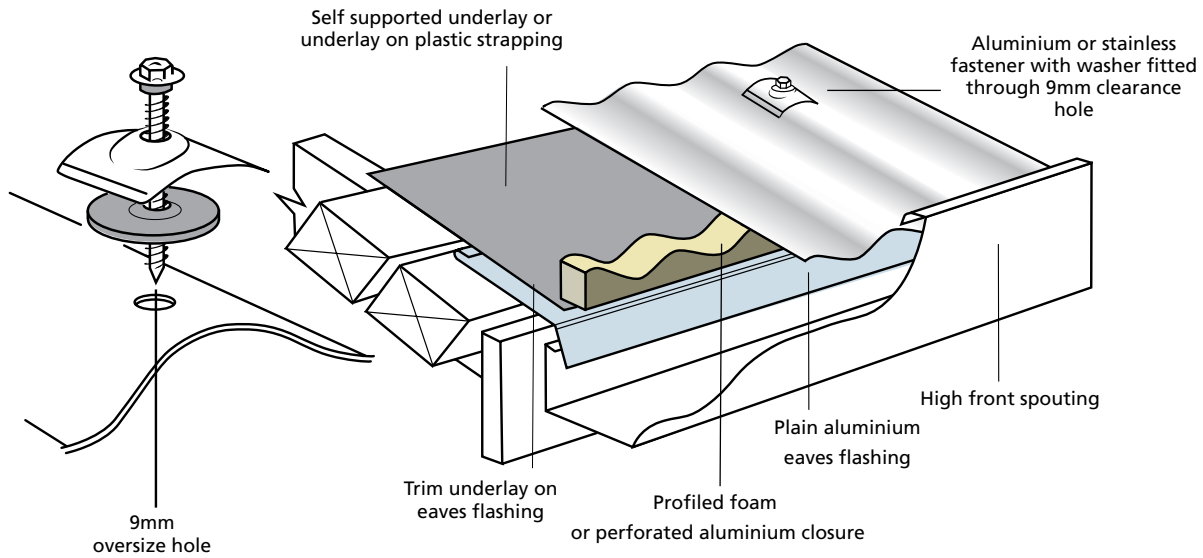


7.11 FIXING ALUMINIUM SHEETINGupdated
June 2014**Drawing 7.11**

Aluminium has been used as a roofing material for many years and generally performs well in Severe and Very Severe Marine and Industrial environments. As with any material, to achieve its potential durability, installation requirements appropriate to the material and its environment must be adhered to.

Aluminium is inherently a very active element, it is listed at the same end of the galvanic table (**See 2.4.9**) scale as Z, AZ and ZA coatings. Upon exposure to the atmosphere under normal conditions, it quickly forms a protective inert oxide coating which retards subsequent reaction with the atmosphere. When conditions prevent the formation of this protective layer, corrosion can occur rapidly, which is why correct design is essential for this product

Because of the very severe environments where aluminium is commonly employed, it is often fastened with stainless steel screws, which are towards the opposite end of the galvanic table. Aluminium is more tolerant of this dissimilar metal contact than many other metals, but salt residue and moisture present in contact areas can accelerate the reaction. This can also apply when aluminium is in contact with other potentially corrosive surfaces such as CCA treated timber, butyl rubber, concrete, carbon-containing products and other chemically reactive surfaces.

Pre-painted aluminium is also prone to these effects. This is primarily due to the fact that thermal movement or mechanical action may remove the paint from a point of contact, and also because the paint film itself is not impermeable, which allows electronic or chemical reaction with the aluminium substrate. Because with pre-painted aluminium the relative areas of cathode and anode are different than with uncoated aluminium, the resultant reaction may occur over a very small area of surface and result in pin hole corrosion of the sheet surface.

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In general good aluminium cladding design prevents salt laden air from entering the roof under-space, allows for adequate ventilation of the under-surface, and prevents contact with dissimilar metals and corrosive surfaces.

In exposed situations, profiled closures of perforated aluminium or closed cell foam may be used at the eaves line. If closed cell foam is used, provision must be made for eaves or soffit ventilation, together with ventilation at the apex, to prevent structural damage due to excessive condensation build up.

Galvanised netting or mesh must not be in contact with the underside of aluminium roofs. If present, it must be separated by a 5 mm barrier of inert non absorbent, non reactive material. Alternatively self supporting underlay must be used, or plastic strapping can be used for supported underlays, stapled with stainless steel staples to the vertical face of the purlins.

When aluminium is adjacent to a corrosive surface such as concrete, butyl rubber or CCA treated timber in a wet environment, separation must be achieved by employing a 5mm rigid strip of inert non absorbent material, or by an open woven geo textile layer, or PVC netting. Plastic coated steel netting is not recommended under aluminium sheeting.

The front edge of the spouting or gutter must be higher than the crest of the roofing profile. An eaves flashing of aluminium must be used, and underlay should terminate on top of the eaves flashing.

All screws should be fitted with a profiled or bonded washer. Fixing screws may be aluminium or stainless steel grade 304. When using stainless screws, they are to be fitted centrally through pre-drilled 9mm oversize holes for roof and walls regardless of sheet length. For sheet lengths in excess of 10 metres, capacity to allow for thermal expansion must be in accordance with *table 4.1.6 A and 4.1.6 B*.

When re-roofing with aluminium, the existing support members must be inspected to ensure that complete removal of staples, wire netting, nails or other materials likely to damage the aluminium has been achieved.