

MARCH 2022



TROUBLE SHOOTING GUIDE

A thorough guide for the causes, repairs and prevention methods of common application problems that occur in waterproofing and flooring systems

INTRO DUCTION

This troubleshooting guide covers the causes, repair, and prevention of problems that may occur when using ALCHIMICA® waterproofing, deck coating and flooring systems.

Changes and additions may be added as our technology evolves and our level of knowledge increases.

The team of ALCHIMICA® is always open to any enquiries for specific applications. For any technical assistance you may contact us at alchimica@alchimica.com

**"Quality means
doing it right when
no one is watching."
- Henry Ford**



THE OBJECTIVE

The objective of this troubleshooting guide is to share the knowledge we have amassed through our years of experience in the application of liquid applied waterproofing and flooring systems.

This guide serves the purpose of advancing the level of technical competence through out our stakeholders, from direct clients of ALCHIMICA to field active installation teams.

PINHOLES/ OMEGA HOLES

Description

Pinholes or omega holes are holes on concrete surfaces that may cause blisters or bubbles once the membrane is applied. When these bubbles pop, they usually leave a round crater and the pinhole is seen through the film. Although ALCHIMICA's waterproofing membranes are developed to minimize this phenomenon, it is likely that it may occur depending on substrate conditions and temperature.

Cause

Concrete releases air and moisture vapor that expands as temperatures rise. Also, aggressive shot-blasting may open concrete pores and bug holes.

Repair Method

1. Break the blisters/bubblers before additional coating is applied.
2. Clean surface and solvent wipe if necessary.
3. Use HYPERSEAL®-EXPERT-150 or other ALCHIMICA® sealants to repair the crater area.
4. Apply the next layer of the waterproofing membrane.



PREVENTION

Apply the appropriate ALCHIMICA® primer to effectively stabilize and seal the substrate.

Begin application as temperatures are dropping and continuing to drop. Rising temperatures result in expansion of the moisture and air in the concrete. Falling temperatures cause the air and moisture to contract within the concrete.

Apply the specified system in thinner coats, which will require more coats to build the system. Thinner application may displace the air in the pinholes.

CRATERS DUE TO MOISTURE CONTAMINATION

Description

Craters due to moisture can occur while a polyurethane membrane is applied/curing.

Cause

Moisture from relative humidity or moisture contaminated aggregates will react with the coating material and cause a bubbling effect as shown above. This is caused by a chemical reaction between moisture and the polyurethane coatings.

Repair Method

1. Grind smooth the affected areas.
2. Clean surface and solvent wipe if necessary.
3. Apply additional coating to match adjacent areas. If the coating is older than 1 week apply the primer MICROSEALER-50 at a consumption of 50-60gr/m².



PREVENTION

Ensure that the deck is completely dry before applying the main membrane.

Conduct a moisture test before coating application to ensure that there is no contamination. Moisture may not be readily apparent.

If silica sand aggregates are to be used make sure they are dry as it can be a source of moisture contamination.

Ambient temperature should be more than 3°C above dew point. Relative humidity should not exceed 85%.

BLISTERING DUE TO WATER CONTA- MINATION

Description

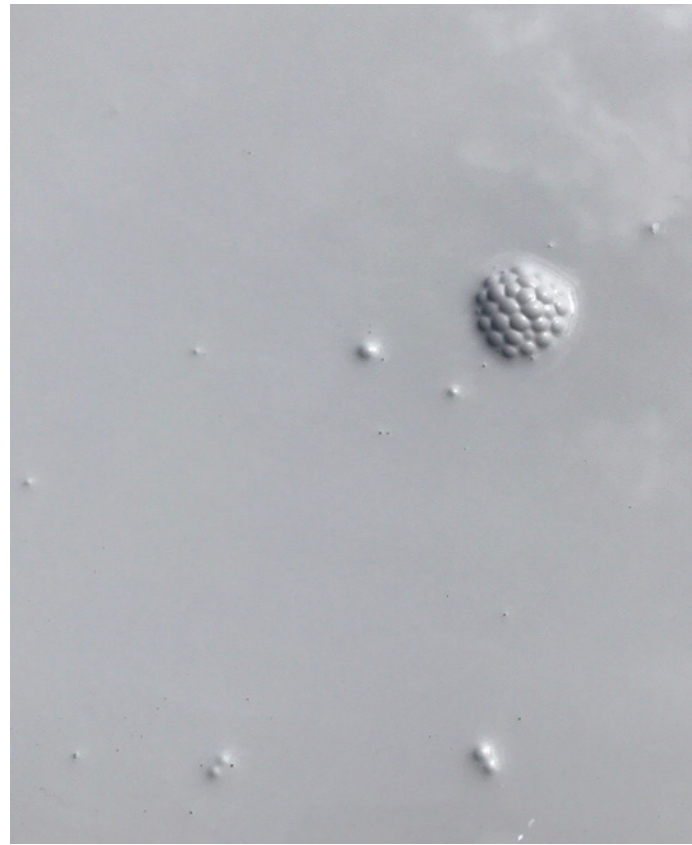
Blisters look like bubbles in the coating surface. The blisters will have a trace of water or moisture trapped inside them. Moisture between the wear coat and topcoat leaves an orange peel texture on the backside of the blister.

