

SPANDEK®

DESIGN AND INSTALLATION GUIDE

LYSAGHT



LYSAGHT SPANDEK®

SPANDEK® is a contemporary-looking, trapezoidal profile which is ideal where a stronger, bolder, contemporary corrugated appearance is required.

SPANDEK® was originally designed as a strong attractive roofing material for industrial and commercial construction - however SPANDEK® has proved equally popular for homes and public buildings, underlining its versatility and pleasing appearance. SPANDEK® combines strength with lightness, rigidity and economy.



MATERIAL SPECIFICATIONS

Next generation ZINCALUME® aluminium/zinc/magnesium alloy coated steel complies with AS 1397:2011 G550, AM125 (550 MPa minimum yield stress, 125g/m² minimum coating mass).

COLORBOND® is pre-painted steel for exterior roofing and walling. It is the most widely used. The painting complies with AS/NZS 2728:2013 and the steel base is an aluminium/zinc alloy-coated steel complying with AS 1397:2011. Minimum yield strength is G550 (550 MPa). Minimum coating mass is AM100 (100g/m²).

COLORBOND® Metallic is pre-painted steel for superior aesthetic qualities displaying a metallic sheen.

COLORBOND® Ultra is pre-painted steel for severe coastal or industrial environments (generally within about 100-200 metres of the source). The painting complies with AS/NZS 2728:2013 and the steel base is an aluminium/zinc alloy-coated steel complying with AS 1397:2011. Minimum coating mass is AM150 (150g/m²).

COLORBOND® Stainless is a pre-painted steel and is used for severe and coastal environments. The painting complies with AS/NZS 2728:2013 and the steel base is a stainless steel complying with AISI/ASTM Type 430; UNS No. S43000.

COLOURS

SPANDEK® is available in an attractive range of colours in COLORBOND® factory pre-painted steel and in unpainted ZINCALUME® aluminium/zinc/magnesium alloy coated steel.

Standard COLORBOND® steel is available in a full range of contemporary colours suitable for all building projects.

COLORBOND® STEEL WITH THERMATECH® TECHNOLOGY

THERMATECH® solar reflectance technology is now included in the standard COLORBOND® steel palette. COLORBOND® steel with THERMATECH® technology reflects more of the sun's heat, allowing both roofs and buildings stay cooler in summer. In moderate to hot climates, compared to roofing materials of similar colour with low solar reflectance, COLORBOND® steel with THERMATECH® can reduce annual cooling and energy consumption by up to 20%.

LENGTHS

Sheets are supplied custom cut.

MASSES

	BMT (mm)	kg/m	kg/m ²	m ² /t
ZINCALUME® steel	0.42	3.23	4.61	217
COLORBOND® steel	0.42	3.26	4.65	215
ZINCALUME® steel	0.48	3.67	5.24	191
COLORBOND® steel	0.48	3.70	5.28	189

TOLERANCES

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

MAXIMUM SUPPORT SPACINGS (MM)

The maximum recommended support spacings (below) are based on testing in accordance with AS 1562.1:1992, AS 4040.1:1992 and AS 4040.2:1992.

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, $M_s=0.85$, $M_i=1.0$, $M_t=1.0$ 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 and end spans, $K_f=1.5$ for internal spans.

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

Type of Span	BMT	
	0.42mm	0.48mm
Roofs		
Single span	1300	2000
End span	1800	2200
Internal span	2400	3000
Unstiffened eaves overhang	300	400
Stiffened eaves overhang	600	700
Walls		
Single span	2500	3000
End span	3000	3000
Internal span	3300	3300
Overhang	300	400

For roofs: the data allow for foot-traffic loading.

For walls: the data are based on pressures (see wind pressure table).

Table data are based on supports of 1mm BMT.

Spacing is based on 4 fasteners per sheet per support.

