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Ask Joe Powder

Mind Blown

Q Hey Joe,
I get all my powders from the same West Coast supplier; however, they surprised me today. I'm not sure if I am curing incorrectly or not but their technical data sheet says, "Coat at room temperature, place in oven at 400°F. Leave in oven UNTIL the part being coated is also 400°F, then at that point set the cure time." Is that correct for most mainstream powders? Hobbyist powders seem to be 450°F flash then typically 400°F for 20 minutes.
Thanks.

Phil H., Brookpark, Ohio

A Dear Phil,
Your powder coating supplier is giving you the right information. Your hobbyist friends have steered you wrong. A thermosetting powder coating requires a specified amount of heat (temperature) for a given amount of time. Hence, when a powder coating supplier recommends 20 minutes at 400°F – *metal temperature*, they are referring to after the part(s) has reached that temperature. Think of the difference between a bike fender made of sheet metal and an alloy wheel. The fender may take 2 to 3 minutes to reach 400°F whereas a hotrod alloy wheel may take 30 minutes to reach the same temperature. And remember the clock starts after the part

reaches the specified temperature, not necessarily when the oven recovers after the doors are closed. I recommend using a non-contact infrared thermometer to measure part temperature. Crack open the oven door enough to point the IR gun at the part and start your timer after the part hits the target temperature. Non-contact infrared thermometers can be purchased for about \$25.

Best regards,

– Joe Powder

Phil's reply:

Mind blown dude. However, for two coats like chromes/clears it's wayyyy different, right Joe?

Dear Phil,

Indeed you are correct. It is best to under cure the first coat, then apply the topcoat and bake the two coats completely per the powder supplier's specification. By under baking the first coat you ensure excellent inter-coat adhesion between the layers. As for specifics on under curing, I recommend an approximately 50% cure (half time at temperature).

Best regards,

– Joe Powder

My Two Scents

Q Dear Mr. Joe Powder,
Recently I have been experiencing a crater problem on all powders I try. So far, I have changed the three filters, one prior to the dryer and two after. The compressor, air dryer, and filters are all new, installed 3 years ago and have been maintained according to the manufacturer's instructions. I've tried eight different polyester powders, I only used epoxy primer and polyester top coats, from a local supplier for the last five years. What I noticed is that the craters/fisheyes are mostly on vertical surfaces; the sides and bottom are not affected as much.

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I tried to use a different compressor and powder gun, and three different ovens which I have a few meters apart, all had the same results. I removed any liquid paint and closed everything in the room. I cleaned the powder coating area and dismantled the powder gun, and changed the powder hose from the hopper to the gun. If I powder coat on a hot substrate, the craters won't appear.

I am running out of options, kindly I would like you to offer your perspective and maybe other solutions. I found out about you after reading this article: <https://www.powdercoatedtough.com/News/ID/349/PC-Summitry-Achieving-Powder-Cure-and-Avoiding-Craters>.

Thank you.

Matthew V., Malta

for years now. Most probably when I am pointing the gun downwards my arm is extended, and the deodorant vapors cause craters. I hope that it's the deodorant as I am going nuts!

I will let you know how it ends. It is a pleasure and honor to get to know people like you. Is there any forum or membership where such info can be shared?

Thank you.

Matthew

Dear Matthew,

I hope that we have collectively solved the problem. Many antiperspirants use silicones, lots of them. Check this out: https://silicones.elkem.com/EN/Our_offer/Market_And_Application/Pages/antiperspirants-and-deodorants.aspx. Perhaps the makers of your deodorant changed their formula.

Please keep me apprised of your cratering situation and I will do what I can to help. As for places to find this information and perhaps a forum—the first places to check are Powder Coated Tough (www.powdercoatedtough.com) and The Powder Coating Institute (www.powdercoating.org). I would also recommend mining the many forums on LinkedIn. Check out the PCI page and Powder Coating Research Group. Let's keep in touch.

Warm regards,

— Joe Powder

Joe Powder is our technical editor, Kevin Biller. Please send your questions and comments to Joe Powder at askjoepowder@yahoo.com.

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!

A Dear Matthew,

Wow, this is perplexing, indeed. Your approaches thus far are all very logical. Compressed air filters, alternate ovens, alternate powders—all wise variables to investigate. Have you tried different people? Crazy as it may seem, craters can occur from personal care products. Sometimes a hand lotion or antiperspirant or even a cologne can cause craters. I have also witnessed terrible cratering from contaminated ambient air. A guy in California would get craters in his powder when his neighbor would spray silicone coatings next door. The overspray would drift into his finishing area and create craters in his powder coating.

Another thought—are your powder coating packages ever left open to the ambient air? Is your spray area enclosed or open to the surrounding area?

These are just a couple ideas. Let me know if any of them help. Best of luck.

Warm regards,

— Joe Powder

Matthew's reply:

Dear Joe,

I may not have explained well, craters are dense on vertical surfaces; on the sides and bottom it is hard to notice any. I achieved very good results without deodorant, the same brand of which I have been using