

BASIC ASSUMPTIONS REFINISHING



PPG Industries Automotive Refinish group makes these assumptions based on accepted industry practices, our knowledge, past experience and feedback from our employees and customers. These assumptions are intended to be used by collision repairers for reference and support documentation to promote a better understanding of the refinishing process to their customers.

For complete information, please refer to the appropriate PPG or NEXA AUTOCOLOR® technical data sheets.

INDEX

Surface Preparation - Metal

Parts Removal Guidelines 1-1

Surface Preparation - Plastic

Plastic Refinishing 2-1

Facts on Bumper Color 2-2

Masking

Vehicle Masking Process (PD-0300) 3-1

Spray Equipment (no items for this category)

Primer and Primer Surfacer Application

Primer Surfacer (PD-0520) 5-1

Pinchweld Priming Process with Epoxy - Air Dry (PD-0570AD) 5-2

Pinchweld Priming Process with Epoxy - Force Dry (PD-0570FD) 5-3

Pre-Paint Preparation

Parts Edging - Internal Repair/Engine Bay 6-1

Sprayout Cards (PD-0632) 6-2

Tri-Coat Let-Down Panels (PD-0660) 6-3

Paint Application Procedures

Primer Sealer (PD-0701) 7-1

Single Stage 7-2

Basecoat Color 7-3

Clearcoat 7-4

Finished Paint Procedures

Paint Defect Removal (PD-0800) 8-1

PARTS REMOVAL GUIDELINES

OVERVIEW: When repairing to a factory-like finish, existing paintwork must be thoroughly sanded and cleaned to ensure the adhesion of subsequent coatings. Often times this is not feasible if moldings and parts are not removed.

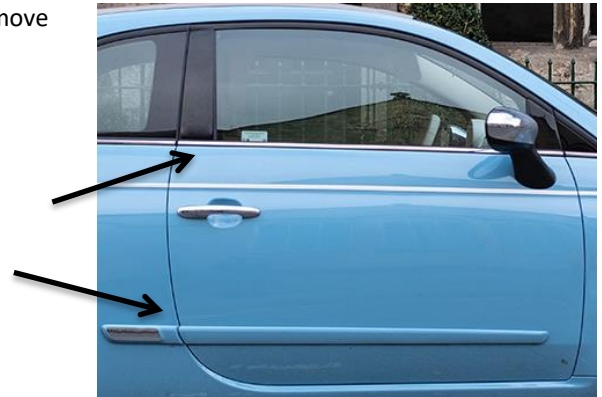
- **1** When possible, PPG recommends that all parts be removed prior to refinishing panels and blend areas.
- **2** If it takes the same time to remove a part as it does to tape the part, remove it prior to refinishing.

Dropping bumper cover ends, rocker moldings and other types of trim can create potential risks while moving a vehicle and require additional time to mask and secure compared to removing the part. Partially attached components also can create issues during the paint process. It is PPG's recommendation to remove parts prior to prepping and refinishing, especially if a partially attached component will impede work.

- **3** If the interior door panel must be removed as part of the repair operation, remove whatever parts can be removed prior to painting the exterior

- **4** If no gap exists between the part and the panel (close-fitting part), remove the part prior to refinishing.

- **5 CAUTION** – Manufacturer warranty recommendations supersede any PPG guidelines shown above.





PLASTIC REFINISHING

OVERVIEW: When repairing to a factory-like finish, the substrate being refinished determines the process and products recommended. To reproduce the color, gloss level, and texture of the factory finish on plastic parts requires a different process than painting metal.

