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Ask Joe Powder™

Pretty in Pink

Q **Dear Joe,**

I work in R&D at a company where we produce powder coatings in Vietnam. We have followed you on the web for a long time and often find answers to the errors we have encountered. We also have a lot of questions we want to ask about problems with applying powder coatings. It is my pleasure when you reply to my question.

This is one of the projects we are doing: spraying powder coatings on bottles for compressed gas. It includes two layers: a high zinc primer and a pink topcoat. We encountered some specific issues like when spraying powder coatings at the customer's powder application line, our powder does not adhere well to the edges. The picture shows the powder has poor adhesion. We have tried several ways to improve application: particle size solutions, anti-faraday additives, but it still does not work. Could you please advise us how to solve this issue?

Poor powder coverage in handle area of gas cylinder.

Thanks, and best regards,

Thuong P.
Vung Tau City, Vietnam

A Dear Thuong,

I hope you are doing well today. It is Monday morning for me and I thought I would try my best to help you. First of all—it is great that you are manufacturing powder coatings. I have always found it to be interesting work.

Let's talk about your customer's application system. Here is what I would recommend they do. (They may be doing these things already, but I am not sure.)

1. Always make sure that the hooks have a very good ground (earth). Application problems such as Faraday Cage penetration and poor coverage on edges can often be traced to a poor ground on the parts. Clean hooks are essential and the contact to earth can be checked with a Megohmeter. Connect it to the part and a good ground. It should read <500 ohms, preferably <250 ohms. If too high, contact points should be inspected carefully and corrected.
2. Powder coating spray guns need to be maintained regularly (once a week is usually good). Make sure that they are charging correctly and that there is no excessive wear in internal parts.
3. Be very careful with the percentage of reclaim mixed with virgin powder. Make sure that the customer never sprays 100 percent reclaim. A good rule is to keep the reclaim concentration at 20 percent or below.
4. I would recommend that the gas tanks be sprayed when they are warm. This is especially helpful when applying the pink topcoat. Warm parts provide better transfer efficiency. It is also wise to spray the difficult-to-reach areas first in the application process. Otherwise the powder builds on the easy-to-spray areas and makes it more difficult to reach the Faradays and edges. If possible, have a manual touch-up at the beginning of the application process to ensure best coverage.
5. Another idea—I would try a non-zinc primer to see if the electrostatics are better for the pink

topcoat. Zinc-rich primers are difficult to handle and exhibit unpredictable electrostatics.

6. Regarding the powder coating itself, particle size distribution is important, and it sounds like you have explored this already. I would target a median particle size of about 35 to 38 microns and keep the fines (<10 microns) percentage at <8 percent.
7. In my experience, electrostatic agents (anti-Faraday) used to try to improve application performance usually do not correct the problem. It would be interesting, however, to compare a polyester-HAA powder versus a polyester TGIC powder for the pink topcoat. Polyester-HAA powders usually have better transfer efficiency.

I hope that these recommendations help you solve the problem.

Please let me know if you have any further questions and how you solved your problems.

Kind regards,

– Joe Powder

Managing Expectations

Q **Dear Joe,**

My company is a leading shopping cart manufacturer. I just read your July/August 2016 article in *Powder Coated Tough* magazine comparing HAA and TGIC powders and found it very interesting. We currently have several customers in Florida, and I found your reference to the powder's performance in South Florida very intriguing. Specifically, the ability to have a coating that will provide corrosion protection for up to five years.

We currently manufacture our carts in China and use a large global powder supplier. I want to provide direction to their China office to source the powder as you outlined. Can you share exactly what I should be asking for? Also, if you can provide any further guidance it would be very much appreciated.

Cheers,

Phillip L.
Bolton, ON

A Hi Philip,

Thanks for reading my stuff. Achieving durability, especially in Florida, requires a number of planets to be in alignment. Certainly, the powder coating formula is the primary determinant; however, a number of other factors are critical in achieving long term durability. The powder coating resin provides the UV durability that resists fading, gloss loss, and chalking. The quality of the metal and, just as important, the metal cleaning/pretreatment process are essential to ensure five years durability. Other critical factors are film thickness control and adequate curing conditions (time and temperature). All surfaces must be completely covered and cured properly.

I would let your powder coating supplier know your expectations for coating performance. They should offer an exterior durable product that conforms to an architectural specification like AAMA 2604. You also have to ensure that the proper metal pretreatment is being used and is in control. The best path forward is to create a comprehensive coating specification. We talk about this in our Ask Joe Powder podcast (Episode 10) which can be found at www.askjoepowder.com.

You may want to seriously consider establishing a proper specification for the performance of the coatings used on your shopping carts. This would significantly help your coating suppliers with their offerings to your coaters. I hope that this helps and let me know if you have any further questions.

Best regards,

– Joe Powder

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Editor's Note: Letters to and responses from Joe Powder have been edited for space and style.

Not Your Average Joe...

Each issue, we take the padlock off the PCI® Test-Lab door for a few minutes so our favorite technical editor and "powder guru" Joe Powder can run in the yard. When he's not gnawing on a rawhide bone, he loves to answer readers' questions. Go ahead and send him one at askjoepowder@yahoo.com... he doesn't bite. Maybe it'll end up in the next issue!