

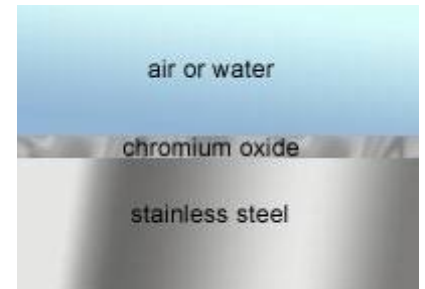


A COMMONLY HELD MISCONCEPTION IS THAT STAINLESS STEEL WILL NOT SHOW SIGNS OF CORROSION

THE SCIENCE BEHIND THE STAINLESS

Stainless steel is an alloy of iron and has a very thin, approximately 5 nano metres, chromium oxide layer. This layer is known as the passive layer since it renders the surface electrochemically passive in the presence of corrosive environments.

The passive layer forms due to the addition of Chromium to the stainless which must be a minimum of 10.5% for the passive layer to form. The more chromium that is added to the stainless along with molybdenum, nickel and manganese the better the corrosion resistance, leading to the differing grades of stainless.



APPEARANCE OF CONTAMINATION

If the chromium oxide layer is disturbed or perforated, albeit for a short time and the oxide layer cannot recover in time, a rouge bloom will appear over the area of contamination. To the layman this bloom is usually interpreted as 'Rust' and the immediate reaction is that the metal is at fault and is sub-standard.

It is not rust and the bad news is that the area has likely been contaminated. The good news is that it is relatively easy to fix.

THE CAUSE OF THE PROBLEM

1. The first and most common causes of 'flash rust', 'tea staining' or 'rouging' as it is commonly known are industrial cleaners that contain a chloride ingredient. During cleaning of a building these cleaners work well on most surfaces but if applied to stainless steel they will contaminate the oxide layer of the stainless and within a short time, typically a few days, an appearance of a rouge bloom will form, some of which can be quite alarming, see below:



2. The second most common cause is that of **airborne carbon steel** particles that are carried onto the surface of the oxide layer and when combined with moisture the particles dissolve to form iron oxide which will appear as localised flash rust spots. In a marine environment, **seawater droplets** will evaporate and increase the salt and chloride concentration around the oxide layer, again causing stain.

3. The third most common cause is general dirt and grinding dust which is generated from cutting of tiles or brickwork in the locality. Again, this is airborne and will lie on the surface and in the case of brushed finishes, will lie in the grain and contaminate the oxide layer, and eventually a reddish area will appear.



THE REMEDY

Generally brushed stainless finishes are completed in the polishing shop with a 240-grit scotch bright cloth. This is wiped around the product by hand to ensure a smooth consistent appearance. To rectify the issue of flash rust we recommend that the same process is repeated on site whilst the door handles are in situ. Carefully wipe around the area, with the grain of the brush marks and the stain is removed completely.

Following this, wipe down with a solution of soap and water.

The passive oxide layer will then repair itself once it has contact with non-contaminated air and the issue should not arise again.