- **1** Successfully preparing plastic parts for painting requires more complete scuffing/sanding and more thorough cleaning than what is needed for metal parts. If water “sheets” off the part, then it is ready for paint. If water “beads up” on the part, recleaning is necessary. There are special cleaners designed specifically for this process.
- **2** When refinishing bare plastic, use the appropriate preparation products and adhesion promoters to ensure a successful outcome. These products are explained and demonstrated in our technical training materials and courses.
- **3** Due to the nature of a flexible substrate, it must be able to absorb a slight impact and not crack or chip. Additives are used in undercoats and clearcoats to maintain this flexibility. Years ago, these additives were just a solvent that would evaporate. Today, our flex additives contain resins that actually remain with the paint film after any solvent has left. These resins improve long-term flexibility and durability.
- **4** Basecoat film does not require flexing. However, to get the most durable finish when painting flexible leading edges, a best practice is to activate the basecoat (especially solvent).
- **5** PPG does not recommend using flexed materials to paint metal parts. While compatibility and adhesion may be unaffected, there are three reasons to avoid this practice: decreased productivity since the flexed material takes a little longer to dry, the increased material costs of the flex agent, and adding flex agent may result in VOC non-compliance.
- **6** Metal parts can be baked on or off the car with relative ease. Non-rigid plastic parts, if baked off the car, must be adequately supported to avoid warping and deforming of the part or baked longer at lower temperatures.
- **!** Note: Bumper failure due to poor preparation is NOT a warranty issue. More attention to detail during preparation will reduce potential customer satisfaction issues in the future.

FACTS ON BUMPER COLORS

OVERVIEW: Sometimes the original bumper and accent pieces may not match the factory's vehicle body color even before the repair. In addition, sometimes even metal and plastic pieces painted right next to each other at the same time and with the same paint, may not match. Here are some possible explanations:

- 1** A color can vary depending on the substrate on which it is painted. For example, the evaporation rates of paint and related products may vary over metal or plastic. A longer rate gives a flake pigment additional time to "settle" which often darkens the face of the color.
- 2** The body was painted on a production line at the factory, while other parts, such as the bumper and trim pieces, may be painted at another location using a different application method.
- 3** Slight adjustments can be made during application creating a lighter or darker color, or causing the metallic or mica elements to lay down differently. A best practice is to paint the bumper in the same position that it will be mounted on the vehicle.
- 4** Light reflects differently on curved and flat surfaces causing the appearance of a color shift.



The banner features a blurred image of a car's interior on the left and a green abstract geometric pattern on the right. The text "PD-0300 VEHICLE MASKING" is centered in white and green.

PD-0300 VEHICLE MASKING

CAUTION: WEAR THE PROPER SAFETY PROTECTION DURING THIS PROCESS. REFER TO SPECIFIC PRODUCT DATA SHEET FOR APPLICATION AND PRODUCT DETAILS.

1 Pre-Mask

- a. Pre-mask doorjambs, trunk jambs, and mask off hood jambs and the engine compartments to reduce dirt and dust.
- b. Clean rubber gaskets and weather strips with mild solvent immediately before taping to ensure proper adhesion.

2 Masking

- a. Outline all panels to be painted with 3/4" tape. Accuracy is extremely important in the final results of refinish work. Tape should never overlap painted areas and unpainted areas should never be exposed.
- b. Outline the previously taped areas with 3"-12" high quality masking paper (optional).
- c. When masking, keep in mind the unmasking process. Mask parallel with the length of the part for added efficiency.
- d. Mask wheels with paper back-taped to the wheel well opening.
- e. On vehicles with a window gasket at the windshield or back glass, always use a piece of nylon cord to lift the gasket off the body of the car to prevent a buildup of paint.

3 Cover

Cover the car with a clear plastic car cover, cut out the unneeded portion and tape the edges with 1"-2" wide masking tape, making sure the edges are sealed tightly to avoid overspray.

4 Two-Tone

- a. Whenever masking two-tone vehicles always use fine line tape to hold the paint build up to a minimum at the edges.
- b. Avoid double layers of paper, except when two-toning a vehicle. In this situation double layers are mandatory.

5 Clean

Clean areas to be painted with wax and grease remover.



PD-0520 SURFACER APPLICATION- SPRAYABLE

CAUTION: WEAR THE PROPER SAFETY PROTECTION DURING THIS PROCESS. REFER TO SPECIFIC PRODUCT DATA SHEET FOR APPLICATION AND PRODUCT DETAILS.

