

Troubleshooting Guide

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Troubleshooting Guide

1. Bleeding

(discoloration)

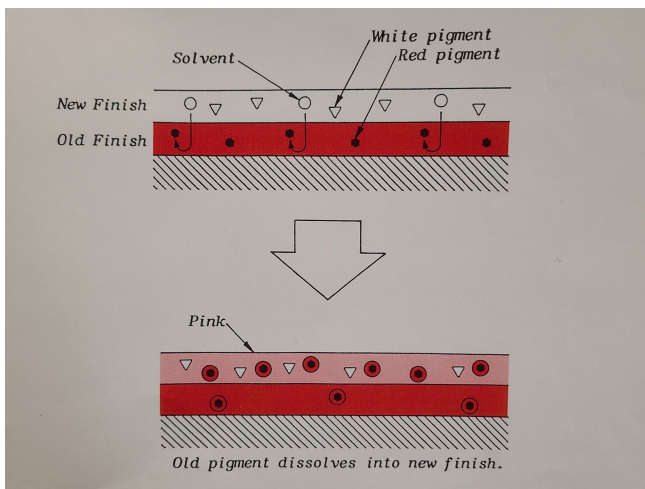
A red or yellow discoloration in the topcoat color

Cause- Solvent in the new topcoat dissolves soluble dyes or pigments in the original finish, allowing them to seep into and discolor the new topcoat.

Repair-

- (1) Allow color to cure, isolate with two component undercoat(s) and refinish.
- (2) Remove the original paint film and refinish.

Prevention- Isolate suspected bleeding finish by applying a two component surfacer and/or sealer. Allow to cure following product recommendations, then apply desired topcoat.



Troubleshooting Guide

2. Blushing

(milky)

A milky gray cloud appears on the surface of the paint film immediately or shortly after application

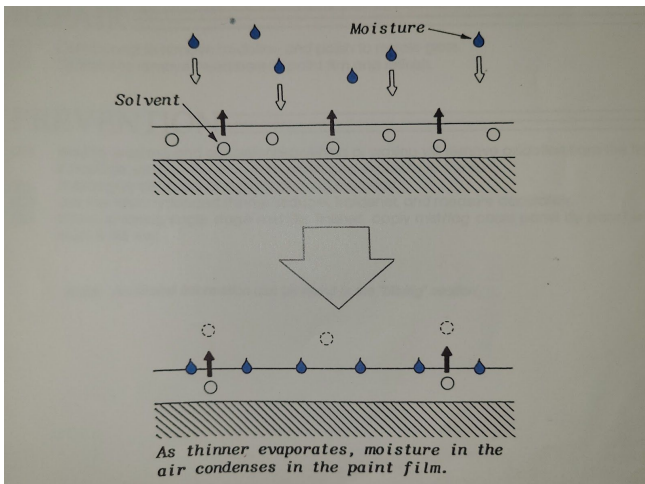
Cause- When spraying during humid conditions, air from the spray gun and solvent evaporation lowers the substrate temperature below the dew point, causing moisture in the air to condense in or on the paint film. The condition is aggravated when too fast drying or an unbalanced thinner/reducer is used.

Repair-

- (1) Should blushing occur during application, (a) heat the affected area, or (b) add retarder and apply additional coats.
- (2) If the finish has dried, minor blushing may be corrected by compounding or polishing, however, severe blushing will require sanding and refinishing.

Prevention-

- (A) Always use good quality solvent and thin/reduce material according to label directions.
- (B) Select a proper thinner/reducer for spray condition.
- (C) Add the recommended amount of retarder when spraying in humid conditions.
- (D) Apply heat after application to evaporate moisture.



Troubleshooting Guide

3. Color Mismatch

(off shade, off color)

The original finish and repair exhibit a noticeable difference in color when viewed under the same lighting conditions

Cause-

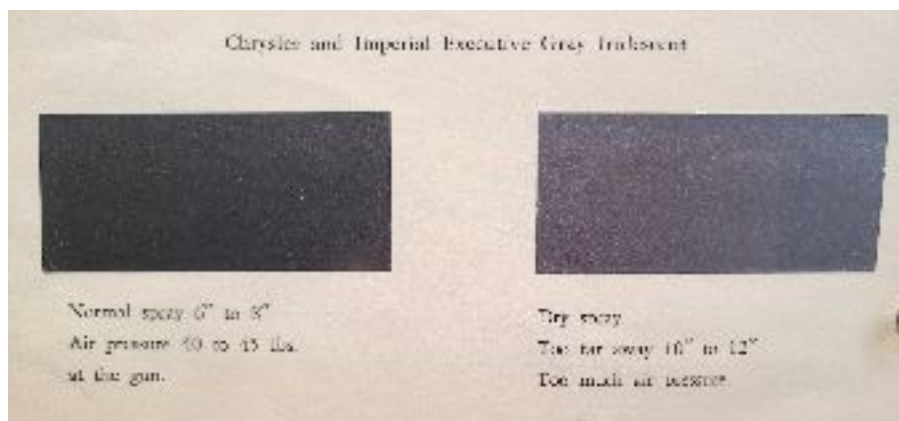
- (A) Original finish has “drifted” from manufacturer’s standard
- (B) Old finish weather and oxidized
- (C) Color over or under reduced
- (D) Improper spray procedures
- (E) Color not properly stirred or shaken
- (F) Improper spray gun setup
- (G) Inaccurate mixing of the color formula
- (H) “Panel” painting instead of blending
- (I) Evaluating color under a light source other than “color corrected” lighting or natural lighting
- (J) Adjusting a color before it has been sprayed, or adjusting a basecoat before applying clearcoat

Repair-

- (1) If color is close enough to blend: (1) Prepare adjacent panel(s) for blending, then (2) Blend color into adjacent panels.
- (2) If color must be tinted: (1) Tint the color for a blendable match, (2) prepare adjacent panel(s) for blending, then (3) Respray the repair, blending into the adjacent panel(s).

