

Epoxy Floor Coating Problem Solving Guide

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Color Differential:



Description:

Difference in color or shading of topcoat.

Cause:

Retouching after 15 minutes: Color float issues arise when a pigmented epoxy has been applied and is re-touched or rolled again after sitting for 15 minutes or longer. Different shades in the color may result.

Using different batch numbers: Coloring can vary from batch to batch. Different batches used on the same project can result in color variances.

Repair:

Back roll the entire area always using an 18", woven, shed-resistant, 3/8" nap roller. Always try to go across the entire area from side-to-side.

When possible, recoats should always be completed with the same coating batch.

If batches are different, blend colored (base) side first before adding activator.

Prevention:

If material needs to be re-touched or rolled for any reason, it needs to be done within 10 minutes of application.

Different batch numbers:

Always check to make sure that you have the same batch number on the pigmented side of the product prior to adding the activator.

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Fish Eye

Description:

Fish eyes are round separations or indentions in the coating finish. They look like a crater with a rim around the perimeter and contain a small dot in the center. This is what gives it the name “fish eye”.



Cause:

Oil/Grease Contaminants: This can cause the epoxy to work improperly and fish eyes to appear.

Silicone: Contamination from silicone can cause fish eyes to appear.

Repair:

Oil/Grease:

- Remove the coating by grinding or another suitable method.
- Clean substrate; remove all oil/grease contamination.
- Recoat the entire area.

Silicone:

- For isolated areas, sand with 60 grit sandpaper or diamond grind.
- For wide spread fish eye problem, remove the coating.
- Use solvent to remove contaminants from the substrate.
- Recoat the entire area.

Prevention:

Oil/Grease: De-grease the surface properly using appropriate product. If it cannot be entirely removed, use a suitable oil-stop primer.

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Milky or Cloudy Coatings

Description:

A milky or cloudy appearance in wet or cured coating.



Cause:

Moisture in the concrete or high humidity can cause moisture to be present on the surface when the material is being applied or before it's fully cured. This can result in a "milky or greasy" film. This is sometimes referred to as a "blush" or "amine blush".

Thick application: A milky or cloudy appearance can result from product being applied too thick. It's usually more noticeable if the coating is clear.

Repair:

- For moisture, remove affected area by diamond grinding.
- Monitor humidity levels and reapply coating within the Product Data Sheet recommendations.
- If "greasy", wipe surface with Denatured Alcohol.

Prevention:

Moisture: Test the area using a Calcium Chloride Kit.

Thick Application: Follow Product Data Sheet for mil thickness recommendations.

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Orange Peel



Description:

A stipple appearance to the final coat of epoxy.

Cause:

Cold substrate or Cold Materials: This will prevent the product from leveling out causing an “orange peel” appearance.

Hot Substrate/Materials: This can cause the product to cure too rapidly which prevents the product from leveling out.

Repair:

- (1) Diamond grind the surface dull.
- (2) Remove all debris and dust by vacuum.
- (3) Reapply the epoxy topcoat *per the coating instructions*.

Prevention:

Hot and Cold Substrate/Materials: Substrate should be above 60 degrees and materials should be at 70 to 75 degrees. If thinning is desired, use up to 5% Acetone mixed within the coating.

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Peeling or Delamination

Description:

The epoxy is peeling or “letting go” from either the concrete or between layers of coatings.



Delamination from substrate:

Cause:

Improper Cleaning: The epoxy will not adhere to dirt, grease, or other contaminants.

No Primer Used: When priming is skipped, delamination may occur.

Moisture Vapor: Water vapor penetrating up through the substrate can cause peeling or delamination. After removing the problem areas, you may notice the concrete being dark from being damp.

Repair:

Improper Cleaning:

- The coating must be removed by grinding or blasting.
- Re-apply the epoxy after proper preparation.

No Primer Used:

- Remove the coating by suitable means.
- Prime and recoat after proper preparation.



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Moisture Vapor:

- Remove coating by suitable means.
- Measure moisture level; consult product data sheet and/or dealer before reapplying.

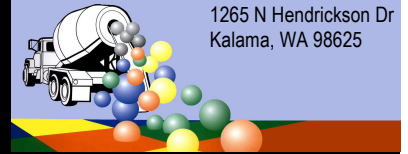
Prevention:

Improper Cleaning: Properly clean the substrate and provide a suitable profile by mechanical grinding or shot blasting.

No Primer: Use a suitable primer or prepare a primer following directions

Moisture Vapor Transmission:

- Substrates should have a properly installed and effective vapor barrier if in contact with the ground.
- Always perform a calcium chloride test prior to installation. Test results should be no more than 4 pounds per 1,000 square feet per 24 hours.
- Approved primer systems should be used on readings that are higher and/or mitigate the moisture levels.