- **1** Scuff sand all recessed areas and panel edges with red scuff pad for adhesion of primer surfacer.
- **2** Clean area to be primed with Wax and Grease Remover and/or Waterborne cleaner and a clean cloth.
- **3** Mask as necessary to protect vehicle from overspray.
- **4** Apply Etching Primer to bare metal areas as per process document Self Etch Primer Application.
- **5** If not using primer sealer later, use the recommended shade of gray surfacer now. Mix Primer Surfacer according to product document.
- **6** Apply multiple coats of Primer Surfacer to the repair area. Apply surfacer just beyond edges of repair area to minimize size. Use reverse priming technique (cover the largest area with the first coat and keep the following coats within that area.)
- **7** Allow each coat of primer to flash to a uniformly dull appearance before applying the next coat.
- **8** Allow the Primer Surfacer to air or force dry according to the product document. Proceed to process document Primer Surfacer Sanding for next steps.



PD-0570AD PINCHWELD PRIMING- AIR DRY

Overview: A two-component epoxy primer must be used on bare metal areas of pinchwelds when installing stationary glass using urethane repair materials.

If corrosion is present or if sheet metal repairs or metal replacement are required, the pinchweld flange must be primed in order to restore the bonding area strength.

- **1** When all necessary metal repairs to pinchweld areas have been completed, sand all bare metal and body filler areas with 180 grit using a DA sander. Do not apply body filler to pinchweld area. Final sand and featheredge all adjacent painted areas with 320 grit on a DA sander.
- **2** Clean area to be primed with approved Wax and Grease Remover and dry with clean towels.
- **3** Mask vehicle appropriately according to process document Vehicle Masking Process.
- **4** Mix DP50LF/DP90LF OR DP50LV/DP90LV Epoxy Primer according to the product document.
- **5** Apply two coats of DPLF OR DPLV Epoxy Primer to the repair area. Allow each coat to flash to a uniformly dull appearance before applying the next coat.
- **6** Allow the DPLF OR DPLV Epoxy Primer to air dry overnight before applying the urethane adhesive. However, the refinishing process can continue once the epoxy can be masked without tape tracking.
- **!** IMPORTANT STEP – Mask off primed pinchweld area before color and clearcoat application. Windshield adhesive must only be applied to a clean, epoxy-primed surface.

PD-0570FD PINCHWELD PRIMING- FORCE DRY

CAUTION: WEAR THE PROPER SAFETY PROTECTION DURING THIS PROCESS. REFER TO SPECIFIC PRODUCT DATA SHEET FOR APPLICATION AND PRODUCT DETAILS.

Overview – A two-component epoxy primer must be used on bare metal areas of pinchwelds when installing stationary glass using urethane repair materials.

If corrosion is present or if sheet metal repairs or metal replacement are required, the pinchweld flange must be primed in order to restore the bonding area strength.

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- **2** Clean area to be primed with approved Wax and Grease Remover and dry with clean towels.
- **3** Mask vehicle appropriately according to process document Vehicle Masking Process.
- **4** Mix DP50LF/DP90LF OR DP50LV/DP90LV Epoxy Primer according to the product document.
- **5** Apply two coats of DPLF OR DPLV Epoxy Primer to the repair area. Allow each coat to flash to a uniformly dull appearance before applying the next coat.
- **6** Force dry the DPLF OR DPLV Epoxy Primer using an IR light at full power for 15 minutes or bake for 30 minutes after metal temperature reaches 140°F. Allow pinchweld flange to cool to room temperature before proceeding.
- **!** IMPORTANT STEP – Mask off primed pinchweld area before color and clearcoat application. Windshield adhesive must only be applied to a clean, epoxy-primed surface.



PARTS EDGING & CUT-IN OPTIONS

Overview – When repairing to a factory-like finish, sometimes a body color or an engine bay color is required to match the OEM gloss level and performance capability. To achieve these characteristics, consider one of the options listed below.

