

Coatings Troubleshooting Guide



Problem BUBBLES IN THE COATING

Bubbles may appear in the coating as small defects or honey combed clusters. They are almost always caused by the release of gas from the concrete slab or the entrapment of gas, usually air, in the coating or applied film.

	1. OUTGASSING	2. AIR MOVEMENT	3. HIGH TEMPERATURE / HUMIDITY	4. SUNLIGHT
Cause of The Problem	Air and other gases can escape from porous concrete and be trapped in the coating surface.	Excessive air movement from vents, doors or other sources may cause flash drying and prevent air release.	Too hot or too humid conditions can result in rapid drying conditions and result in air entrapment.	Floors exposed to direct sunlight can tack off before sufficient air release has occurred, forming bubbles.
How To Solve The Problem	Either degloss with 80-120 (depending on film build) grit screen or sand larger craters and fill with 100% solids material. Vacuum and apply another coat.	Either degloss with 80-120 (depending on film build) grit screen or break larger craters and fill with 100% solids material. Vacuum and apply another coat.	Either degloss with 80-120 (depending on film build) grit screen or break larger craters and fill with 100% solids material. Vacuum and apply another coat.	Either degloss with 80-120 (depending on film build) grit screen or break larger craters and fill with 100% solids material. Vacuum and apply another coat.
How To Avoid The Problem	Apply a suitable primer to seal off the air in the concrete. Usually a lower solids, high penetrating primer works best (APF Epoxy 100 or Poly 250).	Avoid any condition that can generate fast air movement across the coating. Always suck air out vs. blowing with exhaust fans for ventilation.	Wait until the temperature and humidity are within the ranges as needed to properly apply the material. (See APF product-specific data sheets.)	Close all doors and window shades where the sunlight can hit the floor and coat the areas exposed to the sunlight before the sunlight hits that area.

(BUBBLES - continued)	5. POOR MIXING	6. ROLLER COVERS	7. MOISTURE / HIGH HUMIDITY
Cause of The Problem	Air can become entrapped in the coating by using fast speed mixing equipment or improper mixing procedures.	Too short or too long of a roller nap can cause air to be generated into the coating causing air bubbles.	Some urethanes and epoxies are sensitive to moisture in the concrete or excessively high humidity, causing bubbles.
How To Solve The Problem	Either degloss with 80-120 (depending on film build) grit screen or break larger craters and fill with 100% solids material. Vacuum and apply another coat.	Either degloss with 80-120 (depending on film build) grit screen or break larger craters and fill with 100% solids material. Vacuum and apply another coat.	Degloss with 80-120 grit screen if the problem is minor or remove affected areas by grinding prior to recoating the area.
How To Avoid The Problem	Use slow speed mixing equipment with a paddle type blade. If air is embodied into the material, let stand until air is visibly released.	Use the appropriate length nap roller and apply without vigorous rolling. Use an air removal tool to remove air entrapped if necessary.	Make certain that the concrete is properly dried and the humidity is at the recommended levels before applying the coating.

Problem FISH EYES, COATING SEPARATION OR DE-WETTING

Imperfections in the coating that form circular areas that resemble fish eyes or similar looking flaws in the coating.

	1. SILICONE CONTAMINANTS	2. OIL / GREASE CONTAMINANTS	3. ACID RESIDUE CONTAMINANTS
Cause of The Problem	Some manufacturing processes such as welding or spraying can deposit silicones on the floor causing fish eyes.	Oil or grease contaminants can cause the coating to function improperly and appear to have fish eyes.	Muriatic or acid stain residue can cause dewetting in two-component coatings resulting in high surface tension and coating separation while still wet and fish-eyeing when cured.
How To Solve The Problem	When minor fish eyes occur, use 80-120 grit screen. Often, wiping the coated surface with solvent will allow for proper recoating. Otherwise, completely remove coating.	Remove the coating by grinding, stripping or other suitable methods and clean the substrate prior to recoating the area.	When minor fish eyes occur, use 80-120 grit screen. Often, wiping the coated surface will allow for proper recoating. Otherwise, completely remove coating.
How To Avoid The Problem	Become familiar with certain types of installation procedures and test areas prior to application. Properly prepare the substrate before coating. (See APF installation guidelines.)	De-grease surface properly and in areas where all contaminants cannot be removed, use a suitable oil locking-in primer.	Become familiar with certain types of installation procedures and test areas prior to application. Properly prepare the substrate before coating. (See APF installation guidelines.)