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Delamination between Coats:

Cause:

- Beyond recoat window: Coating was applied beyond the recommended time for recoating.
- Surface contaminants: Surface was contaminated by water, humidity, oil, dust or grease.
- Improper Mixing Methods: Coating was not mixed at proper ratio or for 3 minutes *at minimum*.

Repair:

Beyond recoat window:

- Remove all loose or un-bonded coating.
- Surface needs to be sanded, using a diamond grinder.
- Vacuum to remove all dust and debris.
- Wipe the floor with Denatured Alcohol. Follow all safety instructions.
- Re-apply epoxy following Product Data Sheet instructions.

Surface Contamination:

- Make sure surface is clean and dry and free of any contaminants prior to coating. Vacuum or mop any water or dust.
- Oil and grease must be removed using a degreaser.
- Make sure the surface is dry before applying another coat.
- If surface coat has been on longer than 36 hours, you must diamond grind the floor dull.
- Remove any dust from surface by vacuum.
- Wipe surface with Denatured Alcohol. Follow safety instructions.
- Re-apply epoxy coating following Product Data Sheet instructions.

Improper Mixing:

- Remove any loose, peeling or uncured coating.
- Any uncured coating must be solvent wiped with Denatured Alcohol or Acetone *per instructions*
- Diamond grind the coating.
- Vacuum the surface to remove dust and debris.
- Solvent wipe surface with Denatured Alcohol.
- Re-apply the epoxy following Product Data Sheet instructions.

Prevention:

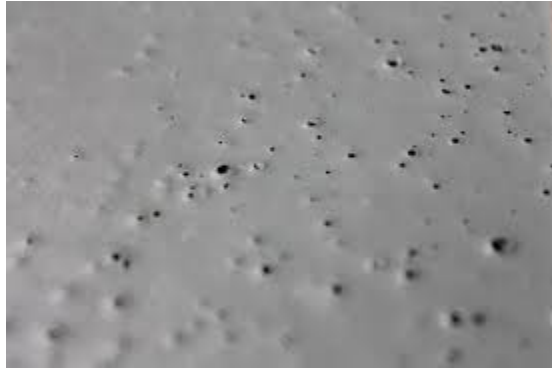
Beyond Recoat Window: Each coat needs to be applied with 24 hours.

Surface Contamination: Check substrate carefully before applying epoxy. Remove any contamination prior to coating.

Improper Mixing: Follow directions on labels and Product Data Sheets.

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Pinholes/Bubbling



Description:

Pinholes in the coating appear as small blisters or bubbles. After the blisters pop, they leave a round crater and the pinhole can be seen through the transparent film.

Cause:

Outgassing: Air escapes from the porous substrate and becomes trapped in the coating.

Temperature/Humidity: If too hot or humid, it can result in rapid drying that cause's air entrapment in the coating.

Air Movement: Air movement from fans, door or vents blowing directly on the surface may cause flash drying which causes bubbles.

Sunlight: Direct sunlight can cause the product to tack up before necessary air release has occurred, which results in bubbles.

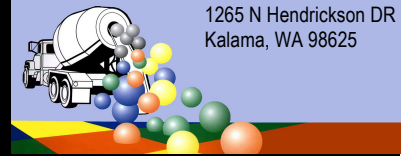
Mixing: Mixing at too high of a speed entraps air, resulting in bubbles.

Surface Prep: Extreme/aggressive shot blasting opens the pores in the concrete causing air to be trapped when the coating is applied resulting in bubbles.

Roller Covers: Not using the proper nap recommended. *Woven, Shed-Resistant, Rollers are recommended.*

Repair:

- Sand the problem areas dull. Vacuum dust and debris.
- Fill large craters with epoxy patching material.
- Sand patched areas and vacuum.
- Reapply coating at recommended rate and follow directions.



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Prevention:

Outgassing: Use a primer system on all porous concrete. Follow directions for mixing and using primer. Spike rollers can be used if bubbles appear but may not completely remove them.

Air Movement: Eliminate any source of direct air blowing onto the surface.

Temperature and Humidity: Follow all direction to insure you are within the products recommended ranges.

Sunlight: Avoid direct sunlight when applying.

Mixing: Always use a jiffy mixer and medium to slow speeds. If air bubbles are present in coating, allow to sit briefly before pouring on the floor.

Roller Covers: Always follow recommended nap and type of cover. *Woven, Shed-Resistant, Rollers are recommended.*

Surface Prep: Avoid aggressive shot blasting.

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Product Settling



Description:

Solid material settles to the bottom of the container. This typically happens in pigmented/colored product.

Cause:

Time: Some products settle with time.

Shipping or Vibration: Settling due to shipping vibration.

Prevention:

- If product appears to be settled, make sure the mixing blade reaches the bottom of the container.
- Premix the pigmented/colored product before adding activator.
- If settling material is dry and does not mix back into the material, do not use it.

