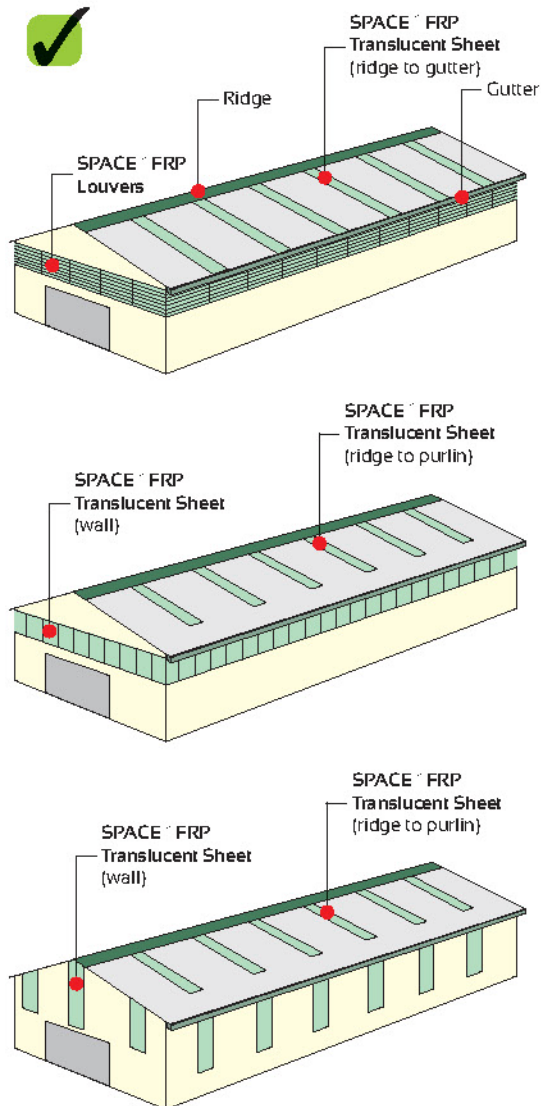




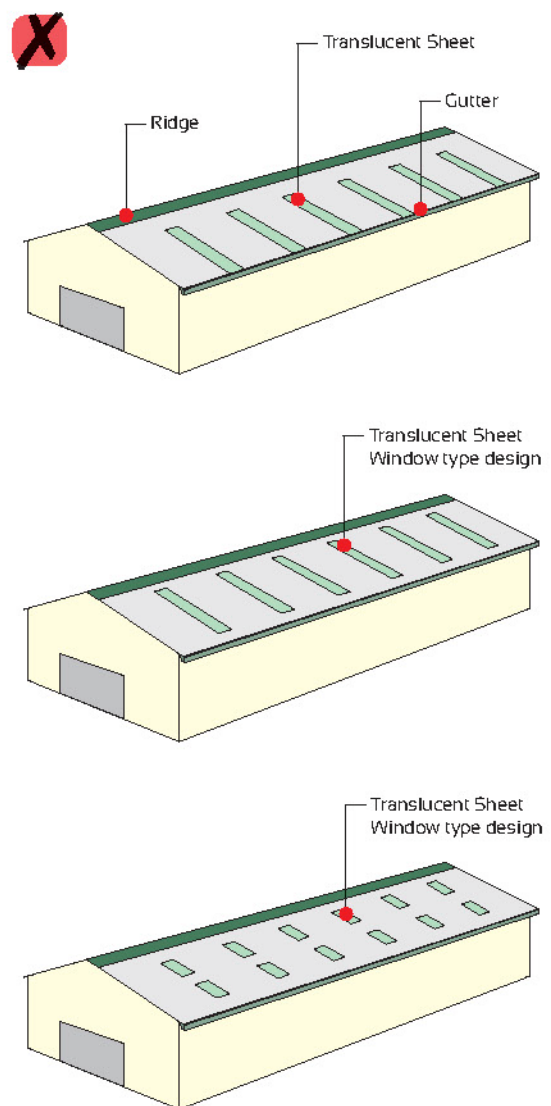
Design Considerations

Recommended



- 1 It is recommended to start fibreglass sheeting installation from the ridge capping which will help prevent leakage.
- 2 Ridge to purlin installation has less skylight area compared to ridge to gutter installation. However, it can be compensated by installing continuous SPACE™ Wall Siding.
- 3 The installation of ridge to purlin incorporating SPACE™ Wall Siding is to enable a deeper installation of the siding sheets at the same intervals as the roofing skylights.
- 4 Generally recommended FRP Translucent sheet installation is not less than 10% of total roof area in order to achieve desired illuminance.

Not Recommended



- 1 Good fibreglass translucent sheet must be able to diffuse light evenly instead of scattering unevenly to an area where light is required.
- 2 In case window type design is unavoidable, FRP sheet must be placed on top of metal sheet to prevent leakage.
- 3 In case "not recommended" installation is unavoidable, two continuous beads of clear non-hardening silicone sealant must be applied to prevent leakage.

