

LYSAGHT® SPANDEK® OPTIMA™

Trapezoidal steel cladding
with longer spanning capability



Structural Solutions



Roofing & Walling Solutions

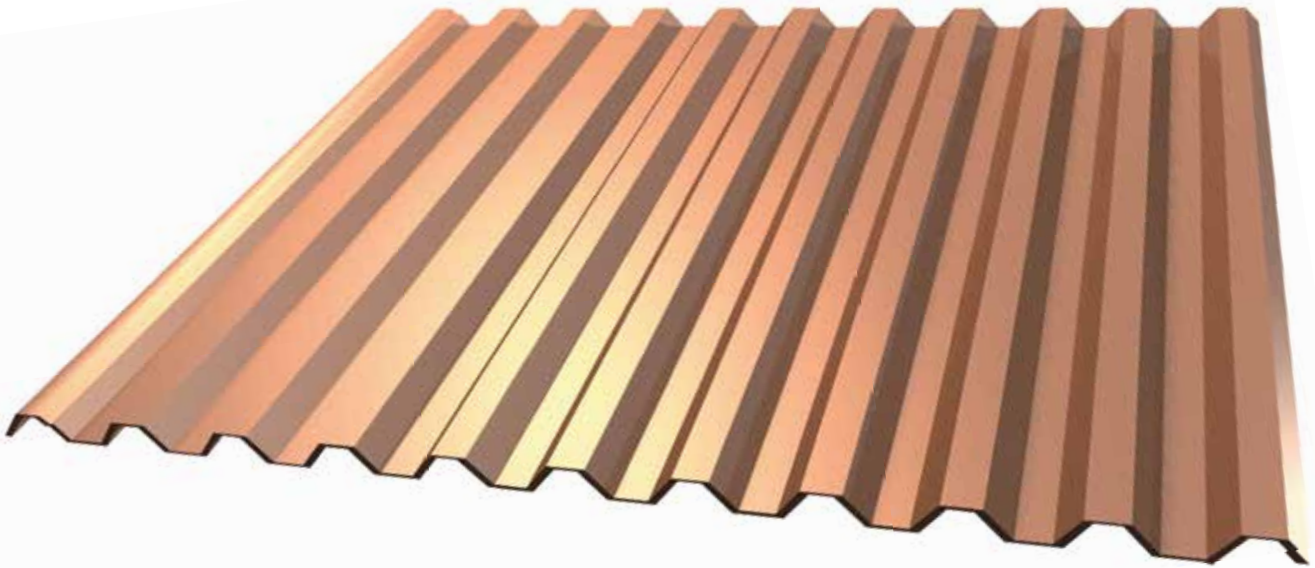


House Framing Solutions

LYSAGHT

LYSAGHT® SPANDEK® OPTIMA™

Trapezoidal steel cladding with longer spanning capability



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 LYSAGHT® 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.

Finishes	Base Metal Thickness (mm)	Total Coated Thickness (mm)	kg/m	kg/m ²
ZINCALUME® steel	0.42	0.47	4.23	4.52
COLORBOND® steel	0.42	0.47	4.30	4.60
ZINCALUME® steel	0.48	0.53	4.80	5.13
COLORBOND® steel	0.48	0.53	4.87	5.21

- Contemporary-looking, trapezoidal profile which is ideal where a stronger, bolder, sharper corrugated appearance is required.
- LYSAGHT® SPANDEK® OPTIMA™ combines strength with lightness, rigidity and economy.
- The strength, spanning ability, lightness and rigidity of LYSAGHT® SPANDEK® OPTIMA™ means wide support spacings can be used with safety.
- A special anti-capillary groove in the under lap allows you to use LYSAGHT® SPANDEK® OPTIMA™ on roof pitches as low as 3 degrees.



PRODUCT PROFILE

MATERIAL SPECIFICATIONS

LYSAGHT® SPANDEK® OPTIMA™ is made from:

- ZINCALUME® aluminium/zinc alloy-coated steel complying with AS-1397 - 2001 G550, AZ150 (550MPa minimum yield stress, 150g/m² minimum coating mass);

The COLORBOND® steel complies with AS/NZS2728:1997.

LENGTHS

Sheets are supplied custom cut.

TOLERANCES

Length: + 0mm, - 15mm

Width: + 4mm, - 4mm

COLOURS

LYSAGHT® SPANDEK® OPTIMA™ is available in an attractive range of colours in COLORBOND® steel and in unpainted ZINCALUME® aluminium/zinc alloy-coated steel.

