

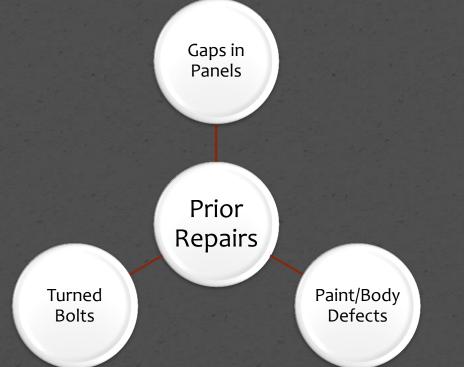
Paint Defects

Identification and Correction

Overview

"Paint & Body Defects" is one of the 3 most consistent indicators when inspecting for 'prior repairs' that could ultimately indicate structural repairs, existing damage or alterations.

Use this guide to better understand the various paint and body defects.



Correcting Paint Conditions

- * Corrective processes not involving refinishing operations must maintain proper UV protection
 - ★ Check film thickness before starting
 - ★ Check film thickness after correction
 - If more than 0.3-0.5* mil of clearcoat is removed the affected area should be re-painted
 - * Varies by OEM paint process

Paint Condition List

- O Acid Rain
- Industrial Fallout
- Ø Water Spotting
- Ø Scratches
- O Environmental Contamination
- Ø Polishing marks
- Ø Stonechip
- Corrosion
- Orange Peel / Texture
- Ø Dirt Inclusions
- O Adhesion Problems with Plastics
- O Adhesion Problems with Clearcoat
- O Clouding / Mottling
- O Contamination / Fish-eyes
- Ø Peeling Problems
- Sanding Marks Topcoats

Sanding marks - Substrates O Loss of Gloss / Matting Hiding Power (Coverage, Opacity) O Color Off Shade Clearcoat Yellowing Moisture Blisters Adhesion Problems with Polyester Ø Edge Mapping O Wrinkling / Lifting O Shrinkage / Edge mapping O Striping / Banding O Pinholes - Topcoats O Pinholes - Substrates 0 Solvent Pop 0 Runs O Peroxide Staining

Acid Rain

Cause

Rain containing airborne contaminants from manufacturing processes, chemical industries, and power stations

Contaminants may become acidic or alkaline when combined with water (sulfur dioxide - acidic, cement dust - alkaline)

Prevention

Avoid heavily contaminated atmospheres

Wash surface immediately after exposure to remove and neutralize the contaminants

Remedy

- Neutralize the surface with mild detergent and water, thoroughly rinse
- Sand, and polish Sand, and repaint

Industrial Fallout

Cause

 Iron and steel particles from heavy industry, foundries, railroads
 Prevention

Thoroughly wash vehicle immediately after exposure
Protect vehicle from exposure to such environments, cover if possible

Remedy

Clean surface with a suitable solution to dissolve the particles, neutralize, then polish

Remove particles, sand, and repaint



Water Spotting

Cause

- Droplets of water on paint which is not sufficiently cured due to:
- Excessive film thickness, drying time too short
- Failure of cross linking due to moisture contamination
- Unsuitable thinner

Prevention

- ۶ Follow technical recommendations
- Ensure lids are tightly replaced after using hardeners

Remedy

- Remove marks by polishing
- Sand, isolate and repaint





Scratches

Cause

- Frequent use of brush or soft cloth automated car wash facilities
- Wiping a dry surface instead of rinsing with water

Prevention

Maintain and protect the finish with quality, non-silicone polish or wax Rinse vehicle, never dry wipe the surface

Remedy

Polish

For severe scratches, sand and repaint



Environmental Contamination

Cause

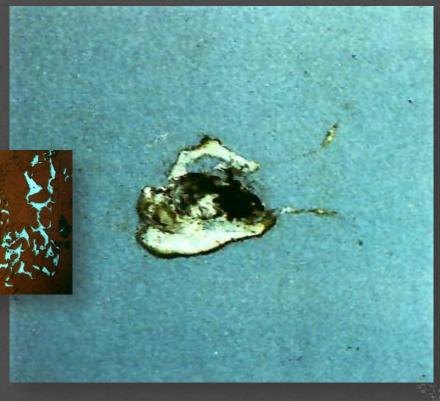
Ø Bird droppings, acid rain, other environmental influences
 Prevention

Immediately clean and neutralize the contamination with mild detergent and water before etching starts

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Remedy

Neutralize, sand, and polishNeutralize, sand, and repaint



Polishing Marks

Cause

- Top coat not through-dried
- Sandpaper too coarse
- Unsuitable polish
- Polishing through layers on edges

Prevention

- Thoroughly dry top coat, if necessary re-bake
- Use suitable polish and equipment
- Use correct sandpaper
- ² Use polish, free of ammonia