Prevention-

- (A) Check alternate color selector for variances. Choose the alternate that provides a blendable match.
- (B) All color must be viewed under equal gloss; compound or polish the area to be matched.
- (C) Thin/reduce according to label direction.
- (D) Follow label directions for proper application of color coat.
- (E) Stir or shake materials thoroughly to be sure all pigments and metallics are in solution.
- (F) Refer to product label or data sheet for spray gun, fluid nozzle, and air cap recommendations.
- (G) Recheck color code, formula number, formula weights before mixing colors.
- (H) Spray a test panel prior to application to determine if blending or tinting is necessary.
- (I) Always use natural daylight or color corrected lights to make color matching decisions.
- (J) All color must be sprayed out for an accurate evaluation. Basecoats must have clearcoat applied. Check color from all angles, face (90 degrees) and side tone (20-60 degrees)



Troubleshooting Guide

4. Dust Contamination

(dirt in finish)

Foreign particles embedded in paint film

Cause-

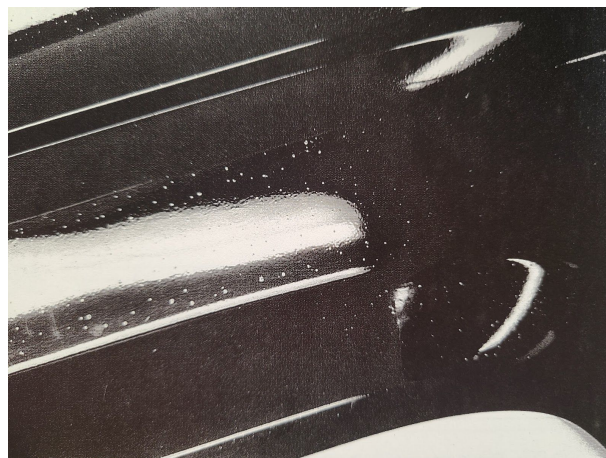
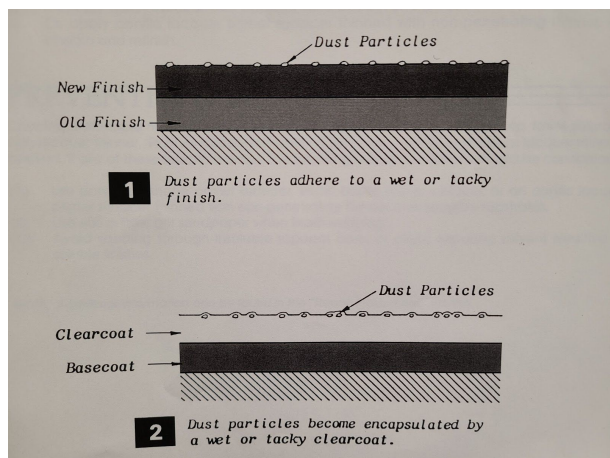
- (A) Inadequate cleaning of the surface to be painted
- (B) Dirty spraying equipment
- (C) Inadequate air filtration or unfiltered air entering the booth
- (D) Dirty or unsuitable work clothes that contain dust, lint, or fibers
- (E) Particles from deteriorated air supply lines
- (F) Using a poor grade masking paper
- (G) Removing the vehicle from the spray booth before the finish is “dust free.”

Repair- Sand with 1200 or finer grit sandpaper, then compound and polish to restore gloss, or sand smooth and refinish

Prevention-

- (A) Thoroughly blow off around windows, doors, jambs, hood, trunk, moldings, engine compartment, and wheel openings. Wipe the surface to be painted and the masking paper with a tack cloth.
- (B) Maintain a clean working area and spray equipment
- (C) Install proper air filters. Never use residential-type furnace filters in the spray booth. Repair any defective air lines, as well as any leakage found in the spray booth due to poor fitting doors, gaskets, seams, or filters.
- (D) Wear a lint-free paint suit during the spray operation,
- (E) Use quality masking materials. “Wicks” found on newspaper can break away and blow into wet paint.
- (F) Vehicle should be kept in a clean environment until the finish is “dust free.”

Note- Fine dust particles that fall on a tacky surface can be encapsulated by the finish, creating an appearance almost identical to solvent pop. This “solvent pop” appearance usually occurs on vehicles that are removed from the booth in a tacky condition and placed in another location to dry. Fine dust contamination can be removed by sanding and polishing. However, if the condition is solvent pop the finish will contain pinholes or small craters after sanding.



