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Technical Reference

Topic: Why Electrocoat?

WHAT IS ELECTROCOAT?

Electrocoating, also known as e-coat, elpo and electrodeposition, is a fully automated coating method based on the principles of plating. It is an electrochemical process by which organic paint solids are deposited on bare metal.

E-Coat requires a tank filled with paint, a DC power source, an anode (usually the elctrodialysis cell) and a cathode (usually the part). The part is immersed in the paint bath for a short period of time (usually two minutes or less). Electricity moves from the anode to the cathode and deposits paint solids onto the cathode. Electrodeposition continues until the cathode is coated with an even film build.

ADVANTAGES

- *Corrosion Protection:* In e-coat, the deposited paint film becomes part of the metal object being painted. Therefore, e-coated objects are highly resistant to salt spray, corrosion, UV contamination and other effects of outdoor exposure.
- *Intricate Parts/Recessed Areas:* Because electrodeposition continues until the entire part is painted, even intricate and hard to reach areas are painted.
- *Reduces Paint Waste:* Transfer efficiencies of better than 95% result in reduced paint waste, especially when compared with spray applied coatings.
- *Water-based:* E-coat paint is 80% water with as little as 1-3% volatile organic solvent. It is environmentally friendly, not a fire hazard, and has low viscosity.
- *Fewer Defects:* E-coat gives a better quality product. The uncured paint is dry enough to allow limited handling. During baking, e-coat will not sag nor will the hot vapors cause the paint to wash off from recessed areas.
- *Predictable Costs:* Paint costs are predictable because the film thickness does not vary from job to job. Costs in other painting processes (powder coat, wet spray) can vary according to operator technique or attention.
- *Better Finish:* An even film build is possible over the entire surface of the part. In addition, the deposited film is reproducible from part to part and day to day.
- *Reduced Labor Costs:* Even the largest e-coat system has only one person tending the e-coat equipment.

LIMITATIONS

- Electrodeposition can only take place on electrically conductive substrates.
- Application of a variety of color coats requires separate dip tanks.
- The capital investment in an entire e-coat system is substantial; some OEM's may want to consider using a job shop to e-coat their parts.

Think and act in a safe manner. Always disconnect power and use a lockout before you work on the E-coat system. Observe any confined space conditions. Use the appropriate safety equipment & clothing for the task.
UFS Corporation … dedicated to providing quality, innovative solutions to the electrocoating industry.