

PHOSPHATE AND LUBE COATING

Benefits

- Phosphate and lube coating of parts are performed to facilitate cold forming operations
- Cold forming produces near net shape parts which helps in cost savings
- Cold forming can be performed at room temperature with no need for heating billets or parts
- Cold forming also improves the parts' strength with better surface finish
- Phosphate coating also provides base for rust preventive material.

Process

The coating process starts with proper surface preparation of the parts by immersing them in a series of chemicals. The first step is caustic cleaning to remove oil, grease, or prior coating followed by acid pickling to remove oxides/rust. Acid etching increases the surface area of the parts microscopically allowing for more reaction with phosphate. Cleaning the material with water between each chemical tank is critical for effective coating. The steel surface chemically reacts with phosphate and provides a very adherent base which reacts with the lube, forming the required lubrication. The coating is strong enough to handle the high load from the press and enables flow of material to the desired shape and dimension.

Phosphates are available in light and heavy versions with a base of zinc, iron, or manganese. In addition, there are several types of lubrications available like sodium stearate, polymer, and molybdenum-disulfide. Depending on the application, one can choose the appropriate combination of phosphate and lubrication to optimize the forming operation.

Materials

Phosphate and lube coating is suitable for several types of low carbon and low alloy steels.

Wire coils up to 1080 grade are also coated for wire drawing operation.

Applications

- Sun gears
- Trunnions
- Shafts
- Spindles
- Tube drawing
- Wire drawing