Colorcoating Weather Limitations Rev

What happens when conditions aren’t just right

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Overview

• Acrylic Acid Structure
• Drying (coalescing) of Acrylic Resin
• Acrylic Limitation
  • Alligator Cracking or Mud Cracking
  • Spider Cracking
  • Bubbling
  • Streaking
  • Rust Spots
  • Slow Cure
• Storage Considerations
Molecular Structure of Acrylic Acid

\[
\text{CH}_2=\text{C}(\text{O})\text{CH}_2\text{COOH}
\]
Acrylic Differences

Poly Methacrylate (soft and rubbery)

Poly Methyl Methacrylate (hard and brittle)
Coalescing (Drying) of Acrylics
Alligator Cracking or Mud Cracking

Film Shrinkage

Topcoat

Undercoat
Alligator Cracking or Mud Cracking
Alligator Cracking or Mud Cracking

• Cause: Material applied thick. Material skins over and rips as remaining material dries underneath.

• Ways to avoid: Ensure material is not applied in thick layers.

• Corrective Measures: Ensure all bird baths and low spots are leveled. Sand down alligator cracking, resurface, and topcoat.
Spider Cracking

Film Shrinkage

Topcoat

Undercoat
Spider Cracking

• Cause: Material skins over and rips as remaining material dries underneath.

• Ways to avoid: Apply in early morning or late evening.

• Corrective Measures: Sand down, resurface and topcoat.
Bubbling
Bubbling
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Bubbling

• Cause: Trapped moisture underneath system expanding.

• Ways to avoid: Moisture mitigation primer (concrete); less is better

• Corrective Measures: If on concrete, remove to bare concrete and seal concrete with a moisture mitigation primer. If due to excessive coatings, remove to substrate and resurface and topcoat (1 +2).
Streaking
Streaking
Streaking

• Causes: Applying final topcoat at higher temperatures, substrate temperatures of 120°F or greater

• Ways to avoid: Apply in early morning or late afternoon.

• Corrective Measures: Apply addition topcoat in the early morning or later afternoon.
Rust Spotting

Dissolving pyrite produces rust and acid

\[ 2 \text{FeS}_2(s) + 4 \text{H}_2\text{O}(l) \rightarrow 4 \text{H}_2\text{SO}_4(aq) + 2 \text{Fe(OH)}_3 \]

- pyrite
- water
- sulfuric acid
- rust (orange)
Rust Spotting
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Rust Spotting

• Cause: Moisture mitigation pulling rust through substrate

• Ways to avoid: Seal substrate; Ensure asphalt doesn’t contain pyrites

• Corrective Measures: Remove infected area (pyrites); coat entire court with a polyurethane primer to lock in the rusting (stop moisture mitigation).
Slow Cure
Slow Cure
Slow Cure

• Cause: Cool temperatures (40-60°F); Shadows

• Ways to avoid: Apply when court is able to fully receive sunlight.

• Corrective Measures: Allow additional cure time (24-48 hours)
Storage Considerations

• Freeze/thaw
• Excessively high temperature
• Solar gain
• Open containers/mixed material
Freeze/thaw

• Most water based coatings are designed to withstand a few cycles.
• Ice crystal formation forces solid particles together into aggregations that may not re-disperse when thawed.
• If a container of product has been frozen and has a lumpy inconsistent texture, it is probably no good.
• If the material still has normal texture and thickness, it is probably okay.
High Temperature During Storage

• Increased risk of skinning.
• Separation by evaporation and condensation.
• Viscosity reduction – increased risk of settling.
• Degradation of sensitive binders.
• Increased potential for bacterial growth (especially in containers that have previously been opened).
Solar Gain

• Containers stored in direct sunlight get dramatically hotter than in shade.

• Think of how hot a black car gets in the sun – that heat will get transferred directly into the coating in a drum.

• A black drum in the sun can easily exceed the stable range of the latex leading to dramatic degradation of coating properties.
Open containers/mixed material

• Any time a container is left open or material is mixed with water or other additives it is exposed to some microbial contamination.

• Water based coatings have preservatives to prevent microbial growth, but these can be overpowered by too much exposure.
  • Always keep containers sealed until as close to use as possible and minimize storage of mixed material.
Any Questions