Troubleshooting Guide

5. Edge Mapping

(edge ringing, featheredge lifting)

Raised or lifted edges in the wet or dry paint film that outline sand throughs or featheredges

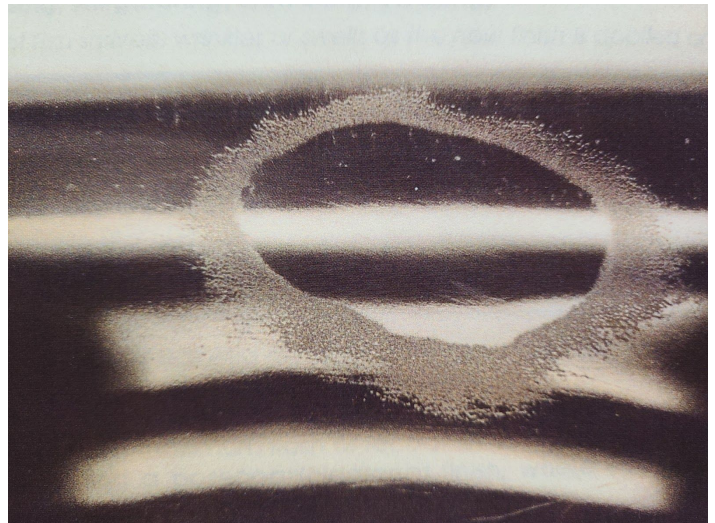
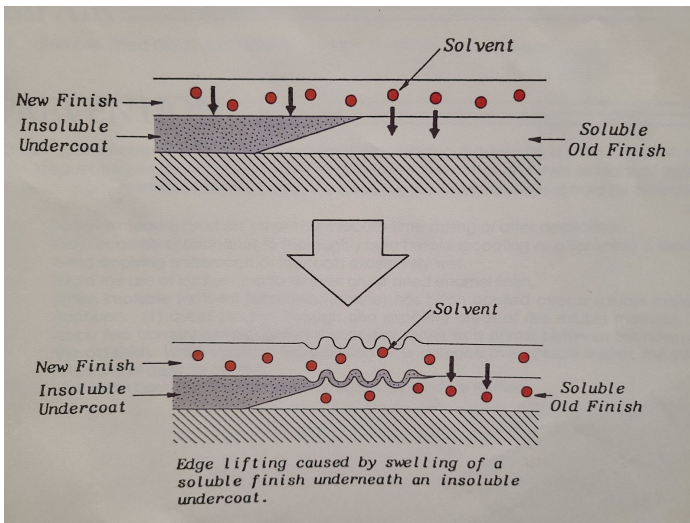
Cause- Solvent from a new topcoat penetrates a solvent sensitive substrate, causing a lifting or wrinkling that outlines the featheredge.

Repair-

- (1) Sand smooth or remove the affected area. (final sand with 400 or finer grit sandpaper)
- (2) Isolate the affected area with two component primer surfacer and refinish
- (3) Or, apply water borne primer surfacer, sand, smooth, and refinish
- (4) Or, apply acrylic lacquer primer surfacer thinned with non-penetrating thinner, sand, smooth, and refinish

Prevention- Check questionable finishes by rubbing a small inconspicuous area with a shop towel saturated with lacquer thinner. Finishes susceptible to lifting will soften, wrinkle, or shrivel as lacquer thinner is applied. If any of these reactions occur, the following recommendations should be considered:

- (A) Use acrylic urethane primer surfacer, water borne primer surfacer, or an acrylic lacquer primer surfacer thinned with non-penetrating thinner over sensitive substrates.
- (B) Use 400 or finer grit sandpaper when featheredging.
- (C) Avoid sanding through insoluble topcoat color or clear, exposing solvent sensitive or soluble finishes.



Troubleshooting Guide

6. Fisheye

(silicone contamination, cratering)

Small, circular, crater-like openings that appear during or shortly after the spray application

Cause-

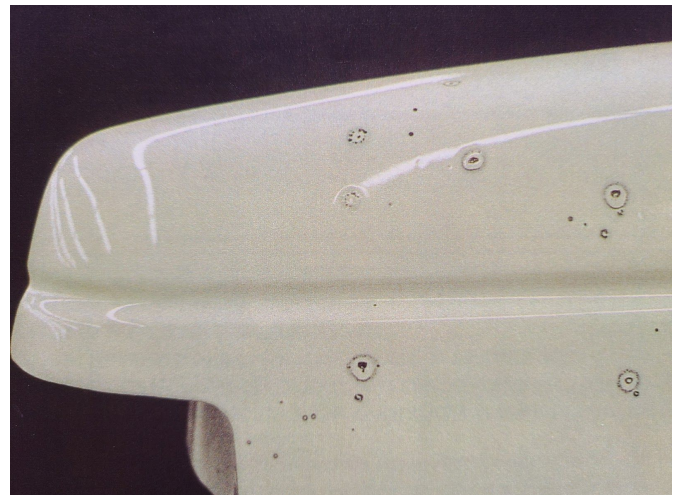
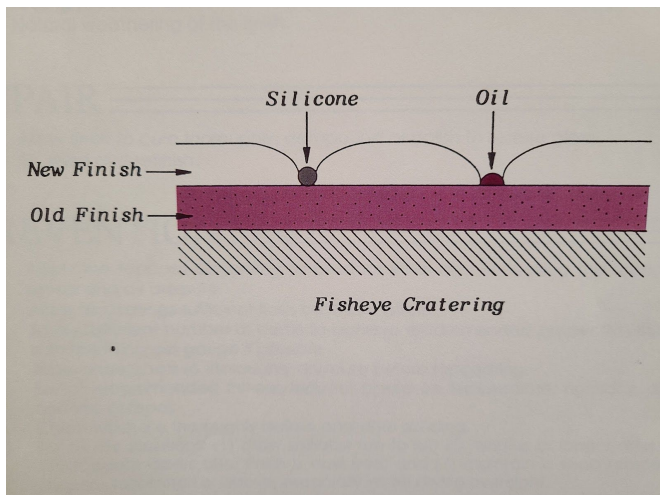
- (A) Spraying over surfaces contaminated with oil, wax, silicone, grease, etc.
- (B) Use of thinner/reducer in place of a solvent cleaner.
- (C) Spraying over previously repaired areas containing “fisheye eliminator” additive.

