

# Electro-deposition Coating (E-coat):

## E-Coat Process Finishes

Electro-deposition uses electricity to deposit a smooth, thin, uniform layer of plastic coating on the surface of a metal part. **E-Coat** is a formula combining epoxy resin, paste, and deionized water, which gives the part its protective layer of coating.

The state-of-the-art pretreatment process of an **E-Coat** are most critical.

- 1.** Each metal part is first cleaned with a powerful combination of spray and dip alkaline cleaners in order to remove dirt, oils, and other contaminants which can interfere with the development of good paint adhesion or could cause surface defects.
- 2.** Immediately following the cleaning stages, the parts receive a fresh water rinse and an activator salt immersion. The metal surface is activated with titanium salts prior to phosphating to increase the number of phosphate crystals, decrease the size of those crystals, and to provide multiple points of nucleation for the phosphate solution. This activation with titanium salt generally improves phosphate coating.
- 3.** Once the parts are properly cleaned and rinsed, they are then immersed in a zinc phosphate tank. Zinc phosphate is the preferred conversion coating because of its superior corrosion resistance. The zinc phosphate coating converts the metal substrate to a crystalline surface, creating a good surface for paint bonding and improving corrosion resistance. The crystalline structure provides an excellent surface for paint adhesion, and if a part is damaged, the conversion coating helps protect against rust creepage. The part is again rinsed to remove any excess phosphate.
- 4.** The part is then immersed in a non-chrome sealer. Sealing is performed in order to reduce porosity and to prevent flash rusting.
- 5.** The parts are once again rinsed with deionized or reverse osmosis water prior to epoxy coating.
- 6.** After the part has been cleaned and zinc phosphated, it is immersed in liquid epoxy and coated to a smooth and uniform 0.7 - 0.9 mils. The benefits of **E-Coat** are that the process negates drips and sags and allows for reproducible results day after day. Furthermore, since coating is applied as a liquid, the epoxy travels into crevices and trouble spaces to assure that outside moisture cannot invade the coated area and cause rust. The end result of this aggressive pre-treatment and **E-Coat** application is a pole that is thoroughly cleaned and fully encapsulated in plastic.

7. The epoxy-coated pole is then cured in an oven at approximately 400°F for at least 20 minutes. The latest generation of **E-Coat** finishes can be expected to withstand 1,000 hours or more in a salt spray chamber. These 1,000 hours are thought to be approximately equivalent to 10 years of performance.

When the part has been properly pretreated and **E-Coated**, you have one of the toughest corrosion resistant coatings available. **E-Coat** is so tough and corrosion resistant that the automotive and appliance industries specify it for a majority of its “under the hood” metal parts. This thin epoxy film also makes an excellent primer suitable for a powder coat and paint finish.

**E-Coat** is available on straight square and round straight steel poles in lengths up to 30’

