

EUROLLS

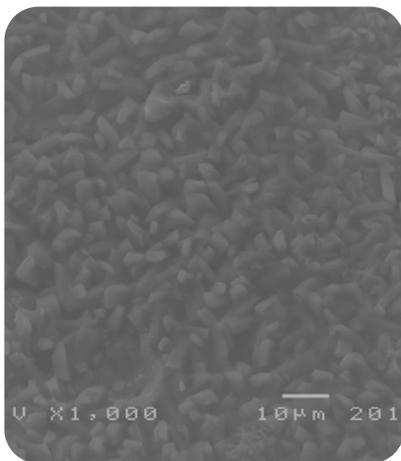
Manganese Phosphating

Description

Surface chemical treatment that forms a dark grey crystalline layer on the metallic surface. Manganese phosphating is used to **improve wear resistance and adhesion, increase lubricant retention, and protect components from corrosion**. It is particularly suitable as a pre-conditioning treatment for subsequent mechanical operations or coating processes.

Furthermore, by acting on surface roughness, the phosphate layer reduces friction between mechanical surfaces in mutual contact. After a very short running-in period, the sliding surfaces become perfectly matched to each other. At the same time, the cavities still present in the phosphate coating act as lubricant reservoirs.

Process



The process is carried out in an automatic plant that subjects the parts to a working cycle consisting of pre- and post-treatments aimed at ensuring the achievement of optimal, uniform, and microcrystalline phosphate layers (photo alongside). The cycle begins with a hot alkaline degreasing treatment followed by surface activation. At this stage, the phosphating phase proper is carried out by immersion of the component in a manganese phosphate-based solution at controlled temperature, followed by the oiling phase.

During the chemical reaction, a uniform microcrystalline layer is formed that **modifies the surface characteristics**, ensuring improved behavior under friction and wear conditions, as well as increasing corrosion resistance.

Highlights

- High wear and corrosion resistance
- Improved behavior under dry or lubricated friction conditions
- Excellent lubricant adhesion
- Uniform treatment even on complex geometries
- Ideal base for subsequent surface treatments or coatings

Applications

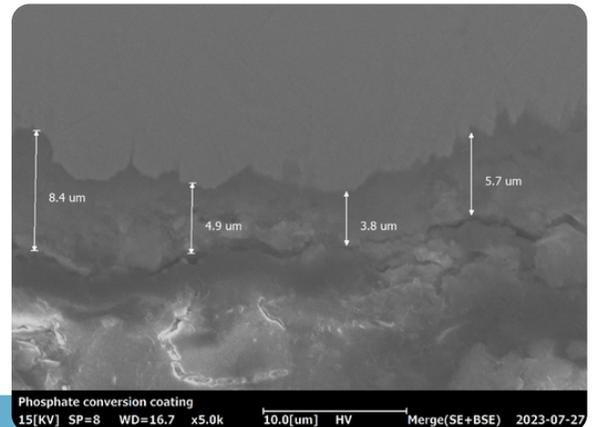
- Rolls and components subject to metal-to-metal contact
- Gears, shafts, bushings, and housings
- Bearings and moving mechanical parts
- Components for drawing and rolling lines
- Fluid dynamic blocks

Applied Materials

- Microcrystalline manganese phosphate layer ($Mn_3(PO_4)_2$)

Technical Data

- Phosphating layer thickness:
- 0.005–0.010 mm (photo alongside)
- Density: 16–20 g/m²
- Corrosion resistance: minimum 24 hours (salt spray test)



Treatable Materials

- Structural steels
- Low-alloy steels
- Cast irons



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