Repair-

- (1) Remove wet paint film with solvent, clean, and refinish.
- (2) Add the recommended fisheye eliminator and respray the affected area.
- (3) If fisheyes appear in a basecoat, allow the color to flash, then spray a mist coat over the affected area. Do not use a fisheye eliminator in undercoats or base color.
- (4) If the paint has dried, sand to a smooth finish below the fisheye cratering and refinish.

Prevention-

- (A) Thoroughly clean the surface to be painted with detergent and hot water, followed by the recommended solvent cleaner. Wipe dry with clean rags.
- (B) Use fisheye eliminator that is specifically recommended for the topcoat.
- (C) Install an air filtering system that removes and prevents oil and moisture contamination.
- (D) Maintain air supply by draining, cleaning, and changing filter(s) on a routine basis.



Troubleshooting Guide

7. Mottling

(streaking, tiger/zebra stripes, floating, flooding)

A streaked, spotty, or striped appearance in a metallic color

Cause-

(A) An uneven distribution of metallic flake caused by:

- (1) Using a spray gun that gives an unbalanced spray pattern
- (2) Improper application technique such as tilting the spray gun during application
- (3) Holding the gun too close to the surface (flooding)
- (4) Uneven spray pattern overlap
- (5) Omitting/improper use of mist coats

(B) Too much thinner/reducer. Color over thinned/reduced

(C) Applying clearcoat to a basecoat that has not thoroughly flashed/dried

(D) Improper application of a basecoat (e.g. failure to apply or an improper use of a low-pressure mist coat, wet basecoat application)

Repair-

(1) To uniform single stage metallic finishes, apply a higher pressure mist coat, panel by panel, while the previous coat is still wet.

(2) Or, allow basecoat color to flash, then apply a low pressure mist coat

(3) Finishes that have dried must be sanded and refinished. Caution: Large areas of basecoat must have clearcoat applied before sanding. However, small nibs or lint may be removed from basecoat by wet sanding, concentrating only on the defect. Apply additional basecoat to the sanded area before clearcoating.

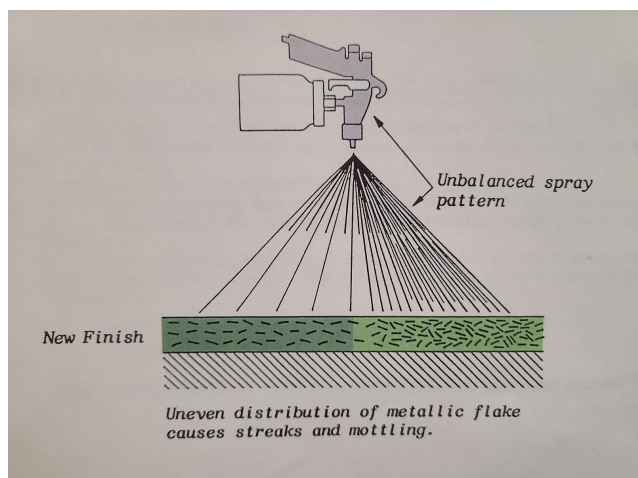
Prevention-

(A) Use recommended spray gun, including fluid tip and air cap for the material being sprayed. Always adjust the gun for best atomization and balanced spray pattern before paint application.

(B) Use the correct ratio of thinner/reducer.

(C) Allow basecoat proper flash/dry time before clearcoating.

(D) Follow basecoat application procedures.



Troubleshooting Guide

8. Orange Peel

(poor flow, texture)

