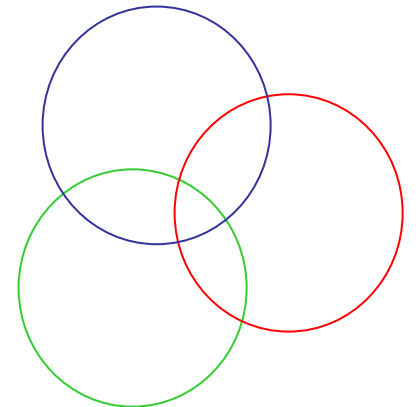


# MATRIX

## SYSTEM

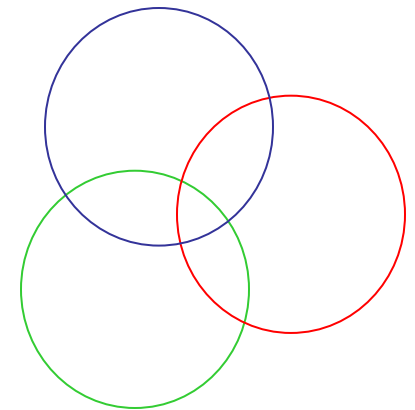
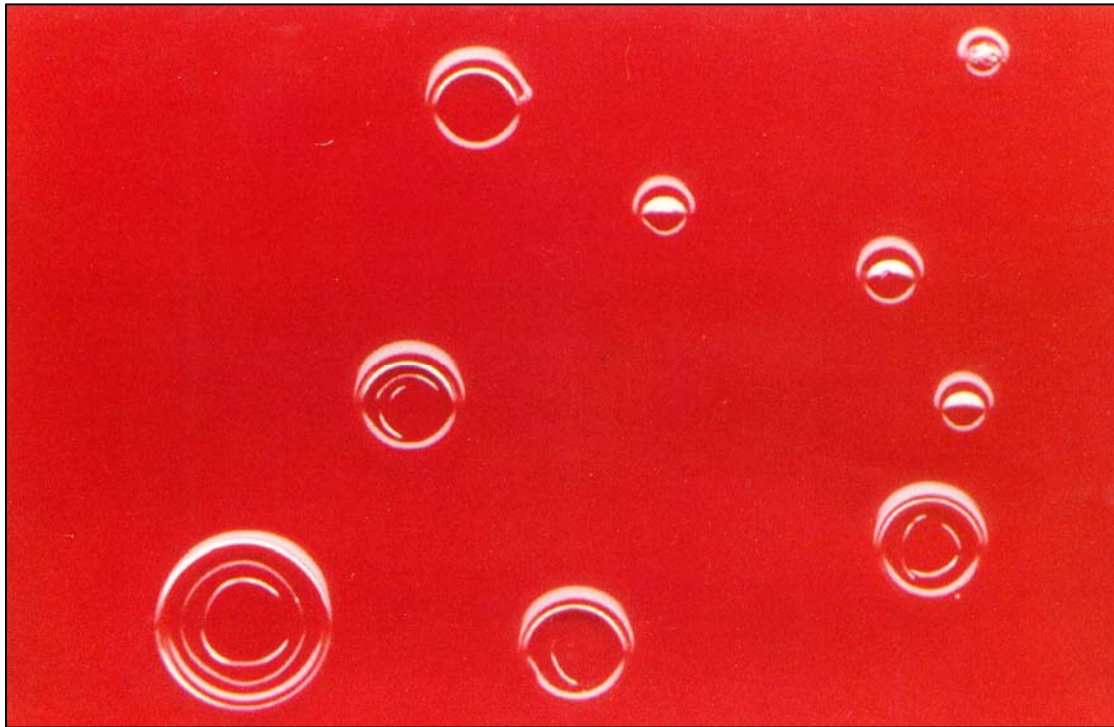
### AUTOMOTIVE FINISHES

----- [ Trouble Shooting Guide



## Air Entrapment (Craters)

Small crater like openings in or on the paint film.



# Air Entrapment (Craters)

## Causes:

Trapped or buried air pockets in the wet paint film that rise to the surface and “burst” causing small craters. Lack of atomization is the cause of air entrapment and may be due to one or more of the following

- 1.Spray gun travel too slow
- 2.Spray gun distance too close
- 3.Air pressure too low
- 4.Improper spray gun setup

## Repair:

- 1.Sand with 1200 grit or finer sandpaper, then compound and polish to restore gloss
- 2.Or, sand smooth and refinish

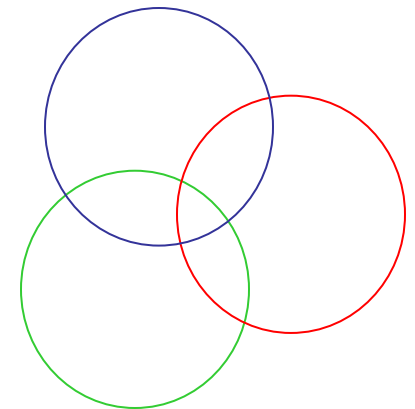
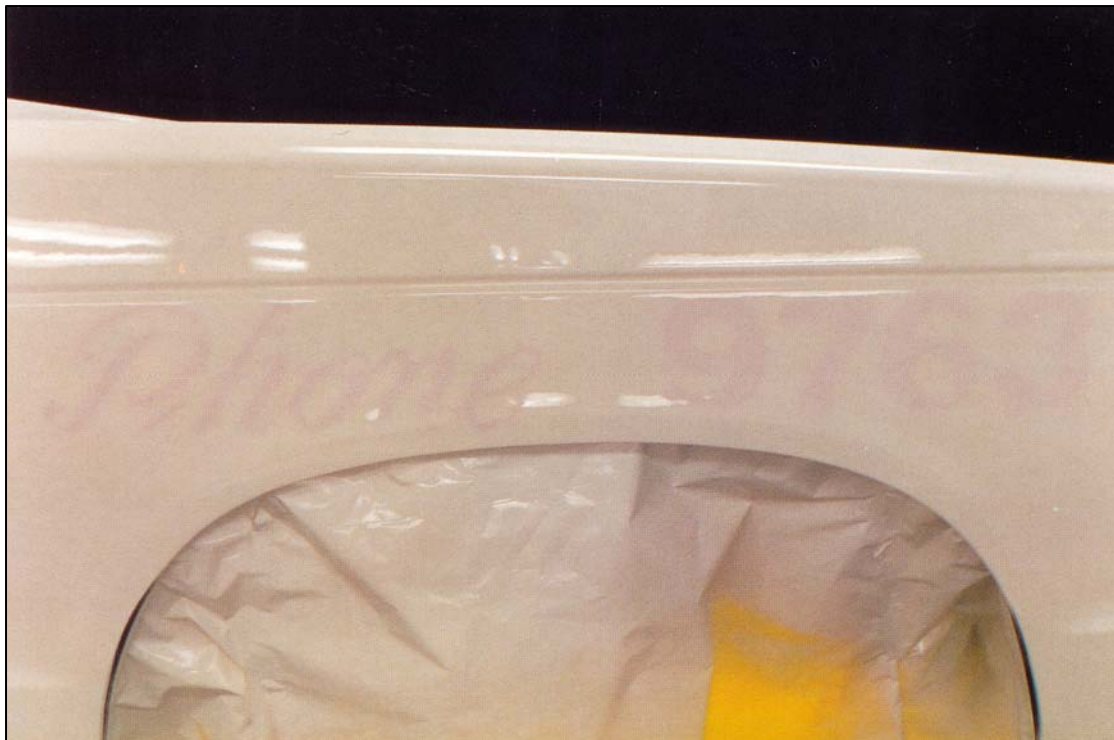
## Prevention:

- 1.Maintain correct spray gun speed
- 2.Maintain correct spray gun distance
- 3.Use the recommended air pressure
- 4.Use the correct air cap, nozzle, needle recommended for clearcoats



## Bleeding (Discoloration)

A red or yellow discoloration in the topcoat color.



# Bleeding (Discoloration)

## Causes:

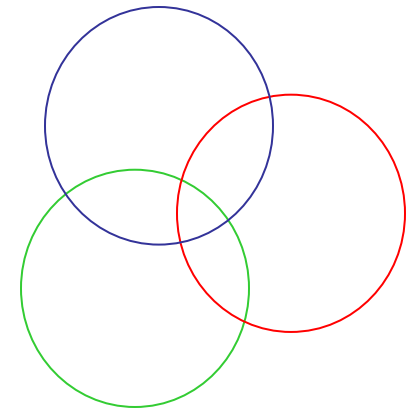
1. Solvent in the new topcoat dissolves soluble dyes or pigments in the original finish, allowing them to seep into and discolor the new topcoat

## Repair:

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

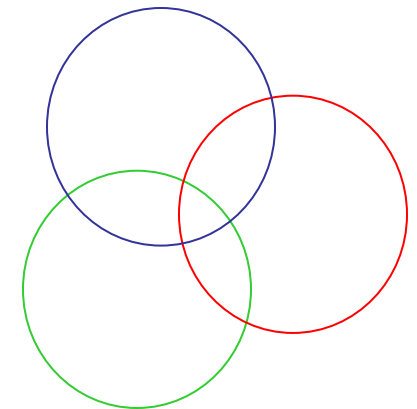
## Prevention:

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



## Blistering (Pimples, Bubbles)

Swelled areas appearing as pimples or bubbles in the topcoat film, often months after application.



# Blistering (Pimples, Bubbles)

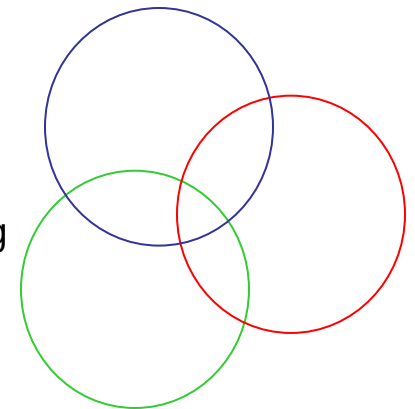
## **Causes:**

Moisture trapped beneath the paint film due to:

1. Improper dry time after wet sanding
2. Contaminated air lines
3. Spraying in extreme high humidity conditions.
4. Using a poor grade and/or too fast evaporating thinner/reducer for spray conditions
5. Trapped solvents from applying wet heavy coats with insufficient flash time between coats
6. Improper dry time of undercoats before topcoating
7. Painting over grease, oil or rust

## **Repair:**

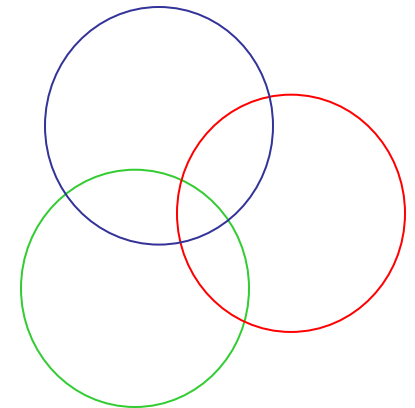
1. Remove affected area and refinish
2. Extreme cases must be stripped to bare substrate before refinishing



