MOISTURE-RELATED FAILURES: BLISTERING, ADHESION LOSS & OSMOSIS

OVERVIEW

Moisture-induced failures are among the most common issues in resinous flooring. Excessive vapor emission, improper substrate evaluation, or hydrostatic pressure can lead to bond failure and film defects. Installers must understand how moisture interacts with coatings to prevent costly callbacks.

Common Failure Types

1. Blistering
- Vapor pressure beneath coating creates bubbles.
- Often appears 24–72 hours after installation.

2. Adhesion Loss / Delamination
- Coating lifts cleanly from concrete surface.
- Caused by high MVER, poor prep, or contamination.

3. Osmotic Blistering
- Water migrates through coating due to osmotic pressure.
- Blisters contain clear fluid; common in high-moisture slabs.

4. Amine Blush / Whitening
- Moisture reacts with amines during cure.
- Produces surface haze, tackiness, or oily film.

Root Causes

- Elevated MVER or RH.
- No vapor barrier beneath slab.
- Hydrostatic pressure.
- Cold or humid curing environments.
- Substrate contamination.

Preventive Measures

- Always test slab moisture (RH + $CaCl_2$).
- Use moisture mitigation primers as required.
- Maintain stable temperature/humidity during cure.
- Avoid evening installations in cooling environments.