

# Coatings for Extreme Applications

Perma-Z

Hi-Pro-Z



 **GREENHECK**  
Building Value in Air.

July  
2008

In 1972, Greenheck took the lead as the first commercial and industrial fan manufacturer to introduce electrostatic powder coatings. Today, Greenheck continues to lead by being the first to offer a superior zinc-rich powder basecoat and powder coating finish.

This zinc-rich basecoat technology is used extensively outside the HVAC industry to protect bridge beams, automotive components and other heavy-gauge steel products. Now, this advanced technology is exclusively available on Greenheck welded steel products.

Greenheck's coating process starts with a minimum of five wash stages to treat all components prior

to painting. Cleaner parts result in better coating adhesion and durability. We then use an advanced two coat powder application method that includes a basecoat of zinc-rich powder and a topcoat of Greenheck's Permatector™ or Hi-Pro Polyester. The combination of these two topcoats over our new zinc-rich basecoat results in the two new coatings Perma-Z and Hi-Pro-Z. These oven cured coatings provide superior corrosion resistance along with a tough, uniform finish to combat the most extreme conditions.

To help determine what process and coating may be right for your specific environment, refer to the performance tested guide provided on page three.

## Two Coat System

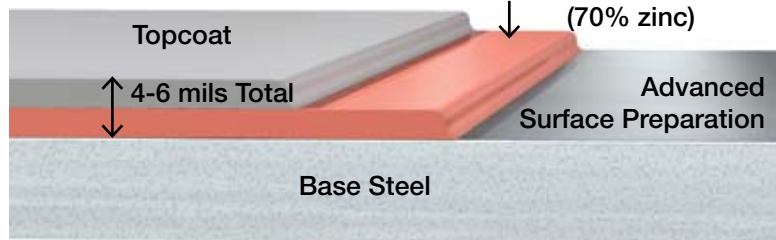
When compared to a traditional single coat application, the benefits of the two coat system include:

- An automatic powder coat application produces uniform coverage and unmatched paint quality.
- The double coat thickness provides superior durability and protection from air and water.
- The zinc-rich basecoat includes an epoxy component that provides additional corrosion protection.
- The zinc-rich basecoat provides chemical protection of exposed steel to prevent corrosion.

### One Coat Process



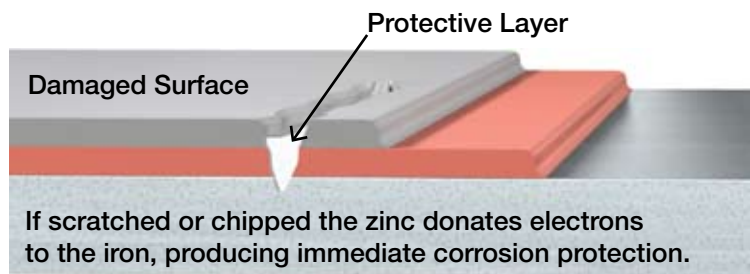
### Two Coat Process



### The Zinc Advantage

The zinc-rich basecoat *actively* and *passively* protects the base steel if the coating becomes damaged and the steel is exposed to air and water.

The zinc-rich basecoat has a lower electrochemical potential than the base steel. As a result, the steel is *actively* held in a neutral state when exposed to a corrosive environment—the driving force of corrosion is halted. A protective layer forms over the damaged surface as a by-product of the chemical reaction and *passively* protects the exposed steel from further corrosion due to air and water.



When selecting a powder coating finish for heavy-gauge welded steel fans, critical information such as environment, moisture, exposure, abrasives, and chemicals should be considered.

Powder coatings are the best choice for most extreme applications. Major advantages over most vendor-applied liquid coatings include:

- Superior finish with uniform coverage and thickness.
- A better coating provides better protection.
- The process is environmentally friendly.
- Unequaled value.

		Environments					
		CLEAN AIR	COASTAL	CHEMICAL *	EXTREME WEATHER	ABRASIVE PARTICLES	SUN-UV
One coat Process	<b>Permatector™</b> Standard coating for steel products in both indoor and outdoor applications Color: Light Gray Thickness: 2.0 - 3.0 mils Polyester urethane powder coating	X					X
	<b>Hi-Pro Polyester</b> Formulated for exterior durability, color and gloss retention. Excellent for chemical applications Color: Dark Gray Thickness: 2.0 - 3.0 mils High performance polyester urethane powder coating	X		X			X
Two coat Process	<b>Perma-Z</b> Two coat powder paint coating provides outstanding corrosion protection in many extreme applications Color: Light Gray Thickness: 4.0 - 6.0 mils Permatector™ topcoat with zinc-rich, epoxy basecoat	X	X		X	X	X
	<b>Hi-Pro-Z</b> Two coat powder paint coating is resistant to saltwater, chemical fumes and moisture in corrosive environments Color: Dark Gray Thickness: 4.0 - 6.0 mils Hi-Pro Polyester topcoat with zinc-rich, epoxy basecoat	X	X	X	X	X	X

Note: Perma-Z and Hi-Pro-Z are not available on aluminum.