# Blistering (Pimples, Bubbles)

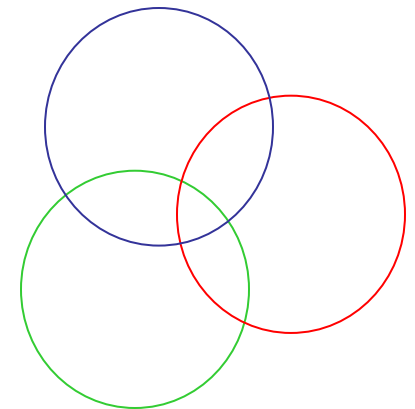
## Prevention:

1. If wet sanding is preferred, allow sufficient time for moisture to evaporate. Avoid wet sanding lacquer type primer surfacer when possible. Drain moisture from compressor and air lines regularly. Allow additional flash time between coats and/or add retarder when spraying in humid conditions, or spray at times of low humidity when possible
2. Select proper thinner, reducer for spray conditions
3. Apply materials according to product recommendations, allow sufficient flash times between coats
4. Allow undercoats to thoroughly dry/cure before topcoating
5. Clean and prep substrate using recommended products and procedures



## Blushing (Milkiness)

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



# Blushing (Milkiness)

## Causes:

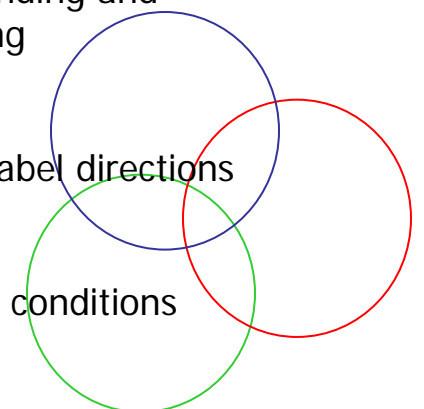
When spraying during humid conditions, air from the spray gun and solvent evaporation lowers the substrate temperature below the dew point, causing moisture in the air to condense in or on the paint film. The condition is aggravated when too fast drying or unbalanced thinner/reducer is used.

## Repair:

1. During application
  - A. Apply heat to the affected area
  - B. Add retarder and apply additional coats
2. If the finish has dried minor blushing may be corrected by compounding and polishing, however severe blushing will require sanding and finishing

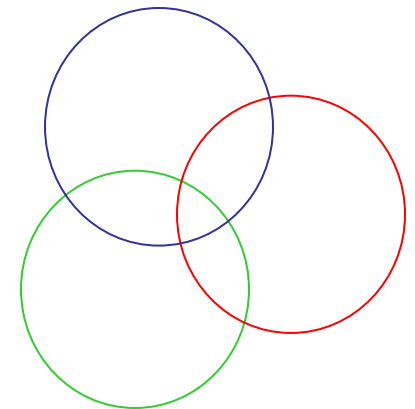
## Prevention:

1. Always use good quality solvent and reduce material according to label directions
2. Select proper thinner/reducer for spray condition
3. Add the recommended amount of retarder when spraying in humid conditions
4. Apply heat after application to evaporate moisture



## Chalking (Fading, Oxidation)

A chalky white appearance on the surface of the paint film.



# Chalking (Fading, Oxidation)

## Causes:

Pigment is no longer held and protected by resin, resulting in a powder like surface and lack of gloss due to:

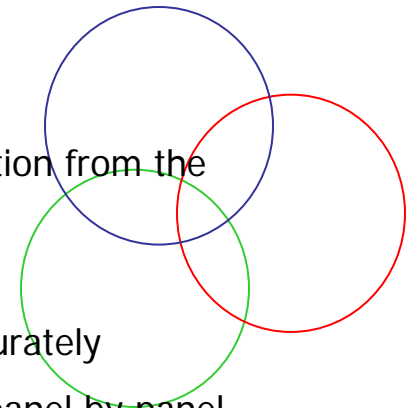
1. Natural weathering of paint film
2. Improper application of paint material
3. Using generic thinner/reducer and/or hardener in the paint material
4. Excessive use of mist/fog coats when applying single stage metallic finishes

## Repair:

1. Compound to remove oxidation and polish to restore gloss
2. Or, sand to remove weathered paint film and refinish

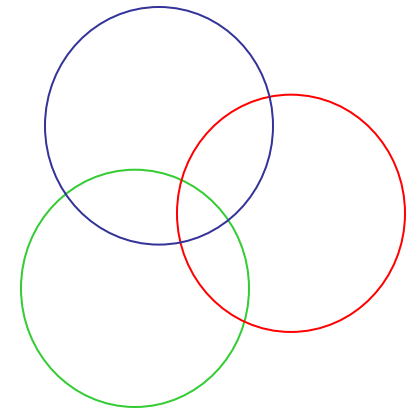
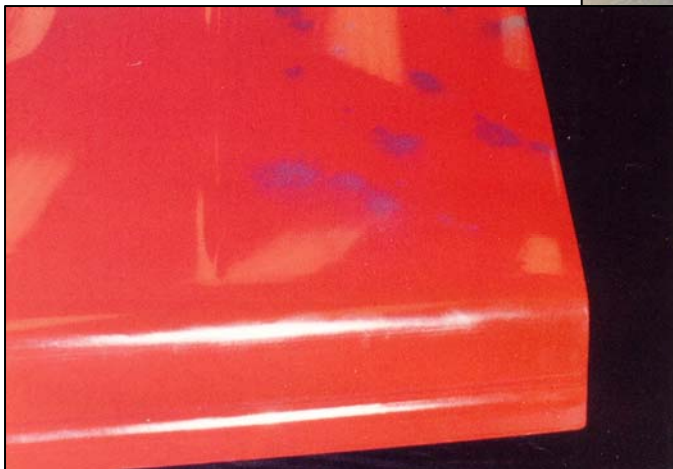
## Prevention:

1. Weekly washing and occasional polishing, waxing will remove oxidation from the finish
2. Thoroughly stir, shake or agitate all paint materials
3. Use the recommended thinner/reducer, hardener and measure accurately
4. When spraying single stage metallic finishes, apply mist/fog coats panel by panel while the finish is still wet



# Chemical Staining/Etching

Irregular shaped pitting, etching or discoloration on the paint film.



# Chemical Staining/Etching

## Causes:

A chemical change occurs when harmful environmental contaminants such as acid rain, tree sap, bird dropping, road tar, etc. remain on the surface for an extended period of time

## Repair:

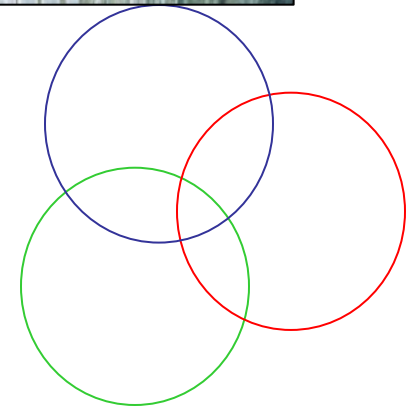
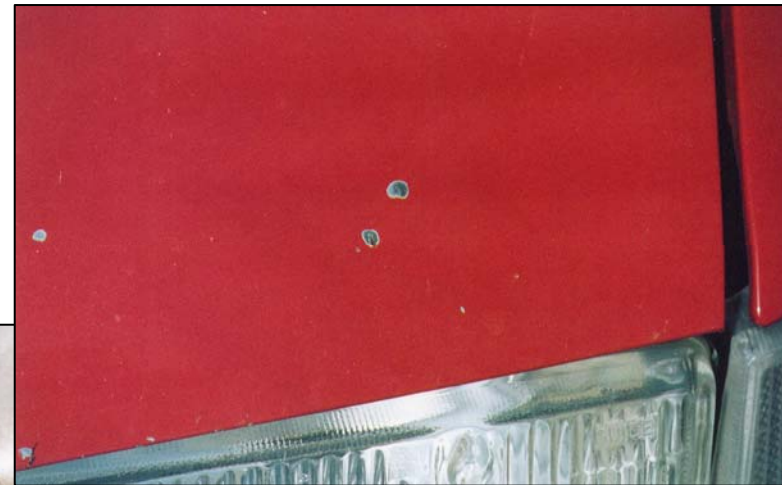
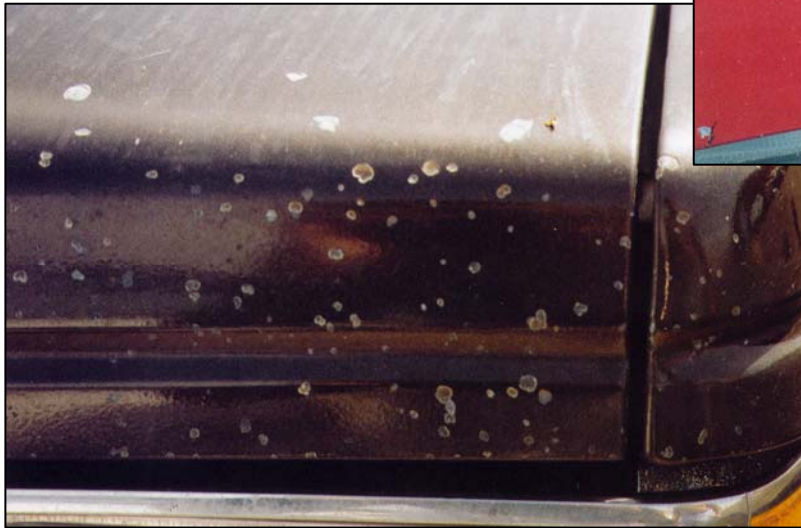
- Wash the vehicle with soap and hot water, rinse and dry
- Solvent clean with appropriate surface cleaner
- Wash with baking soda solution and rinse thoroughly (1 Tbsp per Qt Water)
- Compound damaged surface to restore gloss
- Wet sand with 1200-1500 grit sandpaper then compound and polish to restore gloss
- If refinishing is necessary, sand and remove damaged area with appropriate grit sandpaper, wash with baking soda solution, then refinish. In severe cases the the finish must be removed to bare metal

## Prevention:

1. Remove harmful water soluble contaminants by regularly washing with detergent and clean water
2. Polish or wax periodically

## Chipping (Nicks/Chips)

Small areas of damage to the paint film, leaving a nick, notch or void in the finish.