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

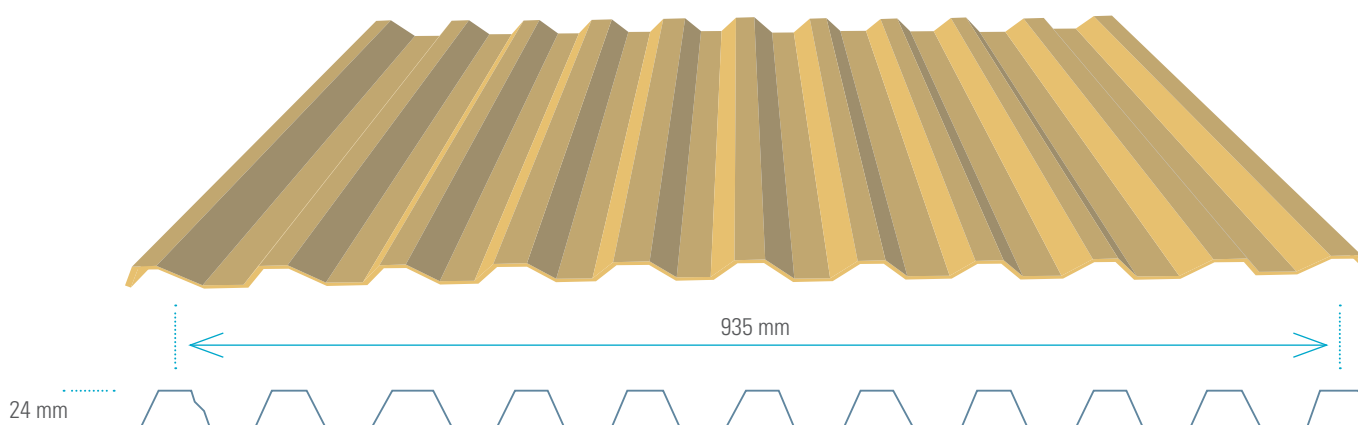
The standard COLORBOND® steel offers a full range of contemporary colours suitable for all building projects.

MINIMUM ROOF PITCH

Long lengths and a special anti-capillary groove in the under lap allows you to use LYSAGHT® SPANDEK® OPTIMA™ on roof pitches as low as 3 degrees (1 in 20).

PHYSICAL PROPERTIES OF LYSAGHT® SPANDEK® OPTIMA™

Steel Grade (MPa)	G550 (550MPa minimum yield stress)
Effective Width of Coverage	935mm
Depth of Rib	24mm
Minimum Recommended Roof Pitch	3° (1 in 20)
Base Metal Thickness	0.42mm & 0.48mm



PERFORMANCE

MAXIMUM SUPPORT SPACINGS

LYSAGHT® SPANDEK® OPTIMA™		
Type of span		
Base Metal Thickness (mm)	0.42	0.48
Total Coating Thickness (mm)	0.47	0.53
Roof (mm)		
Single Span	1500	2200
End Span	2100	2400
Internal Span	2300	3300
Unstiffened Overhang	200	250
Stiffened 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
 $C_{pi} = +0.20$

Roofs

$C_{pe} = -0.9$, $K_i = 2$ for single and end spans, $K_i = 1.5$ for internal spans
 $C_{pi} = +0.20$

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 our information line.



A&A at Ngee Ann Polytechnic, Singapore

LYSAGHT® SPANDEK® OPTIMA™: LIMIT STATE WIND PRESSURE CAPACITIES (kPa)

LYSAGHT® SPANDEK® OPTIMA™ 0.42mm BMT / 0.47mm TCT											
Span Type	Fasteners per sheet per support		For roofs (c/c) Span (mm)								
			900	1200	1500	1800	2100	2400	2700	3000	3300
Single	5	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	5	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	5	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

LYSAGHT® SPANDEK® OPTIMA™ 0.48mm BMT / 0.53mm TCT											
Span Type	Fasteners per sheet per support		For roofs (c/c) Span (mm)								
			900	1200	1500	1800	2100	2400	2700	3000	3300
Single	5	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	5	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	5	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

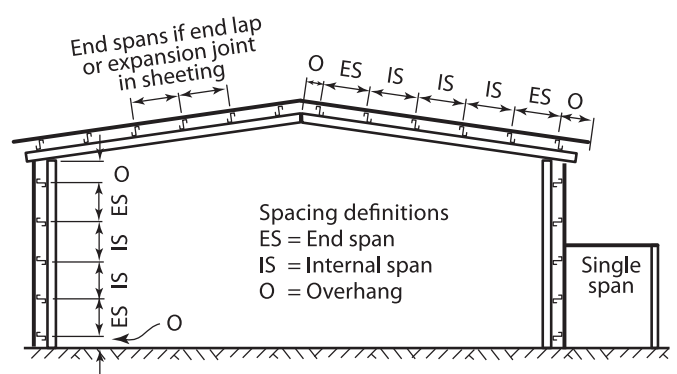
The wind pressure capacities are based on tests conducted at BlueScope Lysaght's NATA registered testing laboratory. Testing was conducted in accordance with AS 1562.1 - 1992 Design and Installation of Sheet Roof and Wall Cladding - Metal, and AS 4040.2 - 1992 Resistance to Wind Pressure for Non-cyclonic Regions.

