TROUBLE SHOOTING
A Stain Solution Guide

ALLIGATORING:

Patterned cracking in the surface of the stain film resembling the scales of an alligator.

POSSIBLE CAUSE:

- Application of an extremely hard, rigid coating, like a solvent-based stain over a more flexible coating, like a water-based stain.
- Application of a Recoater before the Basecoat is dry.
- Natural aging of oil-based stains as temperatures fluctuate. The constant expansion and contraction results in a loss of the stain film elasticity.

SOLUTION:

- Old stain should be completely removed by scraping and sanding the surface. Also, a chemical stripped can be used.
- Follow the recommended prep procedure and application guide.

BLISTERING:

Bubbles resulting from localized loss of adhesion and lifting of the stain film from the underlying surface.

POSSIBLE CAUSES:

- Residue of water in cracks, crevasses, edges, or corners.
- Ambient humidity is too high.
- Improper surface cleaning or preparation. Tiny specs of dirt left on the surface can act as a sponge and hold moisture. When the finish is exposed to the sun (or abrupt changes in atmospheric pressure), moisture expands, and pressure builds up. If the pressure is great enough, blisters form.
- Wrong thinner or reducer. Use of a fast-dry thinner or reducer, especially when the material is sprayed too dry or at an excessive pressure. Air or moisture can be trapped in the film.
- Excessive film thickness. Insufficient drying time between coats may trap solvents which escape later and blister the color coat.
- Contamination of compressed air lines. Oil, water or dirt in lines.
- Incompatibility of the materials.

PREVENTION TECHNIQUES:

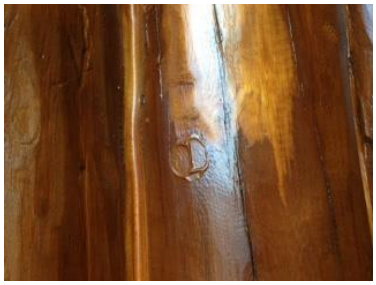
- Thoroughly clean areas to be stained before sanding. Be sure surface is completely dry before applying either Basecoats or Recoater. Don't touch a cleaned area as the oils in your hands will contaminate the surface.
- Dry carefully and thoroughly.
- Allow proper drying time for Basecoats and Recoater.
- Drain and clean air pressure regulator daily to remove trapped moisture and dirt. Air compressor tank should also be drained daily.

SOLUTION:

- If damage is extensive and severe, stain must be removed down to the wood, depending on depth of blisters; then refinish.

TROUBLE SHOOTING – A Stain Solution Guide

BUBBLING:



There are two things that make a product form bubbles on the surface after a product is applied. One is too much moisture in the wood that wants to escape. The other involves the use of linseed oil in the former finish.

POSSIBLE CAUSES:

- Water trapped behind finish.
- All oil-base products have some form of linseed oil in them.
- Processed linseed oil - more refined, more pure, dries quicker, yellows much slower and is more expensive to add to product.
- Non-processed linseed oil (raw, cold pressed) – less refined, more impurities, very slow dry time, yellows much quicker and is less expensive to add into product.
- All processes above will lead to bubbling of the newly applied product.

SOLUTION:

- Scrape, strip, or sand substrate to remove wrinkled coating.
- Make sure the wood is thoroughly dry and oil has been removed before applying product.
- Apply stain at the manufacturer's recommended spread rate.
- When staining during extremely hot, cool, or damp weather, allow extra time for the stain to dry completely.

CRACKING / FLAKING:

This involves the splitting of a dry stain film through at least one coat, which will lead to complete failure of the stain. Early on, the problem appears as hairline cracks; later, flaking of stain chips occurs.

POSSIBLE CAUSES:

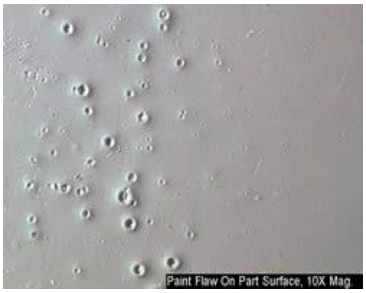
- Water is allowed to soak into wood through cracks. When sun heats this moist surface the finish looses its bond and is pushed away from the wood.
- Staining under cool or windy conditions that make latex stain dry too fast.
- Over thinning the stain or spreading it too thin. Poor surface preparation, especially when the stain is applied to bare wood without priming.