SPANDEK® LIMIT STATE WIND PRESSURE CAPACITIES (KPA) 0.42 BMT

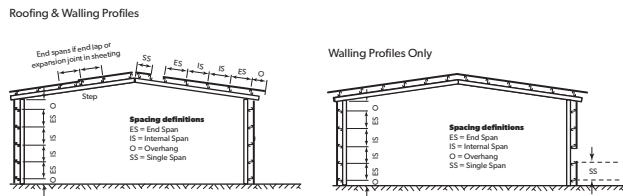
Span Type	Fasteners per sheet per support	Limit State	Span (mm)								
			900	1200	1500	1800	2100	2400	2700	3000	3300
Single	3	Serviceability	2.04	1.64	1.27	0.96	0.72	0.54	0.41	0.30	-
		Strength	8.35	6.85	5.45	4.30	3.50	2.95	2.60	2.30	-
	4	Serviceability	4.24	3.07	2.02	1.20	0.68	0.42	0.33	0.30	-
		Strength	10.25	8.35	6.60	5.20	4.25	3.70	3.40	3.20	-
End	3	Serviceability	2.05	1.82	1.61	1.40	1.20	1.02	0.83	0.65	-
		Strength	5.85	4.40	3.20	2.35	1.85	1.55	1.45	1.40	-
	4	Serviceability	3.75	3.19	2.67	2.20	1.78	1.40	1.05	0.72	-
		Strength	6.90	5.65	4.55	3.75	3.15	2.70	2.40	2.20	-
Internal	3	Serviceability	1.96	1.81	1.66	1.52	1.37	1.23	1.08	0.93	0.79
		Strength	6.90	5.80	4.70	3.70	2.85	2.25	1.80	1.60	1.50
	4	Serviceability	4.74	4.05	3.38	2.75	2.20	1.73	1.36	1.08	0.87
		Strength	8.55	6.80	5.40	4.35	3.55	2.95	2.55	2.30	2.20

SPANDEK® LIMIT STATE WIND PRESSURE CAPACITIES (KPA) 0.48 BMT

Span Type	Fasteners per sheet per support	Limit State	Span (mm)								
			900	1200	1500	1800	2100	2400	2700	3000	3300
Single	3	Serviceability	2.50	2.08	1.69	1.34	1.04	0.79	0.58	0.38	-
		Strength	9.00	7.55	6.25	5.10	4.25	3.60	3.10	2.70	-
	4	Serviceability	5.07	3.53	2.35	1.48	1.00	0.70	0.52	0.40	-
		Strength	12.00	10.35	8.30	6.65	5.40	4.60	4.00	3.60	-
End	3	Serviceability	3.05	2.58	2.15	1.78	1.47	1.20	0.96	0.75	-
		Strength	7.55	5.65	4.05	3.35	2.85	2.50	2.25	2.10	-
	4	Serviceability	5.34	4.37	3.50	2.76	2.16	1.65	1.22	0.83	-
		Strength	9.75	7.65	5.85	4.50	3.70	3.20	2.95	2.85	-
Internal	3	Serviceability	2.72	2.40	2.09	1.79	1.53	1.30	1.10	0.95	0.82
		Strength	9.00	7.05	5.50	4.30	3.40	2.75	2.35	2.10	2.00
	4	Serviceability	6.50	5.44	4.43	3.49	2.66	1.99	1.49	1.14	0.90
		Strength	11.40	9.70	8.05	6.55	5.25	4.20	3.50	3.05	2.80

Support must not be less than 1mm BMT.

SPAN TYPES



LIMIT STATES WIND PRESSURES

SPANDEK® 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 service-ability 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.

ADVERSE CONDITIONS

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

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 guidance from the LYSAGHT® Roofing & Walling Installation Manual.

Peak Rainfall Intensity (mm/hr)	Roof Slopes (degrees)					
	1	2	3	5	7.5	10
100	-	97	111	133	154	173
150	-	65	74	89	103	115
200	-	49	55	67	77	86
250	-	39	44	53	62	69
300	-	32	37	44	51	58
400	-	24	28	33	39	43
500	-	19	22	27	31	35

As with any low slope roof, particular care must be taken when setting the supports to prevent ponding.

For roof slopes down to 2° (shaded), a number of provisions and details will need to be adhered to. Please call your nearest Service Centre for advice.

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 1170.2:2011.

For information on the use of LYSAGHT® products in cyclonic conditions, refer to the Cyclonic Area Design Manual which is available by ringing Steel Direct on 1800 641 417 or on our website: www.lysaght.com.



INSTALLATION

Below are typical guidance on installation. For more detailed installation guidance refer to the LYSAGHT® Roofing & Walling Installation Manual.

