COLLISIONADVICE

# Blend Ruler
# &
# Supporting Documents

September 2013

# Blend Ruler Steps

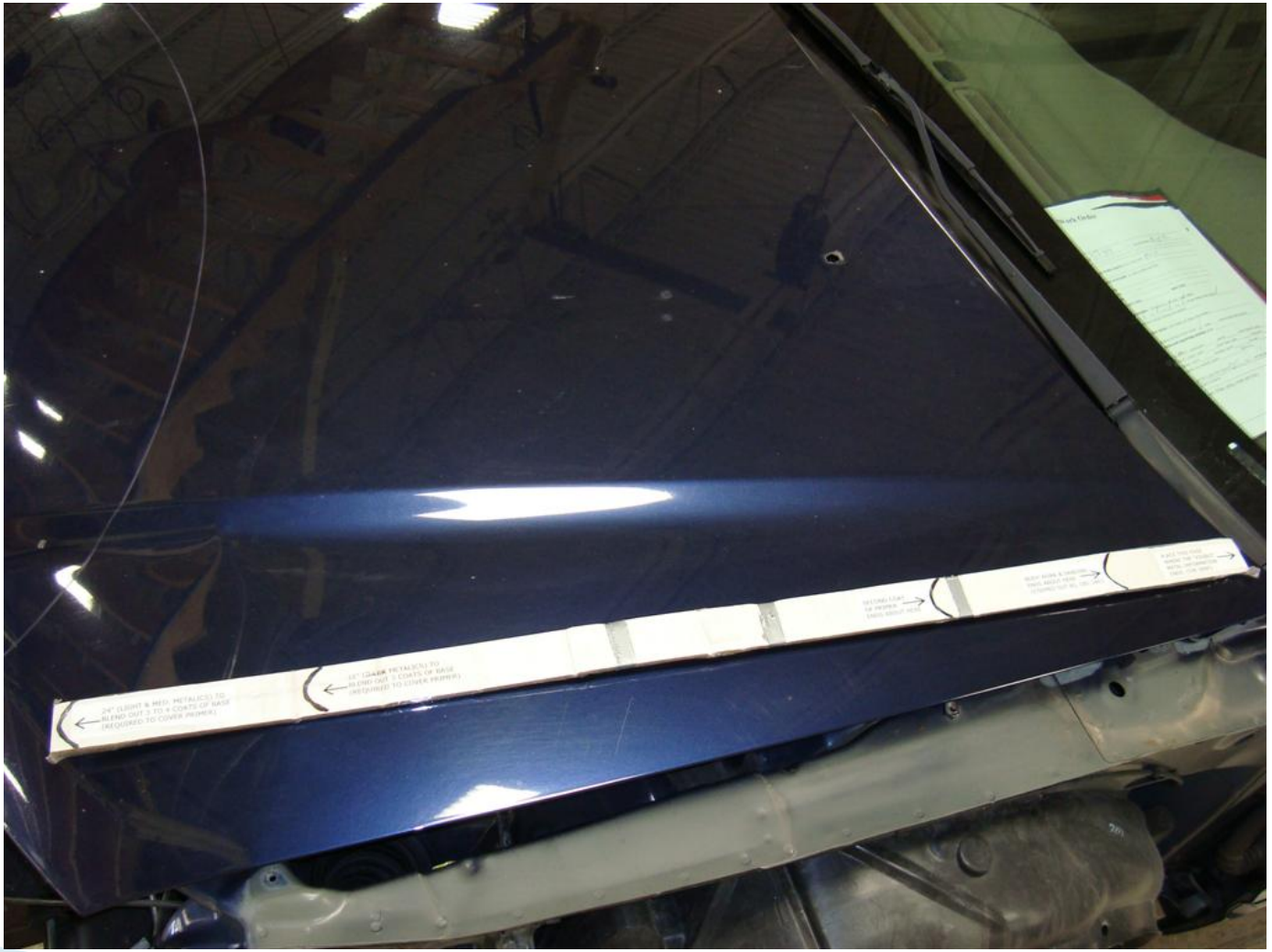
- Place this at edge of the Dent
- Featheredge goes back to here (i.e. 150, 180, 220 )
- First Coat of Primer
- Second Coat of Primer
- Dark Metallic Basecoat Blend of Color Distance
- Light Metallic Basecoat Blend of Color Distance
- 3 Stage Basecoat Blend of Color Distance

# History…

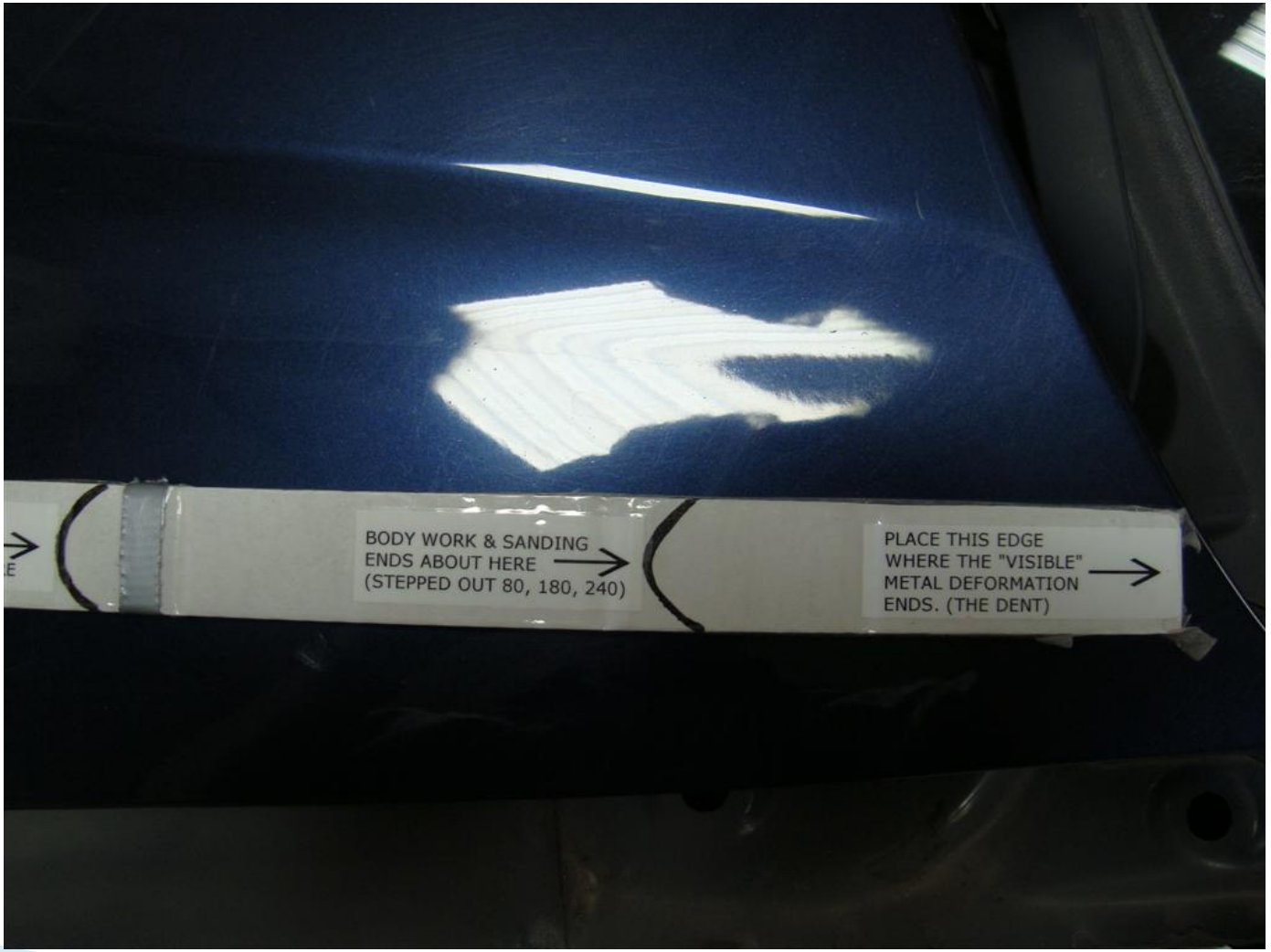
- Initially invented by Aaron Marshall of Marshall Auto Body

