PAINT CONDITION DECK

SAFETY

This publication's purpose is to provide technical training information to individuals in the automotive trade. All test and repair procedures must be performed in accordance with the manufacturers service and diagnostic manuals. All warnings, cautions and notes must be observed for safety reasons. The following is a list of general guidelines.

• The information in this publication has been developed for service personnel, and can help determine the proper method(s) for repairing paint system repair failures.
• Always wear safety glasses when working on vehicles or vehicle components.
• Wear appropriate shoes and clothing.
• Avoid wearing jewelry, rings, watches and clothing with metal fasteners.
• Long hair can become caught in rotating machinery. Tie back long hair, or wear a cap that covers and contains the hair.
• Avoid wearing belts with metal buckles.
• Review Material Safety Data Sheets (MSDS) when there is any question concerning the use, handling or disposal of a product.
• Review material labels for proper use.
• Wear breathing masks when recommended or if specified by state or local requirements.
• Improper service methods may damage the vehicle.

This safety information covers only the situations and procedures DaimlerChrysler Motors Corporation has encountered and recommended. DaimlerChrysler Motors Corporation cannot know, evaluate and advise the service trade of all conceivable ways in which service may be performed, or of the possible hazards of each. Consequently, DaimlerChrysler Motors Corporation has not undertaken any such broad service review. Accordingly, anyone who used a service procedure or tool that is not recommended in this publication, must be certain that neither personal safety, nor vehicle safety, is jeopardized by the service methods they select.

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PAINT AND MATERIAL USAGE

Surface Preparation:

• The first step in any high quality repair is to wash the vehicle with hot, soapy water to remove water soluble contaminants such as: dirt, tree sap, brake dust, road salt, and bird droppings.

• The next step after all water contaminants have been removed is solvent cleaning. This step is designed to remove solvent soluble contaminants such as: grease, oil, road tar, waxes, polishes, and silicone.

Restoring Corrosion Protection:

• Always restore OEM corrosion protection wherever it has been penetrated by sanding or stripping.

• Corrosion protection can be replaced by using refinishing products such as: phosphoric acid and fluoride cleaner, zinc phosphate conversion coating, vinyl etch primer, and two part self-etching primer.

• Always refer to paint manufacturer's recommendation for restoring corrosion protection.

• Always follow proper safety recommendations and utilize the correct safety equipment.

Basecoat/Clearcoat System:

• Use a basecoat/clearcoat system for repair of DaimlerChrysler Motors vehicles when basecoat/clearcoat was the original equipment finish.

• Never mix a combination of refinishing brands for a single repair.

• Always refer to paint manufacturer's recommendation for mixing and application procedures.

TOOL AND MATERIAL USAGE

Pads

• Always use the appropriate pad according to the Paint Repair Procedure Chart.
• Never mix products on pads (1 pad/1 product).
• Store used pads in labeled ziplock bags to prevent contamination and product mix-up.
• Pads are available in 2 sizes (6.5-inch and 8-inch).
• D.A. polisher only uses small pad, rotary buffer can use either pad.
• Smaller pad is better for tight areas.
• Clean pads with nylon brush to remove residue.
• Always use least abrasive pad to do a job.
• Hand-prime new pads with product prior to use.

Finishing Papers (Unigrit®)

• Always soak paper in clean water before use (20 minutes – until edges curl).
• Use a backing pad to get a uniform flat surface.
• If sanding is required, always begin with least aggressive paper – 3000 grit.
• Measure paint finish before, during and after repair to ensure adequate thickness.
• Always use a fresh, clean water source for lubrication.
• Use a little soap in water for added lubrication.
• Always sand in one direction (front to back of car).

Sanding Blocks (Unigrit®)

• Always soak block in clean water before use (15–20 minutes).
• Use a sanding block to remove paint runs, sags, and isolated surface defects.

Overspray Clay

• Used with Finish Enhancer for very light material removal.
• Overspray Clay is a DaimlerChrysler recommended method of removing rail dust and embedded industrial fallout.

POWER TOOL USAGE

Paint repair requires specific procedures and the proper use of tools and materials. Here are important points to keep in mind:

D.A. Polisher (dual action)

