# LYSAGHT®
# KLIP-LOK® 406

## Installation Guide

Structural Solutions

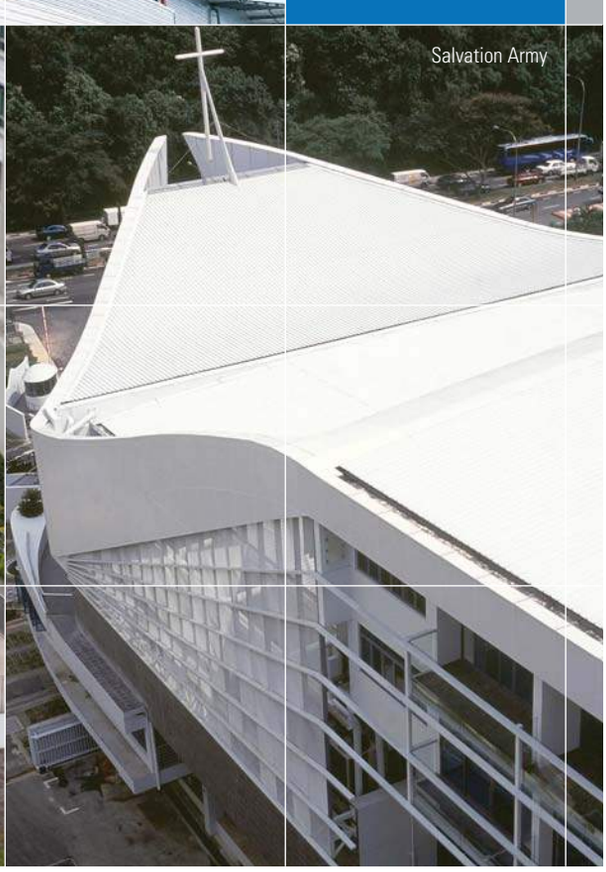
Roofing & Walling Solutions

House Framing Solutions

BLUESCOPE LYSAGHT


Singapore Exposition Hall 7 to 10

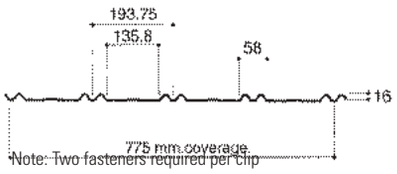
Treelodge@Punggol

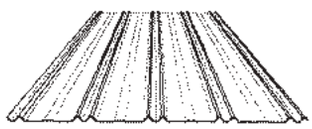


Salvation Army

# FASTENING METHOD & TYPE OF FASTENERS

## THE CONCEALED FIXING CONCEPT



### Identification of Fastener

The format of the number code is:

**10** - **24** x **16**

- 10: Screw gauge (Thread outside diameter)
- 24: Thread pitch (Thread per pitch)
- 16: Overall Length of screw measured from under the head (mm)

## RECOMMENDED FASTENERS

| | Steel Supports | | Timber Supports | |
|---|---|---|---|---|
| | Thickness | | Grade | |
| | Up to 4.5mm | Exceeds 4.5mm | Hardwood | Softwood |
| **Directly to support** | No. 10 - 24 x 16mm wafer-head self drilling and tapping screw | Teks 5 No. 12 - 24 x 32mm wafer-head self drilling and tapping screw | No. 10 - 12 x 25mm wafer-head type 17 self drilling wood screw; 3.75mm x 50mm flat-head spiral threaded nail (on special orders) | No. 10 - 12 x 46mm wafer-head type 17 self drilling wood screw |
| **Over Insulation blanket** | Increase to 22mm or longer screw if required | Same as above | Increase to > 25mm or longer screw if required; 3.75mm x 50mm flat-head spiral threaded nail (on special orders) | Same as above |

"Note : Recommended fasteners should conform to Class 3 AS3566 Standard."