Remedy

- Thoroughly dry topcoat and re-polish
- Thoroughly dry topcoat, sand and repaint

Stonechip

Cause

High use of gravel roads
Frequent highway use
Following vehicles too close
Improper film build
Prevention

Careful driving habits
Proper film builds
Anti-chipping paint systems
Remedy

Sand and repaint with proper systems



Corrosion

Cause

- Paint removed by chipping or scratching exposing bare metal
- Inadequate pre-treatment of metal
- Rust not removed before application of coatings
- Metal surface contaminated before application of coatings

Prevention

- Remove all rust before applying coatings
- Properly pre-treat metal substrates
- Use correct coating materials

Remedy

Thoroughly remove all rust Sand and repaint with proper systems



Orange Peel / Texture

Cause

- Incorrect spray pressure, gun setup, viscosity, technique, or application temperature
- Wrong combination of solvents or non-system solvents
- Substrate not sanded thoroughly

Prevention

- Follow recommendations on technical data sheets
- Prepare and sand substrate correctly
- Use recommended gun set up
- Always use system thinners

Remedy

Sand and polish Sand and repaint



Dirt Inclusions

Cause

Various types of contamination typically introduced during the application or drying process

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Prevention

Proper vehicle/technician cleaning procedures, booth/spray equipment maintenance, material preparation, masking, etc.

Remedy

Sand, and polishSand, and repaint

Adhesion Problems with Plastics

Cause

- Insufficient cleaning, drying (tempering)
- Incorrect primer has been usedPrevention
- Clean and degrease properly
 Temper parts before priming
 Ensure proper solvents evaporation
- Use suitable adhesion primerRemedy
 - Remove damaged finish and repaint
 - Steam clean, sand, clean and repaint



Adhesion Problems - Clearcoat

Cause

- Excessive coat thickness of basecoat
- Intermediate and final flash-off times of the basecoat too short
- Wrong mixing ratio for clearcoat and hardener

Prevention

- Allow proper flash off time
- Apply proper film thickness
- Mix clearcoat correctly
 Remedy
 - Sand and repaint



Clouding / Mottling

Cause

- Incorrect spray viscosity, technique, flash off times, spray temperature
- Defective spray gun setup, incorrect spray pressure
- Unsuitable thinners

Prevention

- Use correct viscosity and spray gun setup
- Keep spray gun parallel to object
- Use correct thinner with sufficient flash off time
- Observe recommendations in technical data sheets

Remedy

- Use droplet method before spraying clear
- After clear has thoroughly dried, sand surface and repaint

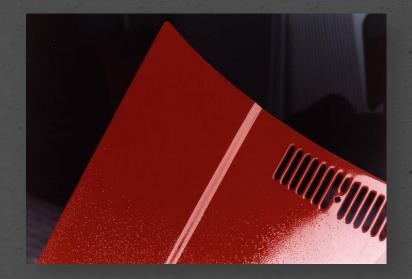
Contamination (Fish-eyes / Silicone)

Cause

- Oil, wax, grease or silicone contamination
- Contaminated air supply
- Use of polishes or aerosol sprays containing silicone (e.g. interior cleaners or dressings)
- Insufficient cleaning
- Prevention
 - Regular maintenance of air supply
 - Thoroughly clean with a suitable wax and grease remover

Remedy

- Apply light coats of basecoat until defect is covered
- [•] Sand panel, clean / isolate, and repaint
- If required, use fish-eye eliminator



Peeling Problems

Cause

- Substrate not sufficiently prepared (rust, grease, moisture, poor sanding or cleaning)
- Use of incompatible material or an incompatible substrate
- Flash off and drying times too short
- Condensation of substrate due to temperature changes

Prevention

- Provide the second s
- Degrease and prepare substrate carefully
- Keep to specified drying times
- Use compatible product systems

Remedy

Sand damaged area and repaint



Sanding Marks - Topcoats

Cause

- Sanding paper too coarse
- Soft, solvent reversible substrates
 e.g. acrylic lacquer (T.P.A.)
- Insufficient film build

Prevention

- Solvent test to identify soft, reversible substrates (T.P.A.)
- Isolate soft finishes
- Use recommended sandpaper
- Apply proper film thickness

Remedy

Thoroughly dry affected area Sand, isolate, and repaint



Sanding Marks - Substrate Preparation

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Cause

- Insufficiently sanded polyester stopper
- Insufficient isolation of the polyester before topcoat application

Prevention

- Use suitable sanding paper
- Isolate polyester areas with 2K filler

Remedy

Thoroughly sand damaged area and repaint



Loss of Gloss / Matting

Cause

- Film thickness/ air humidity
- Solvent-sensitive substrate
- Incorrect mixing or contaminated hardener, or unsuitable thinner
- Insufficient airflow in oven or interrupted baking