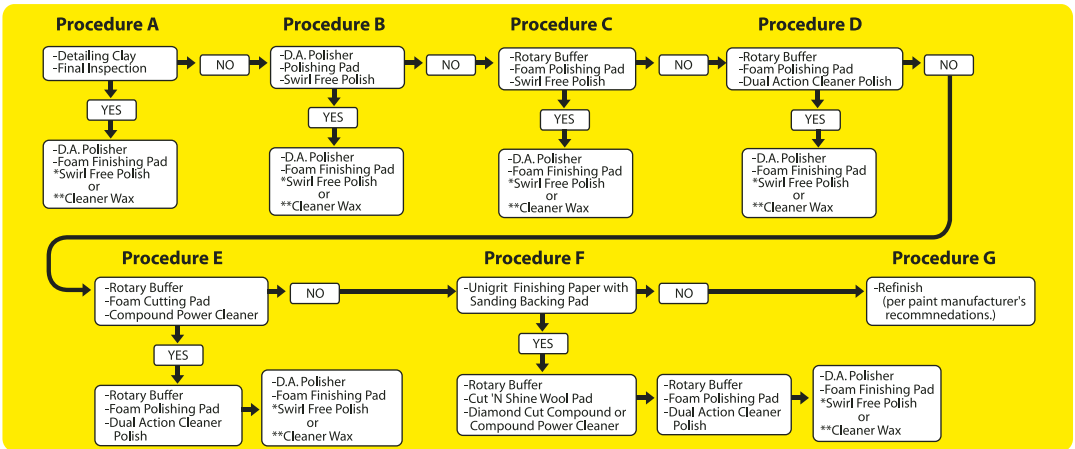
- Always keep the pad flat on the surface to reduce splatter.
- Use overlapping strokes to ensure uniform coverage.
- Never start or stop the machine unless it is touching the vehicle's surface.
- Best when used with polish or Cleaner Wax.
- Can be used by anybody, with no chance of swirls.

Rotary Buffer

- Never exceed 1800 RPM during a paint repair.
- Always keep the pad flat against the surface to reduce swirls.
- Use the appropriate pad (cutting, polishing or finishing, as called out in the Paint Repair Procedure Chart).
- Keep the cord over your shoulder to reduce the possibility of scratching the vehicle or getting the cord tangled.
- Let the machine do the work, do not use excessive downward pressure.
- Use overlapping strokes to ensure complete work.
- Do not buff directly on edges. Use feathering technique, or mask off edges to reduce the chance of burning edges.
- Do not buff dry… "wet buff," leave residue, and wipe off with clean cotton terry cloth towel.

Paint Repair Procedure Chart

Thoroughly wash vehicle before inspection or repair. Always begin with least aggressive method to remove a paint condition. Measure and document paint film thickness before, during and after repair. Only .5 mil of clearcoat removal is permissible for paint condition repair. If more than .5 mil of clearcoat is removed, refinish is required. Follow paint manufacturer's recommendations.



Mopar Part Numbers	PRODUCT
BSMM8501 / BSMM8532	Diamond Cut Compound
BSMM8401 / BSMM8432	Compound Power Cleaner
BSMW4000	Cut 'N Shine Wool Pad
BSME7200	Sanding Backing Pad
BSMS2025 / BSMS2525	Unigrit Finishing Paper
BSMM8301 / BSMM8332	Dual Action Cleaner Polish
BSMM8201 / BSMM8232	Swirl Free Polish

Mopar Part Numbers	PRODUCT
BSMM8132	Hand Polish
BSMM8001 / BSMM8032	Speed Glaze
BSMC2000	Detailing Clay
BSMM3401 / BSMM3416	Final Inspection
BSMM0664 / BSMM0616	Cleaner Wax
BSMM9910	Ultimate Wipe

Removal of Compound, Polish or Wax
Ulimate Wipe

*Procedures for Body Shop
**Procedure for Detail Shop

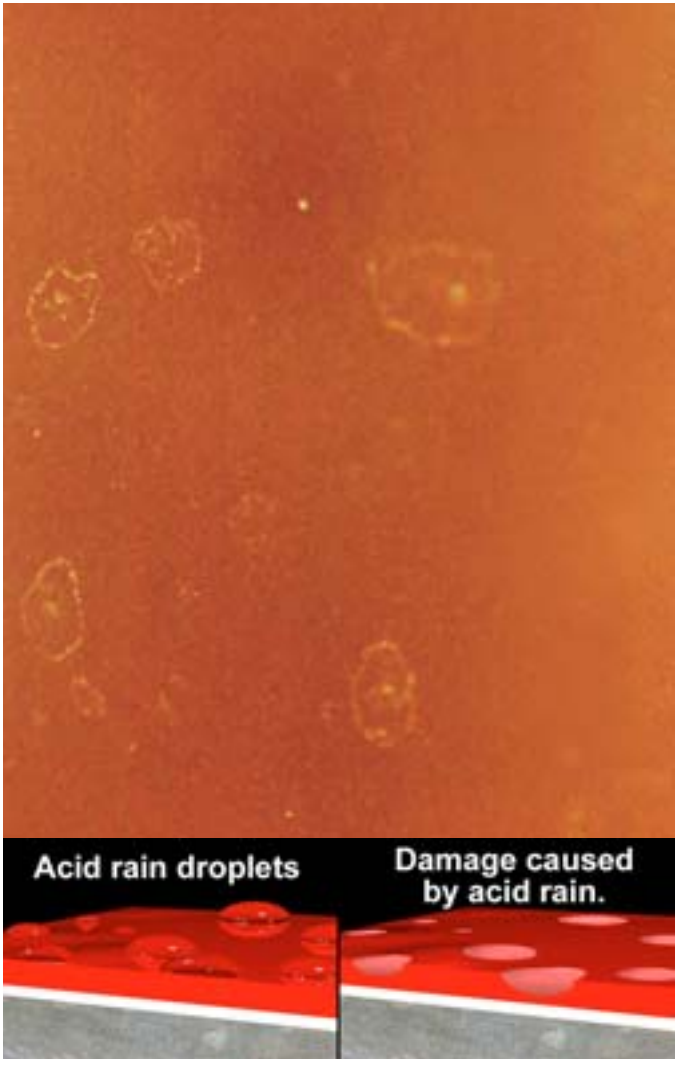
HOW TO USE THIS PAINT CONDITION DECK

This sample deck contains representations of various paint conditions that may occur. The deck opens so that the sample card can be held next to the actual paint condition, to asssit in the identification. The reverse side of each card contains information applicable to each condition.