## 1. CLIP-FIXING APPLICATION

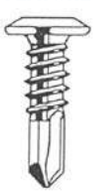
| Fastener Description | Max. Attachment (mm) |
|---|---|
| MTEKS 10-24x16 WAF | 0 - 8 |
| MTEKS 10-24x22 WAF | 0 - 14 |

## 3. MECHANICAL PROPERTIES

| | |
|---|---|
| Single shear strength | 6800 N |
| Axial tensile strength | 11900 N |
| Torsional strength | 8.4 Nm |

(Tested on "undriven" screw)

## 2. FEATURES OF FASTENER



- Forged drill point
- Strip out resistant
- Higher pullout load
- Zinc alloy proven corrosion protection

## 4. ULTIMATE AVERAGE PULLOUT DATA

| Base Thickness | G450 steel |
|---|---|
| 1.0mm | 2 800N |
| 1.2mm | 3 500N |
| 1.6mm | 4 300N |
| 1.9mm | 5 800N |
| 2.4mm | 7 800N |
| 3.2mm | 9 500N |

(Tested under laboratory conditions)

# NOISE & HEAT CONTROL

## [A] REDUCTION OF RAIN NOISE

To further reduce noise created by rainfall on metal roof, an insulation mineral wool blanket can be placed in between two metal roof cladding in BlueScope Lysaght's Acoustic Roof System. As long as the insulation blanket is held tightly against the underside of the roof sheeting, this will dampen the rain induced vibration at the point of impact and a marked noise reduction would be achieved.

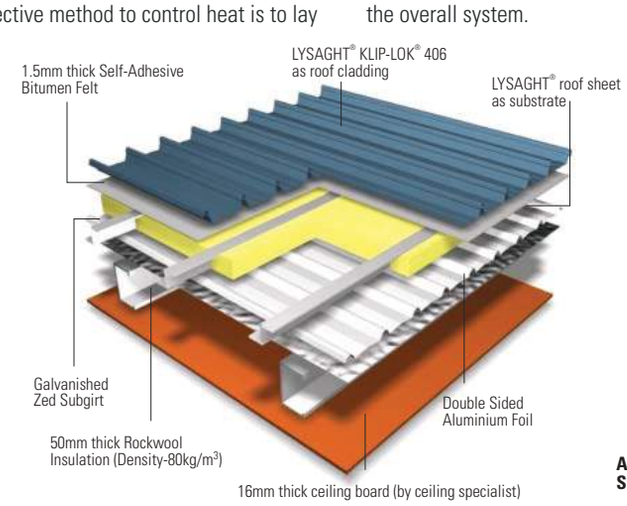
Otherwise, noise will only be reduced by transmission loss through the mineral wool blanket in a standard roof system.

BlueScope Lysaght's Acoustic Roof System has been rated and approved by PSB Corporation (testing group). The system was last tested on 10 October 2002 and proven to meet requirements of Sound Transmission Class 51 (STC 51). The test was conducted in accordance with ASTM E90 - 97.

(Please refer to BlueScope Lysaght's "Guidelines for Specification & Installation of LYSAGHT® Roofing and Walling Solutions" for more information on the Acoustic Roof System)

## [B] HEAT CONTROL

The effective method to control heat is to lay reflective foil laminate over the supports before laying the sheeting or insulation blanket. The insulation blanket over the foil laminate in conjunction with vapour barrier allows condensation control. An insulation blanket is often provided to improve heat insulation to the overall system.