# Blend Ruler # 1 Sample

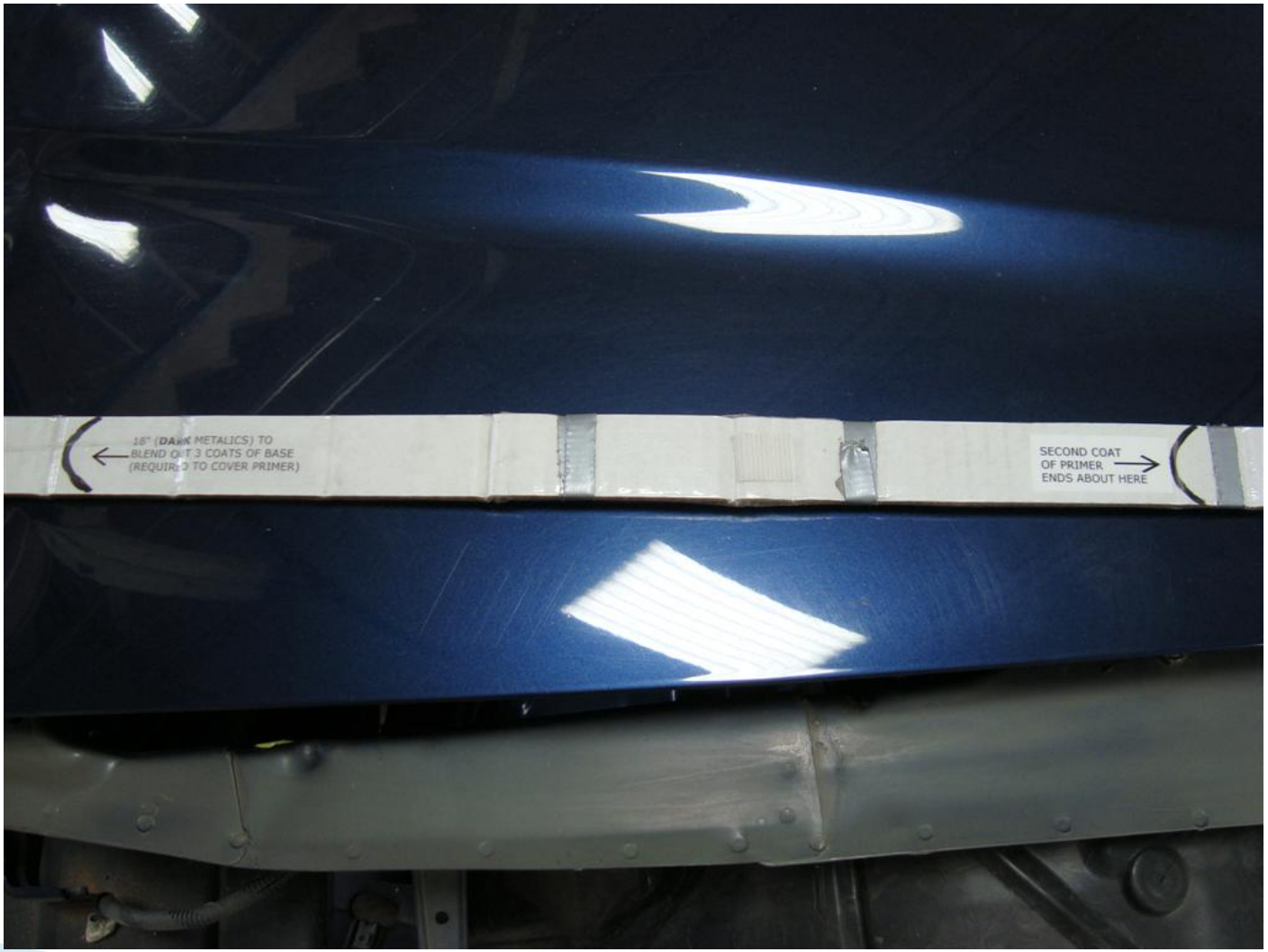
# Blend Ruler # 1



# Blend Ruler # 1



# Blend Ruler # 1



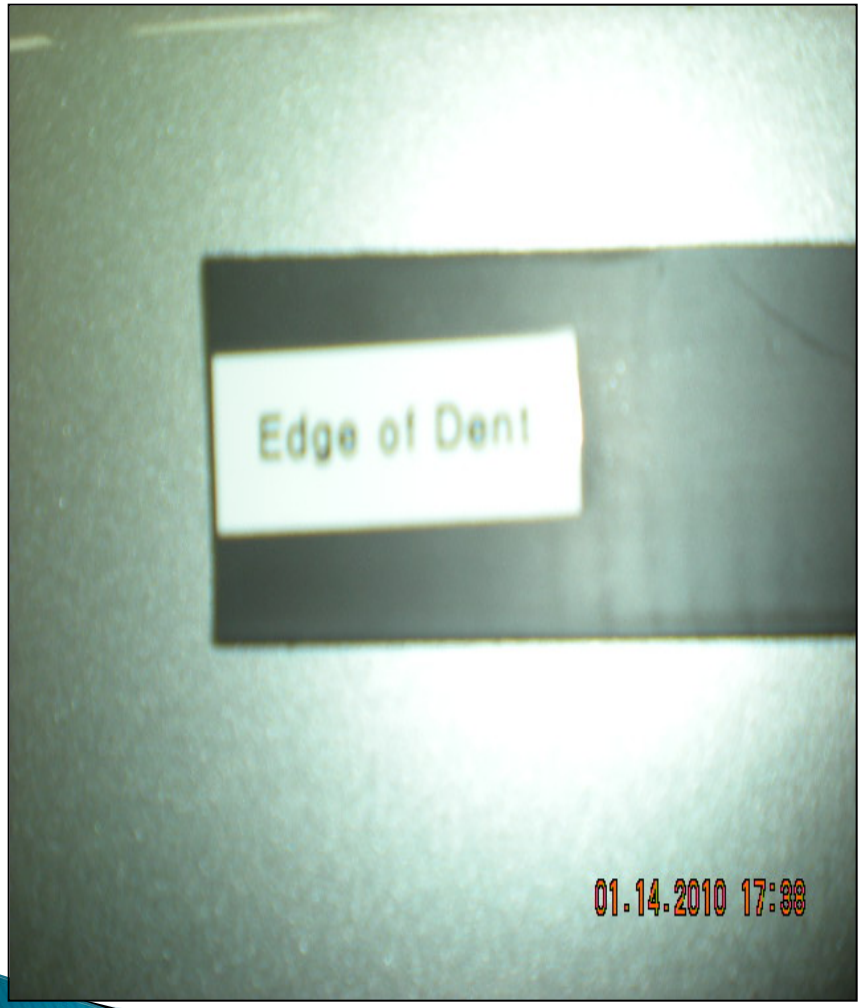
# Blend Ruler # 1

# Samples Light Metallic vs. Dark Metallic

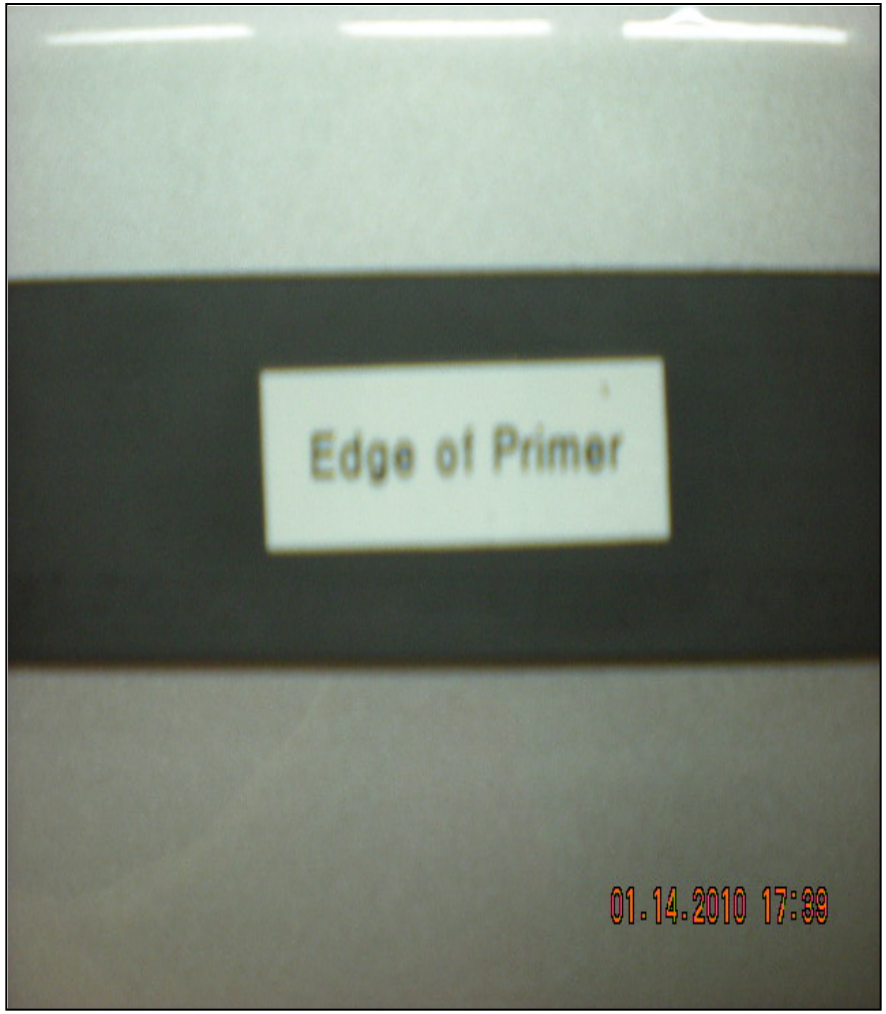
# Blend Ruler # 2 Sample

# Blend Ruler # 2


# Blend Ruler # 2




# Blend Ruler # 2




# Blend Ruler # 2


# Blend Ruler # 2

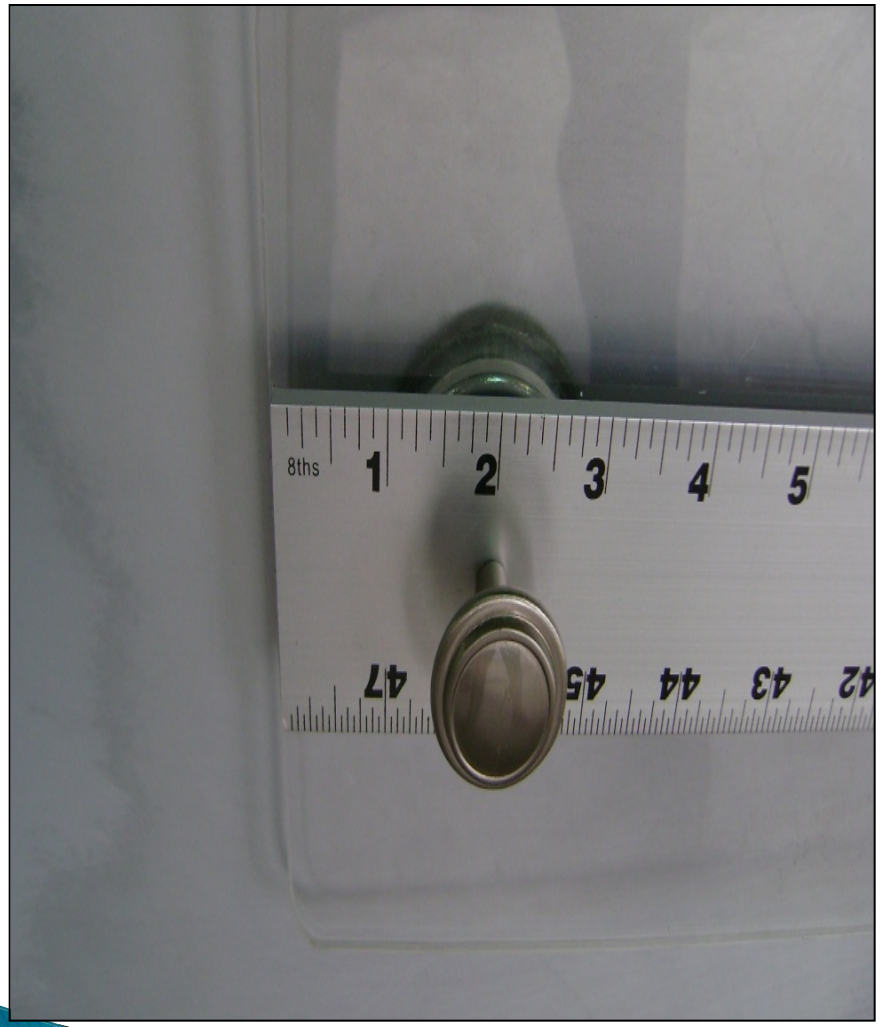

# Blend Ruler # 3 Sample

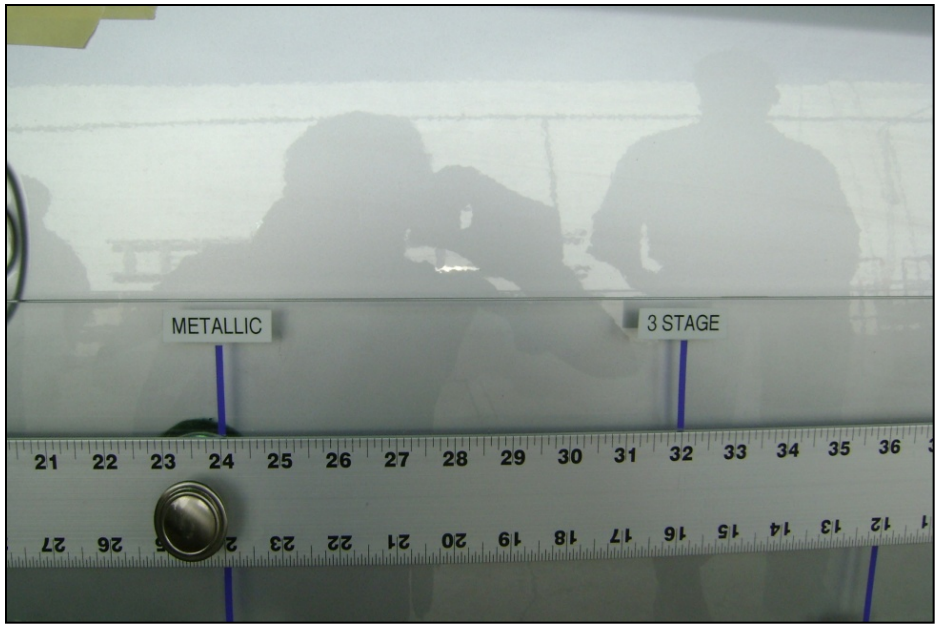
# Blend Ruler # 3 (With Spray Polyester)


# Blend Ruler # 4 Sample

# Blend Ruler # 4

# Blend Ruler # 4



# Blend Ruler # 4

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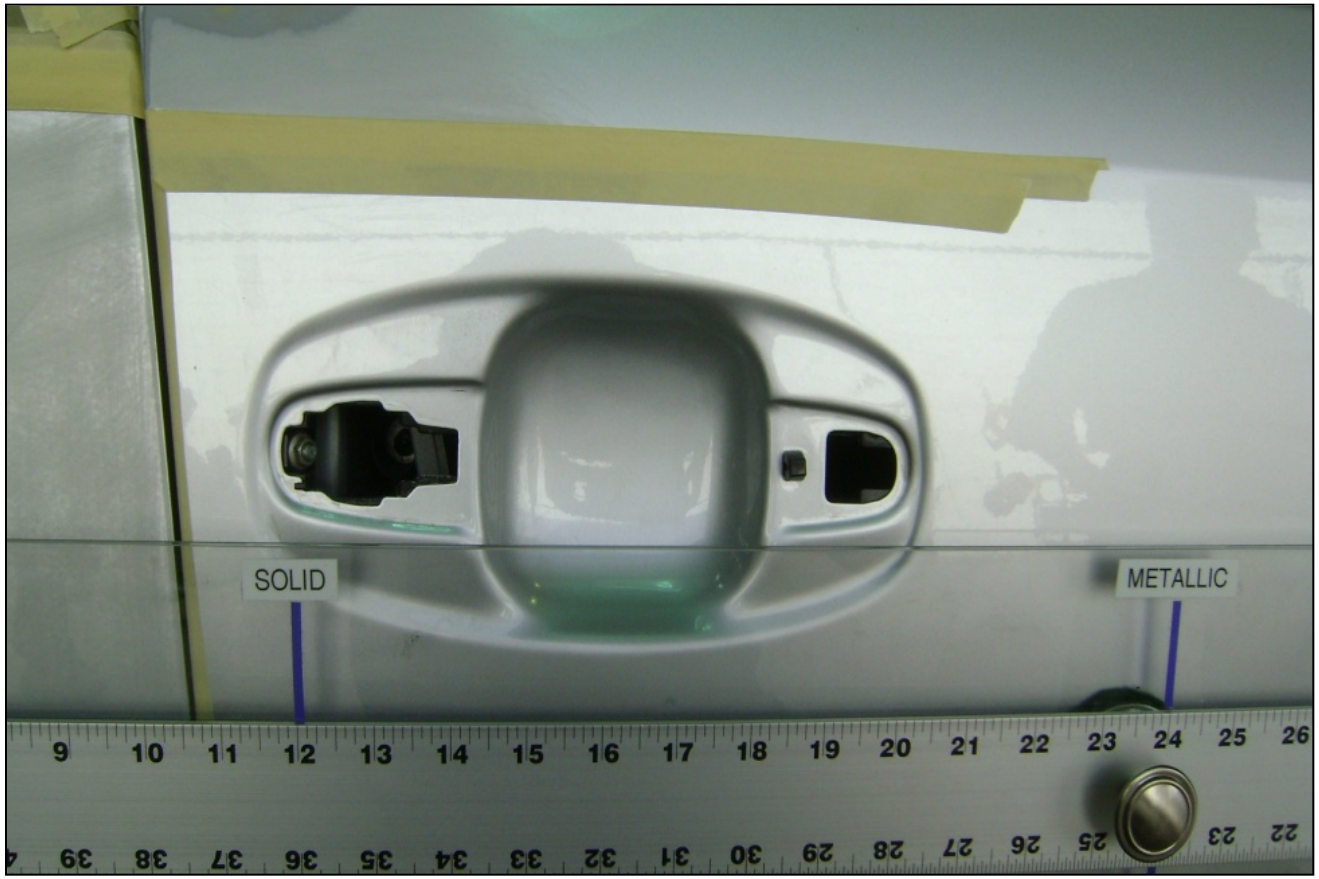

