Powder Coating Forum



Nicholas P. Liberto, P.E. Powder Coating Consultants Division of Ninan, Inc. 1529 Laurel Avenue Bridgeport, CT 06604 203/366-7244 • FAX: 203/367-5245

If you have a question or comment concerning issues relating to the powder coating industry, such as system design, coating selection, features, etc., you may e-mail (aesfjournal@worldnet.att.net) or send your questions to "Powder Coating Forum," 12644 Research Pkwy., Orlando, FL 32826-3298.

Question

Last month you addressed a question concerning "water quenching" for cool-down of parts after the bake/cure process. With maximum throughput in mind, is it possible to powder coat parts that are around 225 °F (*i.e.*, after they come out of the pretreat dry-off oven)? My powder supplier recommends a part temperature no greater than 125–130 °F prior to powder application. We use a "hybrid" black with a flat finish.

Answer

For proper part temperature, your powder supplier is correct in stating that the temperature should be between 125-130 °F. Hotter parts tend to have higher film builds of powder after coating than cool parts. When trying to maintain film builds of < 4–5 mils, you should powder coat parts that have been cooled to the specified range. If higher film builds (6+ mils) can be tolerated, then the part temperature is not that important.

High part temperatures (> 200 °F) prior to coating, however, can cause the powder to begin melting (sintering) as it is applied. This can affect surface texture and appearance (*i.e.*, orange peel). Smoke in the booth, caused by the release of some byproducts of cure, can also be annoying when the part temperature gets this high. Operators may complain about the odor or that they can't see the parts.

The bottom line is to test-coat some parts at the higher temperature in the powder booth and see if any of these problems are intolerable.

Question

Please comment on the situation regarding the emission of E-Caprolactum in urethane-based powder coatings.

Answer

E-Caprolactum has recently been removed from the hazardous air pollutant (HAP) list, and therefore is no longer a concern for powder coaters. In fact, except for "zinc-rich" powders, all powder coatings are 100 percent EPA-compliant for both water and air pollutants. No other organic or inorganic coating can make such a boast.

Question

How do you improve salt spray on TGIC powders? Are TGIC powders poor choices for good salt spray resistance?

Answer

TGIC polyester powder coatings are formulated for superior outdoor weatherability and corrosion resistance. In fact, this formulation can provide 1000+ hr of salt spray resistance on steel, and 5000+ hr of salt spray resistance on aluminum. These substrates must be pretreated properly, however, to achieve these salt spray numbers.

To improve salt spray resistance, look to your pretreatment chemistry and/or your substrate material for alternatives that will provide better salt spray characteristics. Pretreatment systems must scrupulously clean the substrate to allow for proper build of the conversion coating. Conversion coatings, such as iron phosphate for steel substrates and chromic conversion coatings for aluminum substrates, will provide the best protection for salt spray resistance. Sealer rinses can also improve salt spray on steel substrates.

No matter what pretreatment you have selected for your substrate, it will never perform up to expectation unless you have good process control. Frequent titration of the solution in the pretreatment system will ensure that the chemicals are held within specified tolerance. Coating weights-the measure of thickness of the pretreatment coating on the substrate surface-will be lower than expected if both cleaning and phosphate control points are not maintained within tolerance. Salt spray resistance is directly proportional to the coating weight on the substrate's surface.

As you can see, pretreatment selection and control are the best areas one can look to improve salt spray resistance. You may gain tremendous payback in salt spray resistance from just maintaining your existing pretreatment chemistry. PASF

We Still Need Your Help! Because this column is a question-

and-answer forum, reader support is vital to keep the flow of information fresh and pertinent to the needs of our audience.

Please send any questions or comments concerning powder coating issues to *P&SF* (by mail, FAX, e-mail or postage-paid reader service card).