CONTROLLING OUTGASSING IN CONCRETE SLABS

OVERVIEW

Outgassing occurs when air within concrete pores expands and escapes upward during coating application, creating bubbles, pinholes, craters, or blistering. This phenomenon is driven by temperature changes, slab porosity, and coating viscosity. Proper control of outgassing is essential for preventing defects in primers, basecoats, and high-build epoxies.

Primary Causes of Outgassing

- Rising slab temperature (morning to afternoon).
- Porous or lightweight concrete with large air voids.
- High viscosity coatings trapping air during curing.
- Applying coatings too soon after grinding (open pores).
- Wind or airflow accelerating surface evaporation.

Prevention Techniques

1. Coat when substrate is cooling, typically late evening.
2. Prime slab with low-viscosity penetration primer.
3. Use a “key coat” to seal pores before high-build layers.
4. Apply coatings at recommended temperatures.
5. Avoid sudden airflow/ventilation changes.

Best Practices

- Shakeout testing: Apply small sample to confirm slab behavior.
- Do not coat sun-heated slabs at peak temperature.
- Allow sufficient cure of primers before buildcoats.
- Increase film thickness only after sealing pores completely.