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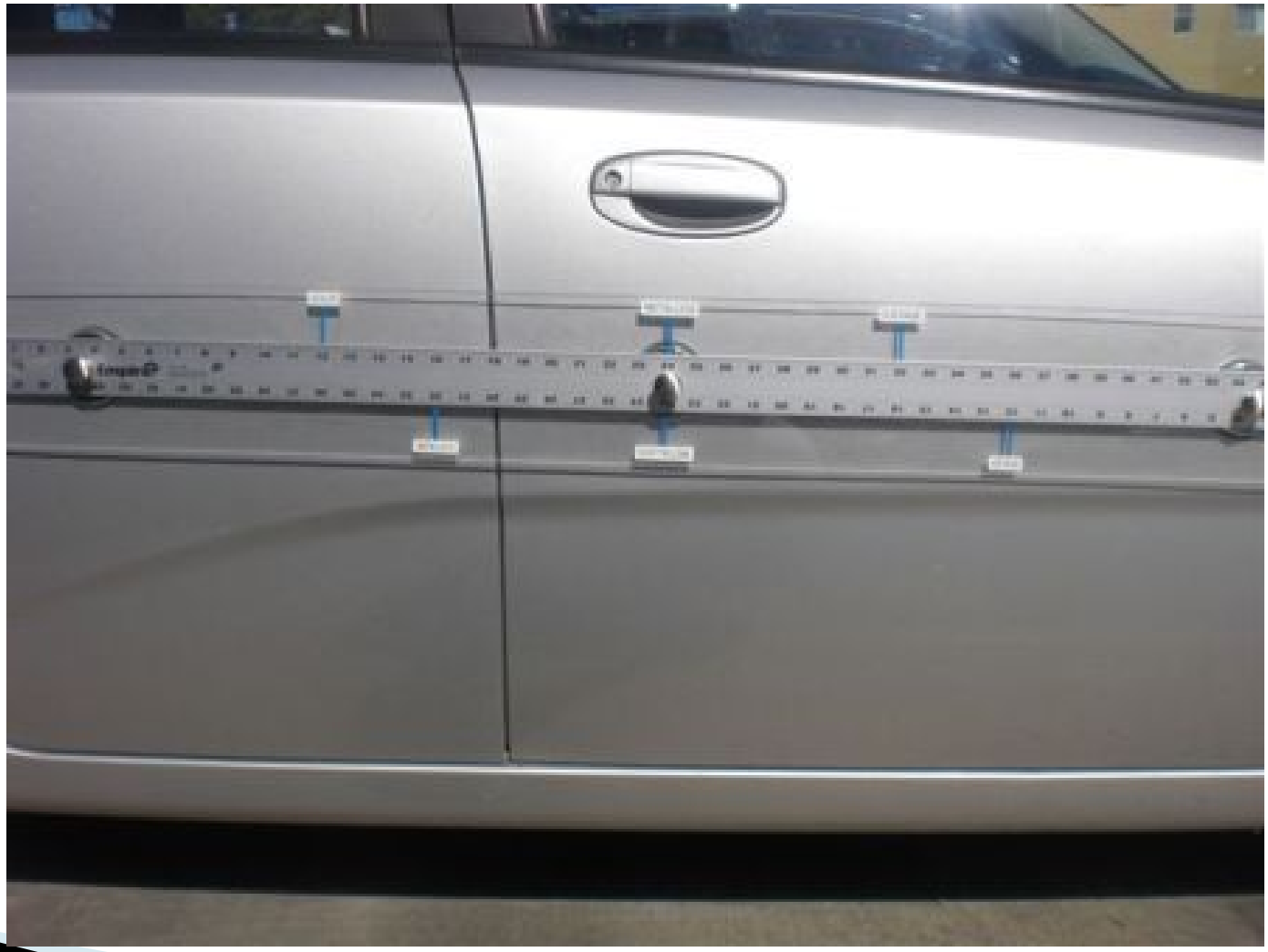

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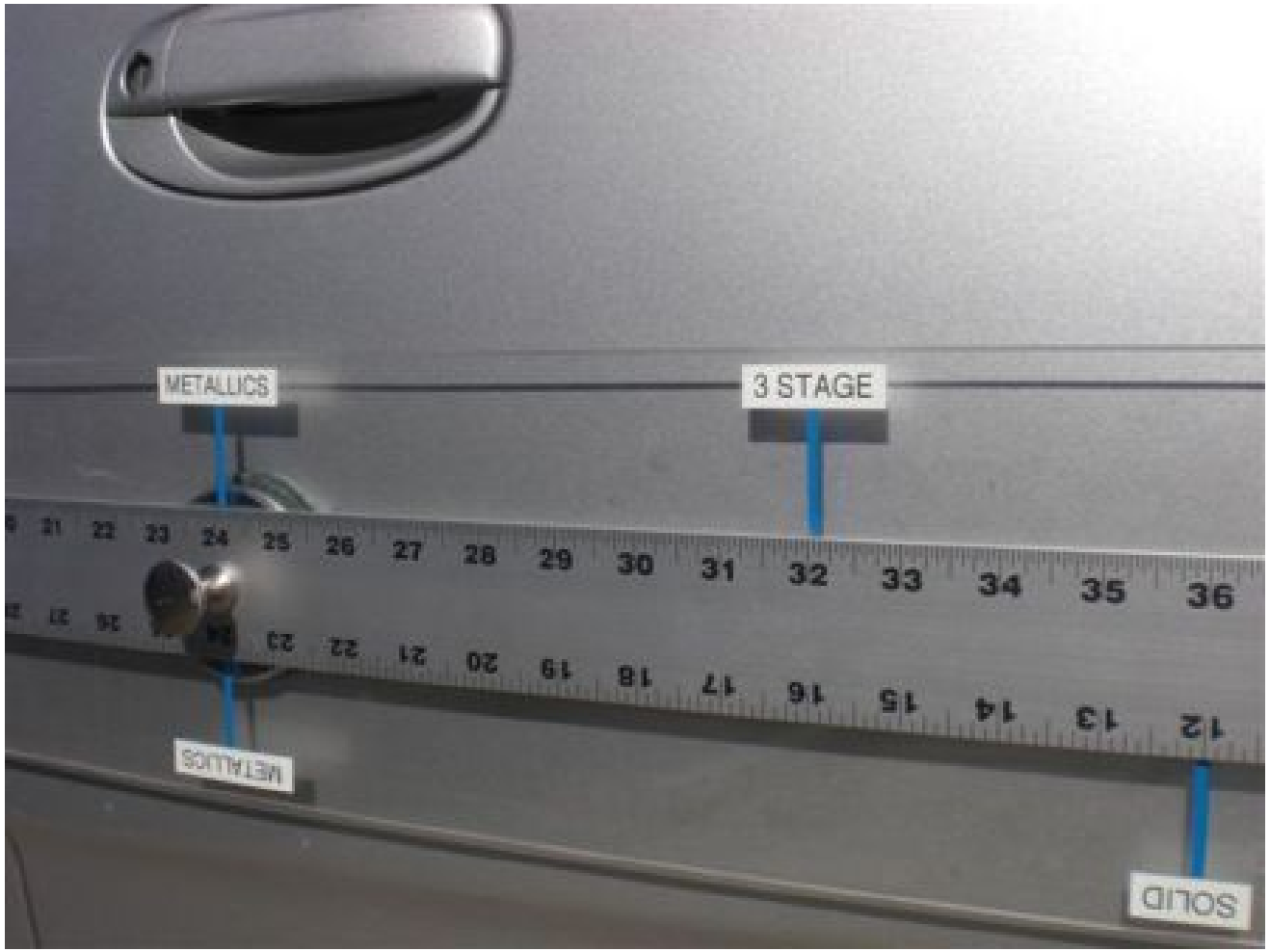

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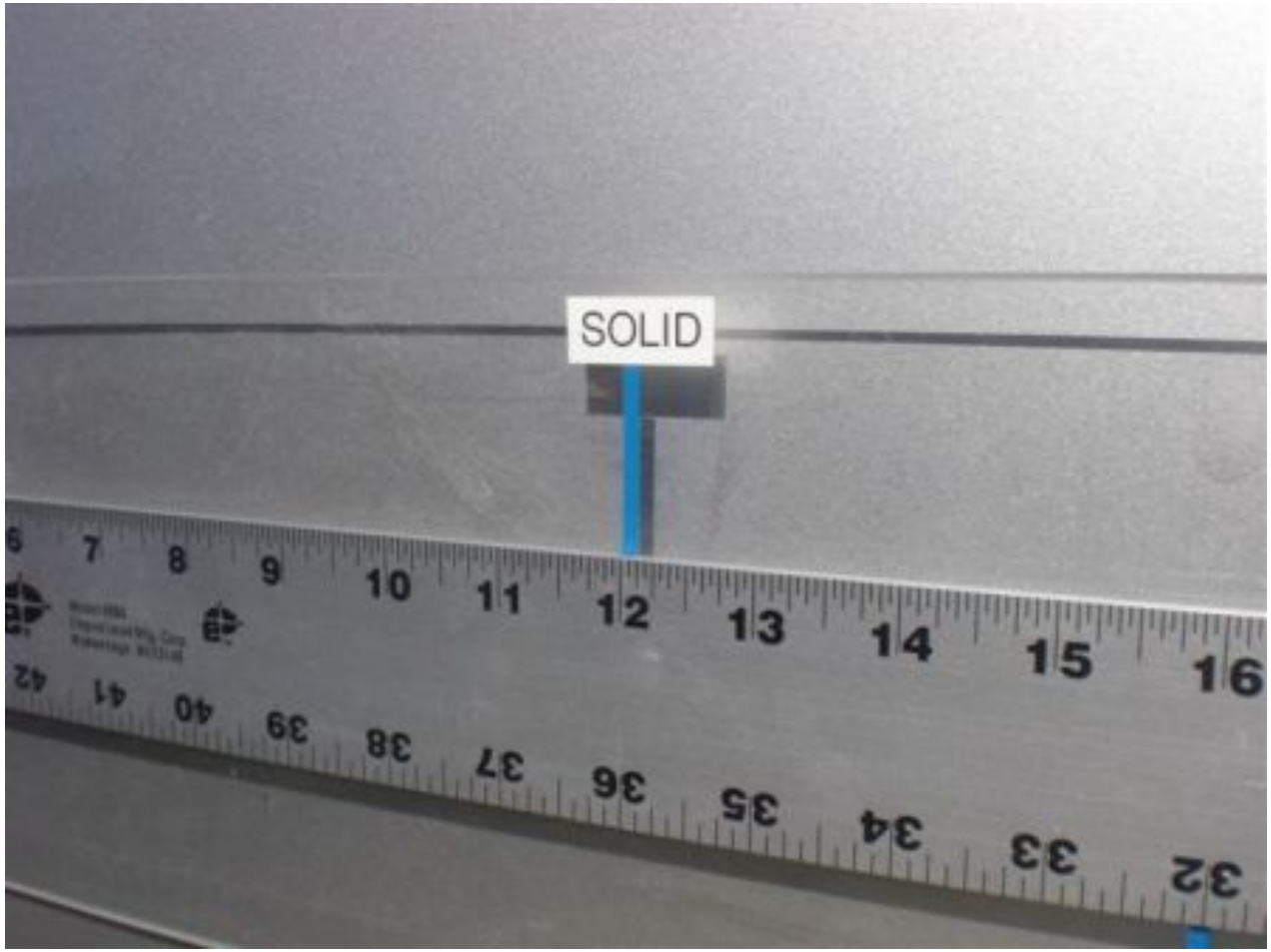

