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Ask Joe Powder

Powder Coating 101

Q Hi Joe,

Very recently I graduated in Materials Engineering and I am naive about coating issues. Is there any handbook (available online) to follow to improve my knowledge on this?

Mugni, Bangladesh Univ. of Eng. and Tech.

A Hi Mugni,

Thank you for your question and congratulations on your graduation. As for handbooks, here are two:

Powder Coating: The Complete Finisher's Handbook, Fourth Edition <https://powdercoating.site-ym.com/store/ViewProduct.aspx?ID=5522715>

Powder Coatings, Foundation for the Novice Formulator <http://www.pcimag.com/products/546-powder-coatings-foundation-for-the-novice-formulator-by-kevin-biller-cd>

The Complete Finishers Handbook is more focused on the applicator of powders, whereas the *Foundation for the Novice* is directed at chemists and formulators.

— Joe Powder

Cure Shiny Wrinkles Today!

Q Hey Joe,

What causes a slick glossy appearance in the Black Wrinkle powders? I have tried a few different manufacturers I have been told that the Black Wrinkle begins its “crawl” at a particular temperature and cannot be interrupted during this process or the “slick” undercoating or what is there before the

crawl will be left. This powder has to be used on certain product lines to match outsourced products. I have tried a few different primers to help with no avail. In your opinion, what do you think could be the prominent issue?

Greg D., Tough Country

A Greg,

From what you describe, this is most probably a polyester based wrinkle. The wrinkle surface is created by a carefully controlled chemical reaction between the polyester resin and a unique curing agent. This chemical reaction requires a very specific catalyst to make this happen. Since the wrinkle surface is driven by a chemical reaction the curing conditions affect the degree of wrinkling, hence a severe undercure will cause the “slick glossy” or “wet look” appearance you describe. Severe undercure can be ascertained by a simple solvent rub test (acetone or MEK will do). If the coating is easily removed with 10 to 20 double rubs of a solvent soaked rag then the coating did not see enough heat (time and temperature).

Another condition that influences wrinkling is pH (acidity/alkalinity). The catalyst used to create the wrinkle is acid based and consequently a substrate surface with high alkalinity will retard the acid catalyst and cause a glossy spot. High alkalinity can occur from substrate contamination especially from poor rinsing of chemical cleaners.

The concept of wrinkle powder over a primer is an interesting proposition. I have seen wrinkle failure with polyester wrinkle powders applied over fillers. This was with repair fillers (first it was old fashioned “Bondo®” and next high temperature filler) and probably occurred due to an alkaline nature of the filler. Many fillers contain high levels of calcium carbonate which is alkaline in nature. As for primers, it's possible that the surface of the primer is alkaline. This could retard the catalysis and cause a glossy instead of wrinkled surface.

I recommend that you try the wrinkle powder over different primers and other more standard powder coatings. If you think the end use of the products you are coating will perform acceptably with a single coat of wrinkle powder, this may be your best bet.

— 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.

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