Prevention

- Follow application recommendations on technical data sheets
- Close hardener cans firmly after use
- Ensure sufficient airflow in oven and do not interrupt baking cycle

Remedy

Sand and polish Sand and repaint



Hiding Power (Coverage, Opacity)

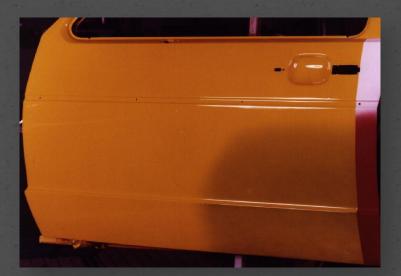
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Cause

Substrate not uniform (effect finishes)
Color coat film build too low
Prevention
Spray a uniform substrate
Spray sufficient color to obtain opacity

Remedy

Sand and repaint



Color Off-shade

Cause

- Weathered surface
- Incorrect spraying technique
 - too wet or dry, poor opacity
- Incorrect spray gun setup or PSI
- Incorrect mixing
- Variations of the OEM finish (multiple color shades)

Prevention

- Check color for variations
- Mix color correctly
- Spray a test panel for verification
- Apply with recommended procedures
- Use blending techniques

Remedy

- Polish adjoining panel for color verification
- P Blend the color
- Tint the color, sand, repaint



Clearcoat Yellowing

Cause

- Wrong or contaminated hardener
- Insufficient clearcoat film thickness

Prevention

- Ensure lids are tightly replaced after using hardeners
- Follow technical recommendations
- > Use system hardeners

Remedy

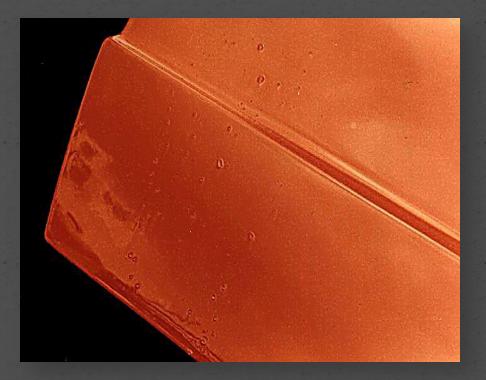
Sand and repaint



Moisture Blisters

Cause

- Residue of sanding water in corners, edges, crevices, or below decorative strips
- Contaminated air supply Insufficient isolation of polyesters
- Ambient humidity too high
- Prevention
 - Always remove exterior trim
 - Blow and dry carefully
 - Check air supply equipment regularly
- Remedy
 - Remove contaminated finish and repaint



Adhesion Problems - Polyester

Cause

- Substrate not carefully prepared
 Polyester material unsuitable for galvanized substrate
- Too high surface temperature while forced drying
- Undercured too much or too little hardener

Prevention

- Clean and sand thoroughly
- Follow the manufacturer's instructions for forced drying
- Use proper mixing ratio
- Ensure the hardener is thoroughly mixed

Remedy

Sand the damaged repair-area well Repair and repaint



Edge Mapping Due to Solvent Penetration

Cause

Insufficient isolation where topcoat was sanded through to substrate

- Isolated with unsuitable filler
- Filler incorrectly applied
- Insufficient drying of substrate

Prevention

- Solvent Test to identify soft substrates
- Apply only several thin coats of 2K Primer Filler
- Avoid sanding through to soft substrate

Remedy

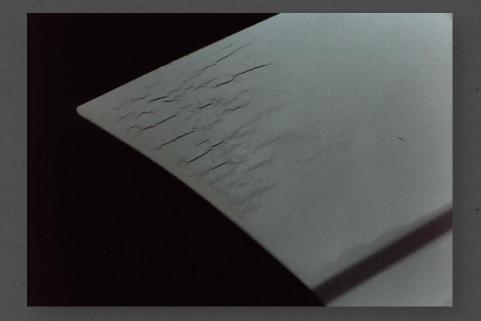
Thoroughly dry affected area Sand, isolate, and repaint



Wrinkling, Rippling, Lifting

Cause

- Finish not fully cured (synthetic resin finishes)
- Unsuitable substrate (aerosol paints, acrylic lacquer or nitrocellulose)
 - Excessive film build
- Prevention
 - Solvent test
 - Remove or isolate solventsensitive substrates
 - Ensure sufficient drying
- Avoid excessive film thickness
 Remedy
 - Remove finish in affected area and repaint



Shrinkage / Edge Mapping

Cause

- Substrate not fully cured
- Subsequent coats applied too soon to preparatory materials
- Excessive film thickness
- Sanding paper too coarse

