SEC 4.2 / REF. 1

How Can I Paint My Product?

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"Chemical coatings" is the name now preferred by many paint manufacturers to describe their coating materials. The nomenclature change is indicative of the increasing complexity of protective and decorative coating for modern high-production finishing installations.

Paralleling this change in materials is a widening choice of methods of application and cure. Electrocoating. Powder coating. Radiation curing.

One reason for the increasing array of materials and application methods is that the finisher finds himself faced with a new set of circumstances brought on by forces beyond his control: energy shortages, EPA air-pollution regulations and OSHA. Plus the latest—TOSCA (Toxic Substances Control Act).

For these reasons the product finisher may find he can no longer use existing equipment economically; or his installation may not be able to cope with ecology, safety and energy demands. Alternative methods of finishing and other materials take on appeal as never before.

Thus it is timely to summarize concisely, in one place—the PRODUCTS FINISHING DIRECTORY—all the choices in modern methods of finishing available to you. We'll make only passing reference to methods considered to be obsolescent. Finishing techniques best able to meet the demands of a production finishing line for metal and plastic products will receive the most attention. The principal "right use" of a method and some of the related processes, such as pretreatment and stripping, also will be examined.

**C. O. HUTCHINSON* is a well-known consultant in industrial paint-finishing methods. His background includes many years in technical capacities for Glidden, Eagle-Picher and other companies. He is a chemical engineering graduate of the University of Cincinnati and has authored numerous technical papers. A frequent speaker at technical meetings, he has been active in the Society of Manufacturing Engineers and the Chemical Coaters Association. Present consulting activities are directed toward aiding users of coating materials in introducing new products and processes in their plants.*

Pretreatment

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Before any product can be finished, the surface must be prepared. In finishing products requiring good corrosion prevention and particularly where high production rates are achieved, there is no economical substitute for adequate metal pretreatment. Simple solvent wiping may be adequate, or abrasive blasting, degreasing or aqueous cleaning and conversion coating may be required, depending upon the application. We cannot delve into the intimate processing details and advantages and disadvantages of each pretreatment method here, but a few comments about the most common methods are in order.

Some finishing specialists say that metal clean enough to paint is clean enough to rust; conversely, if steel won't rust readily in humid air, it is not clean enough to paint. Phosphate coatings on steel, and oxide or chromate coatings on aluminum will prevent the rust, but the idea is valid.

The most universally used system for preparing cold rolled or hot rolled pickled and oiled steel for painting involves aqueous spray or dip cleaning, rinsing, phosphate coating, and rinsing. Phosphate coatings may be essentially iron or they may be complexed with other metals such as zinc and perhaps calcium. For aluminum, chromate conversion coatings are quite popular, as are anodic coatings.[6, 8]

Generally, iron phosphate coatings are applied to steel to give light coating weights—about 10 to 80 milligrams per square foot. Zinc phosphate coatings on steel are applied at heavier coating weights—about 150 to 300 milligrams per square foot. Zinc calcium phosphate coatings tend to be still heavier—200 or more mg/sq ft.

For maximum corrosion resistance, zinc-containing phosphate coatings are the usual. They're rinsed with chromium-containing acidified water and dried in an oven before painting.

In some systems, it is possible to obtain adequate cleaning and phosphate coating in a three-or four-stage washer, while other systems demand five to eight stages to produce the desired results.

On objects with surfaces accessible to sprays, the products normally are conveyed through power (spray) washers. On products with difficult-to-reach but important surfaces, dip cleaning and/or phosphatizing may be

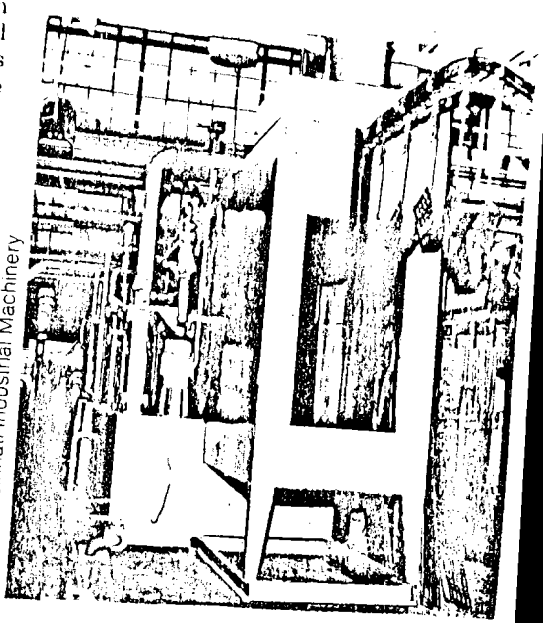

Photo: Cincinnati Industrial Machinery

***FIVE-STAGE** washer such as this one for cleaning and phosphatizing electrical control enclosures is the norm in conveyorized finishing installations.*

FOR TEXT SEE

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