**Acoustic Roof System (STC51)**

# SUGGESTED SPECIFICATIONS FOR EXTREME ENVIRONMENTS

## [A] MODERATE MARINE ENVIRONMENT

| Suggested Specifications for LYSAGHT® KLIP-LOK® 406 | |
|---|---|
| Total Coated Thickness (TCT) | 0.53mm TCT |
| BlueScope Steel Proprietary Pre-painted Steel System | Clean COLORBOND® steel<br>or<br>Clean COLORBOND® XPD steel*<br>or<br>Clean COLORBOND® XPD Pearlescent steel* |
| Steel Grade | G550 (Minimum yield strength of 550 mPa) |
| Minimum Coating Mass of ZINCALUME® steel | AZ150 (150g/m$^2$) |

## [B] SEVERE MARINE ENVIRONMENT

| Suggested Specifications for LYSAGHT® KLIP-LOK® 406 | |
|---|---|
| Total Coated Thickness (TCT) | 0.54mm TCT |
| BlueScope Steel Proprietary Pre-painted Steel System | Clean COLORBOND® ULTRA steel* |
| Steel Grade | G550 (Minimum yield strength of 550 mPa) |
| Minimum Coating Mass of ZINCALUME® steel | AZ200 (200g/m$^2$) |

*Minimum order quantity is required. Please contact our Sales Representative or Customer Service for more information.

# SIMPLE INSTALLATION INSTRUCTIONS FOR LYSAGHT® KLIP-LOK® 406 ROOFING SHEETS

ZERO HARM

**REMINDER!**

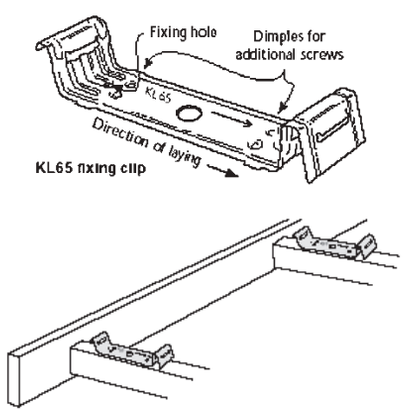
If you are working at height 2 metres and above, you must wear a safety harness with a shock absorbing twin tail lanyard attached to either a life line or an anchorage point.

In addition, the use of Ausmesh 300 is recommended to assist in the prevention of falls during roof sheet laying. Contact BlueScope Lysaght Singapore for more information on Ausmesh 300.

### 1. PREPARATION FOR INSTALLATION

When lifting roofing sheets onto roof frames to prepare for installation, ensure all sheets have overlapping female rib facing the side where fastening is to commence.

### 2. FIX THE FIRST ROW OF KL 65 CLIPS



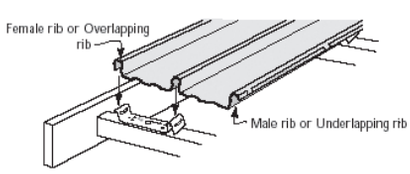

Fix the first row of clips (KL65 clips shown)

The first run of KL 65 clips have to be positioned and fastened, one onto each purlin, so that they will correctly engage in the female and centre ribs of the first sheeting when the sheeting is placed over them.

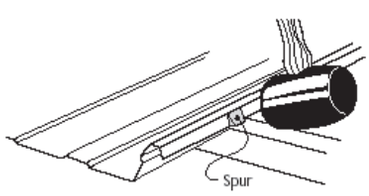
Fasten clips to the purlins at each sheet, having positioned them so that the first run of clips will be in correct relation with the building elements.

Align and fasten the remainder of the first run of clips using a string as a straight edge.

### 3. PLACE THE FIRST SHEET



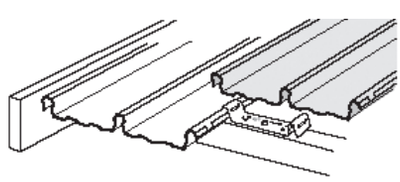

Placing the first sheet




Flatten spurs in way of clips

Position the first roof sheet over the fastened run of clips, having fastened the clips longitudinally in relation to the eaves overhang, and then fully engage on clips by applying foot pressure to the centre and female ribs over each clip. If the clips foul up one of the spurs spaced along the outer free edge of the male rib, the spur can be flattened with a blow from a rubber mallet to allow the clip to sit down over the rib.