For surface paint repairs, follow the steps indicated within the PAINT CONDITION REPAIR PROCEDURES CHART, located on the previous page (pg. iv).

For repairs that require surface refinishing, refer to your paint manufacturer's recommendations.

ACID RAIN



ACID RAIN

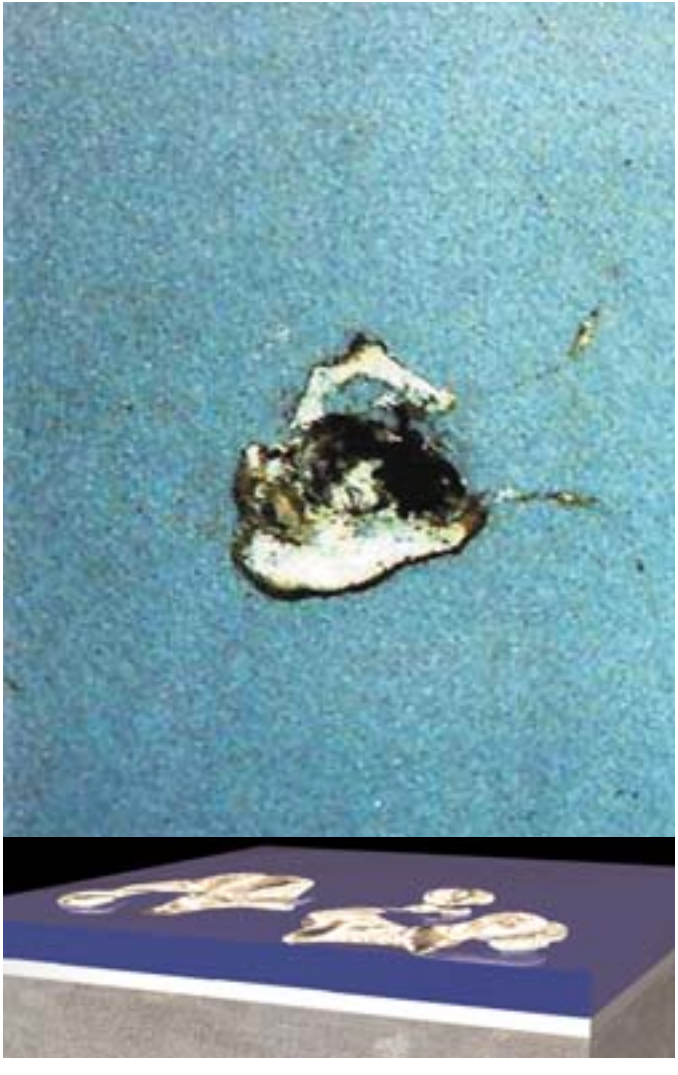
Appearance:
Irregular patches of rough, discolored, or disintegrating surface possibly resulting in a crazing or cracking appearance.

Cause:
Exposure to rain containing effluents from manufacturing, chemical industries and power stations.

Prevention:
- Remove harmful water soluble contaminants by regularly washing.
- Polish and / or wax periodically.
- Avoid parking near factories that produce chemical fallout.

Remedy:
See “Procedure B” on Paint Repair Procedure Chart.

BIRD / BAT DROPPINGS



BIRD / BAT DROPPINGS

Appearance:
Finish damage or spot etching. The longer the dropping stays on the finish, the more severe the etching may become.

Cause:
- The problem is seasonal / regional and affected by bird / insect population.
- The organic etching is accelerated by intensified heat.

Prevention:
- Remove condition as quickly as possible.
- Regular washing.
- Polish and / or wax periodically.

Remedy:
See “Procedure B” on Paint Repair Procedure Chart.