Prevention

- Solvent test to identify soft substrates
- Do not apply polyester products directly to soft substrates
- Isolate with 2K filler, applying thin coats with sufficient inter-coat flash off
- Dry prep materials thoroughly
- Use proper grit sandpaper
- Follow recommendations

Remedy

- Thoroughly dry affected area
- Sand, isolate if necessary, and repaint



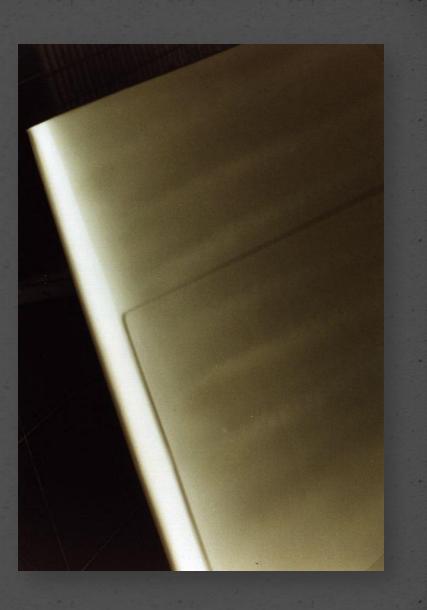
Striping / Banding

Cause

- Spray technique or PSI, material viscosity, or spray gun setup
- Flash off time too short
- Unsuitable thinner for application conditions

Prevention

- Follow application recommendations
- Choose suitable spray gun setup
- Keep spray gun parallel to object
 Follow manufacturer's product system
 Remedy
 - Ensure even application
 Keep spray gun in good working order
 Thoroughly dry, sand, and repaint



Pinholes

O Cause

- Fiberglass bodies
- Insufficient mixing of polyesters
- Solvent popping that has been sanded to open the top
- Insufficient isolation of polyesters

Prevention

- Thoroughly mix polyesters
- Do not sand solvent pop or completely remove defect before repainting
- Isolate polyesters correctly
- Use a sprayable polyester filler
- Remedy
 - Remove damaged finish
 - Sand and apply a sprayable polyester filler, prime, and repaint

Pinholes - Substrate Preparation

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Cause

- Substrate insufficiently dried
- Polyester material not sufficiently isolated
- Pores not deeply sanded

Prevention

- Allow prep materials to dry thoroughly
- Thoroughly sand pinholes and repaint
- Thoroughly sand, re-apply polyester and repaint

Remedy

Thoroughly dry affected area
 Sand, isolate, and repaint



Solvent Pop

Cause

- Solvent or air trapped in film escapes during drying leaving pop marks
- Caused by incorrect spray viscosity, spray pressure, flash off time, or improper drying
- Incorrect choice of hardeners and thinners
- Over application of material resulting in excessive film build
- Incorrect drying of primer / fillers

Prevention

- Apply film at proper thickness
- Allow proper flash off time
- **Follow technical recommendations**

Remedy

- After drying, repaint without sanding (within 24 hours) or scuff with a gray scuff pad
- After drying and sanding apply a sprayable polyester, or remove damaged layers; then sand, prime and repaint



Runs

Cause

- Incorrect spray viscosity, flash off time, technique, or film thickness
- Defective spray gun, incorrect gun setup, or spray pressure
- Temperature of paint, substrate or room too low
- Incorrect choice of hardener and/or thinner

Prevention

- Follow technical recommendations
- Ensure that the spray gun is in good working order
- Warm object and material up to room temperature of 20°C / 68°F
- Use correct combination of hardener and thinner

Remedy

Sand and polish Sand and repaint



Peroxide Staining from Hardener in Polyester Body Filler

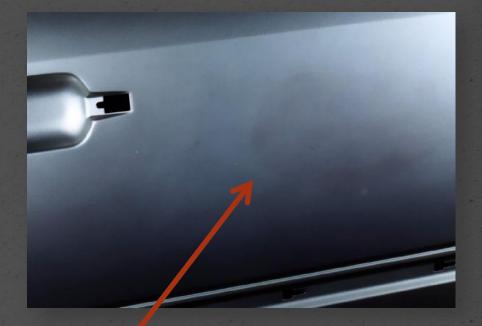
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Cause

- Incorrect addition of hardener
- Insufficient mixing
- Prevention
 - Use recommended amount of hardener
 - Check quantity of hardener, mix by weight or use a dispensing machine
 - Mix thoroughly

Remedy

- Remove polyester and re-do repair or
- Sand, isolate with a sprayable polyester, prime and repaint



Sources

DuPont Refinishing Systems Matt Arias, Director of Manheim Arbitration