Verify the appropriate color needed by referencing the PPG PAINTMANAGER® software, a chromatic variant deck or an engine bay deck.

- **1 Internal Repair (Engine Bay) System:** Designed to provide a simple repair process where there is a specific underhood color or where the internal area is a low gloss version of the exterior color. Dedicated formulas are provided as part of the PPG color retrieval system. They are designed to match the OE finish on internal, unexposed parts.
- **2 Solvent Basecoat:** Catalyze basecoat and apply to underhood and other interior areas. Do not apply clearcoat.
- **3 Waterborne Basecoat:** Exterior colors can be converted into a low gloss internal repair (engine bay) color. For ENVIROBASE® High Performance basecoat, see EB-145 and for AQUABASE® Plus basecoat, see PDS N5.2.1.
- **4 Basecoat/Clearcoat:** Apply appropriate basecoat color. Match the factory gloss level using a full gloss clearcoat, a matte finish clearcoat or a clearcoat mixed with matting base.

PD-0632 CREATE SPRAYOUT CARD

CAUTION: WEAR THE PROPER SAFETY PROTECTION DURING THIS PROCESS. REFER TO SPECIFIC PRODUCT DATA SHEET FOR APPLICATION AND PRODUCT DETAILS.

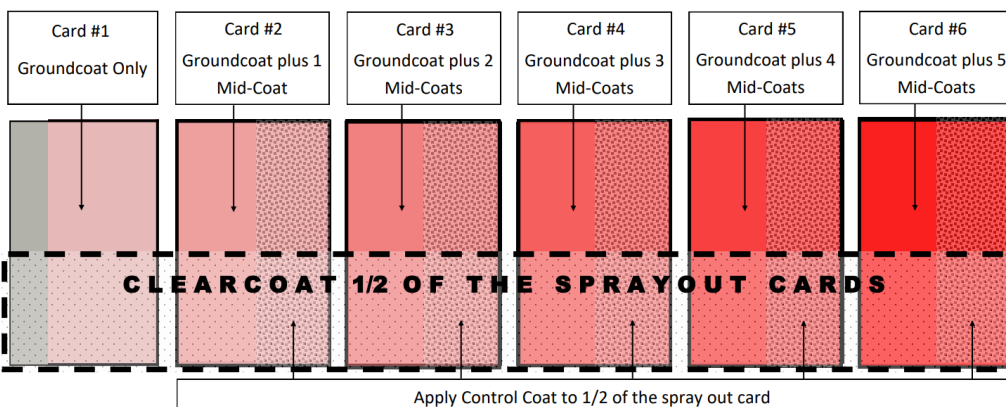
- **1** Identify proper G-shade for formula being sprayed.
- **2** Select the corresponding G-shade sprayout card.
- **3** Using the same spray equipment and techniques that will be used when spraying the vehicle, apply single coats of basecoat to sprayout card.
- **4** Apply coats until perceived opacity is achieved, drying thoroughly between each coat.
- **5** For metallic and/or pearl containing basecoats apply a Control Coat to ½ of each card (depending on the vehicle, a Control Coat may or may not be necessary).
- **6** To properly evaluate color, all basecoat layers should be allowed to dry thoroughly before applying 2 coats of clear to each card.
- **7** Once dry, the sprayouts should be evaluated either in natural daylight or under color corrected light source.
- **8** When a blendable color match is verified, mix enough basecoat Color for the entire repair.
- **9** File sprayout cards in DOX446 binder for future reference.