Problem PEELING OR DELAMINATION

The process of the coating separating from the substrate in either large or small sections or a flaking off of the coating.



	1. POOR CLEANING	2. NO PRIMER USED	3. INSUFFICIENT / IMPROPER PROFILE	4. EXCESSIVE MOISTURE
Cause of The Problem	When improper cleaning occurs, the coating will not adhere to the oil, grease or contaminants present.	Many high-solids coatings require the use of a primer coat. If the proper primer is not used then peeling and delamination may occur.	If an adequate or proper etch is not performed, failure can occur between the coating and substrate.	Excessive moisture can cause pressure which can lift coatings off the floor.
How To Solve The Problem	The coating must be removed by stripping, grinding, shotblasting or other suitable means. Re-apply the coating after proper surface preparation.	Remove any coating that is not adhering properly to the substrate. Prime and recoat.	Completely remove any coating that fails to adhere to the substrate and re-prepare the area prior to applying the coating.	Completely remove any coating that is not tightly bonded and test substrate prior to re-coating the floor.
How To Avoid The Problem	Properly clean the substrate and provide a suitable profile for adhesion. (See APF installation guidelines.)	Use a suitable water-base or solvent based primer prior to coating the substrate.	Repeat profiling method until medium textured floor is achieved (5-10mil) and properly clean, rinse and neutralize the floor (if etched). Allow the floor to dry thoroughly before coating.	Use a moisture meter to test the floor or place and secure plastic on the floor for 24 hours to check for moisture. (Consult with APF regarding moisture barrier materials.)

	5. ADHESION FAILURE	6. SOLVENT ENTRAPMENT
Cause of The Problem	Improperly applied coatings or incompatible coatings can delaminate between coats.	Material solids content less than 100% can entrap product's carrier (usually solvent or water). Coating will eventually release carrier causing loss of mass and delamination.
How To Solve The Problem	Remove any coating that does not adhere properly. Re-prepare the area and re-apply coating using proper techniques.	Completely remove the affected coating. Re-prepare the area and re-apply coating at proper coverage rate.
How To Avoid The Problem	Lightly roughen coats between inter-coat applications and always observe procedures for recoat times. (See APF product data sheets.)	Apply coating (as well as any necessary primer) at APF's recommended coverage rate/thickness. Don't confuse gallon rate with kit coverage rate.

Problem UNINTENTIONAL DULL FINISH

The trait of not being glossy, i.e. low gloss, flat appearance.

	1. RECOATING TOO SOON	2. POOR VENTILATION
Cause of The Problem	The application of the second coat before the proper recoat time can diminish the gloss of the subsequent coat.	If proper ventilation is not provided, then solvent may become trapped in the coating and affect gloss.
How To Solve The Problem	Lightly roughen the coating and then apply another top coat to restore the proper gloss to the surface.	Lightly roughen the coating and apply another top coat to restore the proper gloss to the surface.
How To Avoid The Problem	Be certain the preceding coat has sufficiently dried. Press your thumb into the coating, and if no mark is left then it is safe to recoat.	As soon as the product becomes tack free, provide exhaust ventilation to remove solvent vapors from the area of the coating.

Problem WHITE SPOTS OR STREAKING

The appearance of white spots or white discoloration on or below the surface of the coating.

	1. MOISTURE / HIGH HUMIDITY	2. CONTAMINANTS / LAITANCE	3. SOLVENT ENTRAPMENT	4. WATER ENTRAPMENT
Cause of The Problem	The presence of moisture in the substrate of high humidity can cause some materials to discolor.	Alkaline residue or alkaline salts not removed from the substrate can cause coating discolorations.	Trapping solvent within the coating can cause white thread-like discoloration below the surface.	Trapping water within the coating can cause white thread-like discoloration or small bubble discoloration below the surface.
How To Solve The Problem	For mild discoloration try a vinegar rinse, otherwise remove or re-apply another coat if the coating material is colored.	The only solution for this problem is the removal of the coating and then re-application of the material after surface preparation.	Clear coats can only be restored by removal and re-applying. Color coats will need to be re-coated to restore the proper color.	Clear coats can only be restored by removal and re-applying. Color coats will need to be re-coated to restore the proper color.
How To Avoid The Problem	Make certain that the substrate is dry and the humidity is below the recommendations as set by Arizona Polymer Flooring's guidelines	Always check a substrate after etching or surface preparation for a fine powder residue. If present, vacuum and rinse before coating.	Provide exhaust ventilation as soon as the coating is tack free to remove solvent vapors from the area of the coating.	Closely follow APF's recommended coverage rates. Do not over-apply. Don't confuse gallon coverage rates with kit coverage rates.

