

Make your Stainless Steel Glow

From an article by Pete Stanaitis of the Guild of Metalsmiths

A situation that often comes up is, "Hey, my stainless steel is rusting! Why? What can I do to fix it?" Stainless steel is stainless because of the protective chromium oxides on the surface. If those oxides are removed by scouring, or by reaction with bleach, then the iron in the steel is exposed and can be rusted. Stainless steel is also vulnerable to contamination by plain carbon steel, the kind found in tools, food cans, and steel wool. This non-stainless steel tends to rub off on the surface (due to iron-to-iron affinity), and readily rusts. Once rust has breached the chromium oxides, the iron in the stainless steel can also rust. Fixing this condition calls for re-passivation.

Passivating stainless steel is normally accomplished in industry by dipping the part in a bath of nitric acid. Nitric acid dissolves any free iron or other contaminants from the surface, which cleans the metal, and it re-oxidizes the chromium; all in about 20 minutes.

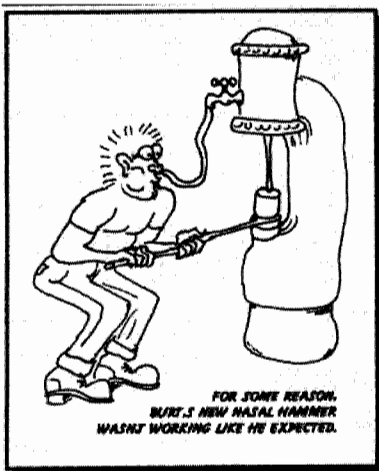
But you don't need a nitric acid bath to passivate. The key is to clean the stainless steel to bare metal. Once the metal is clean (and dry), the oxygen in the atmosphere will form the protective chromium oxides. The steel will be every bit as passivated as that which was dipped in acid. The only catch is that it takes longer—about a week or two.

To passivate stainless steel at home without using a nitric acid bath, you need to clean the surface of all dirt, oils and oxides. The best way to do this is to use an oxalic acid based cleanser like those mentioned below, and a non-metallic green scrubby pad. Don't use steel wool, or any metal pad, even stainless steel, because this will actually promote rust. Scour the surface thoroughly and then rinse and dry it with a towel. Leave it alone for a week or two and it will re-passivate itself. You should not have to do this procedure more than once, but it can be repeated as often as necessary.

Oxalic Acid based cleaners

There are oxalic acid based cleansers available at the grocery store that are very effective for cleaning stains and deposits from stainless. They also work well for copper. One example is Revere Ware Copper and Stainless Cleanser, another is Bar Keeper's Friend, and another is Kleen King Stainless Steel Cleanser. Use according to the manufacturer's directions and rinse thoroughly with water afterwards.

Not all stainless steels behave the same and you'll have to do more research on your own if you want more details. To get the list of hundreds of Internet hits, through which I searched, I simply typed in the word "passivate" and went from there.



*From the
Anvil's Horn
archives..*

*No artist is
listed*