# Chipping (Nicks, Chips)

## **Causes:**

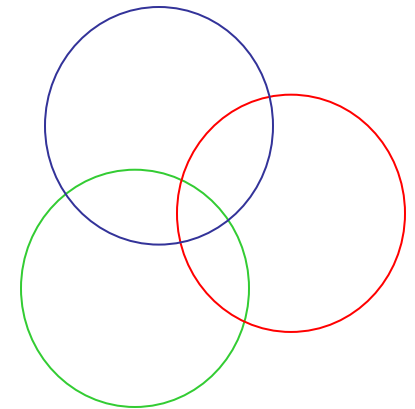
1. Loss of adhesion of the paint film to the substrate caused by an impact from stones or other hard objects

## **Repair:**

- Sand and featheredge damaged areas to remove chips, then refinish

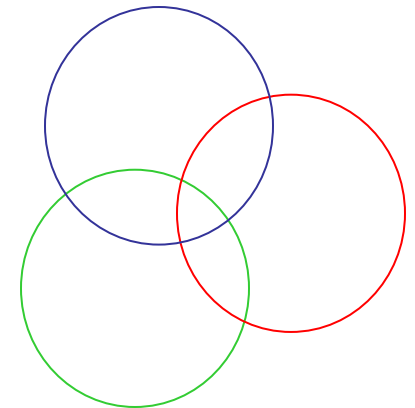
## **Prevention:**

1. Use a premium two component undercoat and topcoat system
2. Use flex agent in undercoat and/or topcoat systems in areas that are prone to chipping



## Color Mismatch (Off Shade)

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



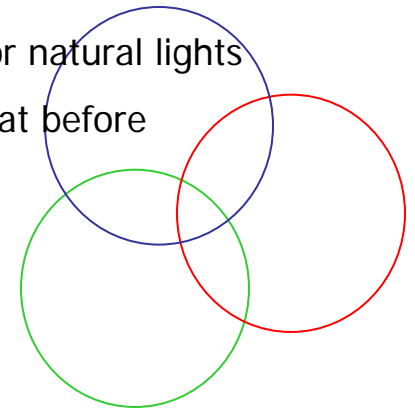
# Color Mismatch (Off Shade)

## Causes:

1. Original finish has drifted from manufacturers standard
2. Old finish weathered and oxidized
3. Color over or under reduced
4. Improper spray procedures
5. Color not properly stirred or shaken
6. Improper spray gun setup
7. Inaccurate mixing of the color formula
8. Panel painting instead of blending
9. Evaluating color under a light source other than "Color Corrected" or natural lights
10. Adjusting a color before it has been sprayed, or adjusting a basecoat before applying a clearcoat

## Repair:

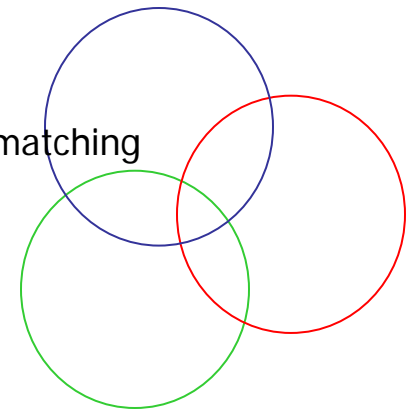
1. If the color is close enough, blend into adjacent panels
2. Tint the color to obtain a blendable match



# Color Mismatch (Off Shade)

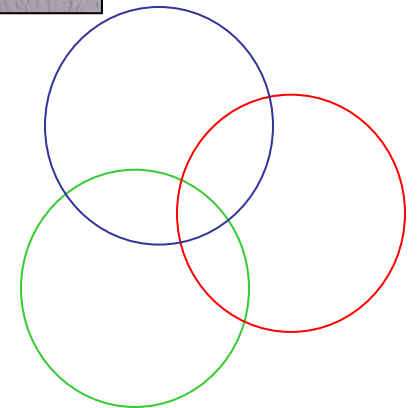
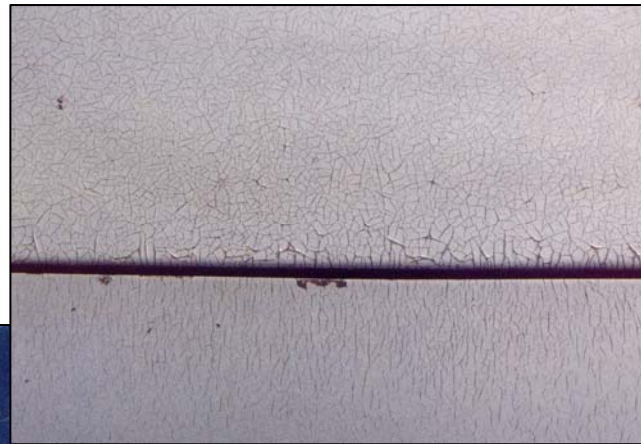
## Prevention:

1. Check for variances to the standard color
2. All color must be viewed under equal gloss, compound or or polish the area to be matched
3. Thin/reduce according to the label directions
4. Follow the label directions for the proper application of the color coat
5. Stir or shake materials thoroughly to insure pigments, metallics and pearls are in solution
6. Refer to the product TDS for spray gun, fluid nozzle or air cap recommendations
7. Recheck the color code, formula number before mixing colors
8. Always spray a test panel!
9. Always use natural daylight or color corrected lights to make color matching decisions
10. Check colors from all angles to insure a blendable color match



## Cracking (Checking, Splitting)

Crack or lines of various lengths and widths in the topcoat finish often resembling the cracking of dried mud.



# Cracking (Checking, Splitting)

## Causes:

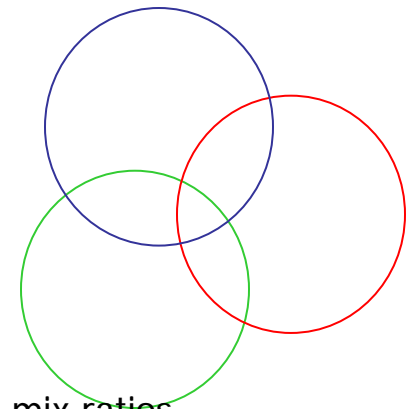
1. Excessive film thickness of the undercoat and/or topcoat
2. Refinishing over a previously cracked or checked surface
3. Insufficient flash time between coats and/or force drying undercoats using air from the spray gun
4. Mixing incorrectly or using too much hardener
5. Paint ingredients not properly stirred or agitated
6. Breakdown of finish due to prolonged exposure to sunlight, moisture, and extreme temperature changes

## Repair:

1. Remove all cracked paint film and refinish

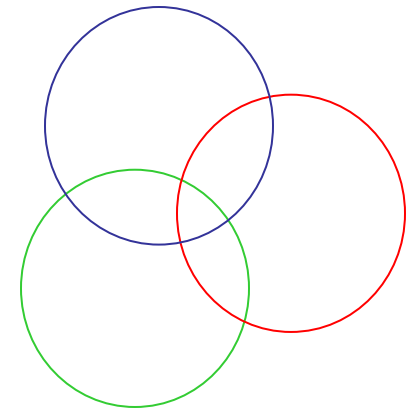
## Prevention:

1. Apply all materials following label directions
2. Completely remove cracked or checked finishes before refinishing
3. Do not force dry undercoats by fanning with spray gun air
4. Use two component materials with the correct reducers, hardeners, mix ratios



# Dust Contamination

Foreign particles embedded in paint film.



# Dust Contamination

## **Causes:**

1. Inadequate cleaning of the surface to be painted
2. Dirty spraying environment
3. Inadequate air filtration or unfiltered air entering the booth
4. Dirty or unsuitable work clothes containing dust, lint or fibers
5. Particles from deteriorated air supply lines
6. Using a poor grade masking paper
7. Dirty spray gun
8. Removing the vehicle from the spray booth before the finish is "dust free"

## **Repair:**

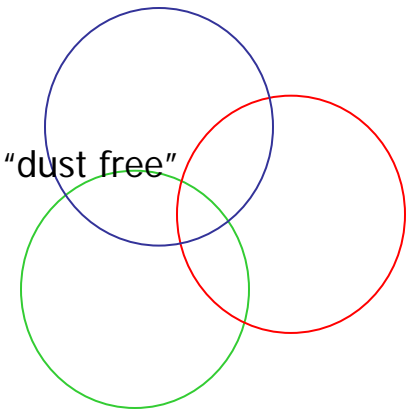
1. Sand with 1200 or finer grit sandpaper, then compound and polish to restore gloss
2. Or, sand smooth and refinish



# Dust Contamination

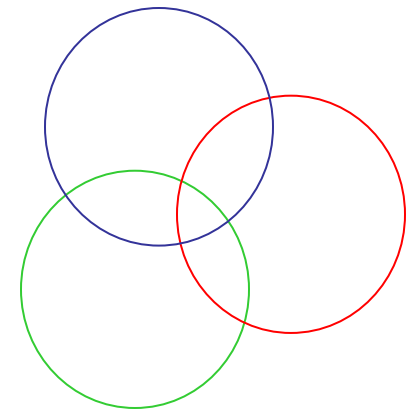
## Prevention:

1. 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 the tack rag
2. Maintain a clean working area
3. Install proper air filters. Never use residential type furnace filters in the spray booth. Repair any leakage found in the booth due to poor fitting doors, gaskets, seams or filters
4. Wear a lint free paint suit during the refinish operation
5. Use quality masking materials
6. Repair or replace defective air lines
7. Properly clean and maintain spray equipment
8. The vehicle should remain in a clean environment until the finish is "dust free"



## Edge Mapping

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



# Edge Mapping

## **Causes:**

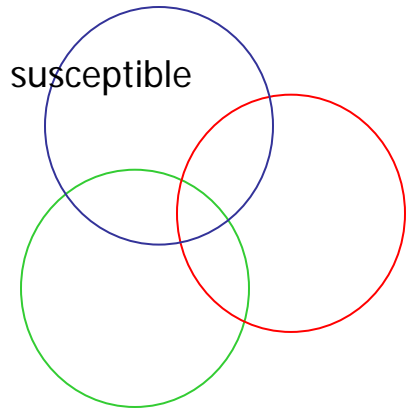
1. Solvent from the new topcoat penetrates a solvent sensitive substrate causing a lifting or wrinkling that outlines the featheredge

## **Repair:**

1. Sand smooth or remove the affected area (600 grit or finer sandpaper)
2. Isolate affected area with two component primer surfacer and refinish
3. Or, apply water borne primer surfacer, sand smooth and refinish

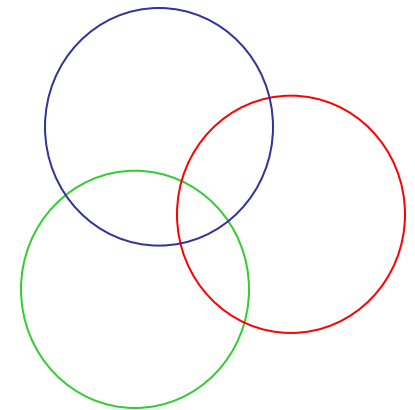
## **Prevention:**

1. Test finishes by rubbing a small inconspicuous area with lacquer thinner to determine the finishes susceptibility to lifting/wrinkling
2. Avoid sanding through insoluble topcoat color or clear exposing the susceptible solvent sensitive finish
3. Use 600 grit or finer sandpaper when featheredging



# Fisheyes

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



# Fisheyes

## Causes:

1. Spraying over surfaces contaminated with oil, wax, silicone, grease or etc.
2. Use of thinner or reducer in place of a solvent cleaner
3. Spraying over previously repaired areas containing fisheye-eliminator additive

## Repair:

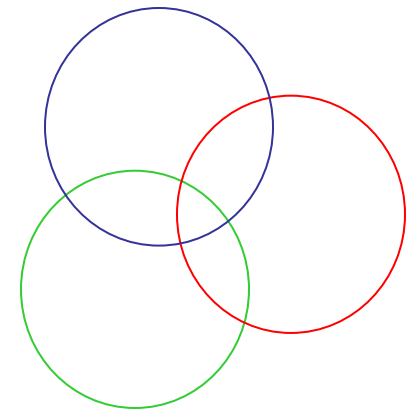
1. Remove wet paint film with solvent, clean and refinish
2. Add the recommended fisheye eliminator and respray the affected area
3. If fisheyes appear in the basecoat, allow the color to flash and spray a mist coat over the affected area. **Do not use fisheye eliminator in basecoat color!**
4. If the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

## Prevention:

1. Thoroughly clean the surface to be painted with detergent and hot water followed by the recommended solvent cleaner, wipe dry with clean lint free rags
2. Use fisheye eliminator specifically designed for the topcoat system you are using
3. Maintain air supply equipment by draining, cleaning, changing filters on a routine basis

## Lifting (Wrinkling, Shriveling)

The existing paint film shrivels, wrinkles as the new finish is applied or during drying.