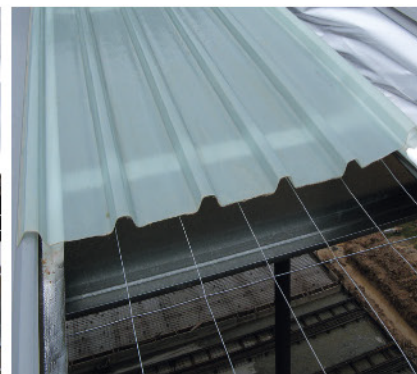
Installation Guide

1

Start metal roof installation first and leave opening for fibreglass sheets.

SPACE™ FRP sheet will rest on top of the purlin support towards both side lapping and fasten at the rib of the metal roof.

Fibreglass translucent sheeting must be placed on top of metal sheet as its thermal expansion is higher than metal sheet's thermal expansion.



2

SPACE™ FRP sheet must be fastened alternate rib with fasteners ASTeks™ Polywing affixed with Dekseal Engineered 26mm EPDM washer. No pre-drilling is required.

Prevent over tightening of fastener against support which resulting flap over of the EPDM washers.

Fastener should comply to A35566, Class 3. SPACE™ FRP Translucent sheet required 4.5 fasteners per meter square.

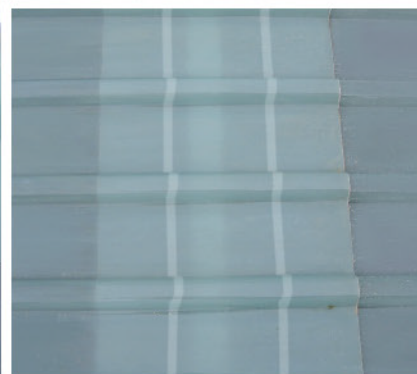
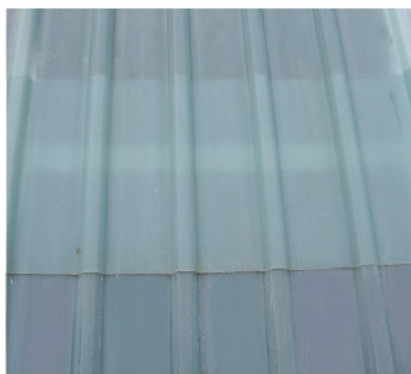


3

Minimum end lapping shall be 200mm and to be on top of purlin. Either FRP sheet overlapping with FRP sheet or FRP sheet overlapping with metal roofing sheet, 2 continuous beads of RTV Non-hardening neutral silicone sealant or a self-adhesive tape (3mm x 20mm) to be applied on top of the bottom sheet.

Remarks :

- 1) Avoid end lapping for roof slope less than 3°.
- 2) Appropriate sheet length \leq 11.9M to allow for thermal expansion.
- 3) Store sheets in a dry and fire safe area.
- 4) Do not stack heavy materials on sheets to prevent fracture.



ASTeks™ Fasteners - Drilling Recommendations

- a) Ensure the correct Fasteners are being used for the right applications. Fastener drill point should be longer than the total thickness of steel being applied to.
- b) Ensure the correct sockets are being fitted for the appropriate application, check sockets are not worn or full of debris.
- c) Ensure drilling setting is switched to "FORWARD".
- d) Recommended drill speed is 2500 rpm, use at full speed until screw has been fully drilled, then slow for threading if required.
- e) 15 kgs of force is to be applied until the fastener has been fully drilled in. Do not put too much load as this will slow drilling and may affect the performance of the fastener.

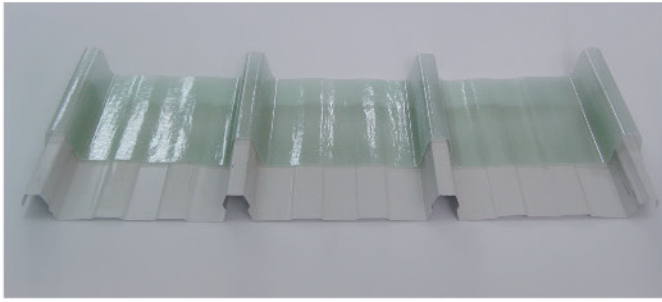
Material Comparison

(0°C to 40°C temperature variation. Sheet length 11.9 Meters)