Problem COLOR STREAKING OR SUBSTRATE SHADOWING

The process of having light and dark streaks visually observed when applying a coating to the substrate.

	1. IMPROPER MIXING	2. MATERIAL FROM DIFFERENT LOTS OR MANUFACTURERS	3. UNEVEN PENETRATION INTO SUBSTRATE SURFACE
Cause of The Problem	If a pigmented coating is not properly mixed, then light and dark streaks can occur when applying the coating.	Pigmented or satin-finish materials can differ from lot to lot and with age.	When applied to an overly or unevenly porous surface, full color hue may not materialize due to coating film loss into the substrate.
How To Solve The Problem	Roughen the surface (de-gloss) and apply the coating after proper mixing.	De-gloss pigmented coatings and re-coat. Clear, satin-finish coats must be completely removed and re-applied.	When appropriate to recoat, apply subsequent coat of the same pigmented material following manufacturer's thickness and application guidelines.
How To Avoid The Problem	Always mix any coating or two component material thoroughly to insure it is streak free and homogenous throughout. Use a flexible spatula to ensure that all material is incorporated into mix.	If using material from different lots, fully blend (box) materials making sure to blend "A" with "A" and "B" with "B" before coating application.	For thin film coatings over concrete, use a compatible primer coat to seal and fill any voids and pores.

Problem COLOR DIFFERENCES OR SHADING

The look of uniform color with variations in shade or appearance.

	1. BATCH VARIATIONS	2. SUNLIGHT EXPOSURE	3. PRODUCT SETTLING	4. SPOTTING / DISCOLORATION
Cause of The Problem	Each batch of material will differ from other batches of the same material.	Exposure to sunlight can cause some areas of a floor to discolor or fade.	If a product settles, the applicator must scrape out all of the material or color shading can occur.	Chemical attack can cause spotting in isolated areas or affect the entire floor.
Solve The Problem	Roughen the surface and apply a topcoat from one continuous batch production run.	Roughen the coating and apply an aliphatic colored topcoat that is UV stable.	Roughen the surface and apply a properly mixed topcoat to the substrate.	If surface integrity is maintained, then roughen and recoat with a more chemically resistant topcoat.
How To Avoid The Problem	Check batch numbers prior to using and if necessary box the batches to form one continuous batch.	Plan ahead. Use materials that are suited to your particular exposure conditions.	Make certain that the product expiration date has not been exceeded and use mechanical stirrers or shaking equipment if necessary.	Before installing a coating system, check the diversity of chemicals that will be exposed to the floor.

Problem FILM WRINKLING

In some applications, problems may arise resulting in wrinkling of the coating that was previously applied to the floor.

	1. TOO THICK AN APPLICATION	2. SOLVENT ATTACK
Cause of The Problem	Some coatings when applied too thick will wrinkle after drying.	Some coatings are too active chemically to topcoat over the coating that presently exists on the floor.
How To Solve The Problem	Either sand smooth and recoat or remove and re-apply the coating.	Mechanically or chemically remove the problematic coating and coat the floor from scratch.
How To Avoid The Problem	Follow the manufacturers recommendations as they pertain to the coverage rate.	Check the compatibility of the coating with the surface film prior to application; if necessary, use a less aggressive coating product.

Problem PREMATURE COATING WEAR

Unanticipated wearing or erosion of the coating.

	1. IMPROPER MAINTENANCE	2. SUBSTANDARD / SOFT CONCRETE
Cause of The Problem	Poor maintenance can cause premature wearing of the coating.	If the concrete is in poor condition, this may affect the performance of the coating applied.
How To Solve The Problem	Apply additional coats as necessary to assure performance characteristics needed.	Roughen and apply additional coats as necessary or apply a more abrasion resistant coating.
How To Avoid The Problem	Set up a proper maintenance program to assure trouble free performance.	Check the softness and condition of the concrete and correct deficiencies as needed.