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Ask Joe Powder™

I Wet My Plants

Q Hi Joe,

I have a product that is used in the garden/composting space and some of my customers are extremely finicky, so I'm trying to understand if there are any residual TGIC issues. Is TGIC still actively toxic once the polyester powder has been oven cured? Is there residual TGIC in the cured coating? Is residual TGIC capable of migration to the surface and into another substance the powder coat is in contact with, like soil/compost?

We are also asking the same of our powder coating supplier but I am asking for an independent opinion due to your position within the industry.

Kind regards,

Owen L.
Australia

A Hey Owen,

Thanks for your question, it's a reasonable one for someone handling a potential for a known toxic chemical leaching into plants, vegetables, and possibly the water table. TGIC (triglycidyl isocyanurate) has been meticulously studied and analyzed since the late 1980s. The main concerns had to do with handling the neat material and also a formulated powder coating. Studies showed that TGIC is a potential mutagen in laboratory animals. This is reason enough to require hazard labeling on both the raw material and products containing it.

Whether residual TGIC remains after a coating has been cured is a good question. Studies commissioned by Nissan Chemical suggest that if there is, the levels are undetectable. So, the possibility of TGIC leaching

out of a cured film is extremely remote. That being said, one could argue, "How can you prove that a coating has been fully cured?" And this is a good point. My personal opinion is that there is no hazard of leaching if you are convinced that the coating was fully cured. How to prove that is another question.

The safest path forward is to coat compost/garden items with non-TGIC powder coatings. Practically speaking however, the risk is extremely minute.

Please let me know if you have any more questions.

Kind regards,

— Joe Powder

Labels, Labels, Everywhere There's Labels

Q Greetings to you Joe!

Have been reading you for some time and thought I'd bounce a Proposition 65 question off of you. Do you know if Prop 65 warning labels in California are required "after" powder paint cures? The cured mixture is now hard as a rock.

Thanks so much for your input.

Vernon P.
California

A Hi Vern,

Thank you for your question—it's a good one. Powder coatings commonly contain materials that are on California's Proposition 65 list, namely titanium dioxide, carbon black pigment, 2-methyl imidazole, and TGIC (triglycidyl isocyanurate). These present health hazards in the respirable particle form, but not when they are bound in a hardened film. So, there is not a need for a Prop 65 hazard label for items that are coated (and cured) with powder coatings.

Hope that this helps.

Best regards,

— Joe Powder

I'd Like a Large Slurry, Please

Q Good evening Joe,

Hopefully you aren't at your computer and may read this tomorrow. I hope all is well with you and your family. Business seems to be getting back to normal. I have a customer visit coming up and our company "engineer" thinks he's also an ace powder formulator. He has mentioned powder slurries to the customer and I'm now looking to get a grasp

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on it. The substrate is a concrete/fiber board with a high moisture content to begin with so outgassing has become an issue. I was wondering if you had any info on slurries? Or if you could provide your opinion on using them on a non-ferrous substrate such as a concrete/fiber board? Any help would be appreciated. Thank you and look forward to hearing from you.

Best regards,

Neil M.
Ohio

A

Hi Neil,

Yeah, I had shut off my laptop and was hanging out with my lovely wife. Everyone is good in our world. Looking forward to springtime and vaccinations.

I do have experience with powder slurries. I spent a year formulating these back in my Glidden days. It is certainly a viable product to make. Basically, you are taking a more-or-less finished powder and making a waterborne paint out of it. It's a suspension of powder particles in an aqueous medium. It requires a surfactant, defoamer, and thickening agent. It probably also requires an in-can preservative and possibly a co-solvent for better film formation.

It can be a costly proposition and you have to "do the numbers" before getting too excited about it. In addition, particle size is somewhat critical to get decent

thin films. And smaller particles require more surfactant. We found that surfactants generally increased overbake yellowing and decreased corrosion resistance (not a problem perhaps over a non-metal substrate).

We did eventually commercialize it. It was back in the days when powder spray equipment was rather primitive and couldn't penetrate Faraday cages well. The customer used the powder slurry to reinforce the Faradays prior to the powder being applied automatically. Another unique aspect was that the powder was delivered as a powder and a slurry concentrate was shipped with instructions as to how to make the powder slurry. They would mix up a batch of slurry as needed. I think the customer did this for a year or two then learned how to spray the powder better into Faradays.

How's that for a story?

Let me know if you have any questions.

Your powder coating friend,

- Joe Powder

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

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