PD-0660 CREATE TRI- LETDOWN

CAUTION: WEAR THE PROPER SAFETY PROTECTION DURING THIS PROCESS. REFER TO SPECIFIC PRODUCT DATA SHEET FOR APPLICATION AND PRODUCT DETAILS

- **1** Obtain OEM Color Code from vehicle and look up the code in PPG's PAINTMANAGER® software.
- **2** Note any variant colors available, check variant colors using PPG variant deck chips against are to be painted on the vehicle, choose prime or variant color with best match.
- **!** The groundcoat - main layer color in this process must be a good match to the OEM color to continue.
- **3** Adhere/affix the necessary number of PPG sprayout cards to a stationary object (cardboard box, scrap hood etc.). Sprayout cards should be the correct "G-Shade" or the appropriate "G-Shade" sealer should be applied.
- **4** Spray all cards with single coats for Groudcoat until perceived opacity is achieved. Drythoroughly between coats. For waterborne metallic and/or pearl containing Groundcoats apply a control coat to help ensure proper color alignment.
- **5** Using masking paper, cover card #1. This will be used to reference Groundcoat color by itself.
- **6** Cover all but 1 card with separate pieces of masking paper. Apply 1 mid-coat to exposed card.
- **7** Remove masking paper for the next card and apply 1 mid-coat to both exposed cards. Repeat step 6 until card #2 has only on coat of mid-coat.
- **8** For WB pearl-containing mid-coats, vertically mask off ½ of each sprayout card and apply a control coat to the exposed areas (depending on the vehicle, a control coat may or may not be necessary).
- **9** To properly evaluate color, all basecoat layers should be allowed to dry thoroughly before applying 2 coats of clear to ½ of each card. Note: Color should be evaluated in either natural daylight or color-correct lighting.
- **10** One the cards are dry, note on the back, the formula numbers, viscosity, # of ground and mid-coats applied, spray gun type/set-up, air pressure, etc. Thorough documentation will make it easier to replicate in the future.





PD-0701 PRIMER APPLICATION

CAUTION: WEAR THE PROPER SAFETY PROTECTION DURING THIS PROCESS. REFER TO SPECIFIC PRODUCT DATA SHEET FOR APPLICATION AND PRODUCT DETAILS

- **1** Clean area to be sealed with Wax and Grease Remover and/or SWX350 waterborne cleaner and dry with clean towels. Use the one direction wiping method.
- **2** Mask vehicle appropriately according to process document Vehicle Masking Process.
- **3** Look up the formula for the topcoat and identify the recommended spectral gray G-shade for the sealer and mix according to product instructions.
- **4** Tack off the repair area and apply a medium wet coat to the repair, following product instructions. For spot repairs, keep the sealer confined to as small an area as possible.
- **5** If a second coat is necessary, allow the sealer to flash to a uniform, dull appearance before applying the next coat.
- **6** Then, to create a smoother transition, melt in the sealer edges using a blending solvent. Or, after the sealer has dried thoroughly, lightly scuff the sealer edges with P800 grit sandpaper.
- **7** When complete, the repair is ready for the application of the basecoat.



SINGLE STAGE

Overview - Some manufacturers use a single stage product for the vehicle body. This describes a product that has color and clear properties in one package. Since the product is handled similarly to clearcoat and to repair to a factory-like finish, collision centers must match the OE finish which may raise the following concerns.

■ **1 FULL PANEL:** Some car companies have specific procedures for warranty repairs when refinishing an OEM single stage where no definite break line exists for stopping the paint. To meet this OEM warranty guideline and for PPG Lifetime Limited Paint Performance Guarantee purposes, the single stage application must extend to the nearest panel edge or break point.

■ **2 BLENDING:** PPG does document a single stage blending procedure. However, this procedure was designed for specific, economical repairs. Due to its nature, the single stage blend edge is not durable enough to withstand weathering, repeated exposure to the elements and becomes visible after a period of time. As a result, for OEM warranty and PPG guarantee purposes, blending a single stage edge is not recommended.

■ **! GUARANTEE:** Are Single Stage blends guaranteed under PPG's lifetime guarantee? By the definitions above, only full panel application is covered. Single stage blends are not covered under the PPG Lifetime Limited Paint Performance Guarantee.



