



GOLDEN WAY TECHNOLOGY SDN BHD

Power Transmission Specialist

Phosphating

Phosphate coatings are usually applied to carbon steel, low-alloy steel and cast iron. The coating is formed with a solution of iron, zinc or manganese phosphate salts in phosphoric acid, and is applied by either spraying the solution onto the substrate, or immersing the substrate into the solution. When steel or iron parts are placed in the phosphoric acid, this causes a metal reaction which locally depletes the hydronium (H_3O^+) ions, raises the pH, and causes the dissolved salt to fall out of the solution and precipitate on the surface. The acid and metal reaction also creates iron phosphate, which may be deposited.

The following is a typical phosphating procedure:

1. Cleaning the surface
2. Rinsing
3. Surface activation
4. Phosphating
5. Rinsing
6. Neutralizing rinse (optional)
7. Drying

The main uses of phosphating are:

- Corrosion protection in conjunction with organic coatings, such as paints and polymer films
- Facilitation of cold-forming processes, such as wire drawing and tube drawing, or deep drawing
- Corrosion protection in conjunction with oils and waxes
- Corrosion protection with no subsequent treatment
- Improving anti-friction properties, such as break-in, wear resistance, anti-galling and coefficient of friction
- Providing strong adhesion bonding for subsequent painting or other organic coating

What is black phosphate coating ?

Phosphate is a coating that is often used on steel parts in order to provide corrosion protection, lubricity, or as a pretreatment for further coatings such as paint or powder coating. ... The finish provided by the phosphate coating will be gray to black in appearance.

Black phosphate coating is often used to enhance corrosion resistance. However, phosphate coating by itself does not provide protection because of the porous nature of the coating. Therefore, additional treatment with oil or other sealers are used to attain a moderate level of corrosion resistance.