Cause

Water from rain, dew or other sources, mixed or rolled into wet/uncured product. Polyurethane coatings react with water and attempts to cure on the surface, forming blisters and stress wrinkled areas.

Repair Method

1. Cut out and remove all blistered and wrinkled areas.
2. Grind affected areas to sound coating.
3. If the coating is older than 1 week apply the primer MICROSEALER-50 at a consumption of 50-60gr/m².
4. Re-apply coating as needed to bring system to specified thickness.



PREVENTION

Do not apply coating if rain is imminent.

Ambient temperature should be more than 3°C above dew point.

Ensure that the deck is completely dry before coating. Moisture may not be readily apparent. Conduct a moisture test before application to ensure that there is no water contamination.

BLISTERING DUE TO THICK COAT APPLICATION

Description

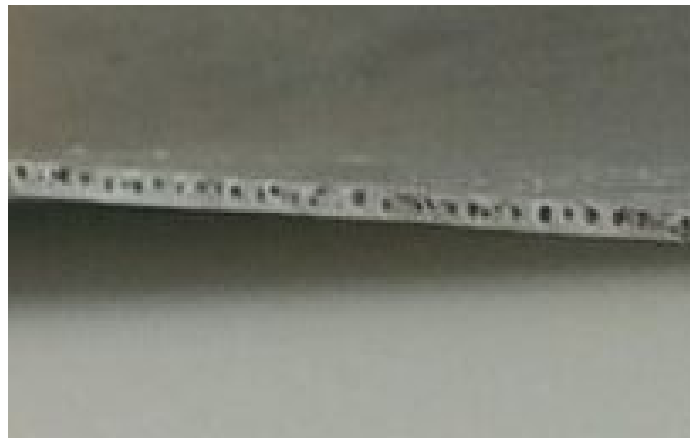
Blisters look like small to large unbroken bubbles in the coating surface and can appear round. The coating may give an orange peel texture.

Cause

Coating was applied at a rate higher than application instructions.

Repair Method

1. Completely remove affected areas down to cured coating or substrate.
2. Reapply the product according to its instructions.



PREVENTION

During installation of coating, frequently check the wet film thickness.

Laying out the job prior to coating by gridding out the area will help to maintain proper and uniform coating thicknesses.

During application, back roll to eliminate low spot areas where self-leveling coating may pool.

WRINKLING

Description

Coating is wrinkled in appearance. Multiple lines of parallel wrinkling may occur.

Causes

Primer or previous coat is uncured:

Material applied over uncured primer or coating, causing stress on the topcoat.

Coating Too Thick:

Coating applied at a thickness that exceeds application instructions.

Loss of adhesion window:

Coating has lost adhesion due to missed adhesion window.

Repair Method

1. Remove coating in affected areas to cured coating or sound substrate
2. Reapply the product according to its instructions.



PREVENTION

Ensure that primer or previous coats are completely cured before applying additional coats.

Coating Too Thick: Apply coatings at recommended coverage rates.

SLOW CURE OR NOT CURING

Description

Coating is soft and may transfer when touched. Coating may also delaminate.

Cause

Product has been diluted with a non-suitable solvent. Generally, the coating will feel tacky, but in worst-case scenario the coating will remain in a liquid state.

Product applied in very low temperatures.

Repair Method

1. Remove to sound, clean substrate.
2. Solvent wipe to remove all residue. Grind to sound concrete if necessary.
3. Re-apply system.



PREVENTION

Do not use other products than ALCHIMICA® SOLVENT-01 in order to dilute the products.

Apply the products within the specified application temperature range.

PEELING/ DELAMINATION ON SUBSTRATE

Description

Coating may peel off in places and show signs of concrete laitance or other contaminants on the backside.

Causes

Improper Surface Profile:

Surface was not shot-blasted or abraded prior to applying membrane, or the base coat was applied over epoxy primer after the 24-hour window.

Contamination from Moisture:

There was dew or other moisture on the surface that was coated.

Contamination from dust, dirt, etc.:

Coating over contaminated surfaces will lead to coating failures such as loss of bond.

Incompatible Materials:

Materials that are incompatible with the coating will cause many issues including delamination.