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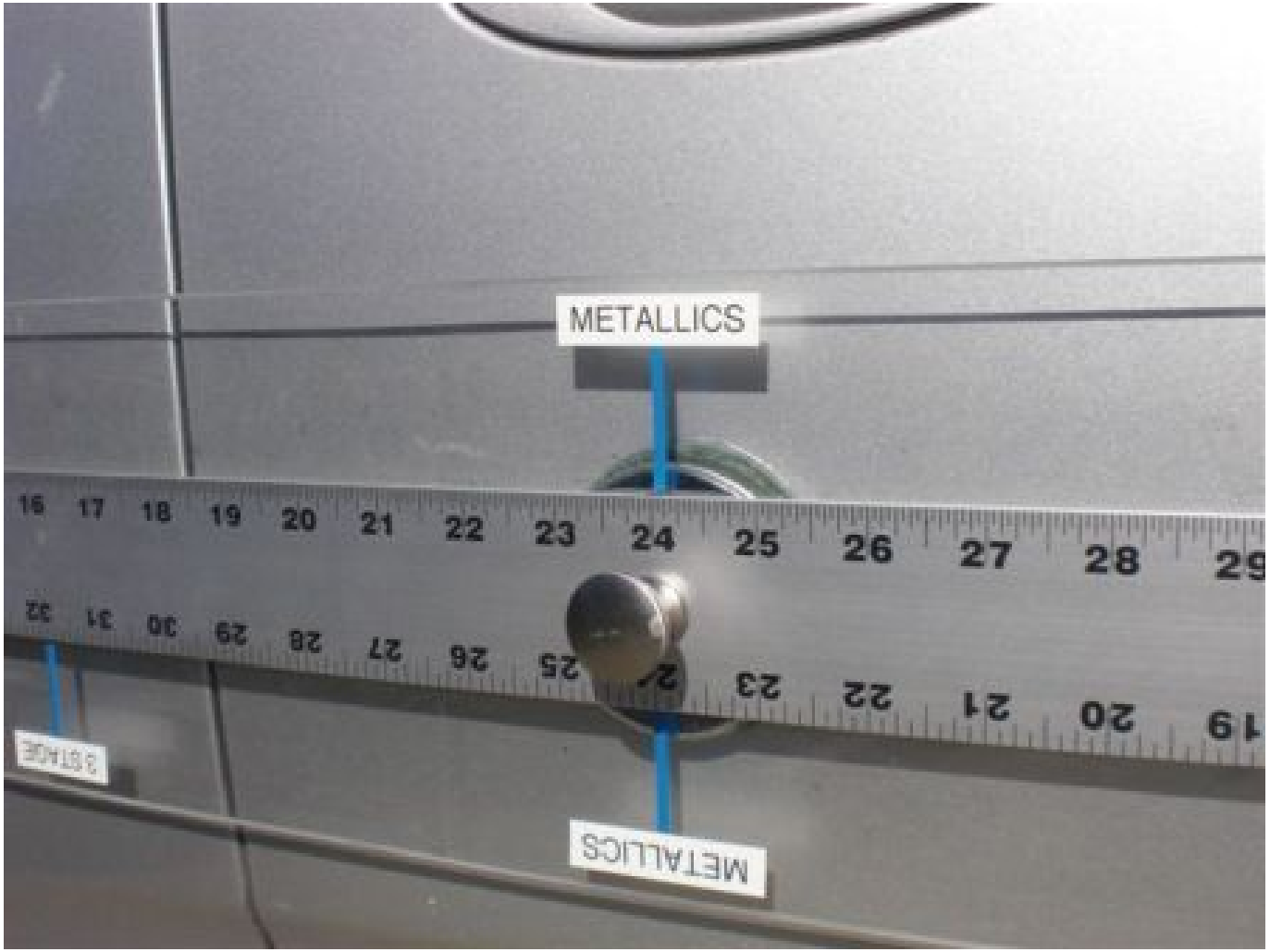

# ASA Refinish Flier for Blended Panels

# More Refinish Time for Blended Panels

## Compare Basic Refinish Procedures for Blend vs. New Panels

22 blended panel procedures vs. 21 new panel procedures

- Ask your paint company for its documentation given to insurance companies for refinish procedures.
- Compare refinish procedures for blend and new panels side by side.
- Refer to ASA's Repaired vs. New refinish flier for blend within a repaired panel, zone refinish and spot refinish procedures.

| Blend Panel* | New Panel* |
|---|---|
| 1. Clean panel/edges for refinish. | 1. Clean panel/edges/vehicle for refinish. |
| 2. Wax and grease for contamination | 2. Sand and prep panel. |
| 3. Abrade panel for adhesion. This process may be repeated three or four times to remove all gloss from panel to achieve complete adhesion. | 3. Mask/bag for sealer and paint. |
| 4. Remove residue and rinse with water. | 4. Mix sealer. |
| 5. Mask and bag for paint. | 5. Mix color (minimum amounts required). |
| 6. Mix color (minimum amounts required). | 6. Tint (if necessary). |
| 7. Tint color (to achieve acceptable blend). | 7. Wax and grease for contamination. |
| 8. Wax and grease for contamination. | 8. Blow off and tack panel for dust. |
| 9. Blow off and tack for dust. | 9. Mix etch primer (for bare metal areas). |
| 10. Apply wet bed (eliminates scratches in blend). | 10. Apply etch primer for adhesion. |
| 11. Apply basecoat to partial panel. | 11. Clean etch primer spray gun. |
| 12. Allow for additional flash time. | 12. Apply sealer. |
| 13. Tack blend area for dirt/overspray. | 13. Clean sealer spray gun. |
| 14. 2nd basecoat application, stepped out and over reduced for blend application. | 14. Apply basecoat color to entire panel. |
| 15. 3rd basecoat application, stepped out again to achieve maximum hiding and full blend effect. | 15. Clean basecoat spray gun. |
| 16. Clean basecoat spray gun. | 16. Mix clear coat. |
| 17. Mix clear coat. | 17. Apply two coats of clear. |
| 18. Apply two coats of clear. | 18. Clean clear spray gun. |
| 19. Clean clear spray gun. | 19. Bake at 140° for 30-45 minutes. |
| 20. Bake at 140° for 30-45 minutes. | 20. Cool down process. |
| 21. Cool down process. | 21. Unmask for reassembly. |
| 22. Unmask for re-assembly. | |

*Based on paint manufacturer requirements, industry refinish standards, technical data sheets, warranty requirements and p-pages as of September 2006.

**Please contact your local paint representative for specific refinish procedures.

Use this tool to help explain proper refinish procedures to insurance partners.**

Automotive Service Association®

(800) ASA-SHOP
www.ASAshop.org


# More Refinish Time for Blended Panels

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22 blended panel procedures vs. 21 new panel procedures

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|---|---|
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# Refinish Manufacturer Statements Supporting Documentation for Blend Ruler

- AKZO Nobel (to include Sikkens)
- BASF
- DuPont ( to include Spies and Standox)
- PPG
- Sherwin Williams

# AKZO

AKZO NOBEL

# Technical Services Bulletin

## Car Refinishes

Date: **Jul. 31, 2000** No. **US & CAN TSB 00 - 003**

Subject: ***Blending***

### Blending

Blending the basecoat into an adjacent undamaged panel is the most economical and productive process for achieving an invisible repair. This is the standard method taught in all of our training centers for achieving an acceptable color match. Clearcoating the entire panel(s) involved is required when performing a blend.

In some instances, although rare, the blending of the basecoat can be confined to just the repaired panel, and in these instances, this would be the preferred repair process. Again, full clearcoating of the entire panel is required. The step-by-step preparation process is not unlike the preparation process for applying color and clearcoat to the entire panel.

We recommend clearcoating entire panels and do not approve solvent blending of the clearcoat in order to qualify for the Akzo Nobel Product Assurance Plan lifetime warranty. In addition, many auto manufacturers do not recognize a solvent blend as a proper repair. The blend area can become visible over time due to weathering or polishing, and for this reason is not warranted by Akzo Nobel.

Distribution

# Repairing Today's OEM Basecoat Systems

As OEM finishes become more complicated at the manufacturers level, so does the paint repair process in the body shop industry. The objective of the repair industry is a satisfied customer, seeing him or her receive their vehicle that looks as if there has never been any damage to it. So, the refinish color and the application of the re-repair must come close enough to the original production line finish to produce an "invisible repair".

We do this by designing repair paint systems that duplicate the processes used at the manufacturing level. The progression has been from solids to metallics in the 50's to the 60's, with basecoat / clearcoat finishes appearing in the late 70's. Today's present OEM color systems now require the repair industry to re-repair silver dollar metallic colors and 3-stage layered paint systems, including *"candy"* OEM finishes. In each case the repair industry had to follow the OEM systems to properly repair customers vehicles.

Akzo Nobel Sikkens Car Refinish is renowned within the industry, for it's color accuracy. We have long been known for our ability to match both domestics and imports, receiving manufacturer approvals from companies such as Volvo, Toyota, Ford, GM, Honda, and Navistar International to name a few.

No matter how good we know we are or how these manufacturers and our customers feel about Akzo Nobel's competence in this area, please remember, it is Sikkens Car Refinish training policy to tint to blend, blend into the adjacent panels and not to "panel paint" or try to "cut short" the area of the basecoat fadeout (basecoat blend). As OEM color formulations become increasingly difficult and with the multitude of 3-stage OEM finishes, it is not uncommon to need an addition panel for the blend or an area of approximately 36 inches past the coverage area to successfully perform that "invisible" repair. With these difficult color combinations today's technician faces, blending basecoats on horizontal surfaces is not advised. Even with the "controlled factory environment", this is not done. If blending of the horizontal is required, it is always best to take the next vertical panel for first repair success, because of the difficulties of performing a horizontal blend successfully. The variant color chips continue to grow and grow. The OEM can not produce cars painted *complete* mottle free or without color variations. Combine this with the new color and pigment combinations the OEM's are using these days and the repair industry problems multiply. The answer.....
Give yourself plenty of room to.....Blend and then, BLEND. And, don't blend on horizontal panels, drop it over the crowns.
*"Don't cut yourself short and do the right thing, or your customer will not be happy with anyone connected to the repair!"*

Akzo Nobel Coatings, Inc.
Car Refinishes Western Region

Akzo Nobel Coatings Inc.
A&AC North America

5555 Spalding Drive
Norcross, Georgia 30092

Tel. 770-798-8195
Fax 770-242-5079

AkzoNobel
Tomorrow's Answers Today

March 14, 2011

Aaron Schulenburg
Executive Director
Society of Collision Repair Specialists

Re: Tinting and Blending Procedures and Recommendations

Dear Aaron,

In response to your inquiry of February 25th, AkzoNobel is pleased to respond as noted below. For clarification, we have imbedded our response in blue type on each of your questions. Additionally, there are 3 attachments for further clarification. Thanks, and feel free to call me with any questions.