SOLUTION:

- It may be possible to correct cracking that does not go down to the substrate by removing the loose or flaking stain with a scraper or wire brush, sanding to feather the edges, priming any bare spots and re-staining with basecoat and recoater.
- If the cracking goes down to the substrate remove all of the stain by scraping, sanding and/or use of a heat gun, then prime and re-stain with a quality exterior stain.

TROUBLE SHOOTING – A Stain Solution Guide

FISH EYE:



A fish-eye is caused when there is some contamination (oil, silicone, etc.) on the surface of the wood before a stain is applied. When the stain is applied over the contamination it will be repelled from the area with the contamination (think oil and water). This causes a little circle with no stain on it, known as a fish-eye.

POSSIBLE CAUSES:

- Effects of the old finish or previous repair. The old finish or previous repair may contain excessive amounts of silicone from additives used during their application. Usually wiping with a solvent will not remove embedded silicone.
- Improper or insufficient surface cleaning or preparation. Many waxes and polishes contain silicone---the most common cause of fish-eyes. Silicones adhere firmly to the stain film and require extra effort for their removal. Even small quantities found in sanding dust rags can cause this type of failure.
- Contamination of air supply by water, oil, or silicon.
- Oil, wax, grease, or silicone contamination of wood surface.
- Use of silicone-containing polishes or aerosol sprays in proximity to the stain area.

PREVENTION TECHNIQUES:

- Precautions should be taken to remove all traces of silicone by thoroughly cleaning and sanding the wood.
- Drain and clean air pressure regulator daily to remove trapped moisture and dirt. Air compressor tank should also be drained daily.
- Regular maintenance of the air supply.

SOLUTION:

- Apply light coats of basecoat until defect is covered.
- If required or recommended, use fish-eye eliminator.
- In severe cases, sand the affected areas, clean thoroughly, isolate and refinish.

LAPPING:

Appearance of a denser color or lighter gloss where wet and dry layers overlap during stain application.

POSSIBLE CAUSES:

- Appearance of a denser color where wet and dry layers overlap during stain application.
- Caused by not following the wood siding to a natural stopping point. Such as a window, door, or where siding butts together.
- Failure to maintain a "wet edge" when applying stain.

SOLUTION:

- It is also wise to minimize the area being stained, and plan for interruptions at a natural break, such as a window, door, or corner (especially important when applying stain to bare wood). Alkyd stains generally have superior wet edge properties
- Maintain a wet edge when staining by applying stain toward the unstained area and then back into the just stained surface. This technique (brushing from "wet to dry" rather than vice versa) will produce a smooth uniform appearance.

TROUBLE SHOOTING – A Stain Solution Guide

MILDEW:

Black, gray, or brown areas of fungus growth under the surface of stain or caulk.

POSSIBLE CAUSES:

- Forms most often on areas that tend to be damp and receive little or no direct sunlight (walls with a northerly exposure and the underside of eaves are particularly vulnerable).
- Failure to properly prep bare wood thoroughly before staining.
- Staining over a substrate or coating on which mildew has not been removed.

SOLUTION:

- Test to distinguish mildew from dirt by applying a few drops of household bleach to the discolored area; if it disappears, it is probably mildew.
- Treat the mildew by applying a mixture of water, bleach and T.S.P. (3 qts. water, 1 qt. bleach and 1/2 C T.S.P. Leave on for 20 minutes, do NOT let it dry! Wear goggles and rubber gloves.
- Then scrub and rinse the area.
- Apply basecoat and recoater.

ORANGE PEEL:

Resembling the skin of an orange, it is an uneven texture of the stain. Generally, it is caused by inadequate spraying techniques along with the lack of back-brushing.

POSSIBLE CAUSES:

- Wood not sanded or prepared thoroughly.
- Improper gun adjustment and techniques. Too little air pressure, wide fan patterns or spraying at excessive gun distances causes droplets to become too dry during their travel time to the work surface and they remain as formed by gun nozzle.
- Extreme temperature. When air temperature is too high, droplets lose more solvent/water and dry out before they can flow and level properly.
- Improper flash or recoat time between coats. If first coats are allowed to become too dry, solvent in the stain droplets of following coats will be absorbed into the first coat before proper flow is achieved.
- Too high viscosity.
- Low application temperature.
- Materials not uniformly mixed. Many finishes are formulated with components that aid coalescence. If these are not properly mixed, orange peel will result.