# Lifting

## Causes:

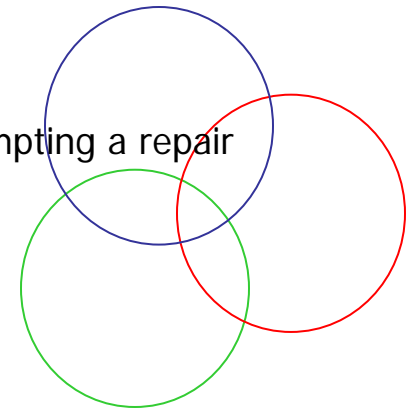
1. Solvents in a newly applied product attack the previous finish causing wrinkling, raising, or puckering the paint film due to
  - A. Exceeding maximum flash or recoating times during application
  - B. Recoating enamels or urethanes that are not fully cured
  - C. Recoating a basecoat/clearcoat finish, where existing clearcoat has insufficient film build

## Repair:

- Remove lifted areas and refinish

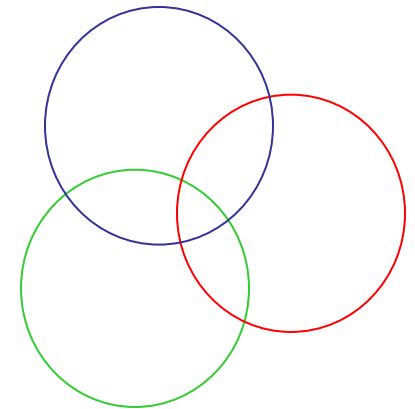
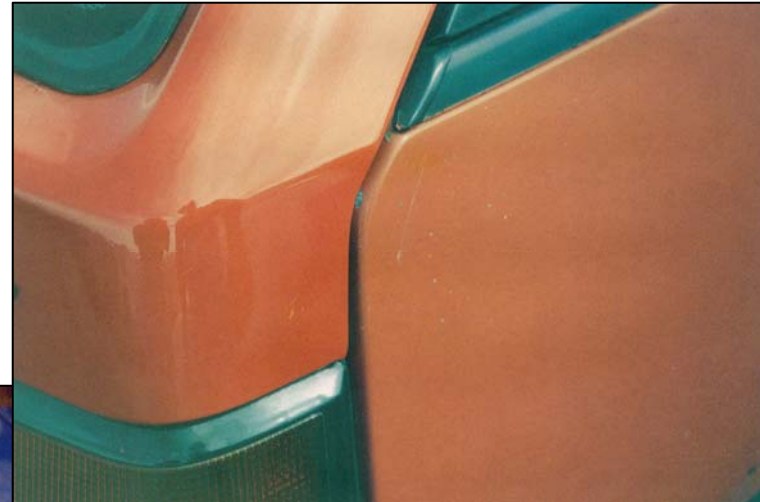
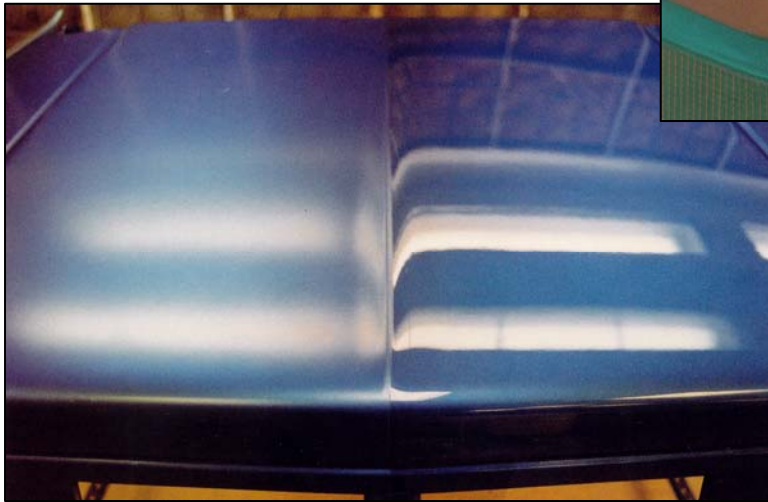
## Prevention:

- Do not exceed a products maximum recoat window
- Allow enamels and urethanes to fully cure before recoating or attempting a repair
- Avoid applying undercoats or topcoats excessively wet
- Avoid the use of lacquer products over an air dried enamel finish
- Use waterborne undercoats to repair extremely sensitive finishes



## Loss of Gloss (Hazing, Dulling)

A dulling of the gloss as the film dries or ages.



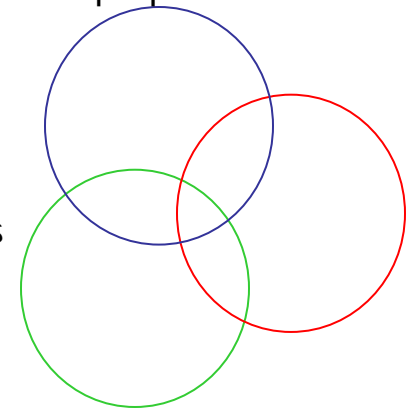
# Loss of Gloss (Hazing, Dulling)

## **Causes:**

1. Topcoat applied in heavy wet coats
2. Inadequate flash time between coats
3. Insufficient film thickness of topcoat color or clearcoat
4. Insufficient drying/curing of undercoats before applying topcoats
5. Using a poor grade and/or too fast evaporating thinner/reducer for spray conditions
6. Improper cleaning of the substrate
7. Insufficient air movement during and after application
8. Spraying over a deteriorated or solvent sensitive substrate finish without proper priming or sealing procedures
9. Natural weathering of the finish

## **Repair:**

1. Allow finish to cure thoroughly, compound or polish to restore gloss
2. Or, sand and refinish



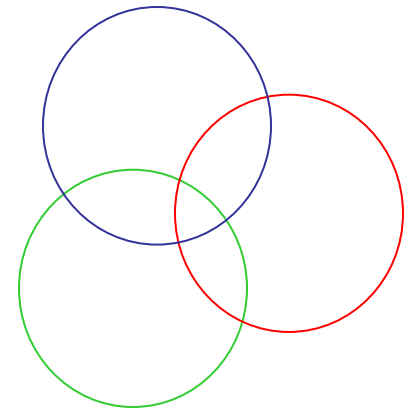
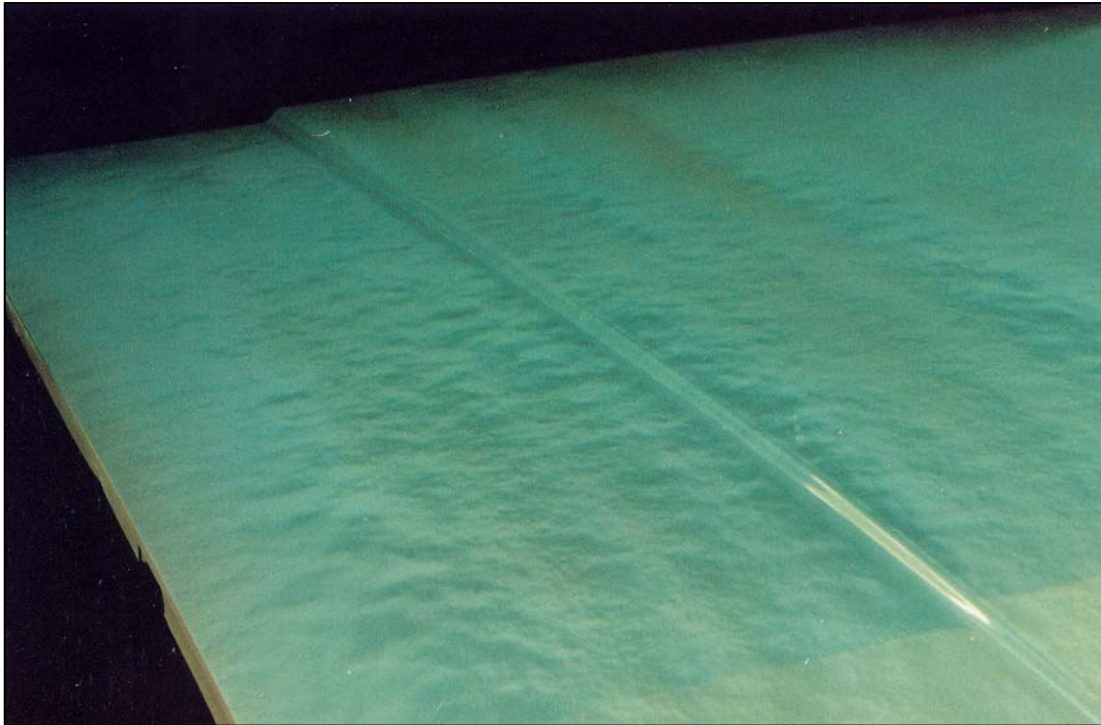
# Loss of Gloss (Hazing, Dulling)

## Prevention:

1. Apply the topcoat according to product label directions using the recommended set up and air pressure
2. Allow all coatings sufficient flash time between coats
3. Apply a sufficient number of coats to achieve recommended film thicknesses
4. Allow undercoats to thoroughly dry/cure before applying topcoats
5. Select recommended thinner/reducer based on temperature, humidity, air movement, and size of repair
6. Clean substrate thoroughly before and after sanding
7. For maximum holdout use a two component undercoat system
8. For air dry situations, allow the fan to run an additional 40 minutes after the last coat has been applied and only open the booth doors after the finish is dust free. It is also recommended that a temperature of 60°F be maintained when allowing to dry overnight
9. Properly wash and care for the finish on a regular basis
10. Using premium topcoat color or clearcoat system will provide maximum gloss and durability

## Mottling (Streaking, Striping)

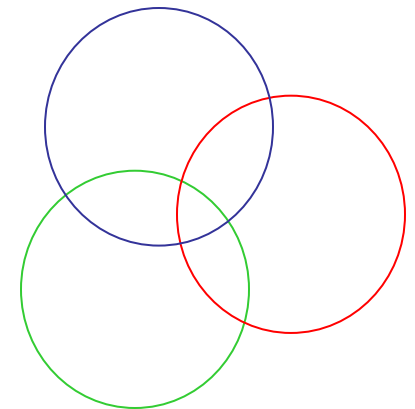
A streaked, spotty, or striped appearance in a metallic color.