Paint film having an uneven texture that resembles the skin of an orange

Cause-

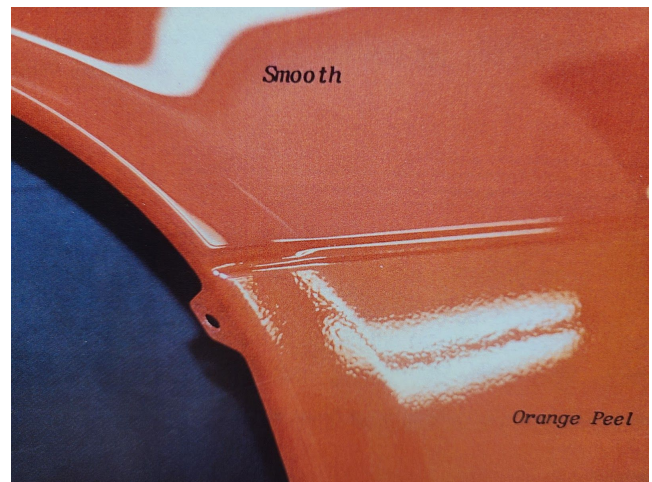
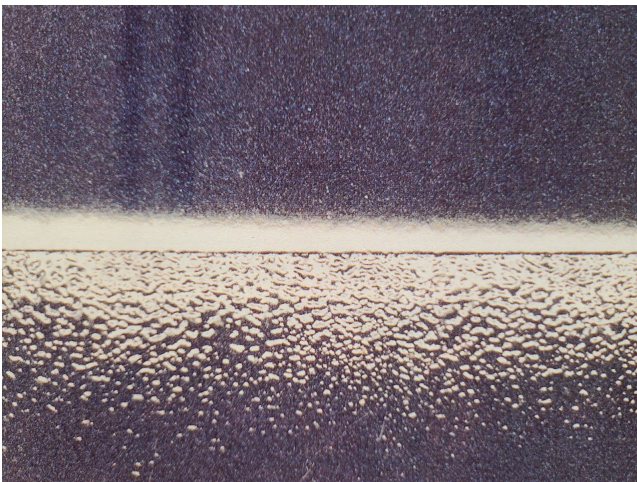
- (A) Under-reduction and/or air pressure too low
- (B) Thinner/reducer evaporates too fast for spray conditions
- (C) Excessive film thickness or piling on of heavy, wet coats
- (D) Improper spray gun set-up
- (E) Improper painting technique

Repair-

- (1) Compound or polish to reduce surface texture
- (2) Or, sand smooth with 1200 or finer grit sandpaper, compound, and polish to restore gloss
- (3) Or, sand smooth and refinish

Prevention-

- (A) Use proper reduction ratio and spray at recommended air pressure.
- (B) Select Recommended thinner/reducer based on temperature, humidity, air movement, and size or repair
- (C) Avoid heavy coats and excessive film thickness.
- (D) Use recommended spray gun, fluid tip, and air cap for the material being sprayed. Always adjust the gun for best atomization and balanced spray pattern before paint application.
- (E) During paint application, hold the gun perpendicular and parallel to the surface. Adjust speed of pass, pattern overlap, and distance from the panel to achieve the desired appearance.



Troubleshooting Guide

9. Runs/Sags

(hangers, curtains, signatures)

Coatings that fail to adhere uniformly, causing beads, droplets, or slippage of the total film

Cause-

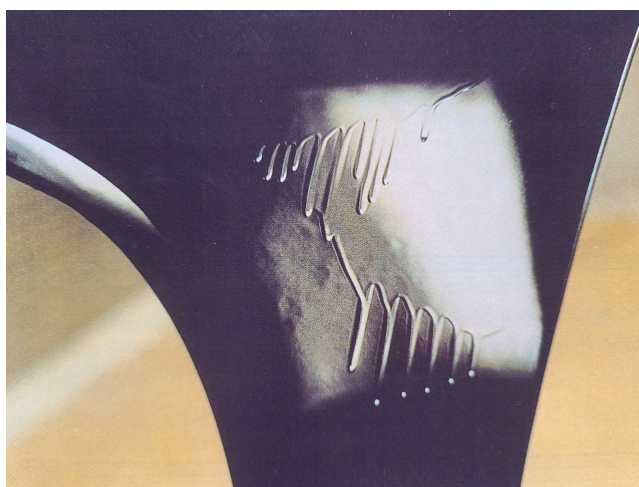
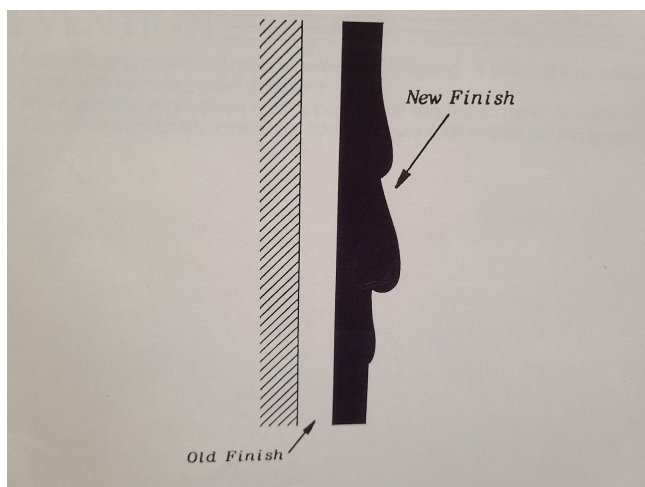
- (A) Over reduction and/or too slow evaporating thinner/reducer.
- (B) Applying paint materials without proper flash time between coats.
- (C) Applying excessive wet coats due to:
 - (1) Holding the gun too close to the surface
 - (2) Slow gun speed
 - (3) Double coating
- (D) Air pressure too low during spray application
- (E) Improper spray gun set-up or an unbalanced spray pattern
- (F) Material and/or substrate temperature too cold

