

## Dura-Bar Responds Well to Surface Treatments

As a general rule, Dura-Bar reacts much like steel to the three most common methods of surface finishing: coating, electroplating, and diffusion. Following is a brief overview of the specific types of surface treatments that readily can be applied to Dura-Bar.

### Coatings

In any case, the coating simply bonds mechanically to the outside of the metal with no chemical or metallurgical reaction occurring.

### Wet paint coating

Paint is applied either by dipping or spraying.

### Dry powder coating

This is a bit more complicated. The part may be dipped in dry paint powder, or the powder may be sprayed on after the part is electrostatically charged to ensure that the powder adheres properly. In either case, a powder coated part must be heated for proper bonding.

### Hot dipping

This involves immersing a part in different solutions, to provide added properties. Hot dipping methods include:

- *Galvanizing*, which uses a zinc bath to enhance resistance to atmospheric corrosion
- *Tinning*, which uses tin to resist tarnishing in food service and other non-industrial atmospherics and to provide better bonding for bearings or soldering
- *Lead and lead tinning*, which makes use of those materials to boost resistance to corrosive industrial atmospheres or chemical processes, especially those involving sulphuric and hydrochloric acids
- *Aluminizing*, which uses aluminum to minimize corrosion and high-temperature oxidation

### Electroplating

Electroplating is a method of surface treatment that provides a more permanent result. It involves dipping the part in a solution that contains another metal to be plated onto the part. During the process, an electrical current is passed through the solution causing the dissolved metal to be deposited onto the part. Metals typically used in electroplating are:

- *Chromium*, which provides excellent resistance to wear abrasion and corrosion, as well as lowering friction and increasing reflectance
- *Nickel*, which is resistant to a variety of chemicals and corrosive atmospheres and which may serve as an undercoating for chromium
- *Zinc*, which offers high corrosion resistance
- *Copper*, which provides high electrical/thermal conductivity



## Diffusion

The third major category of surface treatment is diffusion. Diffusion coating is actually a heat treating operation because it requires elevated temperatures. The diffusion material creates an alloy layer at the surface involving the coating material. The coating thus becomes part of the material's microstructure and may or may not be visible on the surface of the part. Coating media used in diffusion can be a powdered metal, a metallic salt, or even a gaseous atmosphere. The most common diffusion processes are:

- *Nitriding*, which provides added wear and corrosion resistance in high-temperature environments for applications including gears, cams, pawls, and engine heads
- *Carbon nitriding*, which enhances resistance to wear and thermal fatigue in applications similar to those listed above

As stated earlier, the general rule in surface treatments is that if it can be done to steel, it can be done to Dura-Bar. In some cases, however, some surface preparation may be necessary. The key to success is to find a surface coater that is experienced in working with cast iron.

If you have a part that requires surface treatment and would like more information about Dura-Bar, contact us today.