# Mottling (Streaking, Striping)

## Causes:

1. Uneven distribution of the metallic flake caused by.
  - A. Using a spray gun with an unbalanced spray pattern
  - B. Improper application technique such as tilting the spray gun during application, causing the spray pattern to become heavy or light on either the top or bottom respectively
  - C. Holding the gun too close to the surface (flooding)
  - D. Uneven spray pattern overlap
  - E. Omitting, improper use of mist coats
  - F. Too much thinner/reducer color over thinned/reduced
  - G. Applying clearcoat to basecoat that has not thoroughly dried
  - H. Improper application of basecoat



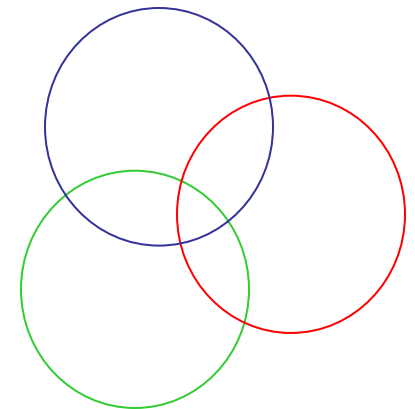
# Mottling (Streaking, Striping)

## Repair:

1. To uniform metallic single stage finishes, apply a higher pressure mist coat, panel by panel while 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

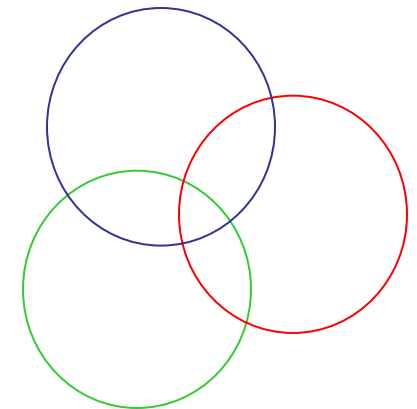
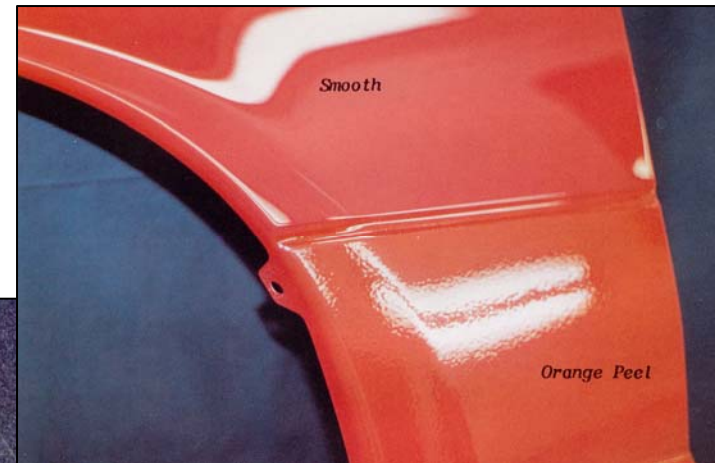
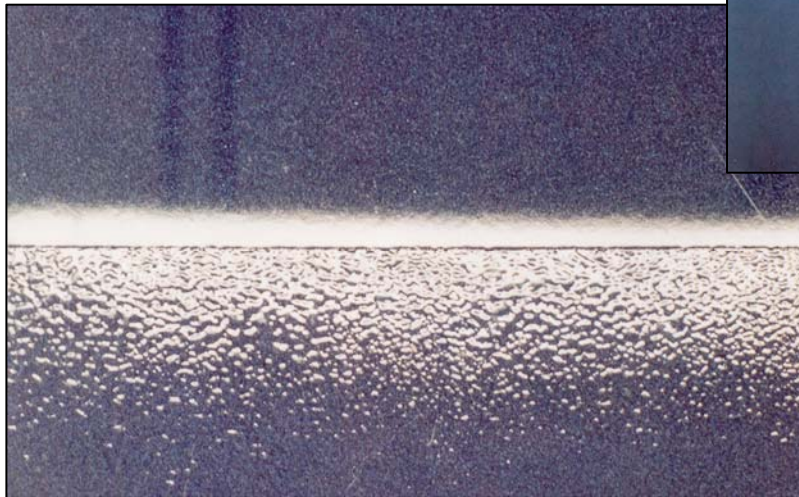
## Prevention:

1. Use the recommended spray gun, including fluid tip and air cap for the material being sprayed. Always test and adjust the spray gun before painting to provide the best atomization and spray pattern
2. Use the correct mix ratio of thinner/reducer
3. Allow basecoat the proper flash/dry time before clearcoating
4. Follow the basecoat application procedures



## Orange Peel (Poor Flow, Texture)

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



# Orange Peel (Poor Flow, Texture)

## **Causes:**

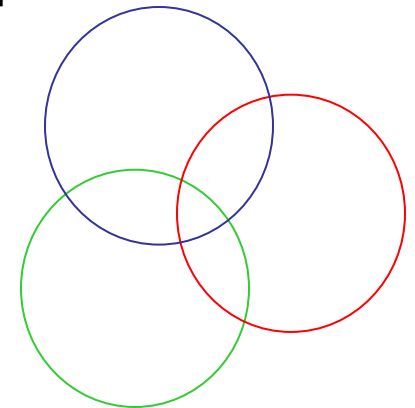
1. Under reduction and/or air pressure too low
2. Thinner/reducer evaporates too fast for spray conditions
3. Excessive film thickness or piling on of heavy coats
4. Improper spray gun set up
5. Improper painting technique

## **Repair:**

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

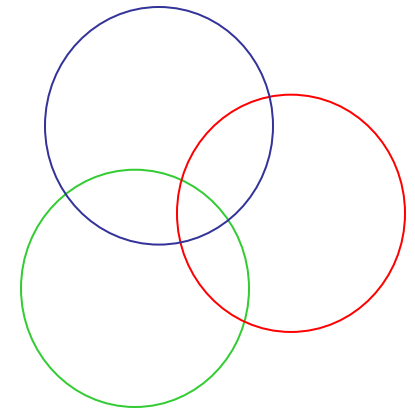
## **Prevention:**

1. Use proper reduction ratio and spray at recommended air pressure
2. Select the temperature correct thinner/reducer for conditions
3. Avoid heavy coats and excessive film thicknesses
4. Use the recommended spray gun fluid tip and air cap for the material



# Peeling (Flaking, Delamination)

A loss of adhesion or separation of the paint film from the substrate.



# Peeling (Flaking, Delamination)

## **Causes:**

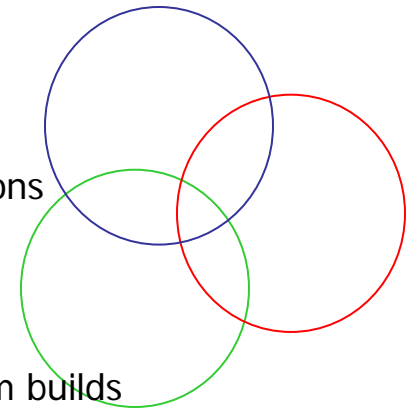
1. Improper preparation of the substrate
2. Omitting or applying an incompatible undercoat to a specific substrate
3. Insufficient dry/flash time or exceeding the products maximum recoat time
4. Insufficient film thickness of undercoat or topcoat
5. Applying basecoat to dry
6. Sanding basecoat without applying additional basecoat

## **Repair:**

1. Remove the finish in the affected area, featheredge and refinish
2. Or, strip to bare substrate and refinish

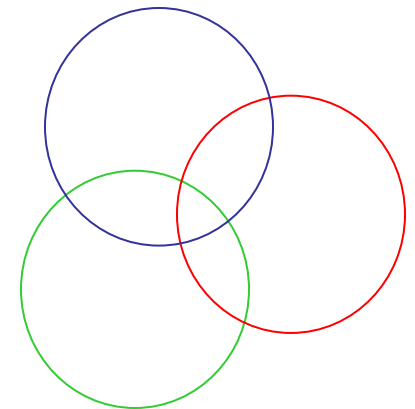
## **Prevention:**

1. Clean and repair all substrates according to product recommendations
2. Use the recommended undercoat for the substrate being refinished
3. Recoat all products within their recommended recoat times
4. Apply a sufficient number of coats to achieve the recommended film builds



## Pinholing in Body Filler

Small holes or bubbles located in or on top of putties or body fillers.



# Pinholing in Body Filler

## Causes:

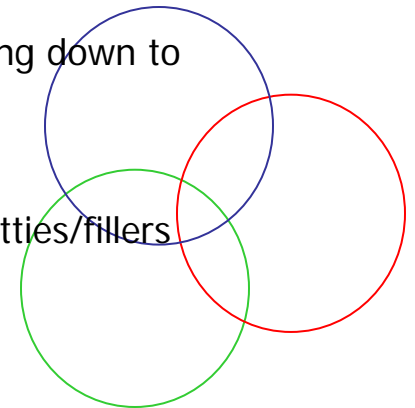
1. Filler and hardener are mixed together using a “whipping” motion (fast circular motion)
2. Adding too much hardener
3. Applying heavy thick coats which produces excessive heat creating gas bubbles to form as the product cures

## Repair:

1. Apply a thin layer of polyester glazing putty (properly catalyzed and mixed), sand smooth and continue the repair process

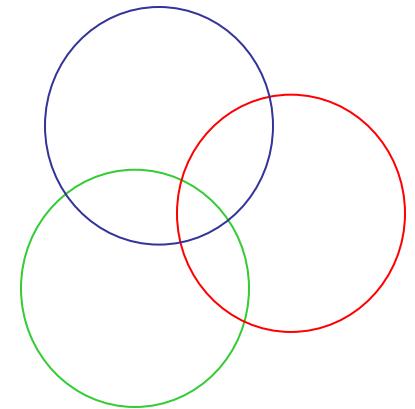
## Prevention:

1. Mix putty/filler components together by folding together and pressing down to eliminate air bubbles
2. Apply putties/fillers in thin coats
3. Follow manufacturers recommendations for correct mix ratios of putties/fillers



## Rail Dust

Small rust colored bumps or specks in the surface of the paint film.



# Rail Dust

## Causes:

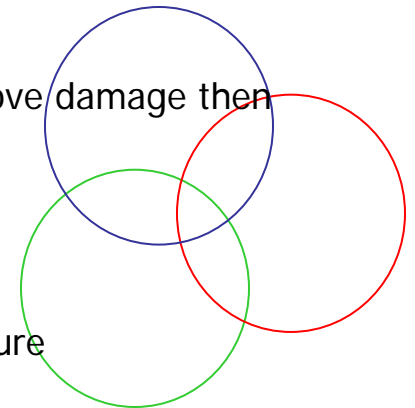
1. When vehicles are transported from the manufacturer by rail, iron dust particles created by friction between train wheels and the track settle on the finish. When exposed to oxygen and moisture, this dust corrodes and becomes embedded in the finish

## Repair:

1. Wash the vehicle with soap and water, rinse and dry
2. Solvent clean with the appropriate surface cleaner
3. Use an acid based rail dust remover following manufacturers directions
4. Rinse with cold water then inspect the affected area to see if all particles have been removed, repeat step 3 if necessary
5. If the finish is pitted sand with 1200 grit of finer sandpaper to remove damage then compound and polish to restore gloss
6. Or, sand and refinish

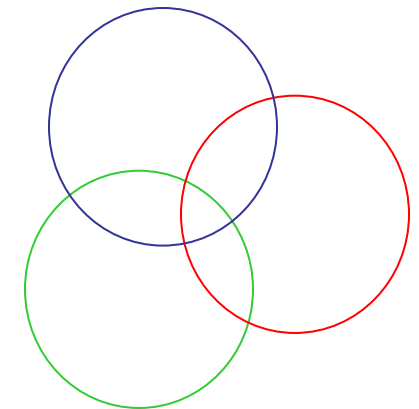
## Prevention:

1. Little can be done to prevent rail dust from occurring due to its nature



## Runs/Sags (Hangers, Curtains)

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



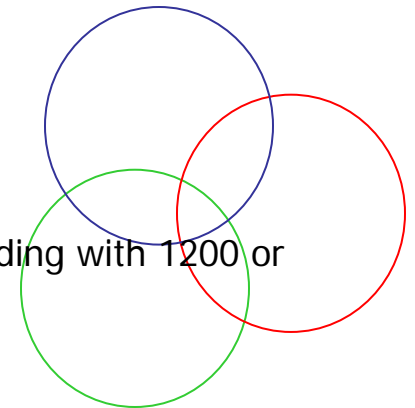
# Runs/Sags (Hangers, Curtains)