1. Is blending the basecoat recommended by your company to achieve proper color match between panels? **Yes, please see attached Technical Service Bulletin (TSB) and technical reference information.**

2. Is tinting the basecoat material a recommended procedure to achieve a proper color match to the vehicle's existing refinish? **No, not in all cases. It is very OE/Car Manufacturer specific on how well the factory colors are held to tolerance to the "Standard" provided to us from the OE Manufacturer. Our recommendation when tinting is "tint to blend".**

3. Are procedures such as tinting and blending commonly performed in conjunction with each other, or are they redundant processes? **Yes they are, if you tint a color you will still need to blend in most cases (particularly special effect colors) if you want to achieve an invisible repair.**

4. Does your company recommend performing one, or both, of these processes to achieve a proper color match on the repaired vehicle? **Blending the color is always recommended, only tint when needed to correct flip or flop issues and when the effect (metallic / pearl) needs adjustment.**

TSB Blending US & CAN TSB 00-003.pdf | Color Selection Flow Chart Poster 2011.pc | SPOT REPAIRS WITH ABP APR 2004.pdf

Kind Regards,

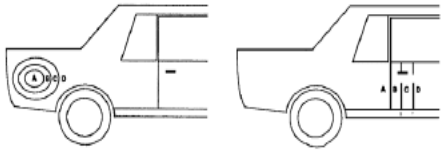
Tom Moreland
Strategic Sales Manager, North America
Automotive & Aerospace Coatings, North America

# SPOT REPAIRS WITH AUTOBASE® PLUS

## DESCRIPTION:

The term spot repair is understood to include all repairs to damaged areas resulting in the repaired area blending invisibly into the still intact existing finish. As a result, the car refinisher is not compelled to spray large panels in the case of minor damage. The spot repair technique also enables minor differences in color and effect between the original car finish and the refinish to be made invisible.

## PREPARATION:



Clean all areas: first degrease with M600 Surface Cleaner. In areas where VOC emission regulations apply, use recommended compliant Sikkens Surface Cleaner.

In the above drawings, area "A" is the area under repair. Shape it and build up the area using the appropriate products. After the products have dried, sand the area under repair "A" as well as the adjacent area "B". When spot repairs are made, wet sanding by hand is preferred.

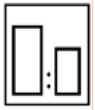
Sand areas "A" and "B" with waterproof #P600 to #P800 grit paper wet. Thoroughly scuff areas "C" and "D" (whole panel) with a *grey* scuff pad, Blend-Prep and water, or alternately prepare areas "C" and "D" with a good quality DA sander using a 3M interface pad and #P1000 grit sanding disk.

If blending of the clearcoat is inevitable (sail panels), apply some Sikkens Blend-Prep on a damp sponge, and scuff until gloss is removed, or alternately prepare (sail panels) by lightly scuffing with a 3M Clear Blend Prep Pad #07745 (gold). Thoroughly clean areas with a compliant Sikkens Surface Cleaner.

## APPLICATION OF AUTOBASE PLUS SPOT REPAIRS:

1. 

Contains acrylic resins and other ingredients.

2. 

100:50
Autobase Plus
Autobase Plus Reducer

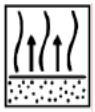
3. 

Use the Sikkens Measuring Stick #1 (Black).

## SPOT REPAIRS WITH AUTOBASE® PLUS

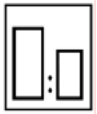
**APPLICATION CONTINUED**

For Autobase Plus solid colors:

| | | | |
|---|---|---|---|
| 4. |   | 2X1<br>HVLP Siphon<br>1.8–2.2 mm<br>HVLP Gravity<br>1.3–1.5 mm<br>Max 10 psi (max 0.8 bar) | **Application Method:**<br>Spray single coats of Autobase Plus in areas A & B until opacity is achieved. Extend each coat slightly beyond the previous one. Flash between coats |
| 5. |  | 3–5 minutes at 70°F (20°C) | It is acceptable to accelerate flash by blowing air on the spot repair with the spray gun. Tack off between coats. |

**SOLID COLOR FADEOUT:**

Prior to applying the fade out coats, add to the ready to spray color, 50 parts by volume Reducer SRA 7.0. This will make the color transparent, facilitating a more uniform blend with the original color.

| | | | |
|---|---|---|---|
| 6. |  | 100:50<br>Autobase Plus Color RTS<br>Reducer SRA 7.0 | **Mix as follows:**<br>100 parts by volume Autobase Plus RTS<br>50 parts by volume Reducer SRA 7.0 |
| 7. |   | 1x1<br>HVLP Siphon<br>1.8–2.2 mm<br>HVLP Gravity<br>1.3–1.5 mm<br>Max 10 psi (max 0.8 bar) | With this transparent color, spray 1 thin coat, extending beyond the repair area. Fading out into area "C". |
| 8. |  | 15–20 minutes at 70°F (20°C) | Allow 15–20 minutes at 70°F (20°C) before final tack and applying the clearcoat. |
| 9. |  | Apply Autoclear III or<br>Autoclear HS + | |

## SPOT REPAIRS WITH AUTOBASE® PLUS

**APPLICATION CONTINUED**

For Autobase Plus solid colors:

| | | | |
|---|---|---|---|
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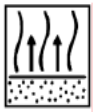
| 5. |  | 3–5 minutes at 70°F (20°C) | It is acceptable to accelerate flash by blowing air on the spot repair with the spray gun. Tack off between coats. |

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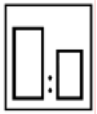
| 6. |  | 100:50<br>Autobase Plus Color RTS<br>Reducer SRA 7.0 | **Mix as follows:**<br>100 parts by volume Autobase Plus RTS<br>50 parts by volume Reducer SRA 7.0 |
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| 8. |  | 15–20 minutes at 70°F (20°C) | Allow 15–20 minutes at 70°F (20°C) before final tack and applying the clearcoat. |
| 9. |  | Apply Autoclear III or<br>Autoclear HS + | |

## SPOT REPAIRS WITH AUTOBASE® PLUS

### ALTERNATE PROCESS:

It is also possible, prior to applying Autobase Plus and fading out, to spray 1 single coat of Autobase Plus Blending Additive. Flash off for 3-5 minutes, and then follow directions on "Spot Repairs with Autobase Plus".

Using this Autobase Plus Blending Additive assists in an invisible blend as far as color, flip tone and effect are concerned.

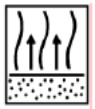
### APPLICATION OF CLEARCOAT:

Autobase Plus is sufficiently dry to clear coat after 15-20 minutes at 70ºF (20ºC). Tack the entire repair area and clearcoat with Autoclear III, Autoclear HS + or Autoclear Vision HS.

**Note:** Use clearcoat appropriate to product performance. Refer to Autoclear III, Autoclear HS + or Autoclear Vision HS technical data sheets.

**EXAMPLE, AUTOCLEAR III:**

1.  Contains xylene and other ingredients. When mixed, also contains isocyanates.
2.  100:50:30
   Autoclear III
   Standard Hardener
   Production Activator
3.  Use the Sikkens Measuring Stick #1 (Black).
4. 

   2x1
   HVLP Siphon
   1.8–2.2 mm
   HVLP Gravity
   1.3–1.5 mm
   Max 10 psi (max 0.8 bar)
5.  5 minutes at 70°F (20°C)

**Application Method:**
Spray 2 single coats of Autoclear III, the last coat over entire panel. Allow 5 minutes flash time after each coat. Limit the application of coats right next to an adjacent panel.

## SPOT REPAIRS WITH AUTOBASE® PLUS

### APPLICATION OF CLEARCOAT (CONTINUED):

6. 

7 hours at 70°F (20°C)
20 minutes at 140°F (60°C)

### BLENDING OF CLEARCOAT:

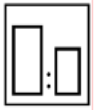
Akzo Nobel Coatings/Sikkens strongly recommends the application of clear coat over the whole panel.
There are, however, instances where this is not practical. Such as repairs on older vehicles where economics would dictate that a warranty is not required. In these instances, it may be acceptable to blend the clear coat into small areas such as a rocker panel or sail panel, vertical areas only. This procedure is not warranteed or OE approved

### Example for Autoclear III

**Note:** Procedures listed below should also be used for Autoclear HS +. Refer to your local VOC regulations for "Specialty Coating" compliance.

### Application Method:

When blending of the clear is inevitable (sail panel). Hard line each coat (do not fade out) and extend the application of the final coat.

1. 

100:50
Autoclear III, ready to spray
Reducer SRA 7.0

After the last coat of clear is sprayed in the sail panel area, add to the ready to spray clear 50 parts by volume Reducer SRA 7.0

2. 

Use the Sikkens Measuring Stick

3. 


1 x 1
HVLP Siphon
1.8–2.2 mm
HVLP Gravity
1.3–1.5 mm
Max 10 psi (max 0.8 bar)

Apply one single coat of this reduced clear over the hard line overspray edge. Into the prepared area (sail panel), melting in previous overspray.

## SPOT REPAIRS WITH AUTOBASE® PLUS

### Application Continued

| | | | |
|---|---|---|---|
| 4. |  | Reducer SRA 7.0<br>Ready to Spray | Use pure Reducer SRA 7.0 to dissolve overspray edge. |
| 5. |  | 2 x 1 | Spray 1 thin coat. Flash for 15 seconds. Apply a final thin coat. |

**AFTER TREATMENT:** After the repair is completely dry, the fade out area (if any) may be polished with an ultra-fine polishing compound and waxed. (Please see *Dry-To-Polish* time of the products used.)

**NOTE:** Refer to the following Technical Data Sheets for more information:
—Autobase Plus Blending Additive
—Autobase Plus Solid, Metallic and Pearl Colors
—Autoclear III
—Autoclear HS +
—Autoclear Vision HS

### SAFETY DATA:

**READY TO SPRAY VOC:** Autobase Plus 100:50 with Autobase Plus Reducer:
6.5 lb/gal 780 g/liter

**NOTICE:** Do not handle until the Material Safety Data Sheets have been read and understood. Regulations require that all employees be trained on Material Safety Data Sheets for all chemicals with which they come in contact. The manufacturer recommends the use of an air-supplied respirator when exposed to vapors or spray mist.

# BASF

BASF

The Chemical Company

March 18, 2011

Mr. Aaron Schulenburg
Society of Collision Repair Specialists
Po Box 346
Smyrna, DE 19977
Dear Mr. Schulenburg:

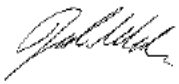
Re: Tinting and blending for color match

BASF recommends blending into an adjacent undamaged panel whenever the panel being repaired / replaced has color applied to the entire surface, or color is applied to the part of the panel that borders an undamaged panel. This is the most cost effective and durable method to produce an undectable color match when repairing motor vehicles.

There is a limit to the amount of color tone variance that can be overcome by blending. When the variance is too great to successfully blend, adjusting the color by adding or subtracting base pigments or "tinting" is recommended. The process of tinting a color ends when a blendable color match is achieved. At this point, the tinted color is then applied to the repaired panel(s) and blended into adjacent undamaged panels as required.

Tinting a color to an exact "panel match" is possible, but it is almost always more time consuming than blending. Additionally, the amount of time required can be unpredictable and in the end, most likely will not produce the same undetectable repair that can be achieved by blending.

Sincerely,



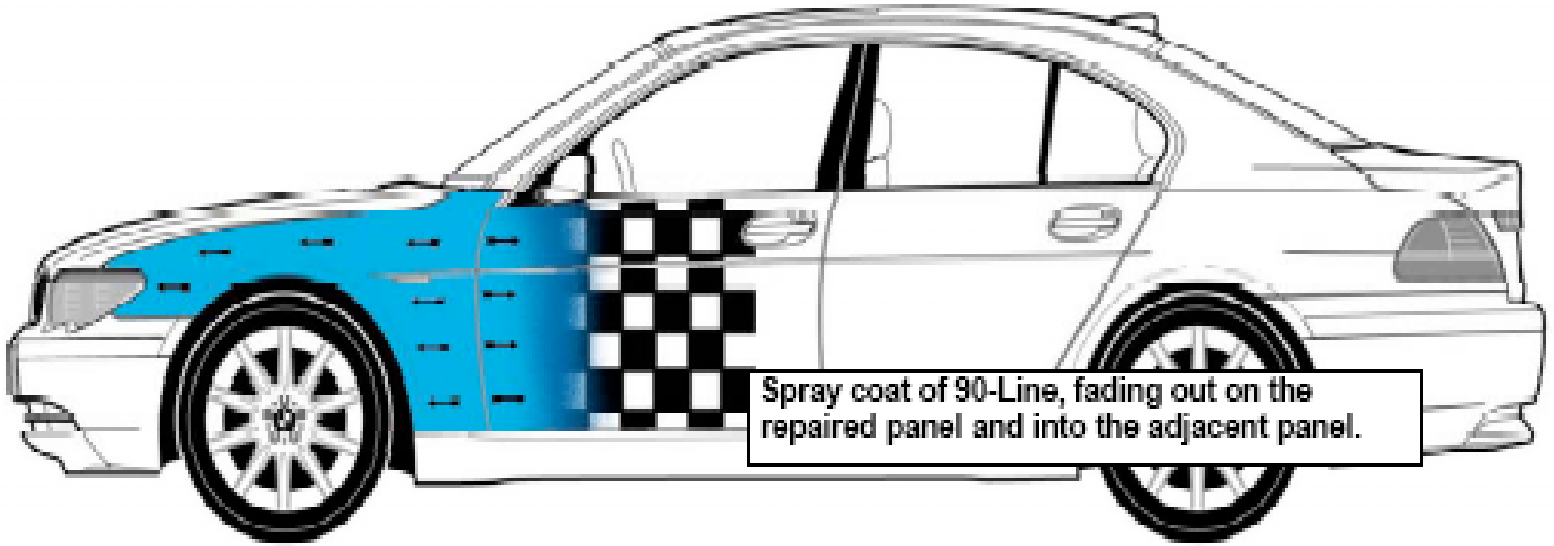
Joseph Skurka
Manager, OEM & Industry relations