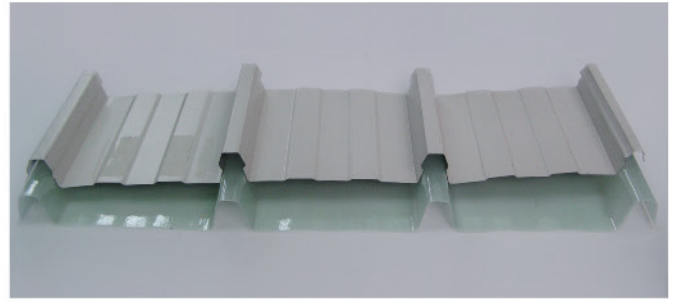
| Material | Fibreglass | Polycarbonate | Acrylic | Steel | Aluminium | PVC |
|--------------------------------|----------------------|-----------------------|--------------------|----------------------|----------------------|----------------------|
| Thermal Expansion (mm) | 14.4 | 32.4 | 32.4 | 5.8 | 11.5 | 30.2 |
| Thermal Co-efficient (cm/cm°C) | 3.0×10^{-5} | 6.75×10^{-5} | 7×10^{-5} | 1.2×10^{-5} | 2.4×10^{-5} | 6.3×10^{-5} |
| Thermal Conductivity (w/m.k) | 0.158 | 0.21 | 0.21 | 47.5 | 23.5 | 0.15 |
| Density (kg/M³) | 1.44 | 1.20 | 1.19 | 7.85 | 2.85 | 1.38 |

Installation Guide

FRP Design For Metal Clip System

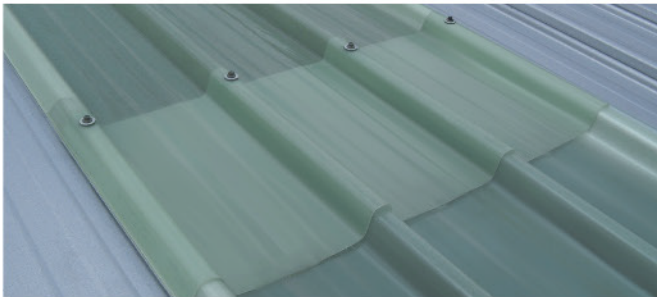
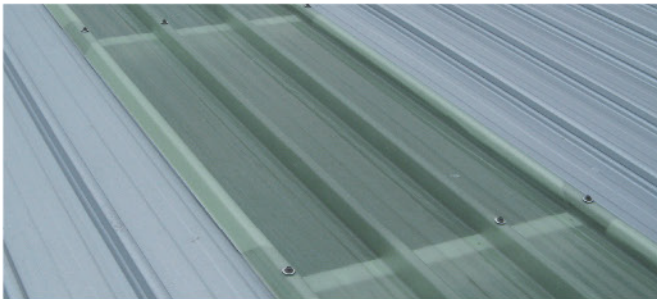


RECOMMENDED
FRP design for metal clip system

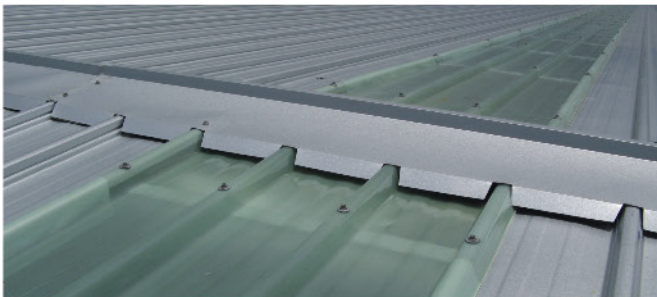


NOT RECOMMENDED
FRP design for metal clip system

FRP Installation Methods With Necessary Accessories



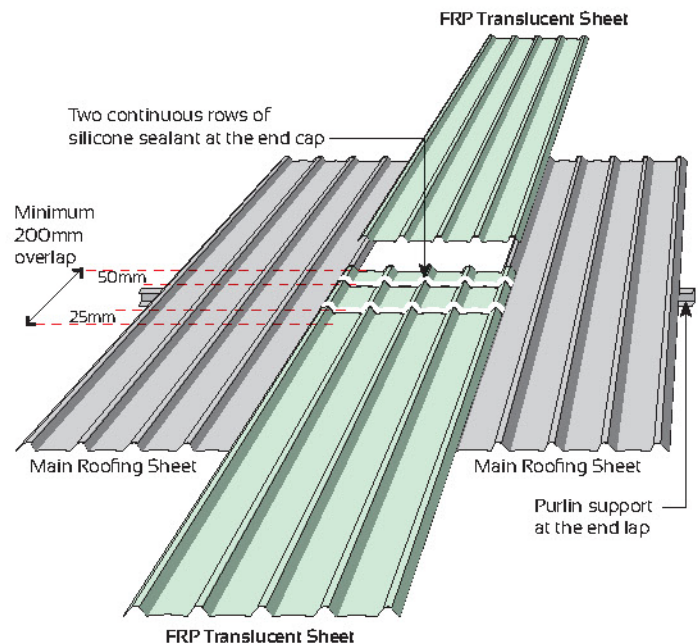
End lapping (Minimum 200mm) – Apply RTV Non-hardening neutral silicone sealant or a self-adhesive tape (3mm x 20mm) with fastener A3 wing screw with EPDM washer at every rib to reduce moisture and airborne dirt.