### 4. FIX THE NEXT (AND SUBSEQUENT) CLIPS & SHEETS

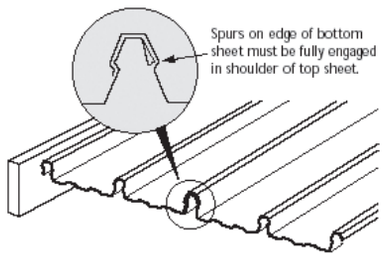


Placing next sheet(s)

Position the next run of clips, one to each purlin, engage over the male ribs of the installed sheet and fasten each clip with the recommended wafer-head fasteners.

Place the second sheet over the second run of clips with the female rib overlapping the male rib of the first preceding sheet, and the centre rib over the centre rib's up-stand of the clips.

## 5. ENSURE ROOFING SHEETS INTERLOCK COMPLETELY



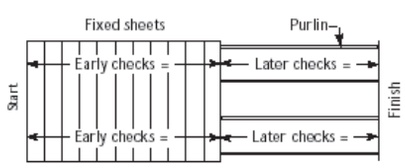

Spurs must engage fully

The interlocking ribs and centre rib should be fully engaged over each clip.

The full engagement can be done by walking along the full length of the roof sheeting being installed, with one foot in the tray next to the overlapping female rib and the other foot applying pressure to the top of the interlocking rib at regular intervals.

A distinct 'click' will be heard as the spurs along the edge of the male rib snap into the shoulder along the female rib.

## 6. CHECK ALIGNMENT PERIODICALLY

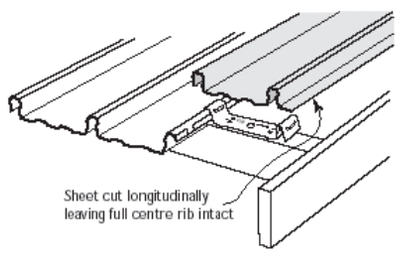



Check alignment periodically

Occasionally check the roofing sheets to ensure they are still parallel to the first sheet. This can be checked by taking two measurements across the width of the fixed sheet.

The string line can be used to ensure that the ends of the roofing sheets are in line.

## 7. POSITIONING THE FINAL SHEET



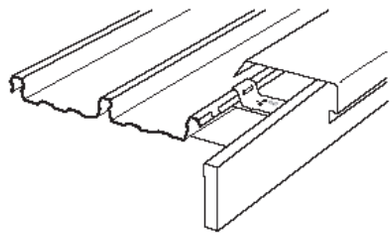

Placing last sheet where half a sheet will fit

If the space left between the last fixed sheet and the fascia or parapet is more than half the width of a LYSAGHT® KLIP-LOK® sheet, cut the final sheet along its length leaving the centre rib complete.

Place the cut sheet onto a row of clips, the same way as it would be done for a full sheet.

Where the space left between the last fixed sheet and the fascia or parapet cannot fit half the width of a LYSAGHT® KLIP-LOK® sheet, fix the edge of the final sheet at each purlin with a clip that has been cut into half.

## 8. FLASHINGS / CAPPINGS



Placing last sheet where half a sheet won't fit

Upon completion of the roofing sheets installation, the flashing will be suited to the requirements on site to complement and improve the total waterproof / watertight roof system.

To prevent LYSAGHT® KLIP-LOK® 406 sheets from sliding downwards in the fixing clips on very steep roof pitches or slopes, each sheet under the flashing or capping should be pierced-fix along the top of the sheets.

Note:

- The installation procedure for walls is similar to that described for roofs. To prevent LYSAGHT® KLIP-LOK® 406 sheets from sliding downwards in the fixing clips, you should pierce-fix through each sheet under the flashing or capping, along the top of the sheets.
- Please refer to "Guidelines for Specification and Installation of LYSAGHT® Roofing and Walling Solutions" for detailed information on installation method, tips for inspection and compatibility notes.

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*Warranty terms and conditions apply.

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