BASF Corporation
cc: B. Koevenig
A. Farah

**BASF Corporation**
26701 Telegraph Road
Southfield, MI 48033
Tel: (248) 827-4670
www.BASFrefinish.com

# Refinishing within a Panel

# Blending into an adjacent panel



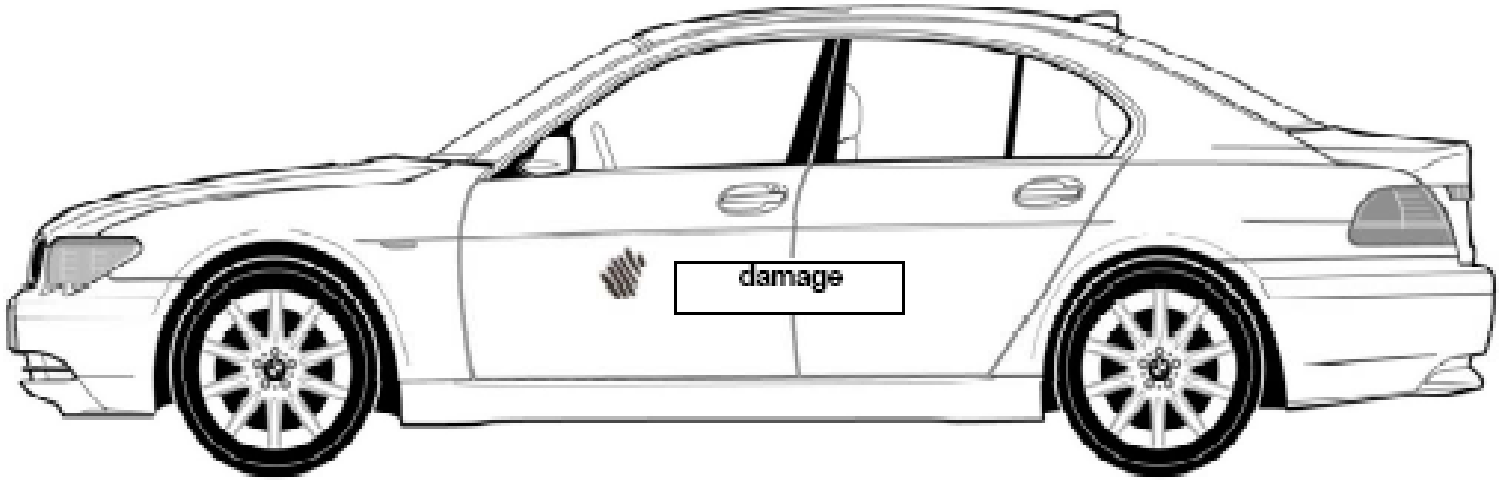

HVLP, 1.3 mm
Pressure: 0.7 bar/10 p.s.i. at the nozzle
(see page 3.7/1)

Flash off until matt (SATA DryJet)

# Refinish within guideline

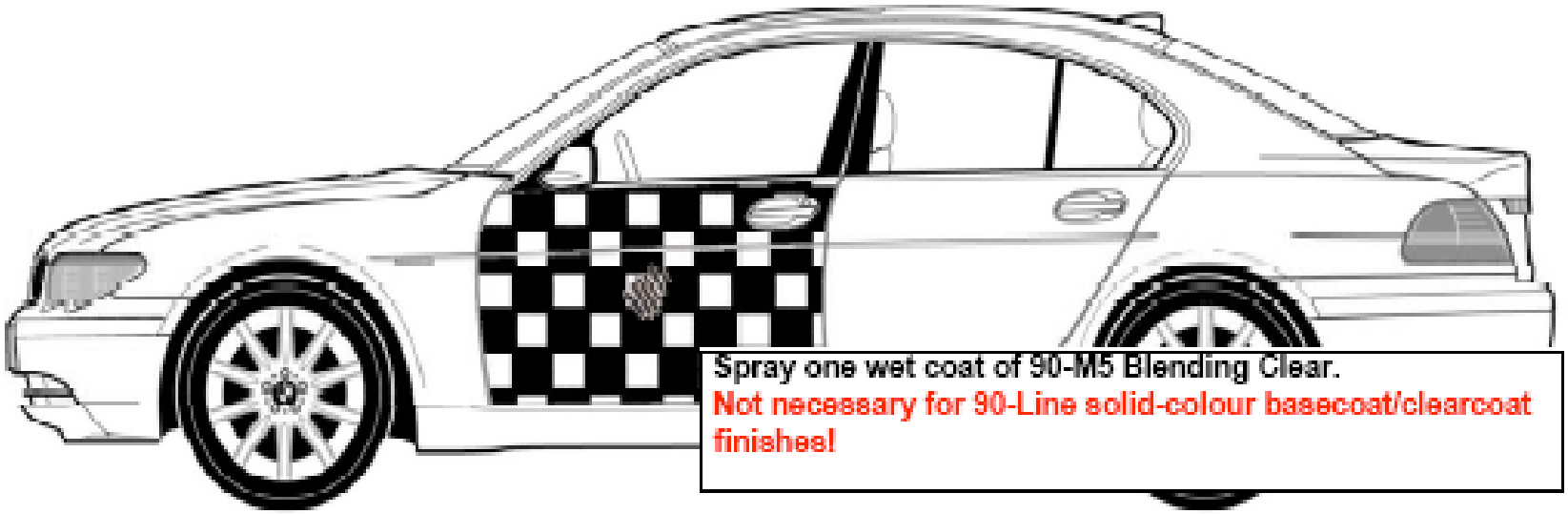
**General:**

In principle, panel repairs with 90-Line are possible. When colour differences beyond allowable limits are to be expected, and when the areas to be refinished are not limited by trim strips or edges, it may be more advantageous to even out colour differences by blending in on adjacent panels. This procedure can be considerably more efficient and economical than time-consuming colour matching.




Pre-treatment: see Chap. 3, page 3.2/1
Paint system: see Chap. 4, page 4.5/1

# Refinish within guideline

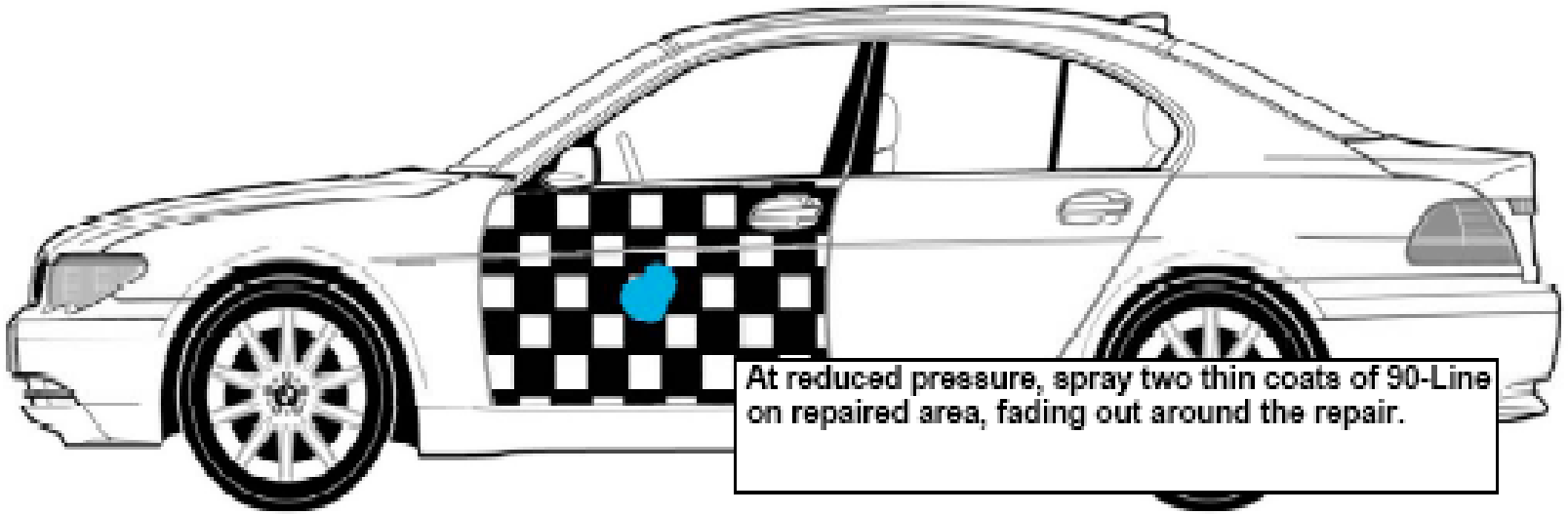


Spray one wet coat of 90-M5 Blending Clear.
Not necessary for 90-Line solid-colour basecoat/clearcoat finishes!

HVLP, 1.3 mm
Pressure: 0.7 bar/10 p.s.i. at the nozzle
(see page 3.7/1)

1 wet spraycoat, no flash-off!

# Refinish within guideline

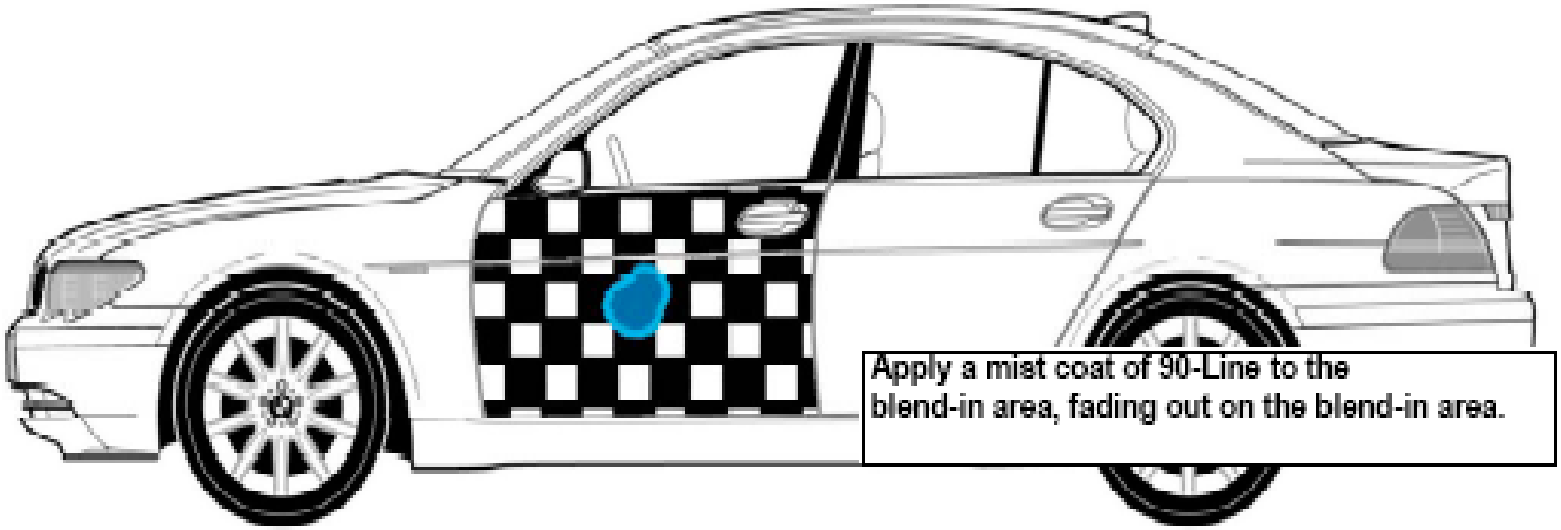



HVLP, 1.3 mm
Pressure: < 0.7 bar/10 p.s.i. at the nozzle
(see page 3.7/1)

Flash off until matt (e.g. DryJet)