Repair-

- (1) Remove the wet paint film with solvent, clean, and refinish
- (2) Or, after finish is completely dry, remove excess paint by block sanding with 1200 or finer grit sandpaper, compound, and polish to restore gloss
- (3) Or, block sand smooth and refinish

Prevention-

- (A) Mix according to product directions. Select recommended solvent for spray conditions based on temperature, humidity, air movement, size of repair.
- (B) Spray medium wet coats and allow sufficient flash time between coats.
- (C) Adjust the spray gun for the best atomization and balanced spray pattern before paint application. Hold the spray gun perpendicular and parallel to the panel. Adjust speed of pass, pattern overlap, and distance from the panel until the desired results are achieved.
- (D) Set air pressure at the gun according to product recommendations.
- (E) Use recommended spray gun, including fluid tip and air cap combination.
- (F) Allow the paint material and substrate to reach room temperature before application.



Troubleshooting Guide

10. Sanding Marks

(streaked finish, sand scratches)

Dark and/or streaked marks that resemble sand scratches in the paint film

Cause- Scratching or distorting metallic/mica flakes close to the surface of the paint film due to:

(A) Sanding single stage or basecoat metallic finishes prior to clearcoating

(B) Sanding single stage metallic finishes prior to buffing

Repair- Allow finish to dry, sand, and refinish

Prevention-

(A) Avoid sanding basecoat finishes before clearcoating. If sanding is necessary, apply additional color following label directions.

(B) When sanding single stage finishes, confine the sanding to minor imperfections (nib sanding) rather than entire panels. For best results, use 1200 or finer grit sandpaper.



Troubleshooting Guide

11. Sand Scratches

(swelling, sinking, shrinkage)

Visible lines or marks in the paint film that follow the direction of the sanding process

Cause-

- (A) Sanding the substrate with too coarse grit sandpaper
- (B) Insufficient dry/cure of undercoats before sanding and topcoating
- (C) Refinishing over soft, soluble substrates (e.g. lacquers, uncured OEM)
- (D) Using a poor grade and/or too fast evaporating thinner/reducer for spray conditions causing:
 - (1) Primer surfacer to “bridge” over sand scratches
 - (2) Topcoat to “skin over,” trapping solvent which swells sensitive substrates.
- (E) Using a solvent cleaner that is too strong for the substrate or using thinner/reducer as a surface cleaner after sanding.

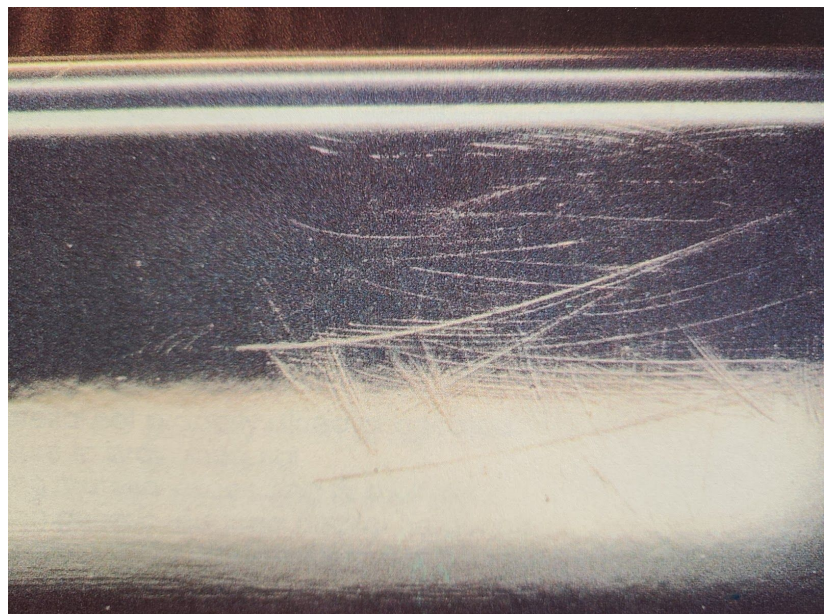
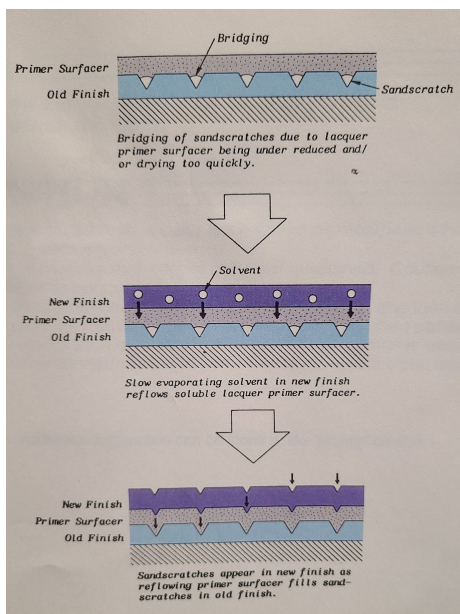
Repair-

- (1) Allow finish to dry/cure, sand smooth, compound or polish to restore gloss.
- (2) Or, sand and refinish.