Repair Method

- 1.Remove all loosely bonded material.
- 2.If substrate is exposed, abrasion may be necessary.
- 3.Clean repair area.
- 4.Re-apply the system as specified by ALCHIMICA®.



PREVENTION

Improper Surface Profile:

Substrate should be cleaned prior to primer application. Determine substrate particularities and consistency and choose the right primer as displayed in the ALCHIMICA® Primer Selection Table

Contamination:

Ensure deck is clean and dry prior to application of material.

Incompatible Materials: Perform field adhesion test prior to application of the coating when installing coating over existing coating system.

Apply the system at specified rates and per ALCHIMICA® recommendations.

PEELING/ DELAMINATION BETWEEN COATS

Description

Coating is peeling or de-bonding between layers of coating.

Causes

Beyond Recoat Window:

Coating was not applied within 24 hours of the previous coat.

Surface Moisture: In many cases, moisture may develop over the first coat overnight

Surface Contamination:

Surface was contaminated by water, humidity, oil, grease, or dust.

Repair Methods

Beyond Recoat Window/ Surface Moisture:

Surface Moisture:

1. Remove all loose, peeling, or un-bonded material.
2. Sand surface.
3. Vacuum surface to remove any dust or debris left by sanding.
4. Apply MICROSEALER-50 at a consumption of 50-60gr/m².
5. Reapply coating as specified and according to ALCHIMICA® recommendations.

Surface Contamination:

1. Clean surface of any contaminants and dry prior to coating. Vacuum or mop any water or dust. Remove oil or grease. Surface must be completely dry before applying next coat.



2. Vacuum surface to remove any dust or debris left over from sanding.
3. Apply MICROSEALER-50 at a consumption of 50-60gr/m².
4. Reapply coating as specified and according to ALCHIMICA® recommendations

PREVENTION

Beyond Recoat Window: Each coat must be applied within 24 hours of the previous coat.

Surface Contamination: Check substrate carefully before applying coating. Remove any existing contaminants.

Surface Moisture: Prior to applying subsequent coats, always check for moisture on the surface. Especially in cases where morning dew is expected.

CRACKS

Description

Cracks in the concrete substrate may come through the coating and become clearly visible. Over time, these cracks may increase in number as well as in size.

Causes

Settling:

Substrate cracks are caused by shifting and settling of the structure after original construction.

Expansion/Contraction:

Concrete structures continually experience expansion and contraction due to temperatures, moisture and loads.

All cracks should receive detail treatment prior to application of the base coat.

Repair Method

1. Route the cracks at a minimum of 5mm and vacuum well to remove any dust particles.
2. Fill with HYPERSEAL-EXPERT-150® or other ALCHIMICA® polyurethane sealants. Allow sealant to fully cure.
3. Clean and solvent wipe the repair area, extending to 5-10cm on either side of the crack.
4. Prime the repair area and any exposed concrete using MICROSEALER-50 at consumption of 50-60gr/m².
5. Install a detail coat of the base coat material extending to the primed area on either side of the crack. Optional: Apply base coat material extending on either side of the crack and embed reinforcing fabric into wet coating. Center fabric over the HYPERSEAL sealant and allow it to fully cure. Apply additional base coat material as necessary to fully encapsulate reinforcing fabric.



PREVENTION

Prior to application of the coating system, perform proper surface preparation including crack detail using HYPERSEAL® sealants.

Unsound substrates such as unreinforced screeds, bitumen membranes, etc. require the application of the waterproofing system with full surface reinforcement using ALCHIMICA® geotextile products.

WATER DAMAGE TO UNCURED COATING

Description

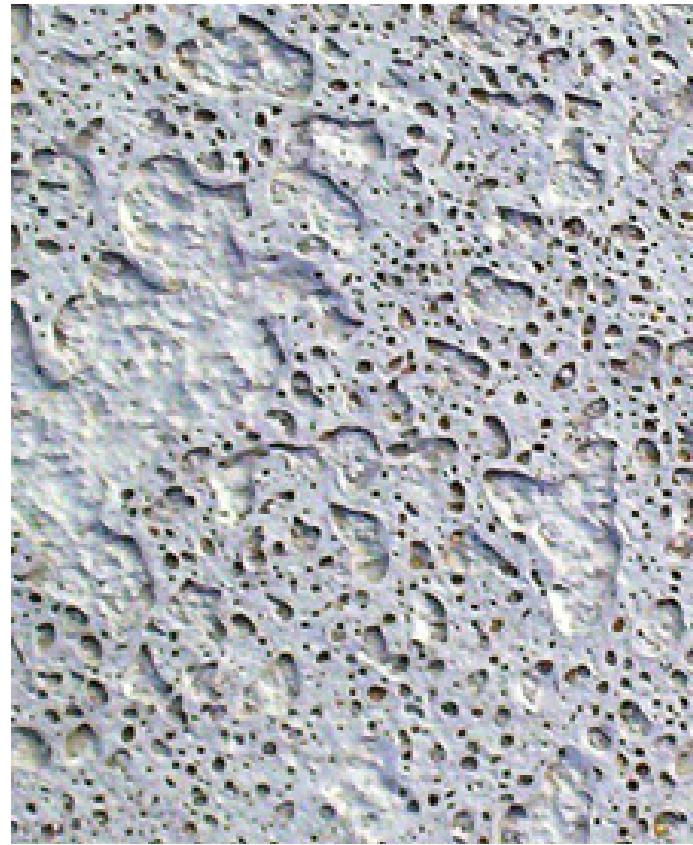
Surface has areas of sponge-like, cratered patterns where water has come in contact with uncured coating