2 thin spraycoats

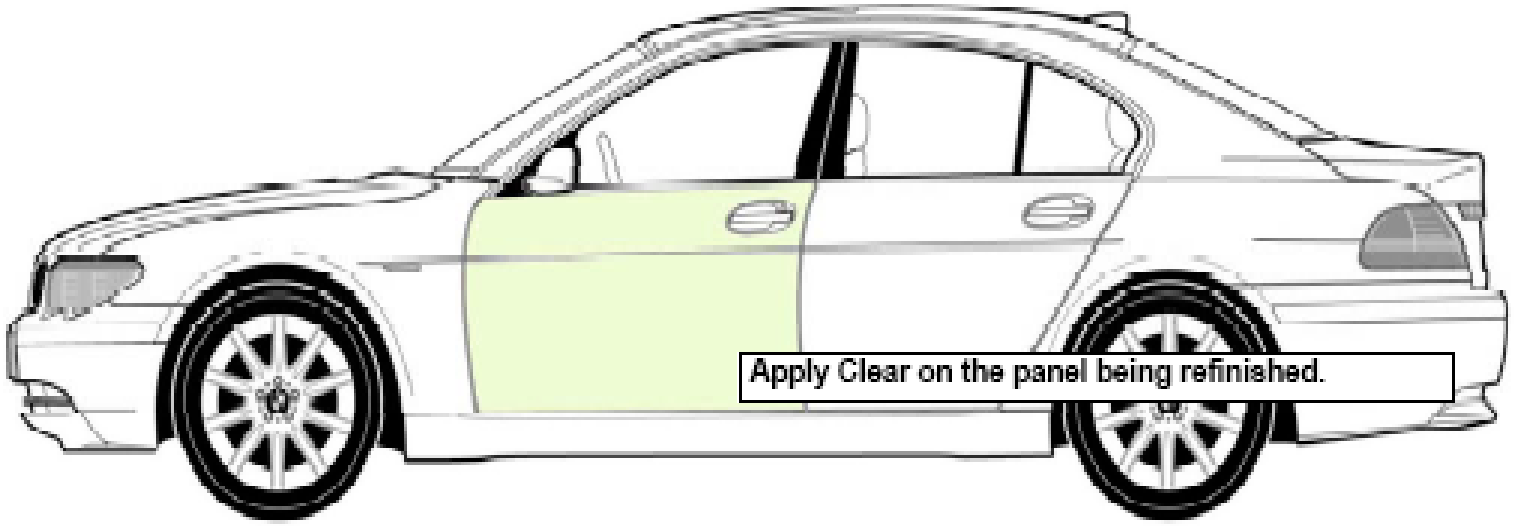
# Refinish within guideline




HVLP, 1.3 mm
Pressure: < 0.7 bar/10 p.s.i. at the nozzle
(see page 3.7/1)

Flash off until matt
(e.g. DryJet)

# Refinish within guideline

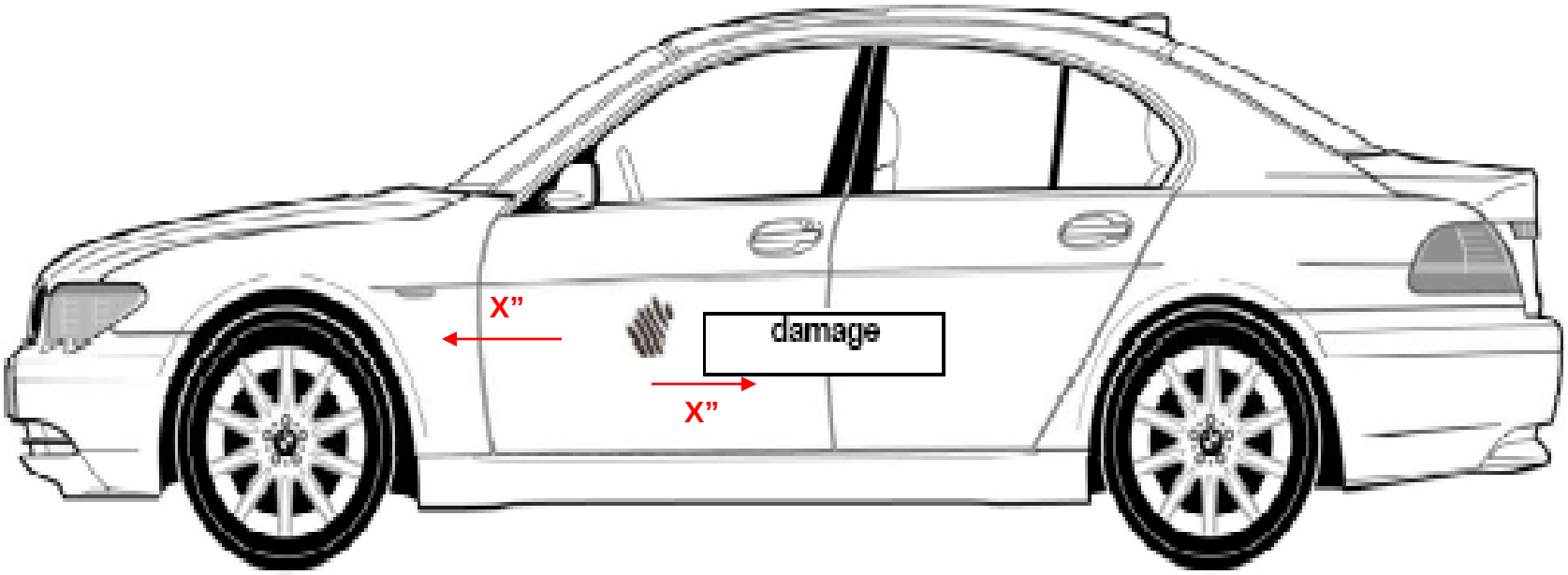



100 parts by vol. Clear
50 parts by vol. Hardener
10 parts by vol. Reducer - Normal

2 thin spraycoats

# Refinish within guideline

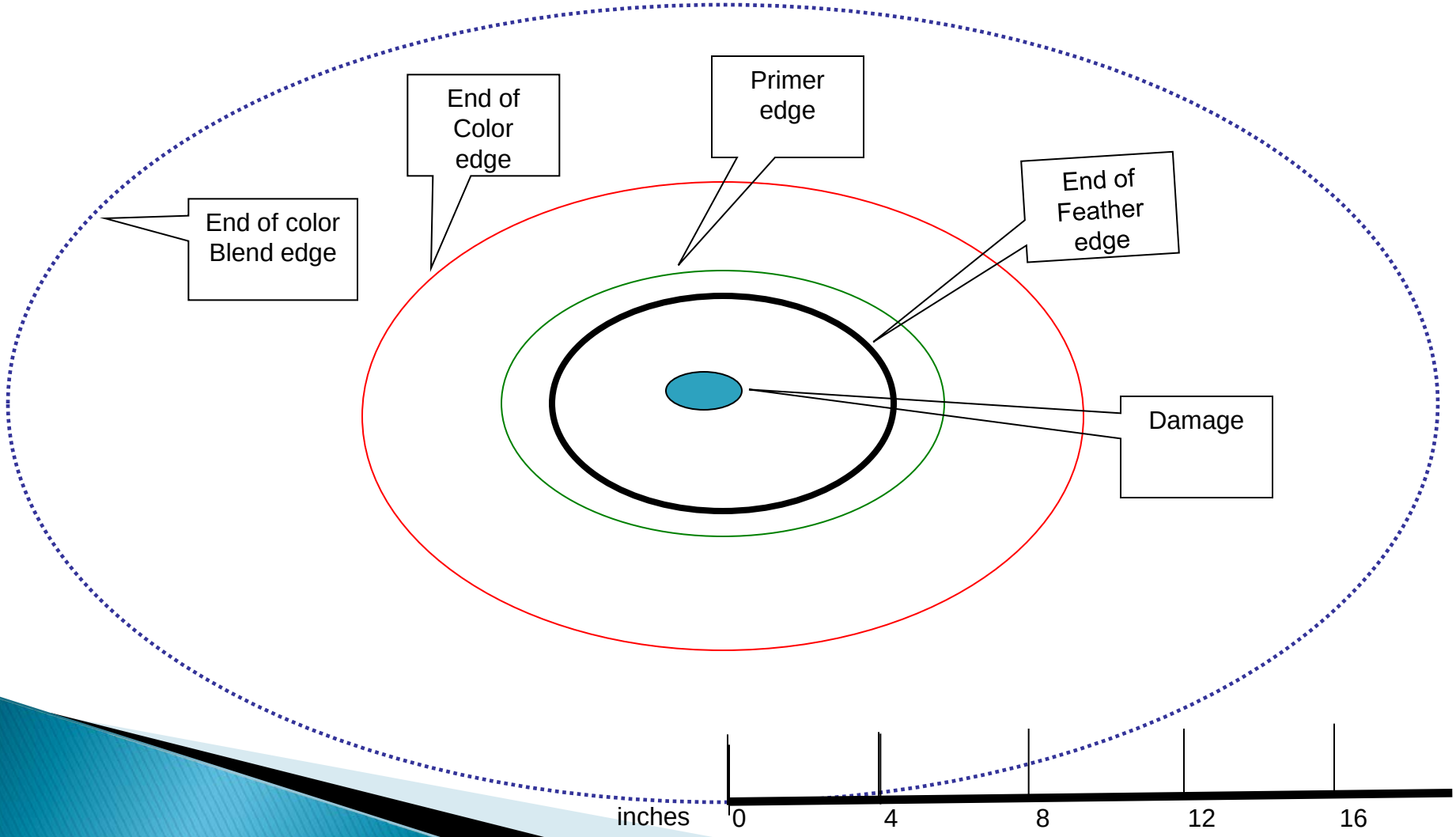
- When do you need to go into an adjacent panel?
  - Is it desirable to define what “X” should be?



# Some Variables to Consider

- Color
  - Some colors require bigger blend areas than others
- Panel location & characteristics
  - Hood vs. lower quarter panel
- Multi-layer basecoats
  - 3 stage
- Type of damage
  - Additional feather prime and block area required?
- Basecoat Hiding Power
  - Additional basecoats required
- ???

# Minimum distance requirement



BASF
The Chemical Company

# Fundamental Automobile Refinishing Concepts

Definitions for common automobile refinishing tasks.

These topics represent the experience of BASF Corporation Automotive Refinish Coatings group. They are intended to be used as a reference by collision repairers, vehicle owners, insurers and other interested parties to support a better understanding of the refinishing process.

For detailed processing instructions, please refer to the appropriate R-M or Glasurit technical manual.


Rev. November 15, 2010

# Fundamental Automobile Refinishing Concepts

1. **Blending and or Tinting for Color Match:**

   BASF recommends blending into an adjacent undamaged panel whenever the panel being repaired / replaced has color applied to the entire surface, or color is applied to the part of the panel that borders an undamaged panel.

   There is a limit to the amount of color tone variance that can be overcome by blending. When the variance is too great to successfully blend, adjusting the color by "tinting" is recommended. Tinting a color to a "panel match" can require an unpredictable amount of time and still may not produce the same undetectable repair that can be achieved by blending. For this reason, we recommend tinting a color to the point that it can be successfully blended.

2. **Spot Repair:**

   Spot repair on a basecoat/clearcoat finish is defined as applying color only to the damaged area and then blending the repair paint into the original so that no transition can be detected. The clearcoat is then applied to the entire panel. The goal is to keep the actual repair as small as possible to avoid having color directly next to an undamaged panel(s). This will minimize color mismatch.

# Fundamental Automobile Refinishing Concepts

3. Clearcoat Blending:

BASF recommends applying the specified amount of clear to the entire panel when doing Basecoat/Clearcoat repairs. This will make the repair eligible for the Glasurit or R-M lifetime warranty.

Because there are situations when clearcoating an entire panel is not possible, when a roof and a quarter panel have no break-off point for example, BASF has developed processes and products for blending clearcoats. These processes and products can be found in the Glasurit and R-M technical manuals.

Blending the clearcoat requires that the thickness of clear be reduced in the blend area. This can result in the clearcoat blend edge becoming visible after a period of exposure to sunlight and weather. The blend edge can also become visible if it is polished too aggressively.

For these reasons, BASF will not warrant the blended edges of clearcoats. Blending procedures recommended by BASF are intended as a cost saving measure in those instances where an economical repair is required.

4. Flexible / non metal parts:

BASF recommends using separate and distinct products and processes when refinishing flexible or non-metal parts. Beginning at the preparation stage, the process is considerably different between metal parts and flexible parts. Flexible parts require a more thorough cleaning than metal parts using products specially designed for this purpose. Sanding requirements are different for non-metal substrates. Because many flexible substrates can deform at relatively low temperatures, force dry temperatures can be different than metal parts. Because of this, it is usually better to paint flexible parts separately from metal ones.

