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*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!*

## Igniting Discussion

***We are presently in the process of installing our second cure oven for powder coating. In preparation for certification and commissioning, our engineering team is concerned that our local inspection body could require us to install fire suppression on it. In the process of installing our first oven this issue did not arise; however, we are being advised to prepare for the potential of it coming up this time. In the past, it has been explained to me that although the oven is a Class A appliance that could be used to cure material that could create an explosive environment during the curing process, if it is used to only cure powder an explosive environment will not occur. Is there a document that explains this?***

An explosion and a fire are two separate hazards that may be present in a Class A oven.

National Fire Protection Association's *NFPA 86 Standard for Ovens and Furnaces* defines a Class A oven as, "an oven or furnace that has heat utilization equipment wherein there is a potential explosion or fire hazard that could be occasioned by the presence of flammable volatiles or combustible materials processed or heated in the furnace." An explosion hazard within a Class A oven may be present due to the concentration of vapors released during the curing process or a leak from a gas fired heating system. NFPA 86 provides guidance to minimize the risk of an explosion utilizing burner management safety devices and proper ventilation.

A fire hazard within a Class A oven may be present due to

the presence of materials, which are not suspended in the air, that can burn. NFPA 86 states, "A study shall be conducted to determine the need for fixed or portable fire protection systems for ovens, furnaces, or related equipment" and that "the determination of the need for fire protection systems shall be based on a review of the fire hazards associated with the equipment." The IFC takes it a bit further by stating that, "Class A and B ovens which contain, or are utilized for the processing of, combustible materials shall be protected by an approved automatic fire-extinguishing system." The combustible materials referenced in the IFC are intended to apply to the workpiece and not necessarily the finishing materials on the workpiece.

FM Global, a leading commercial insurance company, publishes engineering guidelines written to help reduce the risk of property loss. *FM Data Sheet 6-9 Industrial Ovens and Dryers* contains a section on fire protection. It provides recommendations for fire protection under certain conditions.

When evaluating the need for fire protection in an oven, at a minimum the following should be considered:

- Is the oven constructed of combustible materials?
- Is the workpiece being processed combustible (e.g., wood, plastic, composite)?
- Are the racks, trays, spacers, or containers combustible?
- Is there appreciable accumulation of combustible drippings or deposits present on the interior oven surfaces or on hooks, racks, trays, etc.?
- Is there accumulation of combustible deposits in the duct or fan housing?

Additional considerations may be necessary depending upon the specific process.

Sprayed or printed non-combustible workpieces typically do not contain sufficient combustible material (paint or powder coating) to require protection in the oven workspace. However, as mentioned, combustible drippings and deposits, if occurring, need to be considered.

To help manage all the hazards associated with a Class A oven it is important to be familiar with and follow the regulatory requirements adopted in your location. Performing a hazard analysis and documenting the means and methods taken to mitigate the risks can go a long way in demonstrating to the local authority that a fire protection system is or is not needed.



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## Orange You Glad You Asked?

*We are reaching out in hopes you can help shed some light on a powder coat color issue we have encountered with a drawing supplied to us by our customer. Here are the details of our request to your team:*

- *Our customer's drawing calls out: Orange powder coat shall be International Orange for aerospace (RGB 255, 79, 0).*
- *Our powder coat paint manufacturers tell us that there is no such thing as RGB 255, 79, 0. We are told that RGB is not a current method for powder coat color identification.*
- *We have recommended to our customer to revise their drawing to remove the RGB call out and replace it with a color description of PSS-2779 which describes the exact color that matches the RGB call out.*

*The back story here is that we have been supplying this customer with powder coated parts for many years. We have used a local custom coater that was issuing us certificates for the RGB color for all these years but was substituting the PSS-2779 color without telling us. We had to drop this supplier due to repetitive quality-related issues and are now caught in a precarious situation having to explain to our customer that RGB is not a color that exists in the powder coat world, and they must change their drawing so we can use a new reputable powder coater. We are hoping that you can weigh in and provide direction per industry standards.*

*Is there an industry standard that can be referenced that I can use for this issue? Do you have any advice on how to best approach this situation with our customer?*

While colors can often be matched using RGB (red–green–blue) values, the powder coating industry generally relies on other standards for accurate quoting and sourcing. For powder coatings, industry standards typically rely on color specifications from established color systems such as, but not limited to:

- RAL (European color matching system)—Commonly used in powder coating.
- Pantone Matching System (PMS)—Widely recognized for color consistency.
- Federal Standard (FED-STD-595)—Frequently used for aerospace and military applications.

In this case, while PSS-2779 from Prismatic Powders is one recognized source for International Orange (RGB 255, 79, 0), other powder coating suppliers might also provide this color under different product codes. Your customer could certainly retain the RGB callout in their drawing for reference but also include a specification using an accepted color standard, such as a Federal Standard color code (e.g., FED-STD-595 Color No. 12197, which is often associated with International Orange). This will allow for accurate color

matching across multiple reputable suppliers while maintaining flexibility in sourcing from powder coatings manufacturers.

## Rack'em Up

*As the operations manager of a powder coating line, I find one area where we lack a clear procedure is determining when hangers and racks should be cleaned to remove excess powder buildup. Currently, we clean the hangers on an irregular basis, but I believe this inconsistency is contributing to some of our quality issues. What should we consider in putting together a regular cleaning process?*

Stripping cured powder coatings from hooks and racks is an inevitable but critical task in powder coating operations. As coatings become more durable and resistant to wear, the challenge of removing them in a timely manner increases. While often regarded as a “necessary evil” rather than an integral part of producing high-quality finished parts, the stripping process directly impacts quality, productivity, and plant flexibility.

The frequency of rack and hook stripping depends on several factors, including:

- Loss of earth ground: Powder buildup on the contact point can disrupt the grounding connection, which can lead to safety and quality issues.
- Dirt and contamination: Chips of heavy coating buildup on racks or hooks can contaminate parts.
- Interference with proper part hanging/orientation: Coating buildup can prevent parts from being properly hung or oriented on racks.
- Excessive load weight: Coating buildup increases the weight of the racks, adding stress to the conveyor system.

Although initially difficult to predict, stripping frequency typically stabilizes into a routine based on the number of passes through the coating line. However, a regular stripping schedule must still be established and adhered to.

Several precautions can help prolong the operational life of racks and hooks, thereby extending the time between cleaning intervals:

- Fully load hangers—Running hangers with partial loads results in faster coating buildup, necessitating more frequent stripping.
- Minimize rack exposure—Design racks to minimize exposure to the powder application equipment. The parts should be the primary target for powder coating, not the racks.
- Turn off application equipment when racks with no parts are inside the booth. This prevents coating buildup on the hooks and conserves powder usage.

*Have a question for our powder coating experts? Send it to [asktheexperts@powdercoating.org](mailto:asktheexperts@powdercoating.org).*