## **Causes:**

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

## **Repair:**

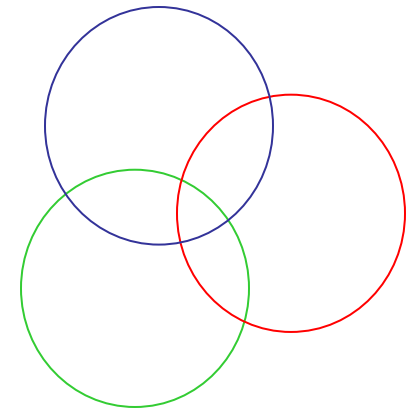
1. Remove the wet paint film with solvent clean and refinish
2. Or, after finish is completely dry, remove excess paint by block sanding with 1200 or finer grit sandpaper, compound and polish to restore gloss
3. Or, block sand smooth and refinish



# Runs/Sags (Hangers, Curtains)

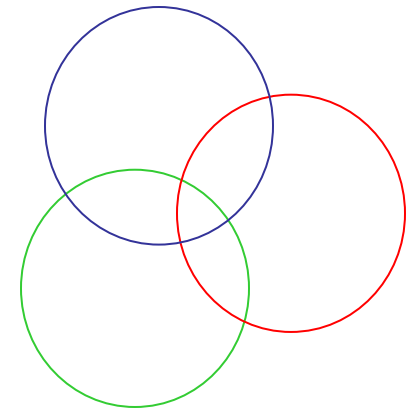
## Prevention:

1. Mix according to product directions. Select recommended solvent for spray conditions based on temperature, humidity, air movement and size of repair
2. Spray medium wet coats and allow sufficient flash time in between coats
3. Adjust the spray gun for the best atomization and balanced spray pattern before painting until the desired results are achieved
4. Set the air pressure at the gun according to product recommendations
5. Use the recommended spray gun, fluid tip and air cap combination
6. Allow the paint material and substrate to reach room temperature before application



## Sanding Marks (Sand Scratches)

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



# Sanding Marks (Sand Scratches)

## Causes:

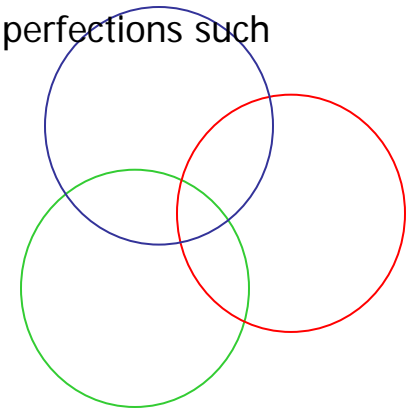
1. Scratching or distorting metallic/mica flakes close to the surface of the paint film due to:
  - A. Sanding single stage or basecoat metallic finishes prior to clearcoating
  - B. Sanding single stage metallic finishes prior to buffing

## Repair:

- Allow finish to dry, sand and refinish

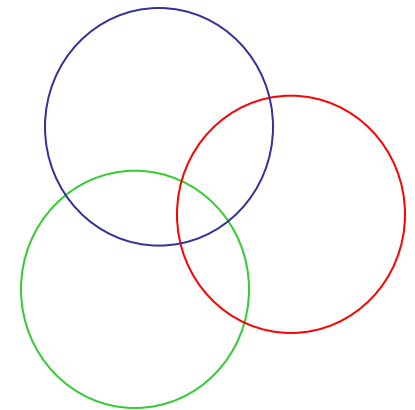
## Prevention:

- Avoid sanding basecoat finishes before clearcoating
- When sanding single stage finishes confine the sanding to minor imperfections such as dirt nibs, use 1200 grit or finer sandpaper for best results



# Sand Scratches (Swelling, Shrinkage)

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



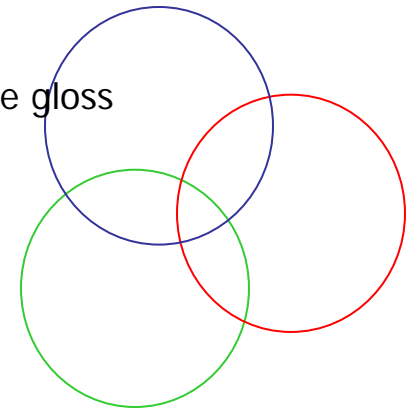
# Sand Scratches (Swelling, Shrinkage)

## **Causes:**

1. Sanding the substrate with too coarse grit sandpaper
2. Insufficient dry cure of undercoats before sanding and topcoating
3. Refinishing over soft soluble substrates
4. Using a poor grade and/or too fast evaporating thinners/reducers for spray conditions
  - A. Primer surfacer to "Bridge" over sand scratches
  - B. Topcoat to "skin over", trapping solvent which swells sensitive substrates
5. Using a solvent cleaner that is too strong for the substrate

## **Repair:**

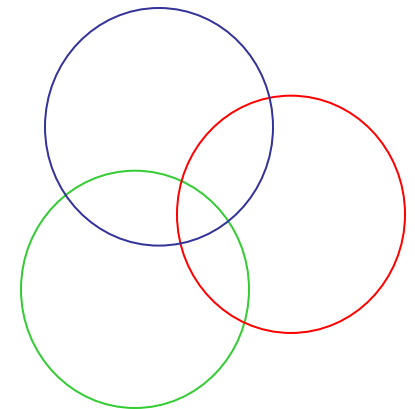
1. Allow finish to dry,cure, sand smooth, compound or polish to restore gloss
2. Or, sand and refinish



# Sand Scratches (Swelling, Shrinkage)

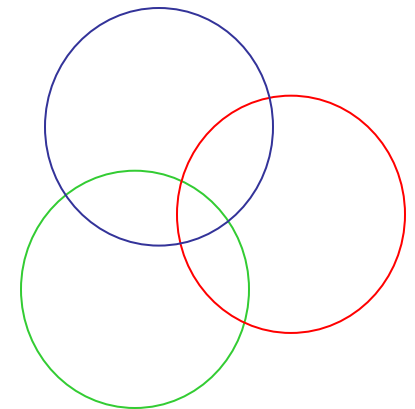
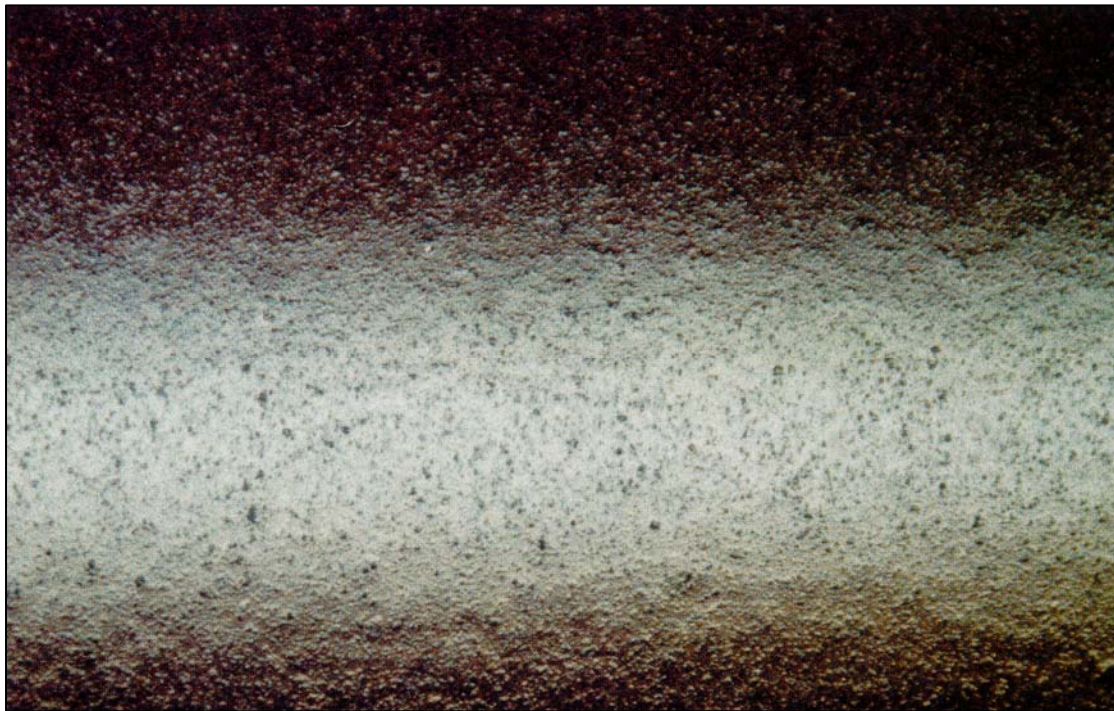
## Prevention:

1. Sand with recommended grit sandpaper
2. Allow undercoats to thoroughly dry/cure before sanding and topcoating
3. Test the finish by rubbing a small area with a lacquer thinner soaked cloth to determine the solubility of the substrate
4. Select the correct thinner/reducer based on temperature, humidity, air movement and size of repair
5. Use the correct solvent cleaner for the substrate



## Seediness (Dirty, Grainy)

Solid particles of various shapes and sizes embedded evenly throughout the paint film.



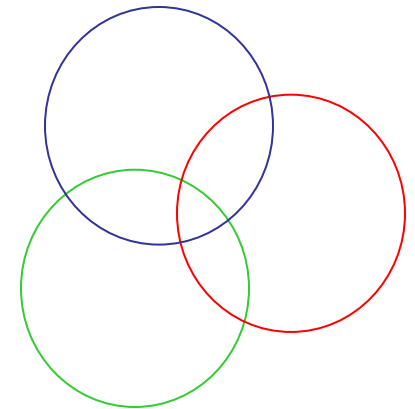
# Seediness (Dirty, Grainy)

## **Causes:**

1. Material not properly stirred or agitated
2. Failure to strain material
3. Using material exceeding its shelf life
4. Using generic reducers and/or hardeners
5. Using materials beyond their specified pot life
6. Using contaminated thinner/reducer or hardener
7. Using contaminated water borne products

## **Repair:**

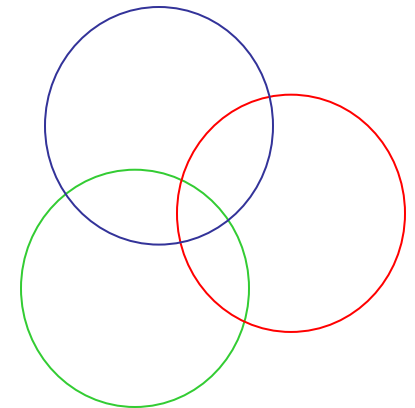
1. Remove the wet paint film with solvent, clean and refinish
2. Or, sand smooth and refinish



# Seediness (Dirty, Grainy)

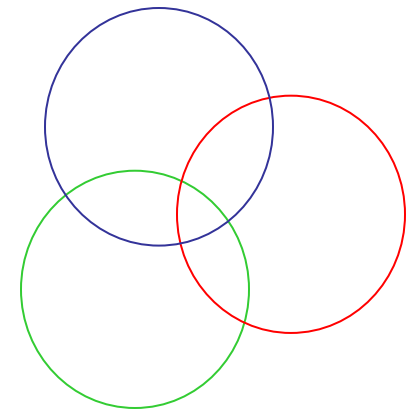
## Prevention:

