

TECHNICAL BULLETIN #1

PINHOLES AND BUBBLES (OUT-GASSING)

THE PURPOSE OF THIS TECHNICAL BULLETIN IS TO DISCUSS CAUSES OF PINHOLES AND BUBBLES THAT OCCASIONALLY ARISE DURING APPLICATION OF A TOP COAT, THE WAY TO AVOID THEM, AND THE METHOD BY WHICH TO REPAIR THEM.



PINHOLES IN TOP COAT DUE TO COATING OUT-GASSING

Pinholes in the top coat appear as small holes. These are generally caused by applying the top coat too thick, or by thinning or diluting the top coat with too much solvent.

Pinholes are created by entrapped solvent trying to escape from the top coat during the curing process. This phenomenon is known as out-gassing. Again, these holes are confined to areas where the top coat has been applied too thick.

Pinholes with corresponding bubbles can also arise by too aggressively applying the final top coat entrapping air into the coating, creating a bubble that leaves a pinhole. These can be avoided by applying the top coat in smooth, even strokes.

Pinholes can be avoided simply by applying the top coat at the published rates contained in the manufacturer's data sheets. They can also be avoided by diluting the top coat with only manufacturer approved commercial grade solvents (xylene or acetone) at no greater a dilution factor of 10% by volume.



PINHOLES AND A POPPED BUBBLE
REVEALING THE CRATER AND A PINHOLE

REPAIR:

1. Clean the coating with a biodegradable cleaner such as Trisodium-phosphate (TSP).
2. Prime the coating with a re-coat primer (such as Polyprime U) followed by broadcasting aggregate into the wet primer at the desired rate.
3. Apply another top coat (Polyglaze AL-50 or Polyglaze 100) at the published rates contained in the manufacturer's data sheets.

Caveat: Know the VOC regulations in the jurisdiction where the coatings are being applied and use only VOC exempt solvents as dictated by the local regulations.



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BUBBLES IN TOP COAT DUE TO BUG HOLES IN CONCRETE

This phenomenon happens frequently during application of thin mil aromatic polyurethane vehicular deck coating systems where the system is comprised of a 14-16 mil application of a single component coating used throughout the coating system. The bubbles generally begin to appear during coating application. When they pop or are popped the next day, they leave a round crater with a tiny pinhole in the center.



**SUBSTRATE IMPERFECTIONS
LEAD TO PINHOLES AND BUBBLES**

The bubbles are caused when the coating flows into bug holes or small voids that have not been bridged by a primer applied prior to coating application. The coating settles into these voids too thick creating the condition discussed above; the coating skins over, entrapping solvent that is released during the curing process resulting in bubbles. Concrete also breathes out releasing air as temperatures rise; this phenomenon also contributes to bubbling in the coating where it is applied too thick.

Bubbles can be avoided by applying a high viscosity primer (such as Polyprime EBF-LV) to bridge the bug holes and voids that may be present in concrete substrates prior to application of the first coat of the deck coating system. Voids slightly larger than pinholes should be filled with a polyurethane sealant.

Bubbles that appear during coating application may be remedied by misting the bubbles with a commercial grade solvent applied by a Hudson sprayer. The misting process may need to be repeated several times as the bubbles continue to appear. As the solvent hits the bubbles, it pops them allowing the coating to flow back into itself. The bubbles eventually disappear completely.

REPAIR:

1. Break or pop the bubbles with a broom or flat squeegee and lightly abrade the ridges or craters as necessary for cosmetic purposes.
2. Prime the affected area(s) with a re-coat primer (such as Polyprime U) followed by broadcasting aggregate into the wet primer at the desired rate. The primer should be applied at a heavier rate (150 square feet per gallon).
3. Apply another top coat (Polyglaze AL-50 or Polyglaze 100) at the published rates contained in the manufacturer's data sheets.

Caveat: Know the VOC regulations in the jurisdiction where the coatings are being applied and use only VOC exempt solvents as dictated by the local regulations.



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