



## **IMPORTANT: EXTERIOR LIGHTING PRODUCT INFORMATION**

During stormy conditions and high winds, salt spray is whipped off the sea and carried inland many kilometres. New Zealand is a narrow country surrounded by ocean and consequently there are very few places which are not affected by this phenomenon. When selecting exterior lighting products, it is important to understand the limitations of different materials used in the construction of light fittings so as to avoid problems in future such as corrosion.

**Aluminium** is the material many light fittings are constructed from because it is relatively inexpensive to use. Aluminium has a lower melting point than other metals so can be easily cast into the various shapes required to form the body of a light fitting, yet has the ability to withstand the heat generated by incandescent, halogen and high intensity discharge lamp sources.

Unfortunately, most 'affordable' light fittings are constructed from grades of aluminium which are susceptible to salt-spray corrosion and while in many installations corrosion pre-treatments and powder coatings can protect a light fitting for many years, other installations with higher corrosive elements in the atmosphere will experience more rapid corrosion. Where screws or bolts hold the light fitting together, it is not possible to maintain powder coating inside the screw thread, consequently over time corrosion can start here and work its way out around the rest of the fitting underneath the powder coating causing it to flake off. Washing down with fresh water and a car wash brush or similar will help extend the life of the painted surface by removing salt or other corrosive substances.

**Stainless-steel** is a fantastic composite metal which offers excellent corrosion resistance at a reasonable extra cost. It is a 'reasonable extra cost', when one compares the cost of ongoing maintenance and/or replacement of light fittings constructed of an inferior material. Unfortunately there is a common misconception about the necessity of maintenance of stainless steel products. Some uninformed people think that if they install stainless steel, then the product will forever remain new in appearance, without any need for cleaning. This is simply not correct. Stainless steel is, just that, stain-**less** steel, not stain-**proof** steel and requires cleaning from time to time in order to maintain its nice untarnished appearance. Cleaning consists of washing the surface with a soft brush like a car wash brush and fresh water with a little mild detergent (e.g. dishwashing liquid), then rinsing off with fresh water. (If you have hard water or concern about your fresh water quality then use distilled water). In the same way you wipe down your stainless steel sink at home you should wash or wipe down your stainless steel light fittings. In fact, the grade of stainless steel used to make your kitchen sink at home is likely to have a relatively low corrosion resistance and it regularly comes into contact with quite corrosive cleaners and liquids, yet it remains clean and corrosion free because it is frequently washed with fresh water and dishwashing liquid.

The frequency of cleaning required of stainless steel light fittings will differ from installation to installation and is dependent on; the level of corrosive elements in the atmosphere, the surface finish of the stainless steel, and the grade of stainless steel used. The level of corrosive elements in the atmosphere is hard to pin point. As a general rule – the closer the installation is to the sea or a harbour, the greater the corrosion problem will be. However other elements can attack stainless steel, for example, warm chloride environments such as heated pools, certain chemicals such as chloride cleaners and fertilisers used in top

dressing, just to name a few. The surface finish of the stainless steel can also help prevent corrosion. If it is a polished smooth finish then there is less opportunity for corrosive elements to get stuck against the surface of the metal. If it is a scratched brushed finish (usually selected for aesthetic reasons only) then it can exacerbate corrosion by trapping corrosive elements in the microscopic scratches and prolonging their exposure to the surface of the metal.

There are two grades of stainless steel often used in the construction of light fittings, namely **304 stainless steel** and **316 stainless steel**. 304 grade is perfectly fine for any installation around New Zealand, however, the higher the level of corrosive elements at the installation, the higher the frequency of cleaning required to prevent staining. On the coast this could be a matter of every few months. Inland it might be only once a year. 316 grade is nicknamed “marine grade” as it has a higher corrosion resistance than 304 grade and is frequently used for parts on boats such as railings. Inland, you may find 316 grade seldom requires cleaning, however, on the coast it might need cleaning every year or possibly every 6 months – it is entirely location specific and will differ from one location to the next. On boats, owners have to regularly maintain their 316 stainless steel to keep it from staining. There are grades of stainless steel with higher corrosion resistance, such as 2205 grade which is used for boat propeller shafts and exhaust systems where there is an extremely corrosive warm chloride environment, however, 2205 is so price prohibitive that it is not used for lighting products.

For further information on stainless steel maintenance visit: [www.estainlesssteel.com/corrosion.shtml](http://www.estainlesssteel.com/corrosion.shtml)

**Copper** is another excellent material for constructing lighting products. Unfortunately over recent years copper has escalated in price due to global demand. The benefit of using natural, unpolished, unlacquered copper in salt-spray environments is that it will oxidise and go brown, just like copper guttering, and will last for a life time without any cleaning. It is more likely the other components of the light fitting will perish long before there is any deterioration of the copper itself.

**Brass** is another excellent material for constructing lighting products, and is again often used on boats. Similar to copper, it will oxidise and discolour, but can be accepted for its natural discoloured look.

**Plastic** obviously has the advantage of being unaffected by corrosion. There are a variety of plastics used in the construction of certain light fittings including PC, PMMA, ABS, etc and they are ideal for use in the harsh coastal conditions around New Zealand. Plastic will photo-degrade in sunlight, but this can take many years if not decades, so is obviously not an issue when used in lighting products. The only limitation when using plastic for lighting products is that when constructed into a compact sized, fully enclosed weatherproof design, it cannot withstand the high temperatures from some lamp sources, such as high wattage incandescent, halogen or high intensity discharge lamps. This means that some high light output fittings like spotlights, flood lights, uplighters, up/down feature lights, etc cannot be practically constructed from plastic materials.