FASTENING SHEETS TO SUPPORTS

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

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

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

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

SIDE-LAPS

The edge of SPANDEK® with the anti-capillary groove is always the underlap (see figures on this page and side-lap). 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 of the long sheet lengths available.

If end-laps are to be used seek guidance from the Installation Manual with respect to sequence of laying, length of end-lap, end treatment, fastening, sealing and other details.

ENDS OF SHEETS

The overhang of the sheets from the top and bottom supports must not exceed our recommendations. It is usual to allow roof sheet to overhang into gutters an appropriate length.

For roofing application the top and bottom ends of the sheet may require particular treatment such as turn-up or turn-down or other particular treatment depending upon the roof slope.

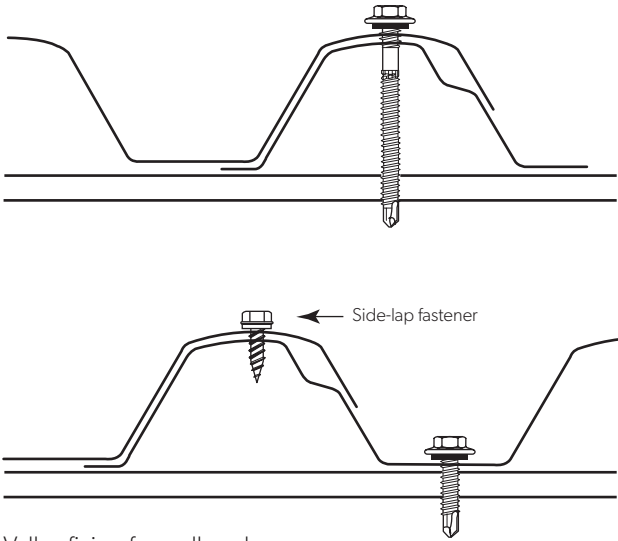
ORIENTATION AND PLACEMENT

Consider which end of the building is best to start from. It is much easier and safer to turn the sheets at ground level than when up on the roof.

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

SHEET COVERAGE

Width of Roof (m)	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	30
Number of Sheets	5	6	8	9	10	12	13	15	16	18	19	20	22	23	25	26	28	29	43



Valley fixing for walls only

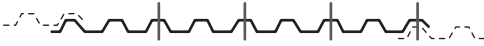
Crest: 3 fasteners †



Valley: 3 fasteners †



Crest: 4 fasteners †



Valley: 4 fasteners †



† Fasteners per sheet per support. Most common practice is:
3 fasteners for internal spans and 4 fasteners for end supports.

FASTENERS WITHOUT INSULATION

	Fix to Steel Single & lapped steel thickness ≥0.55 up to 1.0mm BMT	Fix to Steel Single steel thickness ≥1.0mm BMT up to 3.0mm BMT	Fix to Steel Total lapped thickness ≥1.00 BMT up to 3.8mm BMT	Fix to Timber Hardwood J1-J3	Fix to Timber Softwood J4
Crest Fixed	Roof Zips M6-11x50	12-14x45, Metal Tek's HG, HH or AutoTek's 12-14x50	12-14x45, Metal Tek's HG, HH or AutoTek's 12-14x50	12-11x65, Type 17 HG, HH	12-11x65, Type 17 HG, HH or Roof Zips M6-11x65
Pan Fixed	10-16x16, Metal Tek's, HH or 10-16x25 Designer Head or Roof Zips M6-11x25	10-16x16, Metal Tek's, HH or 10-16x25 Designer Head	10-16x16, Metal Tek's, HH	10-12x25, Type 17, HH 10-16x25 Designer Head or 12-11x25, Type 17, HH	10-12x30, Type 17, HH M5-16x25 Designer Head 10-11x25, Type 17, HH or Roof Zips M6-11x25
Side-laps	(If required) 10-16x16, Metal Tek's, HH or Roof Zips M6-11x25 or 10-16x25 Designer Head or Sealed blind rivet ø4.8mm aluminium				

- Notes:
- 1. For other steel thicknesses 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.

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.

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 according to our maintenance guidelines.

SAFETY, 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 to dry thoroughly.

METAL & TIMBER COMPATIBILITY

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

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.

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.

SEALED JOINTS

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

PRODUCT DESCRIPTIONS

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