BLEEDING

BLEEDING

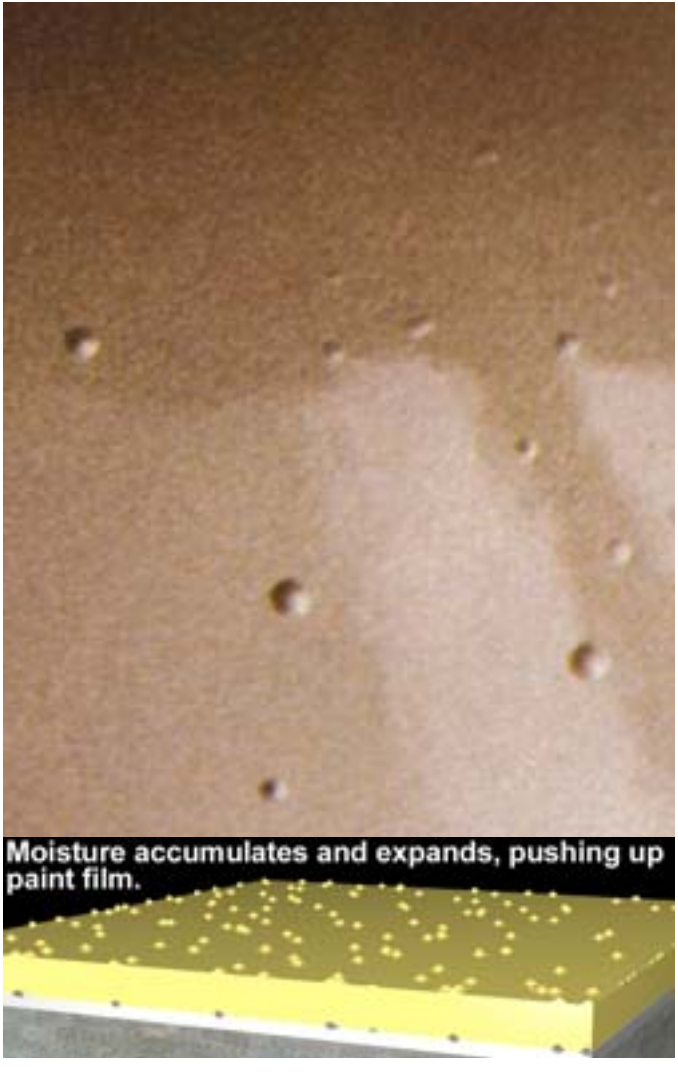
Appearance:
The staining from the substrate or undercoat to the topcoat color.

Cause:
- The original coatings are dissolved by solvents in the repair material causing surface bleed-through.
- Peroxide in the polyester filler is dissolved by solvents in the repair material.

Prevention:
- Follow material manufacturer's recommendations.

Remedy:
See "Procedure G" on Paint Repair Procedure Chart.

BLISTERING



BLISTERING

Appearance:
The surface displays small pimples, bubbles, and bumps either spread out or in groups.

Cause:
- Moisture or contaminants trapped under the surface.

Prevention:
- Thoroughly clean and dry surface before applying coatings.
- Allow panels to reach room temperature before spraying.

Remedy:
See “Procedure G” on Paint Repair Procedure Chart.

BULLSEYE

Appearance:
Visible featheredge or sandscratches around repaired area.

Cause:
- Improper surface preparation.
- Improper material application.

Prevention:
- Follow material manufacturer's recommendations.

Remedy:
See "Procedure G" on Paint Repair Procedure Chart.

CAR WASH SCRATCHES

CAR WASH SCRATCHES

Appearance:
Loss of gloss due to fine scratches.

Cause:
- Frequent use of brush-type automated car washes.

Prevention:
- Use soft touch or touchless automated car washes or hand wash.
- Polish and / or wax periodically.

Remedy:
See “Procedure B” on Paint Repair Procedure Chart.

CHIPPING

CHIPPING

Appearance:
Small areas of paint film broken off the suface.

Cause:
- Flying stones, gravel, and various road debris.

Prevention:
- Select system designed for anti-chip performance (i.e. anti-chip undercoats, flexible additives, etc.).
- Follow material manufacturer's recommendations.

Remedy:
See "Procedure G" on Paint Repair Procedure Chart.

CLEARCOAT EROSION

CLEARCOAT EROSION

Appearance:
The clearcoat eroding from the basecoat.

Cause:
- Ultraviolet rays degrading the finish.
- More than .5 mil of clearcoat removed during a surface repair.

Prevention:
- Never remove more than .5 mil of clearcoat during surface repair.

Remedy:
See “Procedure G” on Paint Repair Procedure Chart.

CRACKING

CRACKING

Appearance:
A wide-spread, random pattern of fine hair line cracks in the paint surface.

Cause:
- Excessive film thickness.
- Painting over a previously crazed or cracked surface.
- Improper mixing or application of materals.

Prevention:
- Apply recommended film thickness.
- Completely remove crazed or cracked finish before refinishing.
- Follow material manufacturer's recommendations.

Remedy:
See "Procedure G" on Paint Repair Procedure Chart.

DIEBACK

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

Cause:
- Improper application of refinish coatings.
- Application over poor quality substrate.
- Solvent fumes or exhaust gases attacking the surface.
- Slow drying due to high humidity or low temperature.

Prevention:
- Use paint manufacturer's recommended primer.
- Prepare surface thoroughly.
- Ensure paint dries under warm, clean, and dry conditions.

Remedy:
See "Procedure B" on Paint Repair Procedure Chart.

DIRT IN FINISH

DIRT IN FINISH

Appearance:
Small, irregular particles in the paint finish.

Cause:
- Improper cleaning.
- Dirty spray environment.
- Inadequate air filtration in the booth.
- Dirty or unsuitable work clothes.
- Dirty spray gun.
- Paint was not strained.