PREVENTION TECHNIQUES:

- Prepare and sand wood correctly.
- Stir all Basecoat and Recoater cans thoroughly.
- Schedule staining to avoid temperature and humidity extremes.
- Allow proper drying time for Basecoats and Recoater. Not too long or not too short.
- Use proper gun adjustments, techniques, and air pressure.
- Do not dry by fanning.
- Follow recommendations on technical data sheets.

SOLUTION:

- For mild cases sand, using recommended materials and techniques.
- In extreme cases, sand down surface and refinish and reduce the air pressure.

TROUBLE SHOOTING – A Stain Solution Guide

PEELING:

This is caused by the loss of adhesion of the stain due to poor preparation. Where there is a Basecoat and Recoater, or multiple coats of stain, peeling may involve some or all coats.

POSSIBLE CAUSES:

- Poor sanding of wood.
- Surface temperature was to low/to high when applying refinish system
- Improper cleaning or preparation. Failure to remove sanding dust and other surface contaminants will stop the finish coat from coming into proper contact with the wood.
- Failing to remove mill glaze because of improper cleaning and sanding of wood.
- Materials not uniformly mixed.
- Film was too dry when the masking tape was removed.
- Flash times too short due to wind, to cool OR warm of the surface temperature.
- Condensation on wood due to temperature changes.

PREVENTION TECHNIQUES:

- Use appropriate 50-60 grit sanding material on the wood.
- If product has not completely detached, scratch-sand area for proper adhesion.
- Do not apply coats of product too heavily.
- Use compatible stain systems.
- Degrease and prepare wood carefully.
- Follow application recommendations per Technical Data Sheets.

SOLUTION:

- Remove finish from an area slightly larger than the affected area and refinish.

SAGGING:

Downward "drooping" of the stain film immediately after application resulting in an uneven coating.

POSSIBLE CAUSES:

- Application of too heavy a coat of stain.
- Application in excessively humid and/or cool conditions.
- Application of over-thinned stain.
- Staining over a glossy surface, which does not provide enough of a profile to which the coating to adhere to.
- Staining over a surface contaminant.

SOLUTION:

- If stain is still wet, immediately brush out or re-roll to redistribute the excess evenly.
- If the stain has dried, sand and reapply a new coat of stain.
- Do not thin the stain unless recommended on the label or data page.
- Follow label and data page directions for the appropriate environmental conditions for the coating.
- Sand glossy surfaces dull to provide a profile for the coating to adhere to.
- Follow label and data page directions for the appropriate spreading rate (e.g., the recommended total area that can be stained) for the product. Two coats of stain at the recommended spread rate are better than one heavy coat.

TROUBLE SHOOTING – A Stain Solution Guide

TANNIN STAINING:

It is a brownish or tan discoloration on the stain surface due to migration of tannins through the stain film. Typically occurs on "staining woods," such as redwood, cedar and mahogany, or over stained knots in certain other wood species.

POSSIBLE CAUSES:

- Excess moisture escaping through the exterior walls, which can carry the stain to the stain surface.
- Failure to adequately prime and seal the surface before applying the stain.
- Use of a primer that is not sufficiently stain resistant.

SOLUTION:

- Correct any possible sources of excess moisture.
- Thoroughly clean the surface.
- Apply high quality, stain-resistant oil-based or acrylic latex Basecoat. Oil-based stain-resistant primers are the best type to use on severely stained boards.

WRINKLING:

Wrinkling is a rough, crinkled surface that occurs when stains form a "skin" on a wood surface.

POSSIBLE CAUSES:

- Stain applied too thickly (more likely when using alkyd or oil-based stains).
- Staining a hot surface or in very hot weather.
- Exposure of uncured stain to rain, dew, fog, or high humidity levels.
- Applying A topcoat of stain to insufficiently dried first coat. Staining over contaminated surface (e.g., dirt or wax).

SOLUTION:

- Scrape or sand substrate to remove wrinkled coating.
- Apply stain at the manufacturer's recommended spread rate.
- Make sure the Basecoats are dry before applying the Recoater.
- When staining during extremely hot, cool, or damp weather, allow extra time for the stain to dry completely.

** Much of the information used above was compiled from the National Stain Institute or Sherwin Williams Problem Solver.*