TROUBLE SHOOTING GUIDE

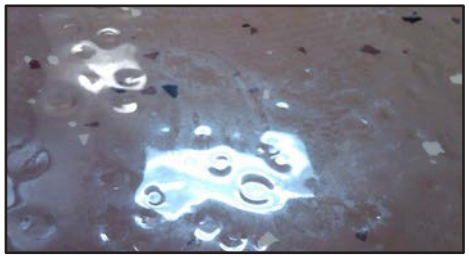
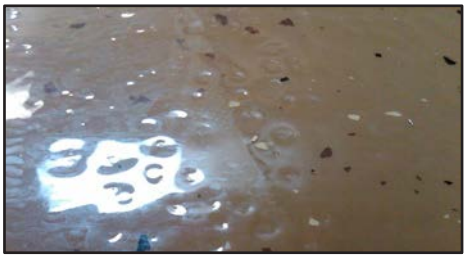
AIR BUBBLES IN THE COATING



Air bubbles may appear in the coating as small defects or honey comb clusters. In nearly all cases, they are caused by air entrapment in the coating or applied film.

CAUSES	SOLUTION	PREVENTION
OUTGASSING Air can escape from porous concrete and be trapped in the coating surface.	Roughen with 60 grit screen. OR Break large craters and fill with 100% solids material. Vacuum and apply another coat.	Apply a suitable primer to seal off the air in the concrete. Typically a low solids high penetrating primer works best.
AIR MOVEMENT Excessive air movement from vents, doors or other sources may cause flash drying and prevent air release.	Roughen with 60 grit screen. OR Break large craters and fill with 100% solids material. Vacuum and apply another coat.	Avoid any condition that can generate fast air movement across the coating. Always suck air out vs. blowing with exhaust fans for ventilation.
TEMPERATURE/HUMIDITY Too hot or too humid conditions can result in rapid drying conditions resulting in air entrapment.	Roughen with 60 grit screen. OR Break large craters and fill with 100% solids material. Vacuum and apply another coat.	Wait until the temperature and humidity are within the ranges as needed to properly apply the material.
DIRECT SUNLIGHT Floors exposed to direct sunlight can tack off before sufficient air release has occured, forming bubbles.	Roughen with 60 grit screen. OR Break large craters and fill with 100% solids material. Vacuum and apply another coat.	Close all doors where the sunlight can hit the floor and coat the areas exposed to the sunlight before the sunlight hits that area. Cover windows with paper or sheets.
IMPROPER MIXING Do not entrap air into the coating by using fast speed mixing equipment or improper mixing procedures.	Roughen with 60 grit screen. OR Break large craters and fill with 100% solids material. Vacuum and apply another coat.	Use slow speed mixing equipment with a paddle type blade. If air is embodied into the material, let stand until air is visibly released.
ROLLER COVERS Too short or too long of a nap roller can cause air to be generated into the coating causing air bubbles.	Roughen with 60 grit screen. OR Break large craters and fill with 100% solids material. Vacuum and apply another coat.	Use the appropriate length nap roller and apply without vigorous rolling. Use an air removal tool to remove air entrapped if necessary.
MOISTURE/HIGH HUMIDITY Some urethanes are sensitive to moisture in the concrete or excessively high humidity, causing bubbles.	Roughen with 60 grit screen if the problem is minor or remove affected areas by grinding prior to recoating the area.	Make certain that the concrete is properly dried and the humidity is at the recommended levels before applying the coating.

FISH EYES

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

CAUSES	SOLUTION	PREVENTION
SILICONE CONTAMINANTS Some manufacturing processes such as welding/spraying can deposit silicones on the floor causing fish eyes.	When minor fish eyes occur, use 60 grit screen; otherwise, completely remove coating. Solvent rinse and recoat the area.	Become familiar with certain types of operations and test areas prior to application. Properly prepare the substrate before coating.
OIL/GREASE CONTAMINANTS Oil/grease contaminants can cause the coating to function improperly and appear to have fish eyes.	Remove the coating by grinding, stripping or other suitable methods and clean the substrate prior to recoating the area.	De-grease surface properly and in areas where all contaminants cannot be removed, use a suitable oil locking-in primer.

