STAINLESS STEEL MAINTENANCE EQUIPMENT CARE & CLEANING TIPS



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Stainless Steels Are Susceptible To Rusting

Corrosion on metals is everywhere. We recognize it quickly on iron and steel as unsightly yellow/orange rust. Such metals are called "active" because they actively corrode in the natural environment.

Stainless steels are passive metals because they contain other metals, like chromium and nickel. 400 series stainless steels contain chromium while 300 series contain both chromium and nickel.

Metals are crystalline solids made up in atom arrangements like tinker toys. With 20-30% chromium, an invisible passive film covers the steel's surface, acting as a shield against corrosion. The metal becomes "passive towards corrosion.

Fe = Iron Cr = Chromium Ni = Nickel



Both Contain 70-80% Iron So Both Can Rust!

As long as the film is intact; not broken or contaminated, the metal is passive and stain-less.



Raw Iron (Shown At Atomic Level) Has No Protection From Corrosion



Stainless Steel (Shown At Atomic Level) When Alloyed - Has Protective Film Millionths Of An Inch Thick

The Three Basic Enemies Of Stainless Steel



Mechanical Abrasion

Includes anything that will scratch the steel's suface. For example, steel pads, wire brushes and scrapers.



Deposits & Water

Water comes out of a tap in varying degrees and hardness. Hard water may leave spots. When heated, hard water leaves deposits behind. If they are left to sit, it will break down the passive layer and cause corrosion. Additional deposits from food preparation and service must be removed properly.



Chlorides

Are found nearly everywhere, including They are in water, food and table salt. One of the worst perpetrator of chlorides can come from household and industrial cleaners.



So, What Does This All Mean?

At this very moment, you're gritting your teeth and saying...

"Well...what am I supposed to do now? The only way to get that crusted lasagna off my stainless steel is to use some kind of scouring pad, and I certainly need cleaner, and the water in this town is hard enough to cut diamonds!"

Here are a few steps that can help prevent stainless steel rust.

Use The Proper Tools

When cleaning your stainless steel products, take care to use non-abrasive tools. Soft cloths and plastic scouring pads will not harm the steel's passive layer. Stainless steel pads can also be used, but the scrubbing motion must be in the direction of the manufacturer's polishing marks (see step 2 for details).

Clean With The Polish Lines

Some stainless steel come with visible polishing lines or "grain." When visible lines are present, you should always scrub in a motion that is parallel to them.

When the grain can not be seen, play it safe and use a soft cloth or plastic scouring pad.

Use Alkaline, Alkaline Chlorinated or Non-Chloride Containing Cleaners

While many traditional cleaners are loaded with chlorides, the industry is providing an ever increasing choice of non-chloride cleaners. If you are not sure of your cleaner's chloride content, contact your cleaner supplier. If they tell you that your present cleaner contains chloride, ask if they have an alternative. They probably will. Avoid cleaners containing quaternary salts, as they can also attack stainless steel, causing pitting and rusting.

Treat Your Water

Though this is not always practical, softening hard water can do much to reduce deposits. There are certain filters that can be installed to remove distasteful and corrosive elements.

Salts in a proprerly maintained water softener are your friend. If you are not sure of the proper water treatment, call a treatment specialist.



Keep Your Food Equipment Clean

Use alkaline, alkaline chlorinated or non-chloride cleaners at recommended strength. Clean frequently to avoid build up of hard, stubborn stains. If you boil water in your stainless equipment, remember the single most likely cause of damage is chlorides in the water. Heating cleaners that contain chlorides has a similar affect.



Rinse, Rinse, Rinse

If chlorinated cleaners are used, you must rinse, rinse, rinse and wipe dry immediately! The sooner you wipe off standing water, especially when it contains cleaning agents, the better.

After wiping equipment down, allow it to air dry for the oxygen helps maintain the stainless steel's passivity film.



Never Use Hydrochloric Acid (Muriatic Acid)

Hydrochloric acid causes general corrosion, pitting and stress corrosion cracking of stainless steel.

Recommended Cleaners For Specific Situations

Job	Cleaning Agent	Comments
Routine Cleaning	Soap, Ammonia, Detergent Medallion	Apply w/ Cloth or Sponge
Fingerprints & Smears	Arcal 20, Lac-O-Nu, Ecoshine	Provides Barrier Film
Stubborn Stains & Discoloration	Cameo, Talc, Zud First Impression	Rub In Direction Of Polish Lines
Grease & Fatty Acids, Blood, Burnt-on Food	Easy-off, De-Grease It, Oven Aid	Excellent Removal On All Finishes
Grease & Oil	Any Commercial Detergent	Apply w/ Cloth or Sponge
Restoration/Passivation	Benefit, Super Sheen	

What Does Corroded Stainless Steel Look Like?

Passive Film Breakdown

If the passive film of your stainless steel has been broken, your equipment will begin the long walk down the dark road of corrosion. At it's end; rust.

The first signs are on the microscopic level. If you were to look at them under a microscope or through a magnifying glass, you would see small pits and cracks. Given time, these pits and cracks will grow and deepen while all the time exuding unsightly, red-orange rust. More severe and visible cracking can also take place.



Pitting



Visible Cracking





Let's Review

- 1. Stainless steels do rust when:
 - Passivity (film-shield) breaks down
 - By scrapes and scratches
 - By deposits and chlorides
- 2. Stainless steel rust starts with pits and cracks.
- 3. Use the proper tools. Do not use steel pads, wire brushes or scrapers.
- 4. Use non-chlorinated cleaners at recommended concentrations. Use only chloride free cleaners.
- 5. Soften your water. Know the hardness of your water. Use filter and softeners whenever possible.
- 6. Wipe off cleaning agent(s) and standing water as soon as possible. Prolonged contact will cause eventual problems.

Need More Maintenance Advice & Assistance?

To learn more about chloride-stress corrosion and how to prevent it, contact customer service at 800-645-3166 or email customer@advancetabco.com.



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