Prevention-

- (A) Sand with recommended grit sandpaper
- (B) Allow undercoats to thoroughly dry/cure before sanding and topcoating.
- (C) Rub a small area of the old finish with a shop towel saturated with lacquer thinner. If the old finish is soluble or undercured, apply appropriate sealer.
- (D) Select recommended thinner/reducer based on temperature, humidity, air movement, and size or repair. Avoid “bridging” existing scratches by applying primer surfacer in thin, wet coats, allowing adequate flash time between each coat.
- (E) Use a solvent cleaner designated for either lacquer (soluble) or cured enamel/urethane (insoluble) substrates.

For best results, use the premium two component undercoat system



Troubleshooting Guide

12. Shrinkage

(bullseyes, ringing, edge mapping)

The repaired area, featheredge, or sandscratches become visible hours, days, or weeks after the repair is completed

Cause-

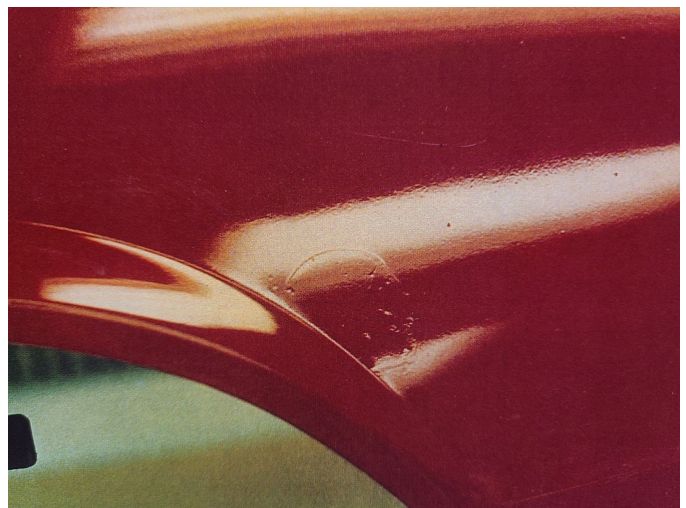
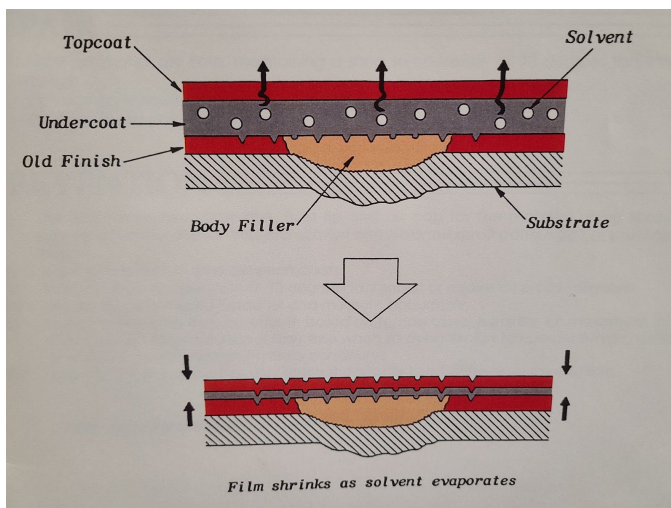
- (A) Topcoating before undercoats have thoroughly dried/cured
- (B) Undercoats applied excessively wet with inadequate flash time between coats
- (C) Undercoats under reduced
- (D) Using a poor grade and/or too fast evaporating thinner/reducer for spray conditions
- (E) Finishing over body filler that has not thoroughly cured
- (F) Using too strong solvent cleaner or using thinner/reducer as a surface cleaner

Repair-

- (1) Allow the affected area to thoroughly dry/cure, sand and refinish.
- (2) If additional filling is necessary, apply a primer surfacer, sand smooth, and refinish.

Prevention-

- (A) Allow undercoats to thoroughly dry/cure before sanding and/or topcoating.
- (B) Thin or reduce undercoats according to product label directions. Apply in thin, wet coats allowing adequate flash time between coats to avoid “bridging” scratches.
- (C) Select recommended thinner/reducer based on temperature, humidity, air movement, and size of repair.
- (D) Follow body filler manufacturer’s recommended cure time.
- (E) Use solvent cleaner designated for either lacquer soluble or cured enamel/urethane insoluble substrate.



Troubleshooting Guide

13. Solvent Popping

(boiling, blowing)

Small bubbles, pinholes, or crater-like openings in or on the paint film

Cause- Liquid solvent (thinners/reducers) becomes “trapped” in the paint film when the surface layer skins over too quickly, preventing their evaporation into the atmosphere. Solvents that vaporize within the paint film leave bubbles, pinholes, or craters as they push through and “pop” the surface. Solvents can be trapped due to:

- (1) Thinner/reducer evaporating too fast for spraying conditions
- (2) Inadequate flash time between coats
- (3) Excessive film thickness or “piling on” of heavy/wet coats
- (4) Too much air movement causing surface to “skin over” before solvents evaporate
- (5) Excessive purge/flash time before force drying