\*Chemical-Resistant Rating Below

## Test Data

Salt Spray ASTM B117					Durability	
Hours	1000	2000	3000	4000	Pencil Hardness ASTM D3363	Cross-Hatch Adhesion ASTM D3359-B
Permatector™	██████████				3H	No Failure
Hi-Pro Poly	██████████				2H	No Failure
Perma-Z	██████████	██████████	██████████		3H	No Failure
Hi-Pro-Z	██████████	██████████	██████████	██████████	2H	No Failure

Salt Spray ASTM B117 is a comparative test that indicates the corrosion resistance of powder paint coatings.

Pencil Hardness and Cross-Hatch Adhesion tests determine the durability of a coating to withstand scratches, nicks and chips.

* Chemical Resistance Ratings						
Chemical	Bleach	Sulfuric Acid (10%)	HCl (10%)	MEK	Chlorine (0.1%)	NaOH (20%)
Permatector™	0	1	2	2	0	—
Hi-Pro Poly	0	0	0	1	0	—
Perma-Z	0	1	2	2	0	2
Hi-Pro-Z	0	0	0	1	0	1
RATING DESCRIPTIONS	0 - No effect    1- Slight change in gloss or color 2- Surface etching, severe staining, but film integrity remains 3- Significant pitting, cratering, swelling, or erosion with obvious surface deterioration					

Chemical Resistance Ratings provide information on how each coating option will hold-up in certain chemical environments.

Greenheck's two coat powder paint system provides unparalleled corrosion protection in the most extreme conditions. Test data demonstrates our two coat paint system offers three and four times the corrosion resistance of other coatings commonly available within the fan industry. The value of this unmatched corrosion protection is realized by our industry-leading coating warranty.

Coating Warranty	
Coating Type	From Ship Date
Permatector™, Hi-Pro	1 Year
Perma-Z	2 Years
Hi-Pro-Z	2 Years

For detailed warranty and limitation information contact your area representative.

## Specifications

### Multi-Stage Wash

All carbon steel components shall be cleaned and chemically treated by multi-stage processes that shall include alkaline cleaner to remove oil and film; oxide removal to eliminate oxide formed on laser cut components; iron phosphate coating to increase corrosion protection and paint bond; and seal rinse to seal pores in iron phosphate coating for optimum corrosion protection.

### Two Coat Electrostatic Powder System

Fan components shall be coated with a two coat powder coating consisting of a zinc-rich powder basecoat electrostatically applied and gelled. Minimum dry film thickness to be 2-3 mils. The basecoat shall consist of 70 percent zinc and shall be formulated with an epoxy binder.

A polyester urethane powder topcoat shall be electrostatically applied at a minimum dry film thickness of 2-3 mils atop the basecoat and baked simultaneously with the zinc-rich basecoat. The total dry film thickness of the two coat powder coating system shall be a minimum of 4-6 mils.

## Going Green

For decades, Greenheck has focused on the environmental side of the building industry—developing reliable, energy-efficient products and systems to promote occupants' health and comfort. As one of the first manufacturers of air movement and control equipment to join the U.S. Green Building Council, our desire for sustainable buildings has extended to our



Prepared to Support  
Green Building Efforts

### Available Coatings

Perma-Z shall exceed 3,000-hour salt spray under ASTM B117 test method. Finish color shall be industrial (light) gray.

Hi-Pro-Z shall exceed 4,000-hour salt spray under ASTM B117 test method. Finish color shall be charcoal (dark) gray.

Specify Perma-Z and Hi-Pro-Z for your extreme applications or for any environment where physical appearance and corrosion protection is essential.

*As a result of our commitment to continuous improvement, Greenheck reserves the right to change specifications without notice.*

state-of-the-art, two coat powder paint system. Our coating system includes pretreatment of the multi-stage washer waste prior to release to the municipal water treatment facilities, a 100% powder paint reclaim system, and infrared curing booster ovens with energy savings approaching 50% when compared to typical convection ovens.

We help engineers, architects, contractors, and owners succeed in their green initiatives, on any project. Going green? Go Greenheck - visit our Web site or contact your area representative.

