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The Benefits of Electropolishing Services

Electropolishing removes elemental Iron from the surface of stainless steel alloys, enhancing the Chromium/Nickel content resulting in dramatically improved resistance to corrosion.

Electropolishing improves the near surface chemistry of stainless steel. Not only does it remove embedded particles and inclusions, it also improves the atomic ratios of the material's alloying elements. Electropolishing preferentially dissolves Iron from the material and leaves the surface with a higher relative concentration of Chromium. Upon exposure to Oxygen, this improved surface will form a thicker and more uniform oxide layer with enhanced corrosion resistance properties. Electropolished stainless steels are better suited to resist the onset of pitting corrosion, crevice corrosion, stress corrosion cracking, and microbiologically influenced corrosion.

Electropolishing improves surface smoothness by leveling micro peaks and valleys resulting in easier sterilization.

Improved micro finishes can do more than improve the appearance of a part, it eliminates potential traps for corrosive elements. The electropolishing process may improve a surface finish reading by up to 50%. Because electropolishing is not a surface coating, there is no risk of the surface distorting or peeling over time, unlike spray on surface treatments sometimes used to improve stainless surfaces.

Electropolishing provides the most superior form of passivation in stainless steel.

Electropolishing removes surface material and, with it, surface contaminants. The process dissolves free Iron, inclusions and embedded particles from the surface. Electropolishing preferentially dissolves Iron from the material and leaves the surface with a higher relative concentration of Chromium. Upon exposure to Oxygen, this improved surface will form a thicker and more uniform oxide layer with enhanced corrosion resistance properties. As a result, electropolishing provides maximum corrosion resistance in stainless steel. Electropolished stainless steels are better suited to resist the onset of pitting corrosion, crevice corrosion, localized galvanic corrosion, stress corrosion cracking and microbiologically influenced corrosion.

Electropolishing improves surface brightness and reflectivity.

The most visible benefit of electropolishing is the resulting lustrous surface. Electropolishing is a non-mechanical process. No tools come in contact with the piece so there is no risk of creating directional polishing lines. The material is treated electrochemically, leaving a microscopically smooth surface that is highly lustrous.

Electropolishing removes metallic and non-metallic inclusions unavoidably introduced during manufacturing.

Mechanical cutting, machining, handling and polishing will leave Iron and abrasive particles embedded within a material surface. These surface contaminants disrupt the formation of stainless steels' (and other corrosion resistant materials) naturally corrosion resistant oxide layer and are the origin of future corrosion. Electropolishing removes surface material and, with it, surface contaminants. Electropolishing dissolves free Iron, inclusions, and embedded particles from the surface.