1. Stir or shake materials thoroughly to insure all pigment/resin is in solution
2. Strain all undercoats and topcoats
3. Do not use materials that cannot be stirred or strained
4. Use the recommended thinner/reducer and hardener and measure accurately
5. Mix only enough material to be used within its pot life
6. Use material as soon as possible, close and tighten container lids immediately after use
7. Do not allow thinner/reducer to come into contact with water borne products



## Shrinkage (Bulls eyes, Ringing)

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



# Shrinkage (Bulls eyes, Ringing)

## **Causes:**

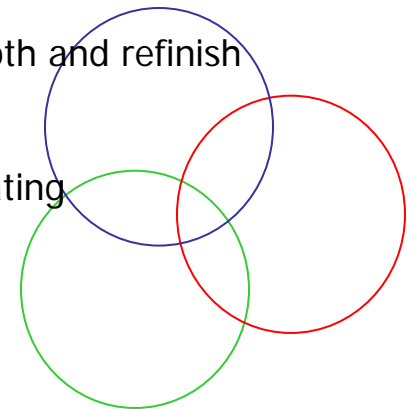
1. Topcoating before undercoats have thoroughly dried/cured
2. Undercoats applied excessively wet with inadequate flash time in between coats
3. Undercoats under reduced
4. Using a poor grade and/or too fast evaporating thinner/reducer
5. Finishing over body filler that has not thoroughly cured
6. Using too strong a 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

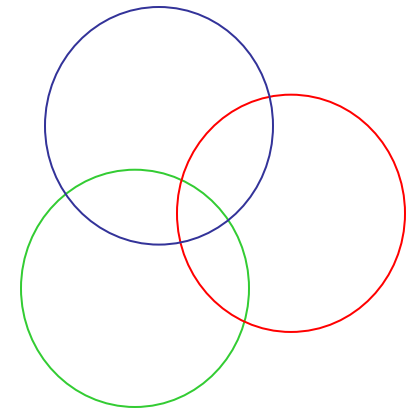
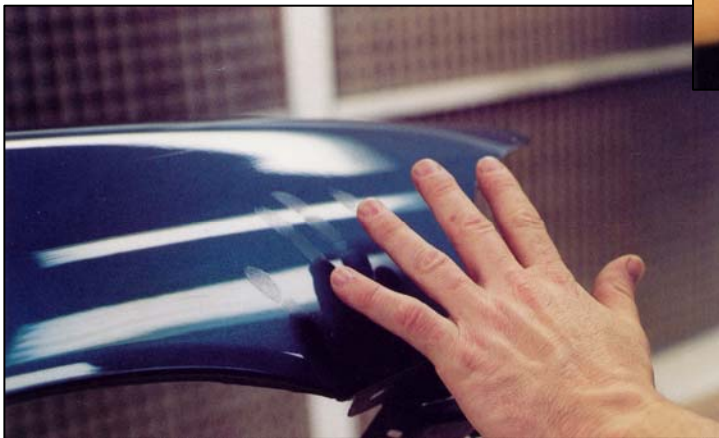
## **Prevention:**

1. Allow undercoats to thoroughly dry/cure before sanding and topcoating
2. Thin/reduce undercoats as recommended apply in thin wet coats
3. Follow body filler recommended cure times
4. Use solvent cleaner designated for the correct substrate



## Soft Film (Slow Dry)

The paint film is soft to the touch, and will finger print or water spot hours/days after application.



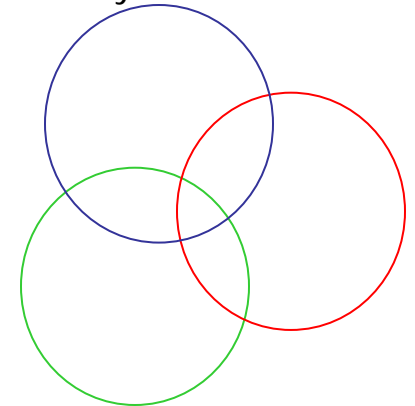
# Soft Film (Slow Dry)

## **Causes:**

1. Applying undercoat and/or topcoat excessively wet
2. Insufficient dry time between coats
3. Improper shop ventilation or heating
4. Adding too much or too little hardener to the paint material
5. Using the incorrect thinner/reducer for spray conditions
6. Omission of drier in enamel/urethane topcoats

## **Repair:**

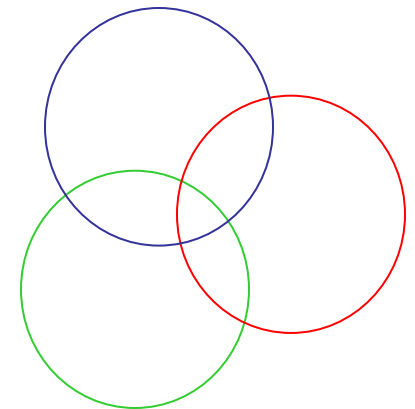
1. Allow additional dry time, maintaining a shop temperature of approximately 70°F
2. Or, force dry following temperature and time recommendations
3. Or, remove soft paint film and refinish



## Soft Film (Slow Dry)

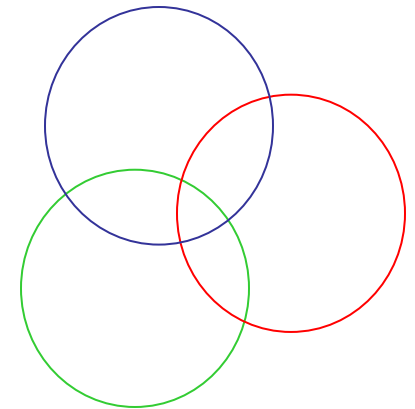
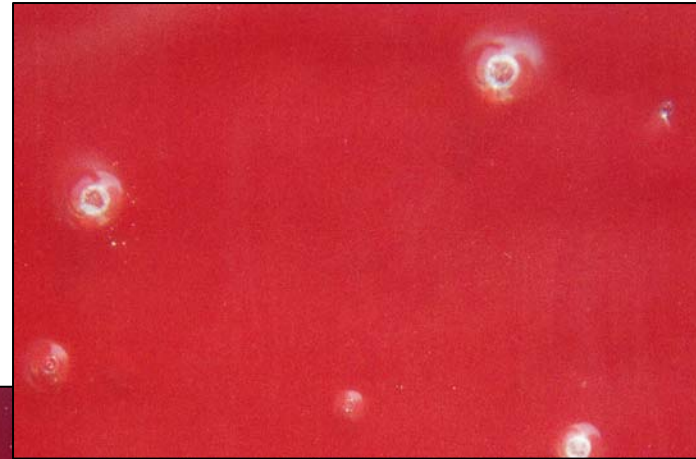
### Prevention:

1. Use recommended spray gun, fluid tip and air cap for the material being sprayed
2. Allow sufficient flash time between coats
3. Maintain a shop temperature of 70°F or above for proper cure/dry
4. Use the recommended hardener and measure accurately
5. Select the appropriate thinner/reducer based on temperature, humidity, air movement and size of repair
6. Add the correct amount of drier as is specifically listed in the color formulation



## Solvent Popping (Boiling)

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



# Solvent Popping (Boiling)

## **Causes:**

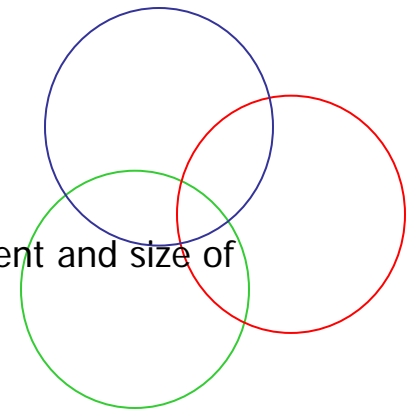
1. Thinner/reducer evaporating too fast for spraying conditions
2. Inadequate flash time between coats
3. Excessive film thickness or piling on of heavy/wet coats
4. Too much air movement causing surface to skin over before the solvents evaporate
5. Excessive purge/flash time before force drying

## **Repair:**

1. Allow finish to thoroughly dry/cure, sand smooth and refinish
2. Or, severe popping will require complete removal of the film

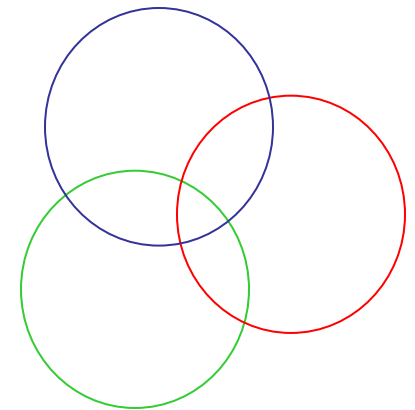
## **Prevention:**

1. Allow proper flash time between coats
2. Avoid piling on or double wet coats
3. Select thinner/reducer based on temperature, humidity, air movement and size of repair
4. Restrict/slow air movement over vehicle



## Staining (Bleed Through)

A yellow brown discoloration appears in the topcoat over areas repaired with polyester body filler or glazing putty.



# Staining (Bleed Through)

## **Causes:**

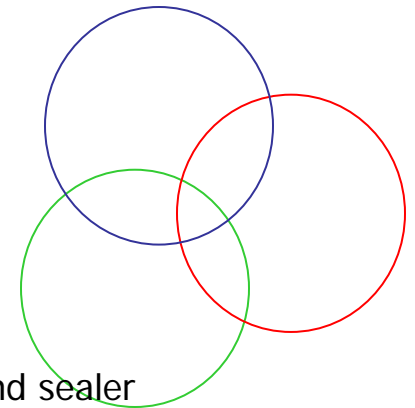
1. Using too much or too little hardener in the putty/filler
2. Insufficient mixing of putty/filler components
3. Applying a surfacer/sealer/topcoat before the putty/filler has fully cured
4. Applying undercoats and/or topcoats excessively wet
5. Clearcoating a white or light color without using a stain free body filler

## **Repair:**

1. Allow topcoat to thoroughly cure
2. Sand affected area, isolate with two component undercoats and refinish

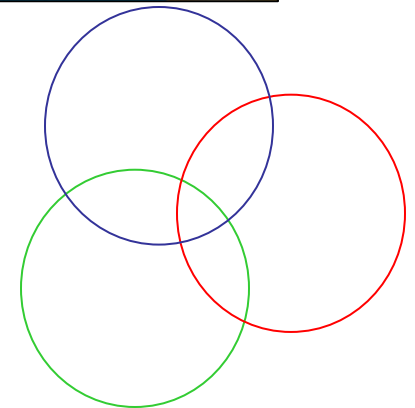
## **Prevention:**

1. Use the correct amount of body filler hardener
2. Mix components thoroughly
3. Allow putty/filler to cure thoroughly before topcoating
4. Use non staining filler/putty, especially for lighter color cars
5. Isolate body filler/putty by using two component primer surfacer and sealer



