYSAGHT® SMARTSEAM™ roof system has been tested by Factory Mutual and is listed in the FM Approval Guide for Class I Panel Roofs.



ASTM E108 Spread of Flame Tests



Tensile Withdrawal Tests



Resistance to Foot Traffic Test



NS BLUESCOPE LYSAGHT MALAYSIA SDN BHD

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Colorbond®

Zincalume®

LYSAGHT® MULTICLAD™ HI-TEN

Steel wall cladding with wider span

NEW EXPANDED PROFILE ADDS TO LYSAGHT® MULTICLAD™'S FUNCTIONALITY

LYSAGHT® MULTICLAD™ now has a wider span, which makes it easier and even more economical to install. It provides versatile and aesthetic walling solutions for all types of building; also, it is well suited for garages, screens and fascia. The remarkable strength and multifunctional usage of LYSAGHT® MULTICLAD™ clearly establish it as the best profile for a multitude of applications.

BUILDING TYPES

- Residential
- Industrial
- Commercial

A WIDER SPAN OF FEATURES

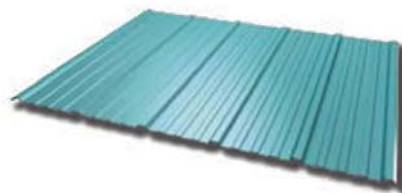
- Wider span profile is more cost-efficient and faster to install
- Covers a very wide area of surface
- Versatile and offers freedom of choice
- Attractive trapezoidal multi ribbed profile adds value to building design
- Tough yet light; strength to withstand high wind pressure
- Specially designed side laps to prevent leaks
- Can be supplied in either custom cut or stock lengths

HALLMARK OF QUALITY

- Manufactured from long-lasting ZINCALUME® steel by BlueScope Lysaght
- Tested and proven by NATA registered laboratory at BlueScope Lysaght (R&D) Sydney – Australia and CSIRO (Commonwealth Scientific and Industrial Research Organisation Australia)
- Conforms to International Building Codes and Standards and manufactured under strict processes governed by ISO9002:2000 and ISO14001
- Available in an attractive range of colours in prepainted Clean COLORBOND® steel and unpainted ZINCALUME® steel



LYSAGHT® MULTICLAD™ HI-TEN



LYSAGHT® MULTICLAD™ is an economical and attractive wall profile suitable for a wide range of residential, commercial and industrial applications. It can be supplied in either custom cut or in stock lengths. LYSAGHT® MULTICLAD™ is made from material conforming to AS 1397-G550-AZ150. (Clean COLORBOND® steel finish to AS 2728).

TOLERANCES

Length: +0, -15 mm
Cover Width: +4 mm, -0mm

PROFILEDIMENSIONS

The support spacings below may be varied by the Serviceability and Strength Limit States for the particular project under consideration.

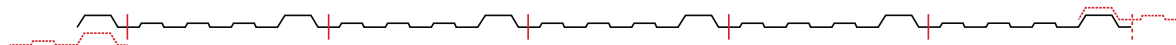
Base Metal Thickness (BMT)	Mass	Width of coverage	Depth of rib	Maximum recommended spacing of supports			Max overhang un-supported	Max overhang stiffened with 50mm x 50mm x 1.6mm angle & gutter
				single span	end span	internal span		
mm	kg/m ²	mm	mm	mm	mm	mm	mm	mm
0.35	3.27	1110	11.6	1000	1100	1600	200	400
0.42	3.87	1110	11.6	1150	1500	1650	300	600

Note

- The maximum recommended support spacings are based on testing in accordance with AS 1562.1-1992, Design and installation of Sheet Roof and Wall Cladding and AS4040.1-1992, resistance to Concentrated Loads. The roof spacings indicated are the maximum recommended for adequate performance of the roof cladding under foot traffic loading. The wall spacings indicated are based on a wind classification of N3 (W41N) in accordance with AS 4055 and the appropriate pressure coefficients of AS 4055. For severe conditions, please refer to BlueScope Lysaght's offices for recommended spacings and fastenings.
- Do not use any lead or copper as flashings, washers, etc. with ZINCALUME® steel or Clean COLORBOND® steel roofing and walling. Use flashing manufactured from ZINCALUME® steel or Clean COLORBOND® steel only.
- LYSAGHT® MULTICLAD™ is available in custom cut lengths.

FIXINGREQUIREMENTS

(Cyclonic assemblies may be required in some areas)



	Fixing to steel up to 0.75mm BMT	Fixing to steel >0.75 to 3mm BMT	Fixing to timber
Valley fixed	Self drilling self tapping screws with hex washer-head 10-12 x 20	Self drilling self tapping screws with hex washer-head 10-16 x 16	Self drilling screws with hex washer-head Softwood: 10-12 x 30 Hardwood: 10-12 x 20

TIP: Walk only in the pans of LYSAGHT® MULTICLAD™, stand on ribs only at supports.