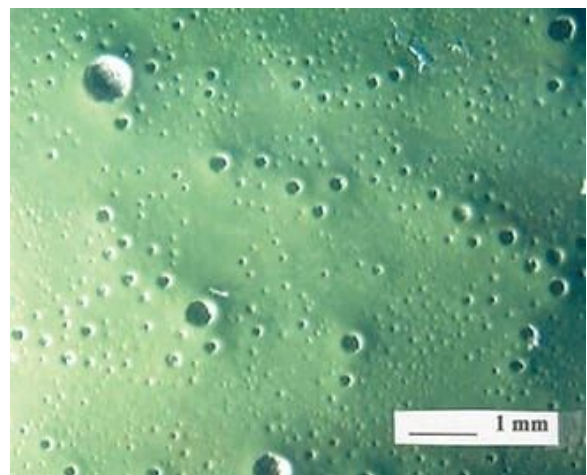
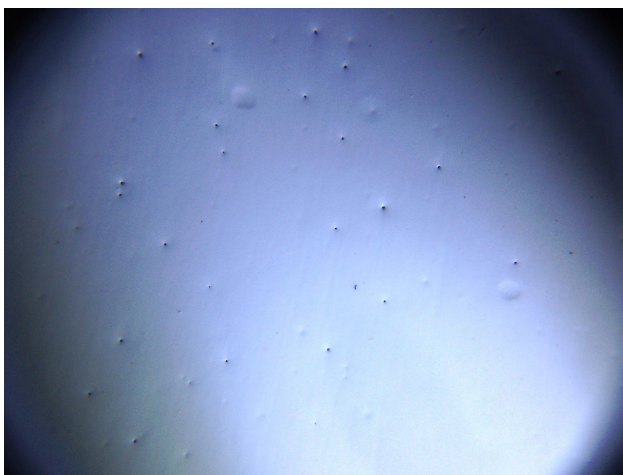
Repair-

- (1) Allow the finish to thoroughly dry/cure, sand smooth, and refinish. Inspect the surface carefully to ensure all craters have been removed.
- (2) Severe popping will require removal of the affected film. Prime, seal, and recoat, as necessary.

Prevention-

- (A) Select recommended thinner/reducer based on temperature, humidity, air movement, and size of repair.
- (B) Allow for proper flash time between coats.
- (C) Avoid “piling on” or double wet coats.
- (D) Restrict air movement over the surface being painted.
- (E) Avoid extended purge/flash time before force drying.

Note- Fine dust particles that fall on a tacky surface can be encapsulated by the finish, creating an appearance almost identical to solvent pop. This “solvent pop” appearance usually occurs on vehicles that are removed from the booth in a tacky condition and placed in another location to dry. Fine dust contamination can be removed by sanding and polishing. However, if the condition is solvent pop the finish will contain pinholes or small craters after sanding.



Troubleshooting Guide

14. Tape Tracking

(tracks)

An imprinted line or texture in the dried paint film following the use of masking tape

Cause-

(A) Finish not dry before taping, causing solvent entrapment between finish and tape

(B) Using a non-automotive tape for multi-color finishes. Solvents from additional color soak through the tape and into the previous color

Repair-

(1) Compound and polish to remove texture

(2) Or, sand with 1500-2000 grit sandpaper, compound, and polish to restore gloss

(3) Or, sand and refinish

Prevention-

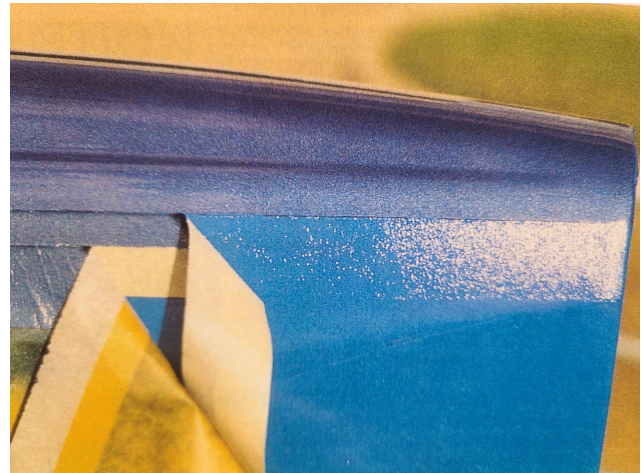
(A) Allow the finish to thoroughly dry before masking

(B) Use only high quality automotive masking tape

(C) Determine if it is safe to tape on freshly painted surfaces by applying a small piece of tape to the surface for 10-15 minutes; remove and check for imprinting.

(D) De-tack the tape before applying by pulling the adhesive side of the tape over your pant leg or between your fingers

(E) Remove the tape as quickly as possible after applying additional colors



Troubleshooting Guide

15. Transparency

(poor hiding, poor coverage, translucent)

The original finish or undercoat is visible through the topcoat

Cause-

- (A) Color not thoroughly stirred/agitated
- (B) Color over thinned/reduced
- (C) Substrate not uniform in color
- (D) Wrong color undercoat used
- (E) Insufficient number of color coats applied

Repair-

- (1) Apply additional coats of color until hiding is achieved.
- (2) Or, sand and apply similar colored undercoat/ground coat and refinish.

Prevention-

- (A) Stir or shake paint material thoroughly, making sure all pigment is in solution.
- (B) Thin/reduce according to product label directions.
- (C) Use a sealer or ground coat to provide a uniform color before topcoating.
- (D) Use an undercoat that is similar in color to the topcoat.
- (E) Spray until hiding is achieved.

