



## Electro Coat (E-coat)

Customers today demand higher quality and durability from the products they buy. Not only do they expect these products to perform well, but they want the finish to look good and resist corrosion for a much longer period of time. The finishing processes leveraged by Hauser are designed to do just that. One of those steel finishing processes is electro coating. Electro coating is the leading corrosion protection process for steel, utilized by manufacturers of premium products throughout the world.

The fundamental physical principle of electro coat is that materials with opposite electrical charges attract each other. An electro coat system applies a DC charge to a metal part immersed in a bath of oppositely charged paint particles. The paint particles are drawn to the metal part and paint is deposited on the part, forming an even, continuous film over every surface, in every crevice and corner, until the electro coat reaches the desired thickness. At that thickness, the film insulates the part, so attraction stops and the electro coat process is complete.

E-coat creates an excellent base for Hauser's Enviroshield powder coating system. It provides an incredible "dual application advantage," creating a more decorative and durable finish.

## Process Specifics

The e-coat process can be divided into these four distinct zones:

- Pretreatment
- Electro coat Bath and Ancillary Equipment
- Post Rinses
- Bake Oven

**The pretreatment zone** cleans and phosphates the metal to prepare the surface for e-coating. Cleaning and phosphating are essential to achieving the performance requirements desired by today's end user of commercial furniture. A high quality zinc phosphate system using the immersion method is primarily used in the systems where steel and iron parts are to be coated.

**The electrocoat 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 provides 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 thickness, 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 are rinsed off to maintain efficiency and aesthetics. These excess paint solids are returned to the tank to create a coating application efficiency above 95%.

**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.