Technical Article

Cleaning for Enhanced Coating Operations

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While necessary, metal parts cleaning can be a complex and time consuming part of the manufacturing process when it is not set up properly. Conversion coating is a very critical part of the pretreatment process, adding significantly to the performance of the finished coating, defining an effective cleaning and phosphating process prior to coating is key in obtaining the best results.

The first question you might ask is "Why Phosphate?" There are three major reasons why phosphating can be beneficial to your operation:

1. To form a stable inert coating on the metal surface.
2. To provide excellent coating, wetting, and adhesion.
3. To inhibit the spread of corrosion from a damaged area.

Phosphate chemicals are mildly acidic solutions containing accelerators and surfactants that can be applied over a wide temperature and pH range. Depending on the process used, the coating weight of phosphate can vary from 15 milligrams per square foot to 100 milligrams per square foot (approx. 150 to 1000 mg/m²).

The most effective and common method to complete the coating process is a multistage spray washer with the proper chemistries, in the right order and concentrations. Iron phosphate is the thinnest of phosphate films. In the application process using KYZEN's Metalnox M6060, an iron oxide base will develop, followed by a flat or amorphous metal phosphate topcoat. The treated metal surface will typically have a gray to blue iridescent or blue-gold iridescent color, depending on the coating weight and the base metal. Using Metalnox M6060 in the phosphating step will greatly enhance the adhesion of oil based and/or powder coat paint.

Typical Color Change Before and After Phosphating

Before

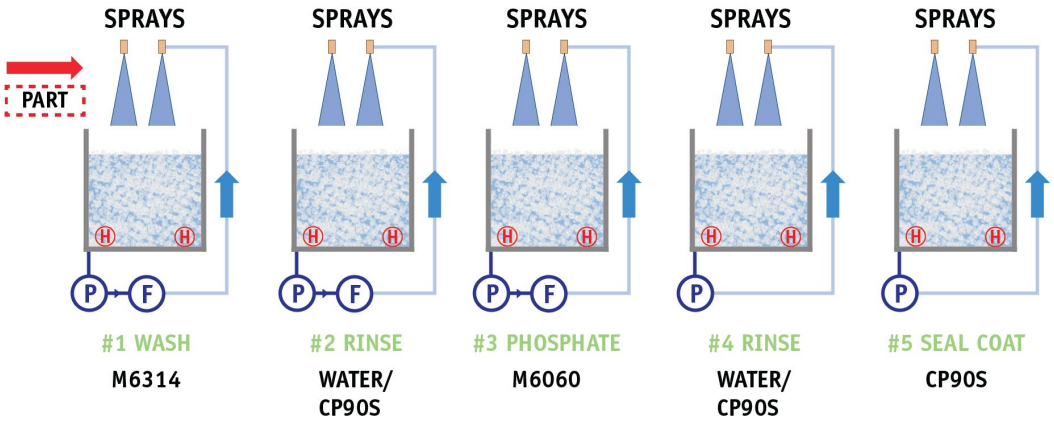
After

For improved results, use Metalnox M6314, a mild alkaline multi-metal cleaner, to pre-clean in step one and add KYZEN's CP90S to all rinse stages for superior corrosion protection. This process is effective on aluminum as well as steel.

While both spray and immersion washers are available with as few as two stages and as many as eight, a five-stage process is most common.

Typical 5 Stage: Spray-In-Air Phosphate Process (Aluminum & Steel)

(NOTE: Parts must be racked for maximum exposure)



Do you need help defining and setting up your coating operation? KYZEN's team of process engineers have over 25 years of experience helping to improve processes. Answering the needs of engineers in all fields including military, automotive and aerospace, KYZEN offers a complete line of parts cleaning chemistries to meet even the most stringent cleaning specifications and requirements. We have engineered our products to be compatible with all materials of construction used in industrial parts cleaning systems and processes, as well as an array of metals and soils.

Global Team of Cleaning Experts Who Care

KYZEN is continuously honored for innovation, quality and service. Their unique approach connects leading science with care to fully understand your unique process, cleaning needs and challenges. They do the technical problem solving for you, usually at no cost.

KYZEN Global headquarters are in Nashville, TN, USA. They also have applications laboratories and facilities around the world. Their brand is built on a unique commitment to respond quickly, show up anytime, anywhere in the world there is a cleaning problem, and tackle it head on until it is successfully resolved.

The demands of metal finishing and fabricating are broad and diverse. From cleaning routine parts, applying corrosion protection, to meeting demanding Mil-Spec or aerospace requirements, or anywhere in between, get the reliability and performance you deserve.

KYZEN is offering a Free Parts Cleaning Assessment to help you identify the best option for your manufacturing process. Visit us at KYZEN.com/Free-Assessment or call us at 615-988-5982.