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Not Drying / Slow



Description:

The epoxy does not fully cure, or remains soft/tacky 24 hours after application.

Cause:

- Improper mix ratios
- Improper mixing methods
- Cold ambient temperatures

Repair:

- Remove the uncured coating down to the clean substrate by using solvent, scraping or mechanical grinding. Follow safety instructions on solvent.
- Reapply the epoxy coating per Product Data Sheet.
- Never apply epoxy over uncured material.

Prevention

Improper Mix ratios: Always read and follow the printed information on the product containers or the Product Data Sheet. Use buckets that have pre-printed measuring guides to insure the proper mix ratio.

Improper Mixing Methods: Always mix the base side first *thoroughly*. Then combine with the activator. Always mix for 3 minutes using a Jiffy mixing paddle, never a drywall mud mixing blade. Never flip buckets upside down on the floor to drain. This could result in sticky spots.

Cold Material: Always make sure the product containers have been brought to suitable room temperatures. Cold materials are difficult to mix and to work with.

Cold Ambient Temperatures: This will cause slower than normal drying times. This can cause air bubbles and blisters since the epoxy will remain thick and prevent vapor in the floor from escaping. Make sure the room is brought to suitable temperatures for at least 2 full days prior to application.

Cold Surface Temperatures: Floors that are 55 degrees or lower will greatly affect the drying time of the epoxy. It can also hurt the physical performance properties of the epoxy. A cold surface can also cause adhesion issues with your project. Make sure the floor is at least 60 degrees for a minimum of 2 days prior to application.

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Stains / Tire Marks



Cause:

Tire Marks: Marks left behind from vehicles.

Chemicals or Spills: Contamination left from spilling products on the surface.

Prevention:

Chemicals or Spills: Epoxies take approximately 7 days to fully cure. It is important to allow a minimum of 24 hours for foot traffic and at least 2 full days for forklift traffic or heavy loads.

Tire Marks: Due to the tires being manufactured with plasticizers, which improve cold weather traction, they tend to leach this plasticizer on to the epoxy floors *when the tires are warm or hot from driving*. This chemical reaction between the tires and epoxy floors are sometimes unavoidable. To help prevent this, consider placing a rubber mat at the location where tires will be on a constant basis.

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Sticky or Uncured Coating

Description:

The epoxy does not fully cure, or it is still soft/sticky after 24 hours.



Cause:

- Improper mixing ratio
- Improper mixing
- Material was cold
- Cold ambient temperatures
- Cold surface temperatures

Repair:

- Remove the uncured coating down to the clean substrate by using solvent wiping, scraping and grinding or blasting. Follow all safety precautions.
- Recoat the entire floor following Product Data Sheets.
- Never apply over uncured material.

Prevention:

Improper Mix Ratio: Always read and follow the mix ratios on the bucket labels and/or the Product Data Sheets. Use mixing containers that have printed measuring devices on them.

Improper Mixing: Always mix the pigmented side thoroughly before adding the activator. Always use a jiffy style mixer and never a drywall mixing blade. Never turn buckets upside down on the floor to drain. This will allow unmixed product to seep onto the floor from the bucket walls and result in sticky spots.

Cold Materials: Cold materials will result in slower than normal cure times and can affect their appearance when dry. Cold material is difficult to mix, roll out and to level out. Product should always be allowed to acclimate to the proper temperatures recommended on the Product Data Sheets.

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Uneven Flake/Chip Application



Description:

Flakes that are broadcast evenly are extremely important in the look of the overall project.

Always present the client a sample board to view the approximate amount of chips that will be used in their project.

Cause:

- Not taking the proper time to allow for even distribution of the flakes.
- Crushing the flakes in your hand as you broadcast them.
- Using the flake particles that have settled to the bottom of the container.

Repair:

- Grind or sand the floor dull.
- Vacuum the debris from sanding.
- Reapply the epoxy per directions and reapply the flakes.

Prevention:

- Use a small bucket when carrying the flakes out onto the floor area.
- Do not crush the flakes when grabbing. Loosely grab and throw the flakes high into the air over the epoxy floor.
- Gradually move around the entire area, broadcasting flakes instead of standing in one area for too long.

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Yellowing



Description:

The epoxy has developed a yellow or amber hue. This will affect both clear and pigmented epoxies.

Cause:

Sunlight: Epoxies, when exposed to sunlight- direct or partial, will amber or yellow.

Repair:

- Remove any dirt, grease or oil by cleaning with appropriate cleaning agent.
- Dull the surface using a diamond grinder or other mechanical method. Then remove dust.
- Reapply coating per directions.

Prevention:

- When using a decorative vinyl flake system, use a *full flake* system. Remember to apply a UV stable, clear, urethane topcoat.
- When using a solid color, use a UV stable, clear, urethane topcoat. This will not prevent yellowing entirely but will hinder it. You may also wish to use a pigmented urethane topcoat.