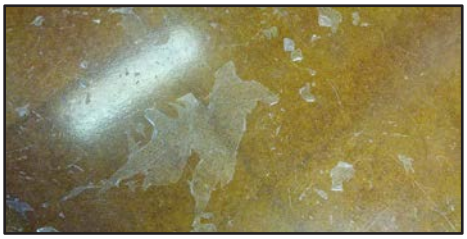
WHITE DISCOLORATION SPOTS

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

CAUSES	SOLUTION	PREVENTION
MOISTURE/HIGH HUMIDITY The presence of moisture in the substrate or high humidity can cause some materials to discolor.	For mild discoloration try a vinegar rinse, otherwise remove or re-apply another coat if the coating material is colored.	Make certain that the substrate is dry and the humidity is below the recommendations as set by the coating manufacturer.
CONTAMINANTS/LAITANCE Alkaline residue or alkaline salts not removed from the substrate can cause coating discolorations.	The only solution for this problem is the removal of the coating then the re-application of the material after surface preparation.	Always check a floor after etching or surface preparation for a fine powder residue. If present, vacuum and rinse before coating.
SOLVENT ENTRAPMENT Trapping solvent within the coating can cause white thread like discoloration below the surface.	Clear coats can only be restored by removal and re-applying. Color coats will need to be re-coated to restore the proper color.	Provide exhaust ventilation as soon as the coating is tack free to remove solvent vapors from the area of the coating.

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.

CAUSES	SOLUTION	PREVENTION
INADEQUATE CLEANING When improper cleaning occurs, the coating will not adhere to the oil, grease, or contaminants present.	The coating must be removed by stripping, shotblasting or other suitable means. Re-apply the coating after proper surface preparation.	Properly clean the substrate and provide a suitable profile for adhesion.
NO PRIMER USED If the proper primer is not used then peeling and delamination may occur.	Remove any coating that is not adhering properly to the substrate. Prime and recoat.	Use a suitable water-base or solvent based primer prior to coating the substrate.
INADEQUATE/IMPROPER PREP If an adequate or proper surface profile is not achieved, failure can occur between the coating and substrate.	Remove any coating that fails to adhere to the substrate and re-prep the area prior to applying the coating.	Repeat etch until medium textured floor is achieved and properly rinse the floor. Allow the floor to dry thoroughly before coating.
EXCESSIVE MOISTURE Excessive moisture can cause pressure which can lift coatings off the floor.	Remove any coating that is not tightly bonded and test substrate prior to recoating the floor.	Use a moisture meter to test the floor or place and secure plastic on the floor for 24 hours to check for moisture.
INTERCOAT ADHESION Improperly applied coatings or incompatible coatings can delaminate between coats.	Remove any coating that does not adhere properly. Re-prep the area and re-apply coating using proper techniques.	Lightly roughen coats between inter-coat applications and always observe procedures for recoat times.

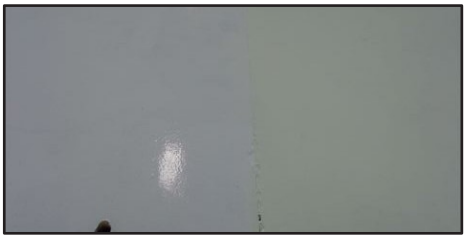
PIGMENT OR COLOR FLOODING

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

CAUSES	SOLUTION	PREVENTION
IMPROPER MIXING If a pigmented coating is not properly mixed, then light and dark streaks can occur when applying the coating.	Roughen the surface (de-gloss) and apply the coating after proper mixing.	Always mix any coating or two component material thoroughly to insure it is streak free and homogenous throughout.

COLOR DIFFERENCES OR SHADING





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

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

BLUSHING

Surface oiliness, exudate, or whitish spots. May appear as milky, hazy effect in clear coatings and may cause lack of gloss in pigmented coatings.

