A Coating Technology for Advanced Applications
Thank You for Your Interest

Industry is familiar with generic hard chrome, thin-dense chrome, titanium nitriding, electroless nickel and various nickel/teflon platings. Industry is also very familiar with the limitations of each plating. However, alternative plating technologies which meet the functional and economical demands of industry are limited.

The Electrolizing surface treatments are technologies and procedures developed to meet or exceed the claimed benefits of the above mentioned platings.

Electrolizing offers advanced metals surface preparation procedures and coating processes designed, developed and controlled to provide consistent and reliable application performance for today’s needs and future applications. The Electrolizing surface treatments are technologies that address an engineer’s **FIVE** most critical needs:

- Hardness
- Lubricity
- Corrosion
- Adhesion
- Precision

The combination of these five designed in features provide an unsurpassed, consistent, reliable technology.

**Features:**
- Anti-galling
- Lower friction
- Increase wearlife
- Prolong corrosion
- Stick retardant
- Dry lubricant
- Eliminate grinding & rework

**Industrial Uses:**
- Bearing & sliding surfaces
- Plastic & rubber molding
- Metal to metal surfaces
- High pressure valves & pumps
- Cryogenic & high temperature
- High vacuum applications
- Aluminum machined parts
- Fasteners & threads
Recognized as the “benchmark” of providing beneficial coefficient of friction properties, PTFE is the polymer of reference. Since both Micro-E™ and Electrolizing are metallic coatings, comparison should be made to which application provides both initial frictional benefits, as well as long-term frictional benefits.

Electrolizing coatings are excellent for providing a “dry lubricant” surface. When discussing “steel against steel”, the resultant frictional values range to about .20 or greater. Micro-E™ and Electrolizing provide the user with .09 to .12 values, or approximately 50% improvement. Lubricated conditions will result in even lower values.

Electrolizing products have been subjected to corrosion testing using ASTM-B-117 salt spray procedures. The results meet or exceed the criteria stated in the specifications QQ-C-320, AMS 2406 and AMS 2438. In addition, the coatings have been evaluated in humidity tests, salt water, de-ionized water, bleaches, copper-sulfate, mold cleaners and various commercial reagents, acids, alkalines and salts. Electrolizing coatings are accepted for use in USDA environments.

Adhesion is the most important focus of the Electrolizing technology. Without adhesion, neither metallic or polymer-type plating have any benefits. The Electrolizing coatings must meet our standard repeated bend testing to 180 degrees without showing signs of chipping, spalling off or separation. The results of our adhesion testing enables our technology to meet the standard ASTM-B-489-85.

The Electrolizing technology also focuses on the “cohesive” properties of the molecular elements being applied, and assures that these molecules form an absolute cohesive bond to themselves. This application technology does not allow Electrolizing to “peel-off” in layers or shed loose particles of itself.

Electrolizing provides the metal with a surface hardness of Rc 72 Rockwell. A combination of factors enable the coating to achieve such a tough and extremely hard surface. Electrolizing combines appropriate engineering of proprietary alloys and pure chromium, with a consistent, controlled and unique deposition processing procedure.

The density of the coating provides a surface which has less cracks, inclusions, voids and other surface irregularities as compared to conventional chrome plateings.

The combination of hardness and density results in reduced wear rates and material fragmentation.

The coatings provided by Electrolizing were developed and designed to be precise, thin depositions. The ranges of normal coating thickness requirements are from 0.000050” to 0.001” per side. Thickness requirements per part vary by material, engineering application and expected performance criteria.

The procedures, controls and techniques for applying Electrolizing assure that highly precise tolerances can be maintained. Tolerances, as precise as 0.000050” to 0.0001” are routine. Tolerances vary with thickness and part geometry.

The availability of a thin, precisely controlled Electrolizing coating can eliminate the need for traditional hard chrome plate and grind. These procedures lend themselves to expensive grinding, rework and handling demands.
Electrolizing, Providence, R.I., provides three premier coating processes to meet the demands of engineering. Each coating, except for the HC, is basically made from the same materials and chemicals, providing a high-grade chromium coating. Major differences are in the application procedures, control levels and cost.

**Micro-E™**

The Micro-E™ Technology is an engineered extension of the Electrolizing coating. The uniqueness incorporates a multi-step cleaning process prior to coating. Additionally, the application techniques are uniquely modified to enable the coating to be applied to a slightly harder range, up to Rc 75 Rockwell.