Prevention:
- Thoroughly blow off vehicle.
- Tack wipe entire surface.
- Maintain a clean work area.
- Wear a lint free paint suit.
- Properly clean and maintain spray equipment.

Remedy:
See “Procedure F” on Paint Repair Procedure Chart.

FISHEYES

FISHEYES

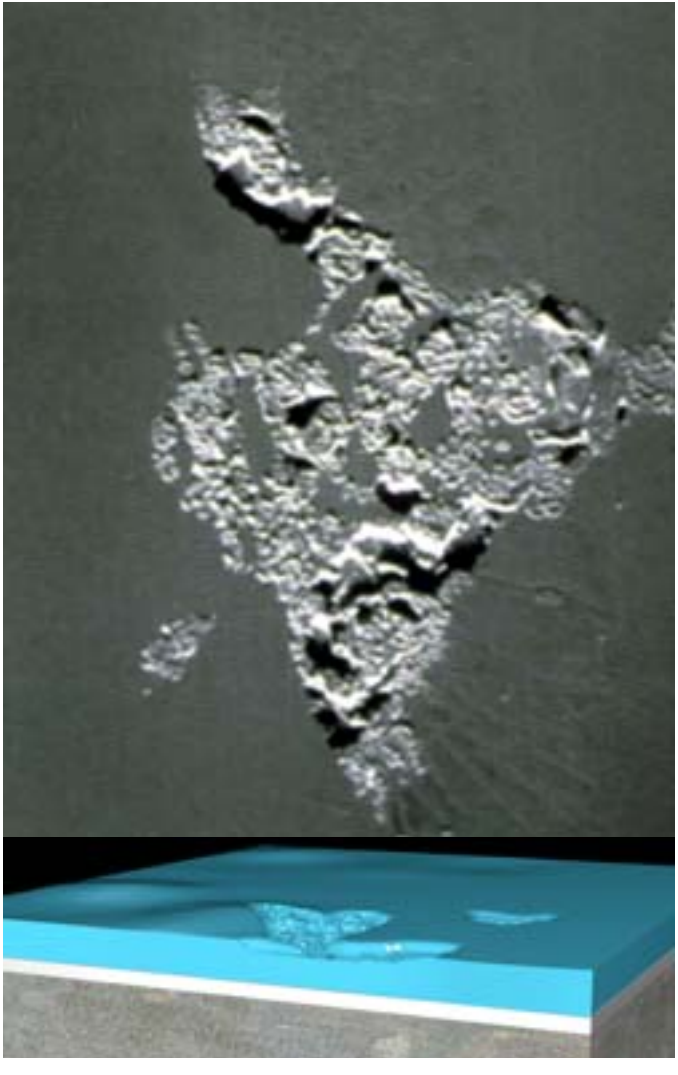
Appearance:
Small crater-like indentations or depressions on the paint surface.

Cause:
- Spraying over surfaces contaminated with oil, wax, silicone, grease, etc.
- Spraying over previously repaired areas containing “fisheye eliminator” additive.
- Air supply was contaminated with oil or water.
- External contaminants entering the spray area.

Prevention:
- Cleaning substrate with soap/water, wax and grease remover.
- Regular maintenance of air compressor/regulator.
- Regular shop cleaning.
- Ensure that spray area is properly ventilated.
- Personal hygiene.

Remedy:
See “Procedure G” on Paint Repair Procedure Chart.

INSECT ETCH



INSECT ETCH

Appearance:
Etched surface with remains of insect bodies, waste or larva.

Cause:
- The presence of dead insect bodies, waste or larva on the vehicle finish.
- The acid from the insect will etch into the paint if it remains in contact with the vehicle for extended periods.

Prevention:
- Clean the vehicle frequently to remove contaminants before finish damage occurs.
- Polish and/or wax periodically.

Remedy:
See “Procedure B” on Paint Repair Procedure Chart.

LIFTING

LIFTING

Appearance:
Raising or swelling of the paint film or peeling of a dried paint surface.

Cause:
- Recoating over incompatible materials.
- Recoating improperly cured finishes.
- Spraying over improperly cleaned surfaces.
- Exceeding maximum flash or recoating times.
- Heavy application coats.

Prevention:
- Follow material manufacturer's recommendations.
- Use Barrier Coat Primers to seal old incompatible finishes.

Remedy:
See "Procedure G" on Paint Repair Procedure Chart.

MOTTLING

MOTTLING

Appearance:
Color distortion resulting from an uneven distribution of metallics, micas or special effect pigments.

Cause:
- Improper equipment or set-up.
- Incorrect reducer.
- Materials not uniformly mixed.
- Improper application.
- Uneven spray pattern.
- Low shop temperature.

Prevention:
- Use recommended spray gun, including fluid tip and air cap.
- Use proper reduction ratio.
- Allow basecoat proper flash/dry time before clearcoating.
- Use correct spray technique.
- Follow material manufacturer's recommendations.

Remedy:
See "Procedure G" on Paint Repair Procedure Chart.

ORANGE PEEL

ORANGE PEEL

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

Cause:
- Under reduction and/or air pressure too low.
- Reducer evaporates too fast for spraying conditions.
- Excessive film thickness.
- Improper spray gun set-up and application.
- Viscosity of paint materials too high.

