

# Why Pay for Galvanizing?

## USE PowderCoat plus™

- ★ Outperforms galvanized in salt spray & impact tests
- ★ Friendly to the environment
- ★ Looks great
- ★ Costs less



Penco has developed PowderCoat<sup>plus</sup>, a cost-effective way of improving the durability and rust resistance of steel lockers. The PowderCoat<sup>plus</sup> system starts before the paint goes on, with superior cleaning and pretreatment of the steel. Then a 2 mil thick coating of powder coat enamel is applied and baked onto the steel surface.

The old way of improving rust resistance on steel surfaces was to cover the steel with zinc prior to painting. However, paint does not adhere to zinc as well as it does to bare steel. During the paint preparation process, zinc can leach from the steel surface and become a wastewater contaminant. During the paint baking cycle, a process known as “out-gassing” from the zinc occurs, creating small fissures in the paint surfaces allowing moisture to penetrate. The result is a locker that is still vulnerable to moisture penetration, which will lead to rust.

Penco's PowderCoat<sup>plus</sup> is a better way to preserve the appearance of lockers. Powder coat systems have the advantage of producing an exceptionally impervious layer of paint in virtually any desired thickness without runs or drips. It adheres to edges better, and looks great.

The first step in the process is a thorough pre-treatment to remove lubricating oils from the steel surface, required to assure a lasting bond of the paint to the steel. Penco's steel preparation systems are electronically monitored with the latest technology to consistently obtain optimum adhesion.

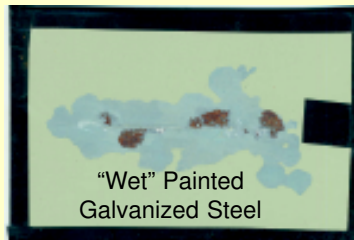
The next step is to apply powder coat paint in an atmospherically controlled chamber. This process is far more environmentally sound than wet systems since there are virtually no liquid solvents to create fumes that go into the atmosphere.

Powder coat paint on cold rolled steel is more rust resistant than painted electro-galvanized (EG) steel, has the added benefit of being environmentally sound, and costs less. Tests have shown that PowderCoat<sup>plus</sup> dramatically outperforms liquid painted EG steel in salt spray tests and impact tests, the most widely accepted tests of paint durability. See the test panels below.

### Salt Spray Test



PowderCoat plus



“Wet” Painted Galvanized Steel

**Salt Spray Test:** The photos above show the results of a 1000 hour salt spray test using Cold Rolled Steel with powder coat paint (left) and liquid paint over Electro-Galvanized steel (EG) at the right. Each sample was scored down to bare metal prior to the test. Note that the “creepage” from the score mark on the EG steel sample is considerably larger than the powder coat Cold Rolled Steel sample (actual sample size is 4” x 6”).

### Impact Test



PowderCoat plus



“Wet” Painted Galvanized Steel

**Impact Test:** The photos above show the effect of impact on Cold Rolled Steel with powder coat paint (left), and liquid paint over EG steel (right). This test shows how well the finish flexes and adheres to the steel with a standard 120 inch-pound force. Note that the liquid paint finish on EG steel has failed to adhere to the metal (shown actual size).

When you specify lockers, specify Penco PowderCoat<sup>plus</sup> paint.  
It's the best way to protect lockers from the harsh elements they will encounter.



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## A few words about locker finishes.

### Type of Paint:

#### **Wet vs. Powder Coat**

Wet, or liquid paint has been used for many years. It is applied either by dipping or spraying. Dipping insures coverage in hard to reach places, however runs are common, and color choices are severely limited due to the expense of changing colors. Spraying produces an improved finish and can cover all visible surfaces. Inefficiency occurs due to over-spraying of the liquid paint, and special environmental precautions have to be taken due to solvents that are emitted during drying.

Powder coat paint is a superior technology. The pigment is concentrated in tiny granules, and is sprayed directly onto the steel, to which it is attracted by opposite electrical charges given to the paint and steel. The powder adheres to the surface as it proceeds to the baking oven where it is permanently bonded to the steel. Finish quality is excellent and paint retention at the edges is better than on a wet system.

Overspray is physically reclaimed and recycled to avoid waste. Other attributes of powder coat finishes compared to wet systems are better resistance to abrasion and impact as well as lower porosity.

### Paint Thickness

Thicker paint will help to forestall rust, and it will offer higher resistance to scratching through to the metal. Increasing the thickness of paint is a common method of attempting to obtain a more durable finish, however with wet finishes, a thicker coat of paint greatly increases the likelihood of unsightly "runs" on the finished product due to the nature of liquid paint. With powder coat, a thicker finish is much easier to obtain in a single pass through the paint line, because powder does not run.

### Material:

#### **Cold Rolled Steel vs. Electrolytic Zinc Coated Galvanized Process (EG steel)**

Steel without some form of protection is subject to rust. There are various ways to apply a zinc coating to steel to improve its rust-resistance. The most commonly used for lockers is Electro-Galvanized steel (EG), because of its smooth surface. However, this process has approximately only 25% as much zinc as other types of zinc coated steel.

EG steel resists rust by "sacrificing" its coating of zinc to corrosive elements. If the life of the product outlasts this process, it may have done its job, however it is not forever immune to rust and corrosion.

EG steel has a number of disadvantages:

- Paint adhesion to galvanized coatings is poor compared to cold rolled steel.
- Outgassing of zinc into the environment during drying creates voids in the paint coating that allow water and oxygen to get to the metal beneath.
- When EG steel is welded, the zinc in the welded area is removed, eliminating protection in those areas.
- The amount of zinc coating on the edges created by punching and cutting operations is dramatically decreased, since the steel is coated when it is "in the flat", prior to these operations.
- When the metal is bent, such as at the edge of a locker door, the zinc coating develops fissures, or small cracks, which diminish its effectiveness as a rust preventative.
- Some of the coating leaches away during the process of preparing the steel for painting, thus reducing its effectiveness. The effluent from this process requires special environmental precautions to be taken.
- EG steel costs more than cold rolled steel.



A Subsidiary of Vesper Corporation

Penco Products, Inc.

99 Brower Ave • PO Box 378 • Oaks, PA 19456-0378

610-666-0500 • Fax 610-666-7561

[www.pencoproducts.com](http://www.pencoproducts.com)