E-COAT DESCRIPTION

Cathodic E-coat (or electrophoretic coating) is an emulsion of organic resins, polymers, and de-ionized water, which are stable in the absence of electric current. The resins consist primarily of epoxy phenolic resins and urethane polymers. When a D.C. voltage is applied across two immersed electrodes (the surface to be coated is the cathode), the passage of current is accompanied by electrolysis of water. This results in oxygen gas being liberated at the anode (positive electrode) and hydrogen gas liberated at the cathode (negative electrode). The liberation of these gases disturbs the hydrogen ion equilibrium in the water immediately surrounding the electrodes. This results in a corresponding pH change at the cathode or surface to be coated, and this in turn de-stabilizes the paint components of the solution and they coagulate onto the appropriate electrode or surface.

The paint particles that are in contact with the product (the cathode) adhere to the surface, and build up an electrically insulating layer. As this layer builds, current can no longer pass, preventing any further destabilization and coating buildup, resulting in a perfectly level coating even in the recessed parts of complex-shaped goods. The product is then removed from the paint bath and baked in an oven. This baking process crosslinks the epoxy resins and urethane polymers giving a hard, smooth, corrosion resistance surface. The thickness of the coating is specified to be between 0.8 and 1.2 mils.