

Cleaning Stainless Steel

The final operation after machining, fabrication or mechanical polishing is cleaning to remove cutting oils, grease, crayon markings, fingerprints, dirt, grime, other organic residues, and any contaminates trapped in inclusions on the surface to prevent "rust spotting" left behind from these processes.

Degreasing: Non-chlorinated solvents should be used in order to avoid leaving residues of chloride ions in crevices and other locations where they can initiate crevice attack, pitting, and corrosion later on when the equipment is placed in service.

Machined, Fabricated and Mechanical Polished Components: After degreasing, components are sometimes "passivated" in nitric or a Citric Acid based solution which enhances the natural oxide surface film. This is done in compliance within the ASTM A380 standards.

Electropolishing- Has been adopted as an accepted method of passivating metal surfaces by applying an electric current through an electrolytic bath in a process that is reverse of plating. During this chemical reaction, surface stress is relieved from mechanical polishing/machining and the surface finish is improved by taking the fine highpoints off the surface created by mechanical polishing. The finish is more corrosive resistant and increases reflectivity by leaving a higher chromium to Iron ratio on the surface. It is more beneficial, depending on the end use of the component, than the standard nitric/citric passivation. This process can also be used to remove hair like burrs on needles used in the medical field. This is done in compliance within the ASTM B912 standards.

Glass bead or walnut shell blasting are very effective in removing metallic surface contamination without damaging the surface. It is sometimes necessary to resort to blasting with clean sand to restore heavily contaminated surfaces such as tank bottoms, but care must be taken to be certain the sand is truly clean, is not recycled and does not roughen the surface. Steel shot blasting is strictly prohibited from being used as it will contaminate the stainless steel with an iron deposit.

Stainless steel wire brushing or light grinding with clean aluminum oxide abrasive discs or flapper wheels are helpful. Heavy grinding or polishing with grinding wheels or belt sanders tend to overheat the surface which stresses and leaves contamination imbedded on the surface. Depending on the application of the part(s) the process of passivation or electropolishing may have to be incorporated to the process.