The pressure capacities for serviceability are based on a deflection limit of (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 technical sales representatives.



METHOD STATEMENT AND GENERAL NOTES

WALKING ON ROOFS

Generally, keep your weight evenly distributed over the soles of your 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 walking across the width of the roof, walk over, or close to, the roof supports.

Fasteners without Insulation			
	Fixing to steel up to 0.75mm BMT	Fixing to steel > 57.0 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 - 11 x 50) OR 12 - 14 x 55 (M5.5 - 14 x 55)	Type 17 Self drilling screws with hex. washer-head & EPDM seal, <i>Softwood:</i> 12 - 11 x 65 (M5.5 - 11 x 65) <i>Hardwood:</i> 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 x 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, <i>Softwood:</i> 10 - 12 x 30 (M4.8 - 12 x 30) <i>Hardwood:</i> 10 - 12 x 20 (M4.8 - 12 x 20)
Side lap & accessories	Self drilling hex. head screws with washer & EPDM seal	10 - 16 x 16 OR EPDM seal: 8 - 15 x 15	

FASTENERS

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

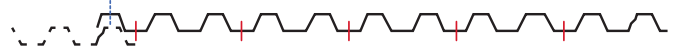
Roof - Screw fix through rib

Crest - 5 fixing



Wall - Screw fix through pan

Valley - 5 fixing



FASTENING SHEETS TO SUPPORTS

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

You can place screws for LYSAGHT® SPANDEK® OPTIMA™ 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 valley or rib.

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

SIDE-LAPS

The edge of LYSAGHT® SPANDEK® OPTIMA™ with the anti-capillary groove is always the underlap (see figures on this page). 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.

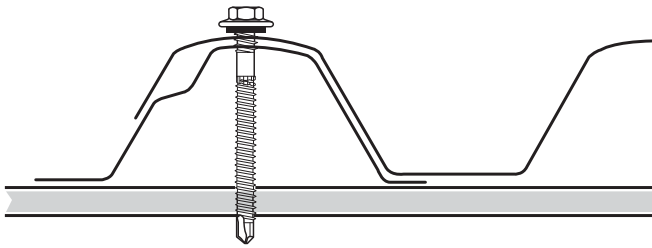
END LAPPING

End-laps are not usually necessary because LYSAGHT® SPANDEK® OPTIMA™ is available in long lengths.

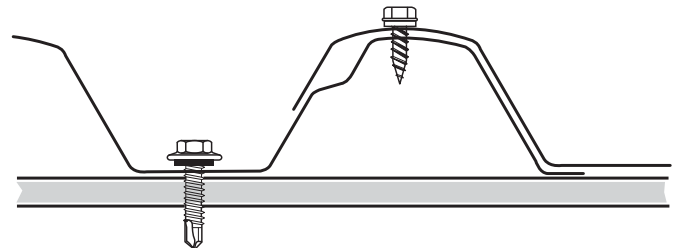
If you want end-laps, seek advice from our information line on the sequence of laying and the amount of overlap.

ENDS 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 valleys of sheets should be turned-down at lower ends, and turned-up at upper ends by about 80°.



Crest fixing for roof or walls



Valley fixing for walls only

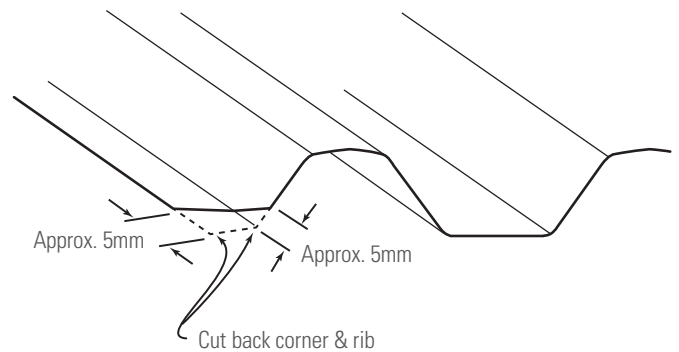
LAYING PROCEDURE

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.

