GALVAN INDUSTRIES, INC.
PO Box 369
Harrisburg, North Carolina 28075

Get your old assets back in the game with Galvan blast cleaning!

Hot Dip News
Summer 2021

This truckload of old, rusted, dirt-and-debris-covered steel, shown on the left, got the Galvan shot-blast treatment and came out as good as new. Galvan blast cleaning can get your old steel inventory clean to SSPC-6 or SSPC-10, usually in one pass. Galvan can also provide storage, plus minor cutting, drilling and welding modifications. Find out more about all our value-added services. **Contact Galvan industries today!**

[Summer 2021]

VETERAN OWNED

Galvan Industries, Inc.
Hot Dip News

Inside:

Galvan Chosen to Rust-Proof Steel for Reconstruction of Charlotte's Memorial Stadium

Galvan Industries is providing hot dip galvanizing for handrails and other steel elements for the reconstruction of the historic American Legion Memorial Stadium in Charlotte, NC.

Originally constructed in 1936, Memorial Stadium is an important landmark in Charlotte, built to honor Mecklenburg County veterans who fought in World War I. The new facility will host professional and amateur sporting events from soccer and lacrosse to football, as well as civic events like concerts, band competitions, civic gatherings, and more. The total capacity for the stadium will be 12,000 spectators. The new galvanized steel elements will be rust-free and maintenance-free for decades to come. **Does your project demand galvanizing excellence that will last a lifetime? Contact Ben Kelly at Galvan today!**

Tech Talk Q&A

The Kirkendall effect causes zinc to peel from heavy steel ...with no appeal!

By Professor Zinc

Q: "We are contacting Galvan in hopes that you could suggest a fix for the poles that were galvanized elsewhere and then powder coated (over the galvanized coating) in the attached pictures. The powder coating appears to be flaking off along with the galvanized coating. What is causing this, and can you re-galvanize these parts for us?"

Answer:

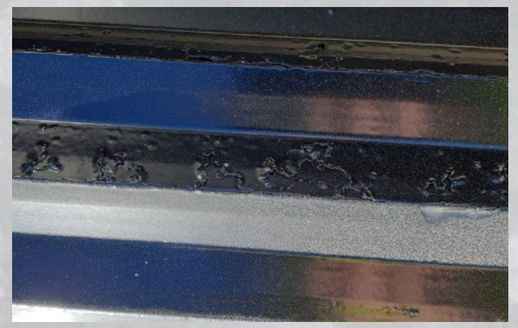
Based on your photos, the powder coating is not the issue. The photos show delamination of the top layer of the galvanized zinc coating due to a phenomenon known as the Kirkendall effect**.**

Named after Ernest Kirkendall, an assistant professor of chemical engineering at Wayne State University in the 1940s, the Kirkendall effect refers to the motion of the interface between two metals in an alloy due to the difference in diffusion rates of the metal atoms. The Kirkendall effect comes into play negatively in galvanizing when steel is allowed to cool too slowly after being removed from the zinc bath. It is the primary cause of peeling or delamination on heavy steel parts after galvanizing.

During the hot-dip galvanizing process, steel is heated to approximately 830 F (443 C) in the molten zinc bath of the galvanizing kettle. The zinc in the kettle is maintained at that temperature. While immersed in the kettle, the iron in the steel reacts with the zinc to form a series of protective zinc-iron inter-metallic alloy layers. Once the item being dipped reaches the same temperature as the bath, it is withdrawn. The metallurgical reaction continues as long as the steel remains near bath temperature.

Heavier steel will retain heat longer, allowing the galvanizing reaction to continue. This can cause voids to form between the solidified top layer of zinc and the hot steel core. These are referred to as Kirkendall voids. If a large number of voids are formed, the top layer of zinc can separate from the rest of the coating and crack or peel off. That is what we are seeing in your photos.

Steel removed from the zinc bath should be immediately dipped in the quench tank to stop the galvanizing reaction. If this is not possible, it should be thoroughly sprayed with cold water to reduce its temperature. It appears these steps were not taken. The result is the delamination of the surface zinc, with a rough textured gray finish underneath.



The surface appearance doesn't necessarily mean that the material is unusable. In most cases, if the remaining coating still meets the minimum ASTM specification requirements for thickness, then it would be considered acceptable. In your case, however, since the galvanizing was intended as a base coat for a galvanized/powder-coated duplex system, you would be right to reject it.

Now to your question: can it be fixed? Yes, but it will be expensive and time-consuming. First, it will need to be sent back to the powder coating company to have the coating baked off. Afterward, when we receive it, we will remove all remaining zinc coating chemically and properly re-galvanize the steel. Then it can be returned to the coater to be powder coated again. We'll be happy to help you solve this problem. The big take-away from your experience, though is this**: "Next time, call Galvan first!"**

Contact Galvan Industries, Inc.
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Galvan Hosts COVID Vaccine Clinic

Galvan Industries worked with Cabarrus Health Alliance to organize and host an on-site COVID-19 Vaccine Clinic on Thursday, June 24.

Moderna, Pfizer and Johnson & Johnson vaccines were available for Galvan employees and our neighbors, J. F. Fabricators and EDSCO.

About 20 shots were given at the event. Galvan's per cent vaccinated with at least one dose increased from 35% to 55%! **Many thanks to everyone who participated!** We are now planning a second clinic so more employees can receive their first or second doses on site.

EMPLOYEE SPOTLIGHT:

Elaine Wilcox, Customer Service and Sales Administrator

Elaine Wilcox, Galvan's customer service and sales administrator for hot-dip galvanizing, joined the company in March 2021. While she is relatively new to Galvan, she is a seasoned pro in customer support.

Elaine has been in the field since 2013 when she took a supervisory customer service position at a major grocery chain in the Northeast. She later worked as Sales Operations Administrator for an industrial equipment wholesaler in New York state. Her last stop before Galvan was in the financial industry.

With eight years of experience in industrial, consumer and financial sales and customer service, Elaine brings strong skills to the table for Galvan, including team management, time management, problem solving, and communication.

"I really enjoy the variety of the work that I do here, the team here at Galvan, and getting to know all the customers," Elaine says. ""It's exciting to work with an industry leader like Galvan.

I look forward to hearing from our customers every day. There's always a new challenge!"

She works closely with Galvan's growing list of steel fabricators, construction and manufacturing companies to ensure they receive the highest level of service from order entry to scheduling and shipping. Her goal is to always meet or exceed customer expectations.

Elaine plays a major supporting role to Galvan's hot-dip sales manager Ben Kelly, providing quotes for new customer opportunities and following up on the details that make for a better customer experience.

"Sometimes I ask a lot of questions. Even though we're just talking on the phone or through emails, I try to get to know our customers. I think one of the most important skills in my job is to be a good listener," she says.

Galvan President Laurens Willard agrees. "At Galvan, our focus is always on the customer," he says. "Elaine's skill set and experience definitely enhance our ability to meet the customer's needs."

Elaine's educational background includes undergraduate and graduate degrees in anthropology. Away from the office, she enjoys hiking, yoga and long walks with her dog, Lennox.

If you're a Galvan hot-dip customer, Elaine is already working for you. Give her a call today.