Developed as a micro-application, the thickness range is only from 0.000050” to 0.0003” per side. This results in no edge build-up or disturbing of dimensions. Micro-E™ orders receive preferred handling, inspection and processing procedures. The processing and inspection are performed by in-house certified technicians. State-of-the-art X-Ray Fluorescent technology verifies the micro deposit to five digits.

**Electrolizing**

The Electrolizing coating technology was developed in Providence, R.I., and has serviced all industry since 1945. The coating is a very versatile material, consisting of a proprietary blend of chromium and other elements, making available a consistently hard surface of Rc 70-72 Rockwell. Applied in a cold processing environment, Electrolizing does not brittle the metal, distort precision machined parts and will not burn, anneal or alter the metal’s tensile, fatigue or granular micro-structure.

Coating thickness ranges are from 0.000050” to 0.001” per side. Precision tolerances can be maintained at all thickness levels. Masking can be performed on any part and does not adversely affect the cost.

The appearance of the Micro-E™ and the Electrolizing technologies is a smooth, fine-grained surface, continuous in color and presentation. The coatings will be free of any blisters, nodules, pits, porosity or excessive edge build-up, or any defect which may be detrimental to the fit and function of the part.

**HC**

Electrolizing, Providence, R.I., also provides a high integrity hard chrome plating which allows the customer not needing highly precise or controlled coatings of Micro-E™ or Electrolizing. The HC plating offers a Rc64-68 Rockwell surface hardness and is always applied free of surface nodules, trees or beaded edge build-up. The plating is always smooth and consistent, and parts can be masked to close run-out requirements. The HC applied by Electrolizing and our operation facility is approved to meet all chrome plating specifications, as well as aircraft, aerospace and government specifications, i.e., QQ-C-320; AMS 2406, AMS 2438.

Our coatings are USDA compliant.
The technology provided by Electrolizing Inc. of Providence, R.I., should not be confused with conventional platings. The technology developed and applied in our facility qualifies Electrolizing as a “state-of-the-art” coater in three distinct areas.

- Coating and application technology
- Quality assurance and measuring technology
- Facility and environmentally conscientious technology

The coatings provided are made from the highest quality raw materials. Using our proprietary formulation, each process is continually monitored to maintain chemical purity to strict, established standards. The result is a consistent, reliable, high quality coating in every application. In addition, all personnel and technicians are highly trained, experienced and certified to company standards.

Compliant to ISO standards, all practices, controls and process procedures are documented and available for review during any on-site audit or visit. Measuring systems to verify the precision of the Electrolized coatings are “state-of-the-art” X-Ray Fluorescent technology. Laser-Mikes are used to measure and document precision machined and coated surfaces, and are well suited for use on tubing, pins, rods and shafts.

Facility

A clean, modern 20,000 square foot building houses Electrolizing. Electrolizing is tested and certified compliant to all State and Federal Regulations pursuant to air and water. Electrolizing Inc., Providence, R.I., is very proud to have been awarded the 1996 Rhode Island Environmental Merit Award for “Outstanding Pollution Prevention” including air, water and chemicals.

Pricing

Pricing for any part is completed for each request. Each part is reviewed separately and processed separately from any other part. In order to extend a price which is accurate and fair, a drawing or sketch is needed. Support information critical to pricing are: number of parts to be coated, coating thickness, material of part and coating coverage expectations.

Parts can be masked and do not always add to the cost. Coating “the whole part” is a requirement which may be more costly and should be discussed with an applications engineer. Fixturing is always required for each part since each part must be secured to a processing tool. Latitude should be allowed for tooling and holding points on each part.

Most important is the coating process selection; Micro-E™, Electrolizing or Hard Chrome (HC). Processing parameters are different for each, thus, a pricing difference. Micro-E™, because of the select controls and demands in processing, carries the highest cost.

Competition

The company’s competition comes from many sources: small and medium-sized platers, either regional or local, as well as other platings and treatments advertised. It is not uncommon for companies to claim to offer the “same processes” provided at Electrolizing, but process technologies are not similar.

Electrolizing Inc., Providence, R. I., is a stand alone company. We have no relationship, partnership or technology exchange with any company which claims to offer the same or similar technology, or that carries the same or similar name.