# Tape Tracking

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



# Tape Tracking

## **Causes:**

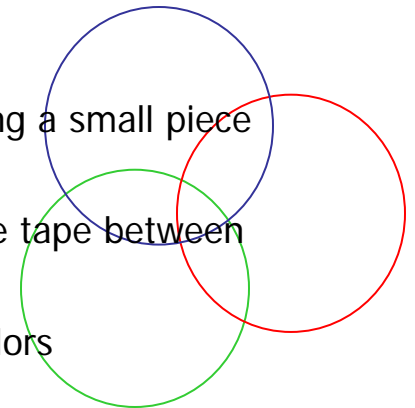
1. Finish not dry before taping, causing solvent entrapment between finish and tape
2. Using a non automotive tape for multi color finishes

## **Repair:**

1. Compound and polish to remove texture
2. Or, sand with 1500-1200 grit sandpaper, compound and polish to restore gloss
3. Or, sand and refinish

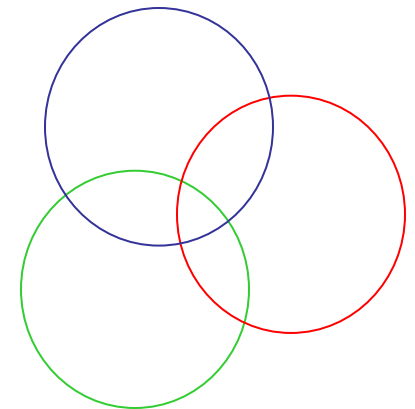
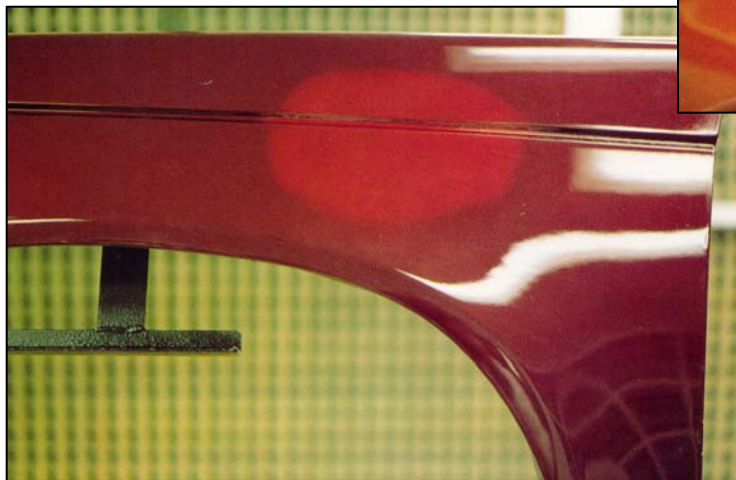
## **Prevention:**

1. Allow the finish to thoroughly dry before masking
2. Use only high quality automotive masking tape
3. 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 and check
4. De-tack the tape before applying by pulling the adhesive side of the tape between your fingers or over a pant leg
5. Remove the tape as quickly as possible after applying additional colors



## Transparency (Poor Hiding)

The original finish or undercoat is visible through the topcoat.



# Transparency

## **Causes:**

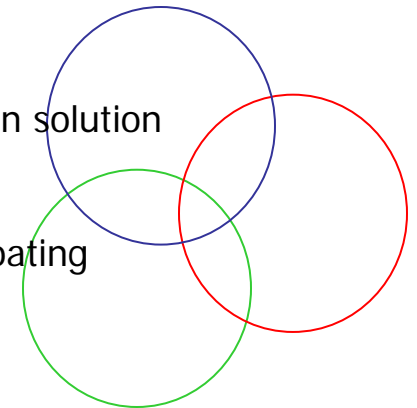
1. Color not thoroughly stirred/agitated
2. Color over thinned/reduced
3. Substrate not uniform in color
4. Wrong color undercoat used
5. Insufficient number of coats applied

## **Repair:**

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

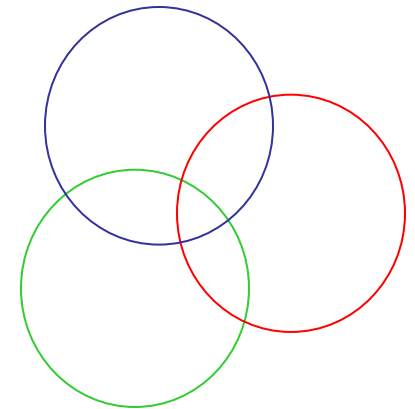
## **Prevention:**

1. Stir or shake paint material thoroughly, making sure all pigment is in solution
2. Thin/reduce according to product label directions
3. Use a sealer or ground coat to provide a uniform color before topcoating
4. Use an undercoat that is similar in color to the undercoat
5. Spray until hiding is achieved



# Water Spotting

Circles with raised edges or whitish spots resembling the various shapes of water droplets appear on the surface of the paint film.



# Water Spotting

## **Causes:**

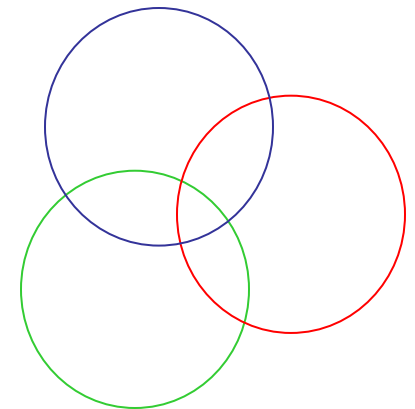
1. Allowing water to come into contact with a finish that is not thoroughly dried/cured
2. Washing a finish in direct sunlight

## **Repair:**

1. Wipe with a damp cloth then polish
2. Or, compound and polish
3. Or, sand smooth with 1200-1500 grit sandpaper, compound and polish to restore gloss
4. Or, sand and refinish

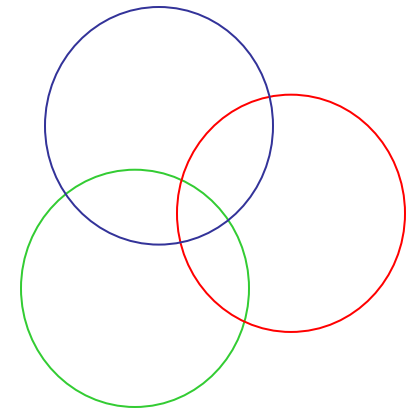
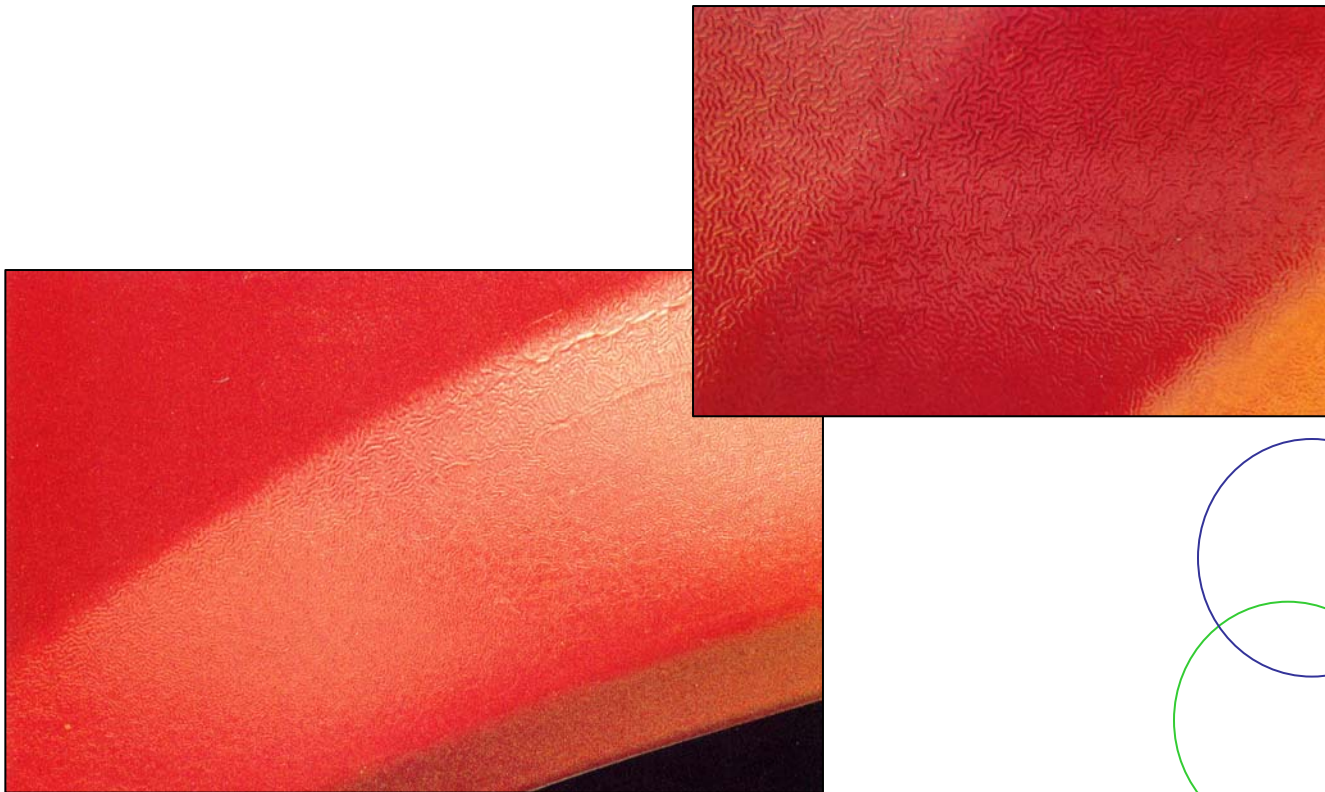
## **Prevention:**

1. Do not allow water to come into contact with newly painted finish
2. If a new finish does get wet, dry immediately with a soft cloth
3. Wash new finishes in the shade and wipe dry



## Wrinkling (Shriveling)

The surface of the paint contains irregular grooves or ridges resembling the skin of a prune.



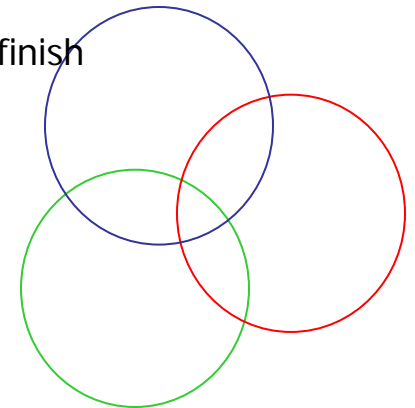
# Wrinkling (Shriveling)

## **Causes:**

1. Excessive film thickness or piling on of heavy wet coats
2. Placing a newly painted finish in the hot sun too soon after spraying
3. Using lacquer thinner to reduce synthetic enamel
4. Spraying in extreme hot, humid weather conditions
5. Under reduced or using too fast evaporating thinner/reducer for spray conditions
6. Air pressure too low during spray application
7. Force drying air dry enamel without the recommended additives

## **Repair:**

1. If defects are minor, sand the surface smooth, allow to cure and refinish
2. If defects are severe, remove the affected area and refinish



# Wrinkling (Shriveling)

## Prevention:

1. Avoid excessive film thicknesses and heavy coats
2. Keep newly painted finish away from direct sunlight until the finish has dried/cured
3. Use reducer that is specifically recommended for the topcoat
4. Use the recommended reducer, retarder, hardener when spraying in hot, humid weather
5. Select recommended thinner/reducer based on temperature, humidity, air movement and size of repair
6. Use the proper reduction ratio and spray at recommended air pressure
7. Select the recommended additive to suit drying conditions