Prevention:
- Use proper reduction ratio and spray at recommended air pressure.
- Select recommended reducer based on spray environment and size of repair.
- Avoid heavy coats and excessive film builds.
- Follow material manufacturer's recommendations.

Remedy:
See "Procedure E" on Paint Repair Procedure Chart.

OVERSPRAY

OVERSPRAY

Appearance:
Paint mist on adjacent panels. Finish may be slightly hazy and rough to the touch.

Cause:
- Poor masking preparation.
- Commercial or industrial paint fallout.

Prevention:
- Mask carefully and completely; ensure that the edges of masking tape are thoroughly sealed.
- Protect adjacent surfaces from spray mist.
- Follow material manufacturer's recommendations.

Remedy:
See "Procedure A" on Paint Repair Procedure Chart.

PAINT DELAMINATION

PAINT DELAMINATION

Appearance:
Topcoats peeling away from undercoats.

Cause:
- Ultraviolet ray penetration.
- Incompatible paint systems/materials used.
- Loss of adhesion between layers.
- More than .5 mil of clearcoat removed during surface repair.

Prevention:
- Follow material manufacturer's recommendations.

Remedy:
See "Procedure G" on Paint Repair Procedure Chart.

PAINT WHITENING

Appearance:
Milky white or cloudy discolored area/spots. On light metallic colors it may appear as a coffee stain.

Cause:
- Moisture trapped within the paint film.
- Aftermarket items, such as front-end covers or magnetic signs may produce this condition.

Prevention:
- Avoid items that cause moisture entrapment.

Remedy:
Heat area using heat gun / heat lamp to remove moisture.

PEELING

PEELING

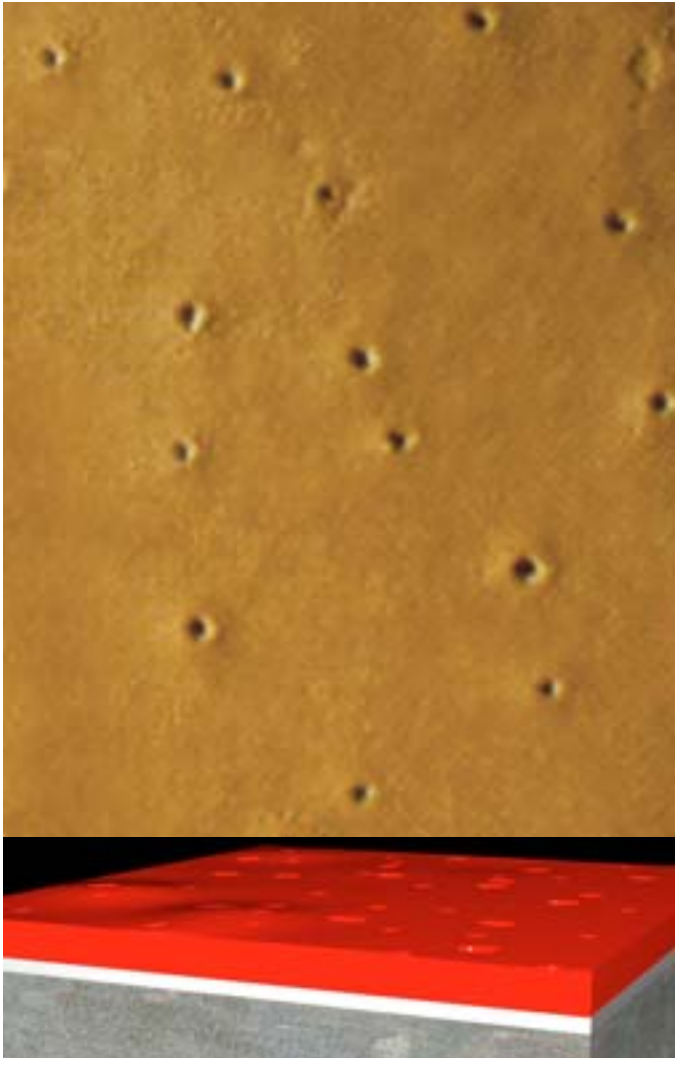
Appearance:
Loss of adhesion or separation of paint film.

Cause:
- Improper substrate cleaning or preparation.
- Omission of a product or procedure.
- Improper mixing or application of materials.
- Incompatible paint materials.

Prevention:
- Clean and prepare all substrates according to product recommendations.
- Use the recommended products for the substrate being finished.
- Follow material manufacturer's recommendations.

Remedy:
See "Procedure G" on Paint Repair Procedure Chart.

PINHOLES



PINHOLES

Appearance:
Tiny holes visible at the surface.

Cause:
- Air or gas bubbles trapped and escaping within finish materials.
- Excessive film application.
- Adding too much hardener to body filler.
- Not mixing body filler thoroughly.

Prevention:
Follow material manufacturer's recommendations.

Remedy:
See "Procedure G" on Paint Repair Procedure Chart.

