

## **SURFACE CONTAMINATION (TEA STAINING)**

All Stainless Steel will discolour, stain or rust if not maintained correctly. No grade of stainless steel is exempt from this.

Even Marine grade 316 stainless steel will discolour and stain if installed in an aggressive environment and not maintained properly.

The more aggressive an environment is, the more maintenance is required.

### ***What are some areas which constitute possible aggressive environments?***

Coastal areas which have sea spray.

Down wind from rubbish dumps or chemical plants.

On main roads with excessive carbon monoxide.

Near mining dumps and filtration plants.

Below an air conditioner unit.

Below a wood beam.

Below a steel gutter.

Washing glass or tiles with certain chemicals.

Some borehole waters.

Continuous temperatures in excess of 500 deg C.

### ***What stainless steel should I use outside?***

Generally Marine grade 316 stainless steel is the accepted grade of stainless steel to use outside.

Duplex grades such as 2205 (1.4462) are considered even better outside near a coast, but this is difficult to get and more expensive.

You should never use a brushed or Satin surface finish outside as this will hold the moisture for longer.

We only recommend a Mirror finish for outside applications.

### ***What is the best way to maintain a stainless steel balustrade or components thereof?***

Remember – the more aggressive the environment, the more often maintenance is required.

Stainless steel tube and fittings should be washed down regularly with a mild cleaning solution.

Don't use an aggressive cleaning solution unless you are an experienced and professional trades-person.

Don't wash down stainless steel with acids, powders, sodas, grinding discs, abrasive papers or cloths, etc unless you are an experienced and professional trades-person.

Just a simple wash down and rinse is required. (The same way that you would wash your dishes)

Also, speak to your installer about maintenance contracts. Many installers offer maintenance contracts to regularly wash and protect your balustrade.

### ***Why do I need to maintain my stainless steel?***

Stainless Steel is actually about 70% steel and 30% various other metals.

These other metals react with Oxygen (in the air we breathe) to create an invisible passive layer on the surface of the stainless steel. (around 3 micron thick) This is what protects stainless steel and gives it the stainless look.

If you break through that passive layer, then you are left with bare steel again, which could rust.

If you break that passive layer (like scratching the surface) then it should form again by itself within minutes, unless something stops it from forming. (like Chlorides from salt spray, or cleaning chemicals, etc)

That is why it is imperative to rinse the stainless steel after washing.

If you put stainless steel on the coast which gets salt spray, and that stainless steel is never cleaned, then the Salt and Chlorides collect on the surface (after the water evaporates) which will eventually prevent the passive layer from re-forming and surface contamination will occur.

If left untreated for too long, then this contamination will eventually cause rust (which is the breaking of the surface, and pits start forming)

If contamination is caught early, then removal of that contamination should be done by a qualified Trades-person using various acids and passivating creams, to restore the surface back to its original condition.

Occasionally re-polishing is needed after heavy cleaning, as acids can sometimes cause the surface to become "milky" in appearance.

Tea-Staining can sometimes occur very quickly if the environment is very aggressive.

***Can I do more to protect my stainless steel handrails or pool fencing?***

Yes, there are 3 or 4 brands of stainless steel coatings which are available, which add even more corrosion resistance to the stainless steel.

Speak to your installer for advice and a quote.

These coatings are applied as a spray and dry as an additional protective coating on the surface.

***How do I know if my Tea-Staining has become rust?***

Not always that easy to tell, but generally tea-staining is a light brown color and can be scratched off with your nail, while rusting can be a very dark red or brown color and if you try to scratch it off, you may see a small hole under it.

***If my tea-staining has already turned to corrosion, can this be repaired?***

Possibly yes, but with some work.

Speak to your installer about a quote on cleaning and re-polishing.

***How do I know if my stainless steel is really what the supplier says it is?***

If you are in doubt, ask your installer for a "Test Certificate" which is a certificate from the producer showing the test results of the chemistry of the product.

If you still have doubts, ask your installer for a material supplier warranty.

**Remember, if you live in an aggressive environment and you look after your stainless steel balustrade, it should outlive you.**