Causes of Pinholes, Bubbles, and Blisters

When protecting industrial concrete, keep in mind the different quality, especially in terms of capillary voids, intergranular spaces, and trapped air pockets. And when you use industrial coatings, or any surface coating, pinholes can sometimes form through the coating.

There are two possible reasons for this.

**First reason** is that air can get trapped underneath the coating in tiny surface voids. And the heat from the sun can cause the air to expand outward before the coating has cured. See picture below.

It is more common to see this type of pinholing, bubbles, and blistering on exterior surfaces coated during the cooler morning hours. When the temperature rises during the day, the concrete, and the air filling the surface spaces, warms. Thus, the warm air expands against the fresh uncured surface coating to produce a bubble or blister that will open and leave a small crater and a central pinhole opening that shows the air space (ie. outgassing) beneath the coating.

**Second reason** blisters and pinholes can form is when air is forced out of some spaces and finds its way into already filled adjoining areas. So if you push the air out of Space A, it will reappear in Space B, and the combined air in Space B will push toward the surface and form a blister or pinhole.

And anytime air is forced out of freshly coated concrete, it can ruin the integrity of the coating. Therefore, the problem lies with the surrounding conditions associated with temperature, expansion, and capillary action – not the coating itself.

**GENERAL SOLUTIONS**

1. Apply coatings when surface temperatures are at or past their afternoon peak. A cool surface will actually absorb coatings into their mold as trapped air contracts.
2. Have a compressed air wand present to pop any bubbles that appear on the surface when coating.
3. Use Ecodur 201 foam to help seal the voids and cracks.