BASECOAT COLOR

Overview - Vehicle manufacturers select colors, years before the actual vehicles are painted at the factory. Once these model year colors are selected, they are provided to paint manufacturers. PPG creates formulas to match these standards. There are many steps to the manufacturing process and variations can occur throughout. They may be due to one step being out of tolerance or a culmination of many steps being close to unacceptable. Examples of these potential variations include different paint manufacturers supplying the OE plant, different application equipment used at the factory, shearing of metallics as they tumble through the supply line, parts painted separate from the vehicle body, to name a few. The end result is that the actual car color does not match the OE standard.

■ **1 TINTING:** When the actual vehicle color does not match the OE standard and is not close enough to blend, the paint formula needs to be adjusted to get the color closer. This process, commonly referred to as tinting, is one of the most difficult tasks a paint technician performs during the repair. When tinting colors, there are five areas that the painter must balance: hue/color, value/lightness, chroma/richness, metallic size, and flop/angle perspective. It is a time-consuming process and rarely results in an exact match due to the variables described above. Therefore, PPG recommends tinting only to get the color to a blendable match.

■ **2 SPOT REPAIR:** When performing a spot repair, the idea is to minimize the repair area. The repair area receives full coverage and the surrounding area receives partial coverage creating an undetectable color transition. The entire repaired panel is clearcoated. If there is not enough room between the repair area and the adjacent panel(s), the color must be blended onto the adjacent panel. All panels that are painted should be clearcoated in their entirety.

■ **3 FULL PANEL:** When replacing a panel, blending color onto the adjacent panel(s) is a necessary operation that results in an undetectable color transition. If a spot repair occurs close to a panel edge, the color should be blended onto the adjacent panel(s) as well. All panels that are painted should be clearcoated in their entirety.



■ **1 FULL PANEL:** Some car companies have specific procedures for warranty repairs when refinishing an OEM clearcoat where no definite break line exists for stopping the clear. To meet this OEM warranty guideline and for PPG Lifetime Limited Paint Performance Guarantee purposes, the clearcoat application must extend to the nearest panel edge or break point.

■ **2 FILM BUILD:** For PPG Lifetime Limited Paint Performance Guarantee purposes, the clearcoat must cover the basecoat by a minimum of 2.0 dry mils after sanding, buffing, and polishing.

■ **3 BLENDING:** PPG does document a clearcoat blending procedure. However, this procedure was designed for specific, economical repairs. Due to its nature, the clearcoat blend edge is not durable enough to withstand weathering, repeated exposure to the elements and becomes visible after a period of time. As a result, for OEM warranty and PPG guarantee purposes, blending a clearcoat edge is not recommended.

■ **4** See the specific clearcoat product data sheet and/or PD-0730 for further information.



PD-0800 PAINT DEFECT REMOVAL

CAUTION: WEAR THE PROPER SAFETY PROTECTION DURING THIS PROCESS. REFER TO SPECIFIC PRODUCT DATA SHEET FOR APPLICATION AND PRODUCT DETAILS.

- **1** Assess the damaged area to look for dust nibs, runs, sags or other refinish defects.
- **2** Clean area with SWX350 or SX330.
- **3 Dust Nibs:**
 - a. Sand nib with P1500 grit using a finishing DA sander and interface backup pad taking care that 2.0 minimum dry film thickness of clearcoat is maintained. Visual and hand check area to make sure nib is removed.
 - b. Refine entire sanded area with P2000-P3000 damp on a DA sander with a backup pad.
 - c. Proceed to the compounding procedure below.
- **4 Runs/sags:**
 - a. Use P1200 grit Wet-or-Dry sandpaper with hand block to remove the defect.
 - b. Refine entire sanded area with P1500 using a DA sander with an interface pad.
 - c. Refine entire sanded area with P2000-P3000 damp on a DA sander with a backup pad.
 - d. Proceed to the compounding procedure below.
- **5** Cosmetic scratches in OE finishes (not freshly repaired paint finishes) can be compounded using the procedure below.
- **6** Compound the entire repair area with extra cut compound using a foam pad or a wool compounding pad.
- **7** Polish the entire repair area with a swirl mark remover and a polishing pad.