POOR HIDING

POOR HIDING

Appearance:
The original finish or undercoat is visible through the topcoat.

Cause:
- Insufficient number of coats.
- Over reduction of product.
- Improper or lack of primer selection.
- Improper equipment set-up.
- Inadequate lighting in spray booth.

Prevention:
- Stir or shake paint materials thoroughly.
- Reduce according to product label directions.
- Use a color-keyed undercoat when using transparent topcoats.
- Spray until hiding is achieved.

Remedy:
See “Procedure G” on Paint Repair Procedure Chart.

RAIL DUST / INDUSTRIAL FALLOUT

RAIL DUST

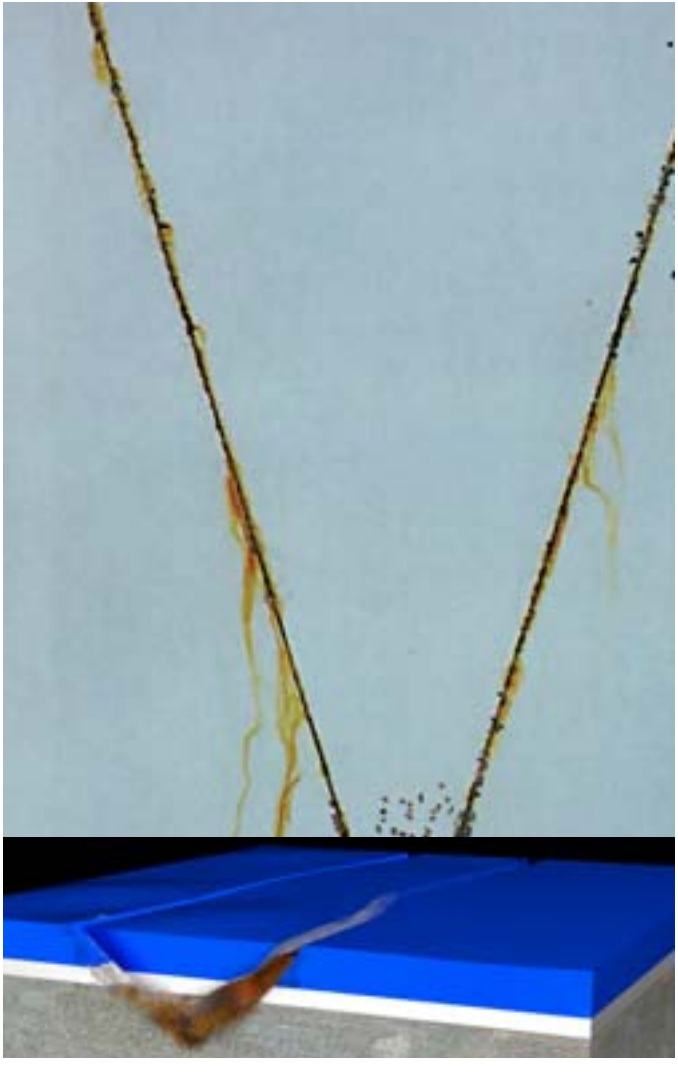
Appearance:
Surface roughness or small rings of rust on the finish. The damage can be felt as easily as seen. This type of condition is more apparent on light colors than on dark colors.

Cause:
- Steel or iron dust (ferrite) particles in contact with vehicle finish.
- Hot iron particles from factories or rail car brakes may be melted or imbedded into the finish.

Prevention:
- Proper maintenance and storage.

Remedy:
See “Procedure A” on Paint Repair Procedure Chart.

RUST



RUST

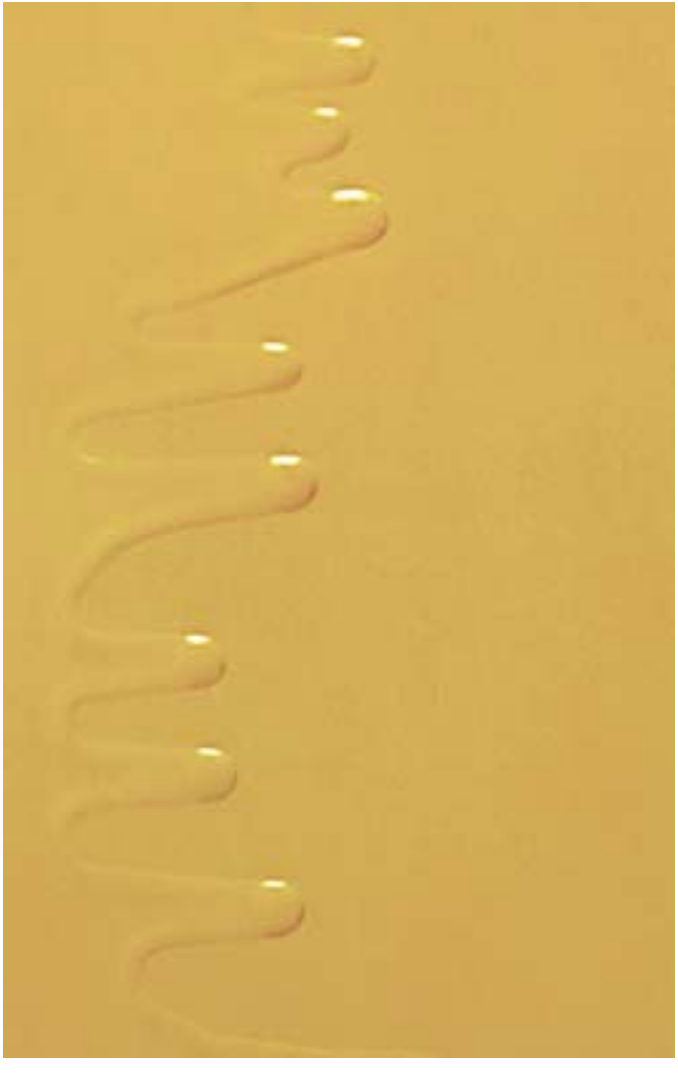
Appearance:
Varying degrees of the condition will appear as bubbles, blisters, or rust spots. Upon closer examination, corrosion may be present below the paint film.

