Ask the Expert

sponsored by Gema

By Steve Ladatto, PCI technical director

You have questions, we have answers. In each issue of PCT, *our extensive network of powder coating experts provides information to help you with your powder coating challenges. Let us know what's keeping you awake at night, and we'll do our best to help you get a good night's sleep!*

Shiny Steel, Slippery Deal

I am a facilities manager at a small medical institution. A little over a year ago, we renovated our 50 patient rooms, including installing a new sink and toilet in each of the bathrooms. We began to see chipping of the coating after a short time and what appears to be a possible sensitivity to the cleaning products used by the maintenance staff. The cleaning products used include Reliable brand Gentle Scrub Cream Cleaner, Clorox Healthcare Bleach Germicidal Wipes/Spray and Clorox Healthcare Hydrogen Peroxide Wipes/Spray. The sinks are stainless steel and factory powder coated by the OEM. My immediate concern is patient safety, but I am also wondering what caused the chipping and so quickly.

First, I assure you that the chips did not pose any serious health issue, unless a patient attempts to consume the chips, which then would become a choking hazard.

Upon close examination of the stainless steel that had been revealed by the failed coating in the photo you sent, I can tell that the substrate had not been abraded. In fact, it appears it was polished. It is obvious that poor preparation was the root cause of the delamination. A quick review of the chemicals that the maintenance staff used for cleaning did not indicate anything that would cause the powder to detach from the substrate.

Expert note: *In the end, the OEM agreed to replace all fixtures with a defective area that was larger than a baseball and the rest would be repaired on site with a touch-up kit provided by the OEM.*

Stainless steel must be abraded thoroughly to promote adhesion with powder coating. In certain applications such as plumbing where the coated article is constantly exposed to water and detergents, additional vigilance should be exercised when prepping stainless steel for powder coating.

And the "Rinse" is History

I am the facilities manager for a laboratory contamination control equipment company. We are having problems with intermittent delamination with no clear cause initially. Then, after discussing washer conditions, we determined through a field report from our pretreatment supplier that the total dissolved solids in the rinse stages were much too high. With a high electrolyte level in the rinsewater, much of the problem is caused by salts left behind on the part. These salts interrupt the adhesion of the powder coating. We use city water and not deionized (DI) or reverse osmosis (RO) water. The supplier's recommendation was that an RO system would be impactful in solving the problem. Do you have any further recommendations?

In addition to adding an RO system, I also recommend that a concise quality program be put into place with frequent measurements of process parameters and intermittent quality checks coming off the line. I sent you several documents that will be helpful for setting up a new quality system as well as a list of several pieces of equipment I would recommend buying for monitoring rinse tanks and other tanks alongside your washer system.

Be sure to dump and recharge both stages 2 and 3, as stated in the pretreatment supplier's report. Remember the importance of routine and preventative maintenance protocols per standard operating procedure (SOP).

Expert Note: *At last check in mid-October 2025, the company had enlisted the help of one of PCI's powder coating consultants to assist with the problems and guide them to new equipment solutions.*

During my face-to-face meeting with this company's management team, they shared that they were looking for a RO system to clean up their incoming rinsewater from the city. They have since completed installation of a RO system to get contaminants below 2 ppm. In addition to this measure, they

have done thorough cleaning of all stages including deep cleaning of the tanks and recharging all stages with RO water.

The company has also fortified its quality assurance with the purchase of a conductivity meter and new pH tester. It is now testing the process multiple times a day and documenting all measurements. It is also performing a wet adhesion test daily to verify that the adhesion is acceptable. The problem has not recurred since making these changes.

The root cause of the delamination was contaminants from the city water as well as inadequate bath maintenance. Salt deposits and other residues were being left on the parts and interfering with the complete adhesion of the powder coating, causing sporadic failures in the field.

Fire Plan vs. Fire Prevention

I have fire suppression equipment installed on my powder booth, which is required by National Fire Protection Association (NFPA) 33. I also have an oven in operation. What are the regulations for operating an oven that I need to be concerned about?

This regulation (NFPA 33) only applies to the application equipment and booths, not ovens. NFPA 86 is the regulation that refers to oven and curing equipment. Reviewing that regulation, I didn't see mention of fire suppression for an oven. Instead, it refers to fire prevention, which is facilitated through complex oven controllers, gas regulation, sequenced purging of gas lines, and so on, all of which happens when the oven is first turned on. If your oven is certified to NFPA 86 (Class A), then you should have no problem satisfying the local fire code. If it is not NFPA 86 certified, contact the manufacturer of the oven for compliance information.

Trash Talk: Powder Edition

Can steel or other metals be recycled without prior removal of the powder coatings? If the coating is stripped beforehand, what can be done with the powder coating that has been removed?

One of the many advantages of powder coatings is that they are not considered hazardous in their finished state. This means that coated parts can be recycled or landfilled without issue.

Stripped powder coating can be disposed of with other trash, like unused powder coatings, and sent to landfill. In some jurisdictions, unused powder may need to be sintered before disposal by exposing it to heat and enabling the top of the container to crust over to prevent it from blowing if the container is mishandled. Cured powder that has been stripped can be treated much like plastic waste, as there is no concern with it contaminating ground water or soil.

Have a question for our powder coating expert? Send it to techdir@powdercoating.org.