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# Ask Joe Powder

## The 4-1-1 on HDG Adhesion

**Q** Dear Joe:

Hope you are fine. What is your recommendation to guarantee an adhesion of powder paint for surface "hot-dip zinc coating"?

Best regards,  
Ozlem E., Turkey

**A** Dear Ozlem,

Life is good lately, thanks! Your question is a difficult one. One of the biggest issues is the variability in the quality of the HDG. It can be very inconsistent—not only from batch-to-batch of HDG, but also on different sections of the same sheet of HDG. What I recommend is first careful cleaning of the surface. This can be an alkaline cleaner followed by a good quality rinse. You may also want to consider media blasting as well, however this adds cost to the process.

As for adhesion, some powder coatings work better than others. A good quality epoxy will adhere better to HDG than a polyester powder. Hybrids (epoxy-polyester) fall somewhere in between. If this is for an outdoor durable application you need to either use a zinc phosphate pretreatment with the polyester or the combination of an epoxy primer followed by the polyester topcoat.

Also it is important to de-gas the HDG prior to applying the powder coating. Otherwise, you may observe pinholes in the coating. De-gassing involves preheating the HDG and applying the powder to the warm substrate. Preheating to 302 to 347°F (150 to 175°C) usually suffices.

I hope that this helps answer your question. And I wish you and your family a healthy and prosperous New Year.

— Joe Powder

## A Stinky Situation

**Q** Hi Joe,

I have a problem with a functional powder coating we use to electrically insulate electric motor armatures. It's a Bis A/ECN (Bis-phenol A/Epoxy Cresol Novolac) resin system, calcium carbonate filled and Dicy (Dicyandiamide) cured.

When cure temperature gets above about 410°F (210°C) there is an odor given off that a customer is complaining about. My question is do you have experience with odor maskers or absorbers that might help us out of this one?

Definitely appreciate your help,  
John

**A** Hi John,

I really don't have much experience in odor masking agents. I think that you may have three or four approaches, however:

1. Identify and eliminate the source of the odor. This would involve a compositional change; however, it may be as simple as comparing different grades and suppliers of the ECN resin.
2. Consuming the odor-causing species. It probably involves volatile, low molecular weight fragments and it may be possible to react or adsorb these compounds to render them less or non-volatile.
3. Masking. This would involve introducing a fragrant compound that would overwhelm the odor caused by the formula. It would be important to find something that would perform at the relatively high temperature.
4. Bonus approach. Replacing the current product with a lower temperature cure formula might minimize the evolution of odor.

That's what I can think of off the top of my head. Let me know if you have any questions or comments.

— Joe Powder

*Joe Powder is our technical editor, Kevin Biller. Please send your questions and comments to Joe Powder at [askjoe powder@yahoo.com](mailto:askjoe powder@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 nipping at the mailman's heels, he loves to answer readers' questions. Go ahead and send him one at [askjoe powder@yahoo.com](mailto:askjoe powder@yahoo.com)... he doesn't bite. Maybe it'll end up in the next issue!

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