CAUSES	SOLUTION	PREVENTION
HIGH HUMIDITY Blushing can occur when polymerization takes place at high humidity and/or low temperatures.	It may be possible to remove the blush by washing the surface with warm water and the proper cleaner. If this does not work you may have to remove the coating and re-apply.	Follow manufacturers recommendations for application temperature and humidity ranges. In confined spaces, the use of industrial de-humidifiers may also help create ideal curing conditions.

LUMPY/SOLID EPOXY RESIN


Lumps (crystals) floating in liquids, cloudy appearance, or even a completely solid mass can all be evidence of epoxy crystallization.

CAUSES	SOLUTION	PREVENTION
EPOXY CRYSTALLIZATION Colder temperatures and temperature fluctuations can accelerate crystal formation.	Do not use epoxy until liquids can be re-heated and brought back to its liquid state. You can do this by following the instructions below or return the material to manufacturer.	Always store products at normal room temperature, and avoid temperature fluctuations when possible.

How to De-Crystallize Epoxy

1. Ensure you are in a well ventilated area
2. Loosen cover of container
3. Heat contents for several hours to temperatures as follows
   - » *Bisphenol-A based: greater than 140 degrees F*
   - » *Bisphenol-F based: greater than 194 degrees F*
4. Stir the contents of the container- pay close attention to sides & bottom of pail
5. Clean all spouts, pumps, and closures to ensure no epoxy buildup

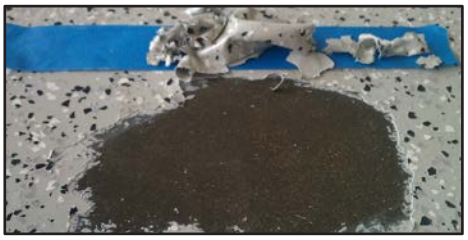
WRINKLING OF THE FILM



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

CAUSES	SOLUTION	PREVENTION
TOO HEAVY AN APPLICATION Some coatings when applied too thick will wrinkle after drying.	Either sand smooth and recoat or remove and re-apply the coating.	Follow the manufacturers recommendations as they pertain to the coverage rate.
SOLVENT ATTACK Some coatings are too chemically active to topcoat over the coating that presently exists on the floor.	Mechanically or chemical remove the present coating and redo the floor.	Check the compatibility of the coating with the surface film prior to application; if necessary, use a less aggressive coating product.
TOPCOATING TOO SOON If the epoxy is not allowed to cure completely before applying a urethane topcoat, then wrinkling may occur.	Either sand smooth and recoat or remove and re-apply the coating.	Prior to applying the topcoat, test the epoxy coating to ensure it has completely cured. This can be done by pressing on the coating with your thumb to verify that no fingerprint impression is left.

TACKY/SOFT FILM OR SLOW CURE


Surfaces or areas of the surface that have not completely cured. Product remains in a liquid, tacky state.

CAUSES	SOLUTION	PREVENTION
IMPROPER MIXING By not properly mixing the material, some portions of the applied floor may not cure.	Mechanically or chemical remove the present coating and redo the floor.	Always mix any coating or two component material thoroughly. Read labels for mixing ratios.
IMPROPER HARDENER If the wrong hardener is used the floor may not cure at all.	Mechanically or chemical remove the present coating and redo the floor.	Read labels prior to mixing to ensure that the proper resin and hardener are being mixed together.
TEMPERATURE If surface or application temperature is too cold, the floor may take much longer to cure.	Heat area to recommended temperatures in order to speed up cure process.	Wait until the temperature are within the ranges as needed to properly apply the material.
TOO HEAVY OF AN APPLICATION If the material is applied too thick it may not cure. Additionally if excess material is allowed to drip onto a surface that has already been applied, problems may arise.	Mechanically or chemical remove the present coating and redo the floor.	Apply the coating evenly and at a thickness recommended by the manufacturer. Take precautions to ensure that material does not drip from rollers, buckets, or paint trays.

Our troubleshooting guide has been updated with detailed information and illustrations to show some common epoxy problems. Problems can occur for various reasons. Contact Aerocoat Floor Coatings if you have a specific concern.