Cause:
- Damage to paint surface exposing bare metal.
- Flash rust formation on bare metal prior to primer coat application.

Prevention:
- Thoroughly remove all rust prior to refinishing.
- Follow recommended procedures for refinishing bare metal substrates.

Remedy:
See “Procedure G” on Paint Repair Procedure Chart.

SAGS



SAGS

Appearance:
The downward flow of a paint film.

Cause:
- Improper reduction.
- Applying paint materials without proper flash time.
- Holding spray gun too close to the surface.
- Applying materials too wet.
- Improper overlap.

Prevention:
- Follow material manufacturer's recommendations.
- Use properly adjusted equipment.

Remedy:
See "Procedure F" on Paint Repair Procedure Chart.

SAND SCRATCHES

SAND SCRATCHES

Appearance:
Visible sanding marks under the surface of the paint.

Cause:
- Improper surface preparation.
- Inadequate drying of undercoats.

Prevention:
- Follow material manufacturer's recommendations for correct sandpaper grade.

Remedy:
See "Procedure G" on Paint Repair Procedure Chart.

SOLVENT POP

Appearance:
Small bubble-like surface defects.

Cause:
- Solvent entrapment in the surface of the paint film.
- Inadequate flash time between coats.
- Excessive film thickness.
- Reducer / hardener selection too fast.

Prevention:
- Use of correct solvent for shop conditions.
- Proper film build.
- Allow proper flash time between coats and prior to baking.

Remedy:
See “Procedure G” on Paint Repair Procedure Chart.

SWIRL MARKS

SWIRL MARKS

Appearance:
Fine, circular scratches on the surface of a paint film.

Cause:
- Incomplete surface condition repair.
- Compounding or polishing surface before fully cured.
- Excessive pressure or speed of mechanical polisher.
- Compound too coarse.

Prevention:
- Follow steps in Paint Repair Procedure Chart.
- Allow surface to cure fully before compounding or polishing.
- Use mechanical polishers at recommended pressure and speed.
- Use the correct grade and type of compound and polish.
- Follow material manufacturer's recommendations.

Remedy:
See "Procedure B" on Paint Repair Procedure Chart.

TREE SAP

TREE SAP

Appearance:
Sap spots that resemble spots of pancake syrup in various sizes.

Cause:
Tree sap in contact with vehicle finish.

Prevention:
- Regular maintenance of the vehicle's finish.
- Remove contaminants before finish damage can occur.
- Polish and / or wax periodically.
- Avoid parking vehicle under trees.

Remedy:
See "Procedure A" on Paint Repair Procedure Chart.

WATER SPOTS (ALKALINE)

WATER SPOTS (ALKALINE)

Appearance:
Water spotting normally appears as light, whitish, circular spots on the paint surface.

Cause:
- Alkaline-rich (hard) water drying on the paint surface.

Prevention:
- Regular maintenance of vehicle finish.
- Do not allow hard water to remain on painted surface.

Remedy:
See “Procedure A” on Paint Repair Procedure Chart.

MANUFACTURER LISTING

Manufacturer & website	**Technical Hotline**
Akzo Nobel (Sikkens) www.sikkens.net	**1.800.618.1010**
DuPont Performance Coatings www.performancecoatings.dupont.com	**1.800.338.7668**
Glasurit www.BASFrefinish.com	**1.800.825.3000**
Mequiar's www.meguiars.com	**1.800.347.5700**
Nexa Autocolor www.nexaautocolor.com	**1.800.647.6050**
PPG www.ppgrefinish.com	**1.800.848.2683** (ask for technical support)
R-M www.BASFrefinish.com	**1.800.825.3000**
Sherwin-Williams Automotive Finishes Corp. www.sherwin-automotive.com	**1.800.798.5872**
Spies Hecker www.performancecoatings.dupont.com	**1.800.371.3313**
Standox www.performancecoatings.dupont.com	**1.800.551.9296**

DEALER TECHNICAL OPERATIONS
PAINT CONDITION DECK

DaimlerChrysler Corporation

81-316-0507 **10-04** **LITHO IN U.S.A.**