Causes

Heavy rain or other water source caused damage to uncured coating.

Repair Method

1. Grind all affected areas to eliminate ridges in the cratered areas.
2. Clean and allow to completely dry.
3. Primer the surface using MICRROSEALER-50 at a consumption of 50-60gr/m² and re-apply coating as specified and according to ALCHIMICA® recommendations.
4. In severe situations, the coating may have to be totally removed prior to system re-application.



PREVENTION

Do not apply coatings if rain is imminent.

COLOR DIFFERENTIAL

Description

Finished waterproofing surface shows different shades of color. While considered less than aesthetically appealing, this condition does not affect the integrity of the waterproofing system.

Causes

Different Batches of Topcoat:

There may be slight shade variation from batch to batch of material.

Deck Coated at Different Times:

Older coating material has weathered and appears different than newer coating material.

Improper Mixing:

Product not mixed sufficiently to disperse pigment.

Repair Method

1. Apply an additional wear coat and topcoat.
2. Allow sufficient time for weathering.



PREVENTION

Different Batches of Topcoat:

Always purchase or set aside enough topcoat from the same production batch to coat the entire surface area. Use odd batches elsewhere such as in the wear coat if applicable. If there is not enough topcoat of a single batch to complete the project, mixing batches is an alternative, by combining all the coating you will be using as the topcoat into one large container.

Deck Coated at Different Times:

When deck coating is completed in phases, a transition such as a wide joint will help to minimize appearance differential from weathering.

Improper Mixing: Always mix material sufficiently to properly disperse the pigment.

FUNGI FORMATION IN WATER TANKS

Description

Fungi commonly forms in water tank walls.

Causes

Fungi formation is expected in aqueous environments when water chlorination does not take place.

Repair Method

1. Remove the water from the water tank and clean the mold using soap and water. Rinse the water tank thoroughly until all soap is removed and refill the water tank.
2. If mold is irremovable:
Grind all affected areas to eliminate ridges in the cratered areas. Clean and allow to completely dry.
Prime the surface using AQUASMART®-DUR/AQUADUR at a consumption of 200gr/m² and re-apply coating as specified and according to ALCHIMICA® recommendations.

In severe situations, the coating may have to be totally removed prior to system re-application.



PREVENTION

Water chlorination is mandatory to prevent the formation on fungi in water tanks. Percentage of chlorine in each case is determined by the use of the water and local standards depending on regulations.

SKIN ON MATERIAL IN CONTAINER

Description

A skin forms on the top of the material in a pail or barrel.

Causes

Single-component polyurethane products are moisture-cured. The pail has been damaged during transportation and or storage, allowing moisture to enter the pail, beginning the curing process. This phenomenon can also occur when a pail has been opened but not fully used.

Repair Method

Remove the skin from the top of the product. Note: Be sure to remove all cured material from the container. Do not mix the skin in the product. In case the skin is mixed into the product, it needs to be sieved.



PREVENTION

When unsure of transportation or storage conditions, store pails inverted.

Use the entire container of coating material whenever possible.

MEMBRANE DAMAGE FROM FOREIGN OBJECTS

Description

Cuts and leaks caused from mechanical damages caused on the waterproofing membrane.

Repair Method

1. Clean the surface around the slit at a perimeter of 10-15cm depending to the tear's length, in order to remove any loose particles, dust, oils etc.
2. Apply MICROSEALER-50 at a consumption of 50-60 gr by overlapping the membrane at the prementioned perimeter.
3. Fill the slit using HYPERSEAL-EXPERT-150, tool it to form a smooth patch and the next day apply the same topcoat that was applied to the rest of the membrane waterproofing system (if one was used) in order to ensure long term UV protection of the patch.



PREVENTION

One of the benefits of ALCHIMICA's liquid applied waterproofing systems is the ease of reparations to be carried out when spot problems occur. Nevertheless, it is always recommended to protect the membrane by securing that there are no foreign objects, sharp and heavy ones mostly, that they could fall and damage the membrane, to the best possible extent.

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