SOLARA

CUSTOM DOORS & LIGHTING

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ELECTROPHORESIS

The E-Coating Process

ELECTROPHORESIS

A brief guide to the latest advance in the war against corrosion.

How can we protect our beautiful steel lanterns from the harsh reality of outdoor living and the test of time? How do we ensure the durability of these artistic creations that add so much style and class to our homes?

The answer is: Electrophoresis or E-coating.

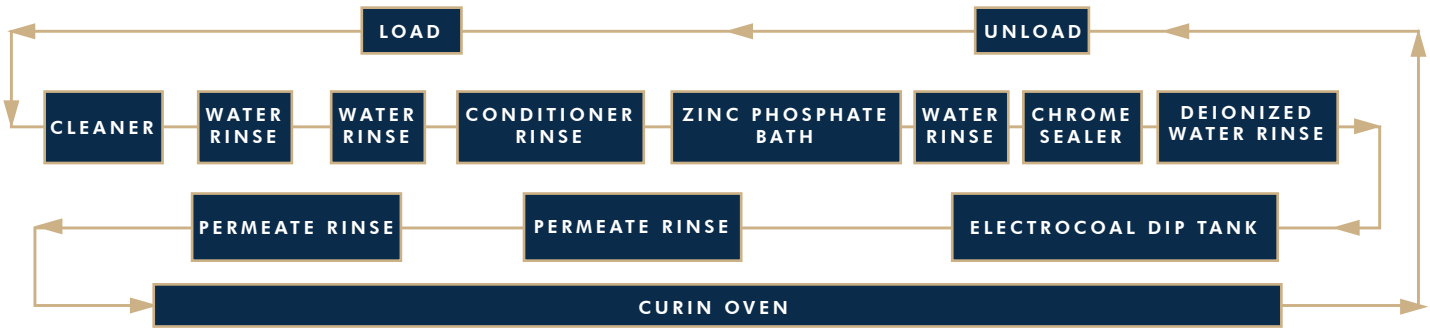
NOUN: 1. The migration of charged colloidal particles or molecules through a solution under the influence of an applied electric field usually provided by immersed electrodes. ***Also called cataphoresis****.*

The lanterns shells and parts are dipped fully into a zinc phosphate bath and then by submerging them into an electrocoat dip tank, the charged particles will penetrate and cling to even the inside of tubing and to the smallest crev- ice.

The immersion tank

The inside of one of our e- coated lantern. Note even the welds are coated.

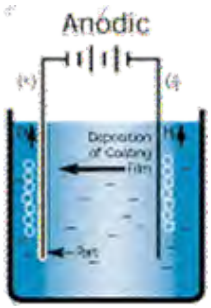
Typical Electrocoating Process Sequence

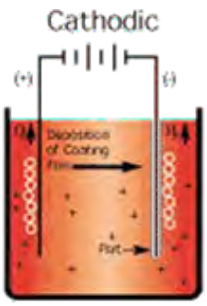


Electrophoretic Deposition

Electrodeposition uses current to reduce ions from a solution to the metallic state as a deposit. Electro- phoresis uses charged particles, the charges carries the particles with them to the metal surface.

Consequently, the deposit builds up as consolidated particles and is self limiting at 5-20 particles thick, typically based on a particle size of 1-5mm. The particles are in suspension in a organic solvent and the charge is provided by traces of metal salt. The particles move slowly (cathodic or anodic depending on the charge) under high dc voltage, eg. 200-500V, but very low current, eg, 5-50mA. The best known commercial success is so-called e-paint or electropaint which as a primer layer on car bodies can access crevices and box sections with large protection capability.





The four major phases of the process are:

The pretreatment zone *cleans and phosphates the metal to prepare the surface for e-coating. Cleaning and phosphating are es- sential to achieving the performance requirements desired by today's end user of the product.*

The e-coat bath *and ancillary equipment zone is where the coating is applied and the process control equipment operates. The e- coat bath consists of 80-90% deionized water and 10-20% paint solids. The deionized water acts as the carrier for the paint solids which are under constant agitation. The solids consist of resin and pigment. Resin is the backbone of the final paint film and pro- vides corrosion protection, durability and toughness. Pigments are used to provide color and gloss.*

The post rinses *provide both quality and conservation. During the e-coat process, paint is applied to a part at a certain film thick- ness, regulated by the amount of voltage applied. Once the coating reaches the desired film thickness, the part insulates and the coating process slows down. As the part exits the bath, paint solids cling to the surface and have to be rinsed off to maintain effi- ciency and aesthetics.*

The bake oven *receives the parts after they exit the post rinses. The bake oven cross links and cures the paint film to assure maximum performance properties. The minimum bake schedule is 20 minutes with the part temperature at 375°F for most e-coat technologies.*

- *We are committed to bringing to our lanterns the latest technology in components, coatings and fin- ishes.*

- *We are committed to incorporating these cutting edge advances into our beautiful old world designs.*

- *We are committed to continue to bring you the highest quality, both in our lanterns crafted by our skilled artisans, and in the latest safety features the world has to offer*