



A.M. Metal Finishing, Inc.

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www.ammetal.com

ELECTROPOLISHING

ELECTROPOLISHING PROCESS CAPABILITIES

- 200/300/400 series stainless steel
- RMS finish specifications
- Passivation & Turco cleaning
- 3-5 days normal turnaround or "hot" expedite
- Proto-type or high volume runs
- Abrasive Blasting
- Protective packaging



SOME INDUSTRIES SERVED:

- Surgical
- Medical
- Pharmaceutical
- Marine
- Stainless Fabrication
- Food Processing
- Automotive

SOME APPLICATIONS:

- Medical, Surgical and Dental Instruments
- Boating, fishing and swimming pool accessories
- Food industry equipment
- Pharmaceutical research equipment
- Meat and Fish Hooks
- Stampings, wire goods
- Aircraft Components, etc.

FEATURE & BENEFITS:

- Stress relief of surface.
- Removes oxide.
- Passivation of stainless steel.
- Superior corrosion resistance.
- Hygienically clean surfaces.
- Decarbonization of metals.
- No Hydrogen embrittlement.
- No direction lines.
- Low-resistance welding surface.
- Reduce friction.
- Polishes and deburrs odd-shaped parts simultaneously.
- Radiuses or shapes edges depending on rack position.
- Reduces annealing steps.

Check out our capabilities today with free processing of your sample part.

Quality & Service Through Experience

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ELECTROPOLISHING produces a number of favorable changes in a metal part which are viewed as benefits to the buyer. All of these attributes translate into selling advantages depending upon the end-use of the product. These include:

- Brightening, smoothing, and deburring
- Removal of surface occlusions
- Increase in corrosion resistance
- Removal of directional lines
- RADIUSING of sharp edges
- Improvement in adhesion of plating
- Reduction in polishing, buffing, and grinding costs
- Total passivation
- Oxide removal
- Reduction of surface friction
- Stress relieving of surface
- Sharpening of blades
- Removal of hydrogen

Electropolishing produces the most spectacular results on 300 series stainless steels. The resulting finish often appears bright, shiny, and comparable to the mirror finishes of "bright chrome" automotive parts. On 400 series stainless steels, the cosmetic appearance of the parts is less spectacular, but deburring, cleaning, and passivation are comparable.

Solutions are available to electro polish most common metals. Notable exceptions include cast alloys of zinc, aluminum, brass, bronze, and carbon steel. Investment cast stainless steels may also be difficult to electro polish to a satisfactory finish unless parts are solution annealed after heat treating. In general, only the 200 and 300 series stainless steels, certain tool steels, copper, and some single-phase brass alloys can be electro polished to mirror finishes. The principal effects on other types of metal are deburring, smoothing, improvement of surface finish, and increased adhesion of plated coatings.

Electropolishing produces a combination of properties which can be achieved by no other method of surface finishing. Mechanical grinding, belting, and buffing produce beautiful mirror-like results on stainless steel, but the processes are labor intensive and leave the surface distorted, highly stressed and contaminated with grinding media. The passivation methods commonly employed produce clean, corrosion resistant surfaces, but do not achieve the bright, lustrous appearance obtained by Electropolishing. Electroplating can produce extremely bright finishes, but the finish is a coating which can chip or wear off. Electroplated surfaces may also exhibit hydrogen embrittlement which must be stress relieved in a separate step. Neither passivation nor electroplating can accomplish burr removal.

SPECIFICATIONS FOR ELECTROPOLISHING

Specifications for Electropolishing vary with the end use of the parts. Knowledge of the end-user's requirements can be

of importance in designing an Electropolishing line. Top quality finishes usually require the greatest care and attention to detail in selecting the process steps to be followed.

The simplest requirements for electropolishing are for a "clean, bright, essentially cosmetic" finish. Results are judged primarily by appearance. This type of application may be satisfied with a relatively simple approach to the Electropolishing equipment and process.

Some specifications require a certain level of deburring without regard to cosmetic appearance. Inspection techniques vary from simple snagging tests on woven or knitted cloth to microscopic examination to evaluate the level of deburring.

Tests for passivation are spelled out in great detail by the Federal specification covering the various methods of chemical passivation. This publication even details the methods and sequence of operations to be followed. To our knowledge, there is no Federal or NEL-specification which permits substitution of Electropolishing for chemical passivation; however, the finishes produced by Electropolishing meet or exceed the test results required to certify passivation of stainless steels.

The use of Electropolishing to improve surface finish is increasing rapidly, and many end user specifications now include photographic, or electron-microscopic examination. Definitions of surface finish such as RMS or Ra are frequently used.

Much attention has been placed on the application of Electropolishing to equipment used in food processing, pharmaceutical production, beverage manufacturing, and other ethical product systems. Special tests, such as the rate of bacterial growth on the finished part, may be required as a part of the quality acceptance procedure.

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