P.E. Foam Filler Profile (20mm thick x 32mm height x profile width) or Metal End Closer Cap with silicone - Apply / place to the top sheet prior to fixing ridge capping to prevent water penetration. Install P.E. Foam under metal sheet to prevent entry of small insects.

End Laps

- 1 Minimum recommended length of end lap of FRP sheets and/or with metal profile sheeting is 200mm.
- 2 Position of lap over purlin - it is recommended the bottom end of the lap sheet be within 50mm of the lower side of the purlin.
- 3 Position of the seal - the bottom bead should be within 25mm from the bottom of the top sheet in lap, and the top bead of seal within 50mm of the top of the bottom sheet.



P.E. Foam Tape

Recommended Number of Fasteners

| Popular Profiles | Recommended Number of Main Fasteners | | | |
|------------------------|--------------------------------------|----------|----------|----------|
| | Roof | | Wall | |
| | Mid Span | End Span | Mid Span | End Span |
| 2 Pans Klip 406 | 3 | 3 | 3 | 3 |
| 3 Pans Klip 700-710 | 3 | 4 | 4 | 4 |
| Lysaght KlipLok Optima | 3 | 4 | 3 | 3 |
| 4 - 5 Ribs 740-760 | 4 | 5 | 4 | 4 |
| 6 Ribs 1015mm | 4 | 5 | 4 | 4 |
| 7 - 9 Ribs | 5 | 5 | 5 | 5 |
| 11 Ribs | 5 | 6 | 5 | 5 |

- The sheet weight recommended are designed to withstand the effects of column expansion caused by thermal movement of the entire roof structure and to provide a sheet of weight and strength necessary to complement the metal roofing specified and supporting structure.
- The drilling and oversize fastener holes is required to allow for thermal movement.
- For sheets up to 10M – drill clearance hole of 10mm diameter. For sheets above 10M – drill clearance hole of 15mm diameter.
- For roof installations, fasteners must be fixed to the ribs. For wall installation, rib fixing is recommended, however valley fixing can be used in low wind load areas.

Recommended Fastener Type

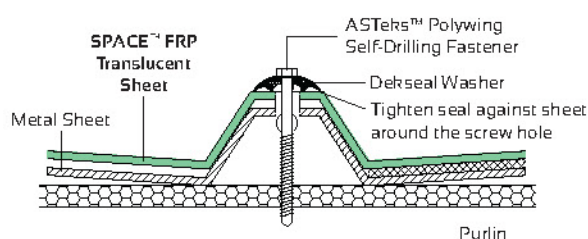
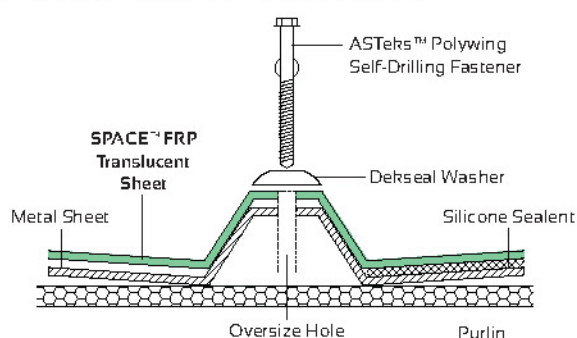
| Depth of Rib | Fastener Height |
|--------------|--------------------------|
| 40 - 50 mm | ASTeks A3 12-14 x 75 PCF |
| 35 - 39 mm | ASTeks A3 12-14 x 65 PCF |
| 18 - 25 mm | ASTeks A3 12-14 x 55 PCF |

Corrosion Class Categories

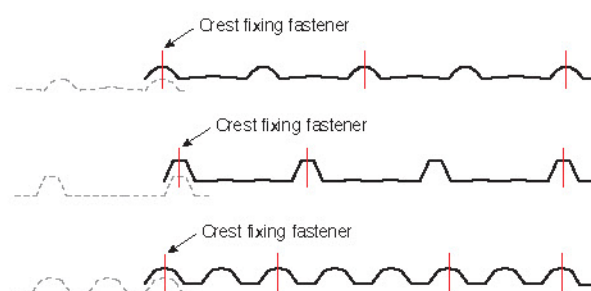
AS3566. 2 CLASS 3

- For general external use in mild and moderate industrial and mild marine applications. This class is intended for roofing and cladding screws in standard applications.
- Minimum 25µ mechanical plated Zinc-Tin Alloy (20-30% Tin).
- Warranty up to 20 years, subject to environmental conditions.

Fastener Installation Methods



Roof - Screw through rib



Wall - Screw fix through pan

