

What's Gone Wrong

A brief overview of coating issues encountered
in the emerging site-applied UV market

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RadTech 2012



What are we doing here?

- This presentation is intended to provide an overview of coating problems that have been experienced in this industry.
- Most of these issues aren't encountered or even considered until months into the development process.
- Having a list of these problems will, hopefully, prepare formulators interested in site-applied for the difficult road ahead of them.

Zipper Lines.....

- In the factory, cure widths are bigger than your substrate.
- 10 foot lamp? No problem!
- On the job site? Problem....
- Curing wider than about 2.5' is unfeasible due to doors, maneuvering, uneven floors, etc.
- This leads to the much maligned zipper line.



Can we fix it with optics?

- Feathering light out can sometimes reduce or eliminate zippers by giving a cure gradient away from the machine, softening the shrinkage differential.
- However....
 - Partial curing tends to introduce differences in finish appearance: gloss lines/haziness/etc. This is **far** more pronounced when the coating contains matting agents.
 - A potentially unsafe piece of equipment in untrained hands is now a very dangerous piece of equipment in all hands.



Temperature problems

- Zipper lines appear to be more prevalent at lower temperatures.
- Flow is important. If the coating turns to putty at low temperatures, your applicators aren't going to be putting it down at recommended thickness, and the finish appearance will change.
- Remember, you're not in a factory! These environmental variables vary wildly.

Wait – Did I cure there?

- Dyes exist which bleach out when exposed to UV light. **Use them!**
- They make the curing process much easier: It's extremely easy to lose track of where you've cured, as there is often no visible difference between a cured and uncured surface.
- Very easy to step on uncured coating, very difficult to repair it seamlessly.
- Helps you cure in a straight path.

How thick?

- Make sure applicators are trained with wet film thickness gauges. Many don't know how to use them! (And many have an epoxy-based mindset of 'more is better')
- Bleaching dyes allow for applicators to spot at a glance an area that is too thin or too thick.
- The usefulness of such dyes in this regard cannot be overstated.
- One puddle = blister/crack/spiderweb = costly repair



No applicator will ever own a radiometer

- Ever.
- Some won't even pick up a \$5 voltmeter.
- Do not design a coating that works only with a brand new, perfect lamp.
- Discharge lamps steadily lose intensity over their life, and it's unreasonable to expect an applicator to replace it when it gets to 90% output.
- Magnetic ballasts will vary lamp intensity with line voltage. (We've seen <100V at the machine!)



What am I putting this on?

- Are you sure this substrate is what you think it is?
- Self-leveling patch materials can have highly porous structures. This is bad for a material that will not cure once soaked in.
- Terrazzo may be cementitious or resinous, but people want to coat it either way, and don't know or care what it is, often enough.

Concrete Specific problems

- Cracks & Joints. Do they need to be filled? Can the coating handle an expansion joint, or will that cause it to fail if it cracks/delaminates?
- Substrate Preparation
 - Some formulators have been very lax with specifying surface prep. This has led to many job failures.
 - Recommend CSP2 or better, just to be safe.
- Coating soaking into the substrate
- People don't like coating whole floors with multiple UV layers. It's time consuming.

VCT-specific problems

- VCT breakdown.
- THIN. Scratches visually pop out when they fill with dirt, thicker coating = deeper scratch. Don't try to put down more than a couple mils on VCT.
- Shrinkage: Poorly glued tiles can just pop right off.
- Cracks: Coating can get in, never cure, attack adhesive, cause the floor to fail. Rollers can minimize this over squeegees.
- Fisheyes. There will be silicone-impregnated spots on VCT.
- 100% solids are a must. Many jobs must be done overnight. Surface prep is not a quick job, and there is little time to wait for flash off of a waterborne.





Wood specific problems

- 100% solids haven't worked well for wood so far.
- Be wary of too many UV coats. Takes up a lot of time, especially when you have to wait for flashing off.
- Panelization is a concern.



Preparation!

- It bears repeating: Prep is king.
- Far too many site-applied UV jobs have failed due to inadequate preparation of the floor.
- Specify how the surface needs to be prepared to the letter. Don't let applicators make judgment calls.



It's not all bad, though...

- Site-applied UV can and **IS** being done properly by some formulators.
 - But it has taken years, and everyone who has done it right learned all of these lessons at various points in their development cycle.
 - Go into your site-applied project aware of these problems from the start. Plan ahead.

Conclusion

- Zipper issues should be fixed chemically.
- Use a bleaching dye.
- Be mindful of lowered lamp output.
- Know what your substrate is.

- Prep, prep, prep.