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.

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, free carbon, stainless steel, bare steel and green or some chemically-treated timber 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 information line.

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

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 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.

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.

SEALED JOINTS

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

NON-CYCLONIC AREAS

The information in this brochure is suitable for use only in areas where a tropical cyclone is unlikely to occur as defined in AS 1170.2-2002. Map and table (below) taken from HB212-2002.



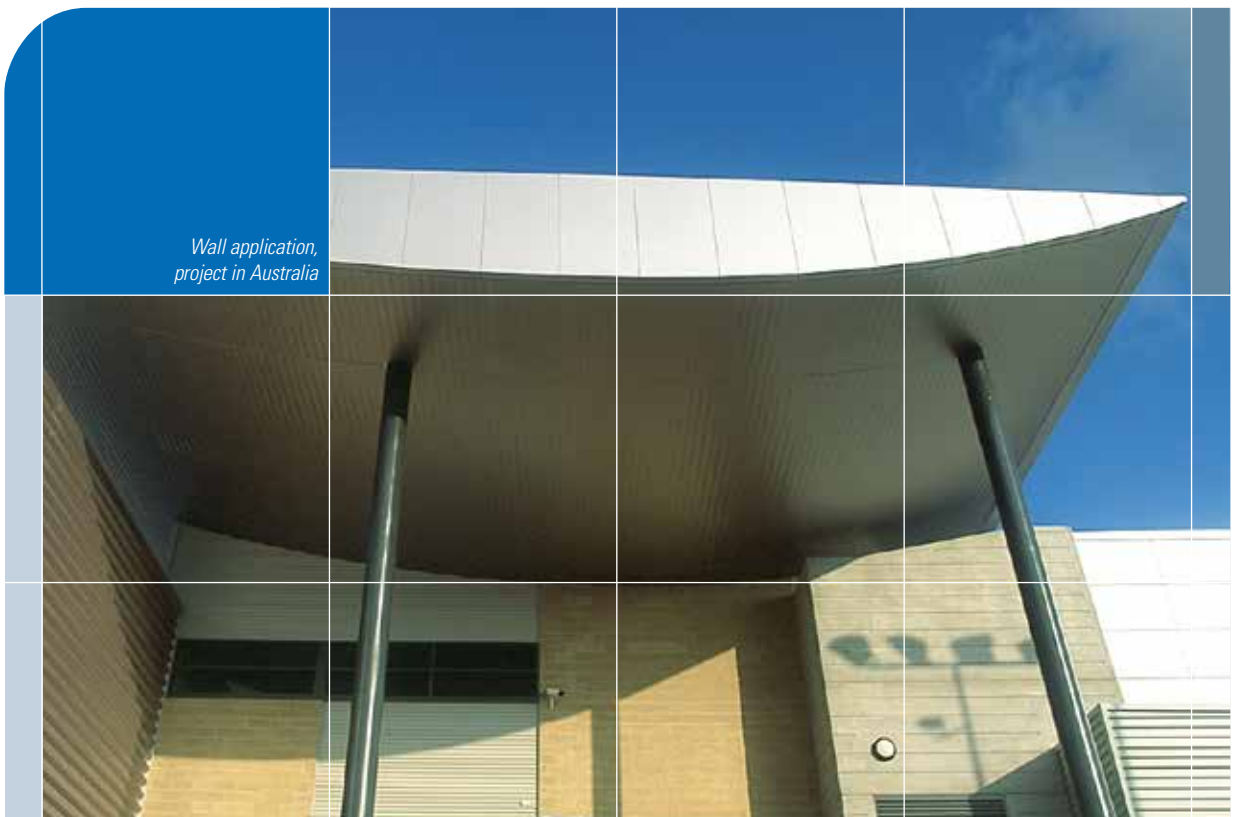
Wind speeds versus return period

(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.

Wall application,
project in Australia





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.
- Lightweight 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.

PROJECT REFERENCES



The Seed Residential @ Sutera, Skudai, Johor



The Seed Residential @ Sutera, Skudai, Johor



Caterpillar Factory, Singapore



Stinis Factory @ Nusajaya, Johor



Residential @ Kemensah Heights, Ampang



3M Factory, Benoi, Singapore



Trusted Partner for Building Systems

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COATING



COLOUR CHOICES



DESIGN FLEXIBILITY



DURABILITY / SECURITY



HI-TECH PRODUCTION



RECYCLING



TERMITE PROOF



THERMAL EFFICIENCY



WARRANTY