In addition to matching the color, gloss and texture of the original finish, flexible parts must also be able to deform when "bumped" and resist chipping and cracking. This requires special adhesion promoters for bare substrates and flexible additives combined with primers and clearcoats. These products and processes are detailed in our technical application manuals. These processes must be followed in order to achieve the same level of performance as the original equipment finish.

While it is technically possible to use primers and clearcoats mixed with flexible additives on a metal part, BASF does not recommend this procedure. Doing this would unnecessarily increase the cost of paint materials used. Also, since "flexed" products typically require longer flash off times, total paint processing time will increase resulting in reduced paint shop productivity

# Fundamental Automobile Refinishing Concepts

5. **Molding / Trim Removal**
   Removing moldings will improve the appearance of a repair and ensure it is undetectable. In order to obtain proper adhesion, existing paintwork must be thoroughly cleaned and sanded before applying repair paint. This can be difficult or even impossible if the moldings are not removed. Also, painting right up to a molding can leave a paint edge that is visible after the repair is completed. Moldings should be removed whenever possible to insure the repair looks and performs the same as the original finish.

6. **Underhood Repair Process:**
   BASF recommends applying catalyzed solvent borne basecoat without clearcoat to underhood and other interior areas that originally were not finished in the exterior BC/CC system. This system produces the same color tone, gloss and physical performance characteristics as the OEM finish.
   When using waterborne basecoats, the color is mixed with a tinted transparent catalyzed sealer to achieve the desired finish characteristics.

7. **Single Stage Finishes:**
   BASF offers single stage finishes that are matched to OEM BC/CC finishes. These finishes can be used as an economical alternative for the repair of older vehicles. They will not however, offer the same level of durability as a BC/CC finish.

8. **Polishing and Color Sanding:**

   BASF recommends polishing, sanding and or de-nibing to remove dirt inclusions from refinished automotive panels. Sanding finishes to match the texture of existing paintwork is also recommended as long as the minimum amount of clearcoat thickness is maintained.

   While refinishing automotive panels with zero dirt inclusions is possible in theory, it rarely happens in actual practice. Following best practices for cleanliness in paint processing areas, and equipment maintenance can minimize this problem and should never be disregarded, but in the overwhelming majority of repairs, some dirt is inevitable.

   Detailed guidelines for polishing clearcoats and topcoats can be found in the R-M or Glasurit technical data sheets and technical reference manuals. These documents can also be found online at BASFrefinsh.com

BASF
The Chemical Company

# Fundamental Automobile Refinishing Concepts

9. **Tintable Primers and Sealers:**

   BASF basecoats are designed to achieve full hiding in 2 to 3 coats. In a small percentage of colors, achieving full hiding can require additional coats. In these cases a tintable primer or sealer can be used to reduce the number of coats required to reach full hiding.

10. **Glass Adhesion to Repaired Areas:**
    In order to insure the proper adhesion of glass to repaired areas, BASF recommends masking off the area where the glass bonding material will be applied so that no repair paint is applied over that surface. In the event a repair is required in this bond area, it should be properly repaired and any bare metal primed with epoxy primer only. No other coatings should be applied over the epoxy primer.

11. **Masking:**
    To prevent overspray settling on undamaged parts of the vehicle, the entire vehicle should be covered during priming and painting operations. To minimize dirt in the final finish, all masking materials used in the priming operation should be removed and replaced with clean material prior to final paint application.

BASF
The Chemical Company

# Refinish Process Guidelines

The following statements represent the position of the BASF NAFTA Automotive Refinish group regarding common repair questions. They describe the best practices for each topic based on our experience. For more processing details, please check the appropriate technical manual.

1. **Blending for Color Match:**

   BASF recommends blending into an adjacent undamaged panel whenever the panel being repaired has color applied to the entire surface, or color is applied to the part of the panel that borders an undamaged panel.
   In certain cases, such as when only a fascia is replaced, it may be more efficient and less time consuming to tint the color to match. Tinting a color to match can at times require an unpredictable amount of time and still not produce a "perfect" color match. For this reason, blending into an adjacent panel is typically the preferred method.

2. **Spot Repair:**

   Spot repair on a basecoat/clearcoat finish is defined as applying color only to the damaged area and then blending the repair paint into the original so that no transition can be detected. The clearcoat is then applied to the entire panel. The goal is to keep the actual repair as small as possible to avoid having color directly next to an undamaged panel(s). This will minimize color mismatch.

BASF
The Chemical Company

## Refinish Process Guidelines

3. **Clearcoat Blending:**

BASF recommends applying the specified amount of clear to the entire panel when doing Basecoat/Clearcoat repairs. This will make the repair eligible for the Glasurit or R-M lifetime warranty.

Because there are situations when clearcoating an entire panel is not possible, when a roof and a quarter panel have no break-off point for example, BASF has developed processes and products for blending clearcoats. These processes and products can be found in the Glasurit and R-M technical manuals.

Blending the clearcoat requires that the thickness of clear be reduced in the blend area. This can result in the clearcoat blend edge becoming visible after a period of exposure to sunlight and weather. The blend edge can also become visible if it is polished too aggressively.

For these reasons, BASF will not warrant the blended edges of clearcoats. Blending procedures recommended by BASF are intended as a cost saving measure in those instances where an economical repair is required.

4. **Molding / Trim Removal**

Removing moldings will improve the appearance of a repair and ensure it is undetectable. In order to obtain proper adhesion, existing paintwork must be thoroughly cleaned and sanded before applying repair paint. This can be difficult or even impossible if the moldings are not removed. Also, painting right up to a molding can leave a paint edge that is visible after the repair is completed. Moldings should be removed whenever possible to insure the repair looks and performs the same as the original finish.

5. **Underhood Repair Process:**

BASF recommends applying catalyzed basecoat without clearcoat to underhood and other interior areas that originally were not finished in the exterior BC/CC system. This system produces the correct color tone, gloss and physical performance characteristics as the OEM finish.

BASF
The Chemical Company

## Refinish Process Guidelines

6. **Single Stage Finishes:**

   BASF offers single stage finishes that are matched to OEM BC/CC finishes. These finishes can be used as an economical alternative for the repair of older vehicles. They will not however, offer the same level of durability as a BC/CC finish.

7. **Polishing and Color Sanding:**

   BASF systems do not need to be color sanded and polished to duplicate the gloss or texture of the OEM finish. Polishing is recommended however, to remove dirt inclusions or to correct other defects.

8. **Tintable Primers and Sealers:**

   BASF basecoats are designed to achieve full hiding in 2 to 3 coats. In a small percentage of colors, achieving full hiding can require additional coats. In these cases a tintable primer or sealer can be used to reduce the number of coats required to reach full hiding.

9. **Glass Adhesion to Repaired Areas:**

   In order to insure the proper adhesion of glass to repaired areas, BASF recommends masking off the area where the glass bonding material will be applied so that no repair paint is applied over that surface. In the event a repair is required in this bond area, it should be properly repaired and any bare metal primed with epoxy primer only. No other coatings should be applied over the epoxy primer.

10. **Masking:**

    To prevent overspray settling on undamaged parts of the vehicle, the entire vehicle should be covered during priming and painting operations. To minimize dirt in the final finish, all masking materials used in the priming operation should be removed and replaced with clean material prior to final paint application.

BASF
The Chemical Company

# Sherwin Williams

# BLEND AREA REFINISHING

**Step 1** Clean blend areas with R7K158 or SC155 Surface Cleaner.

**Step 2** Prepare the blend area using one of the following processes:

- Scuff sand using a gray or gold nylon scuff pad along with USP90 Liquid Scuffing Gel
- Sand the blend areas with P800 grit sandpaper. Thoroughly scuff unsanded areas with a gray nylon scuff pad.
- Sand the blend areas with a DA using a Blending Disc and an interface pad.

**Step 3** Thoroughly rinse off any sanding residue or scuffing gel with clean water and completely dry the surface.

**Step 4** Re-clean the surface with R7K158 or SC155 Surface Cleaner.

**Step 5** Apply 1 medium wet coat of 2K S65 Basecoat Transparent / Adhesion Promoter. It is highly recommended that the S65 is used on high metallic / mica containing colors.

SHERWIN-WILLIAMS
Automotive Finishes

March 30, 2007

TO: All Sherwin-Williams Automotive Sales Representatives
All Sherwin-Williams Automotive Sales Managers

SUBJECT: **Panel Painting vs. Blending**

To ensure a customer-pleasing repair, blending has become a widely accepted practice in the collision repair industry. When performing any type of collision repair, many negative results may occur when blending is removed as an option.

- **Increased cycle time based on added color match labor**
- **Decreased customer satisfaction based on poor color match results**
- **Increased costs based on re-repair to achieve acceptable color match**

Blending continues to be a proven part of every color match scenario. The industry standard for color match continues to be "Blendable Match." By definition that means if a color is close enough to blend and achieve a customer-pleasing, acceptable color match, it meets the standard.

Blending is an important part of any quality spot repair for the following reasons:

- OEM vehicle manufacturers are utilizing new toners every year. It would be economically impossible to incorporate all these toners on a mixing system in a bodyshop
- Cars regularly "drift from standard" due to variations between batches of factory finishes.
- Different parts of the vehicle are painted at different times by different vendors resulting in variations from piece-to-piece. Bumper covers are an excellent example of this.
- Application factors such as airflow, temperature, humidity, spray equipment and painter technique can cause colors to vary substantially. A perfect color, as judged on a test panel, may vary when sprayed on a quarter panel.
- Different light sources can cause different pigments to react differently. This concept is referred to as metamerism and can be very problematic when attempting a panel match.

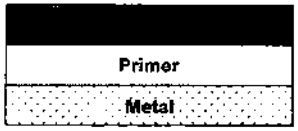
On the rare occasion when the Blendable Match standard is not met because of variations in the OEM finish, some tinting may be necessary. Many companies, including Sherwin-Williams, utilize a "tint-to-blend" philosophy when it comes to color matching. That simply means that during the tinting process the goal is NOT to achieve a perfect panel match. The goal is to tint the color close enough so it becomes a blendable match. This promotes increased productivity, decreased cycle time and increased customer satisfaction.

Attempting to achieve a perfect, customer pleasing color match by panel painting is almost always a mistake, potentially costing time, money and customer goodwill.

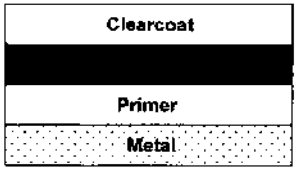
# Three Stage Finishes

SHERWIN WILLIAMS. Automotive Finishes

Let's look at the three types of paint finishes available. First, there is single stage. This is a one step paint procedure which applies color, protection and durability in one application. These colors can be either solid or metallic. Solid colors use only colored pigments to make up its color, while metallics incorporate aluminum flakes. These particles vary in size and polish and reflect light to produce a unique color effect from the side. This tone cannot be produced in solid colors.




Then there is two stage, or more commonly called Basecoat/ Clearcoat. This is a two step paint procedure. The color is achieved from a highly pigmented basecoat, followed by a clearcoat for gloss and durability. These colors may be solid or metallic. The sparkle and color effects in this finish may be made from metallic and/or mica. When mica is used, the color takes on a unique appearance because of the way it reacts to light




Notes

SHERWIN-WILLIAMS
Automotive Finishes

**Craig Williams**
Director of Marketing - VR, Global OEM & Services

March 29, 2011

TO: SCRS (Society of Collision Repair Specialists)

The question has come up regarding our position on the necessity of blending basecoat to achieve an acceptable color match.

This necessity to blend is driven by the increasingly complex color palette being used by the auto manufacturers and an increased awareness on the consumer level of color match issues. The process of blending the basecoat to achieve a consistently customer-pleasing color match is nearly always necessary. Even colors like solid black exhibit such large variations from the OEM's that blending the adjacent panel is often necessary to assure complete customer satisfaction.

During our color adjustment classes we encourage our customers to utilize all the tools available to achieve the very best color alternative. Even then, our recommendation is to blend to achieve the most cost efficient, customer pleasing repair.

Although most colors are deemed "blendable match", there are colors that may require tinting. When tinting is indicated, our recommendation is to "tint to a blendable match". That means that in some situations, the fastest, easiest way to achieve an acceptable match might be to tint and then blend into an adjacent panel.

Sincerely,

Craig Williams
Director of Marketing - VR, Global OEM & Services

SHERWIN-WILLIAMS.
Automotive Finishes

March 30, 2007

TO: All Sherwin-Williams Automotive Sales Representatives
All Sherwin-Williams Automotive Sales Managers

SUBJECT: **Panel Painting vs. Blending**

To ensure a customer-pleasing repair, blending has become a widely accepted practice in the collision repair industry. When performing any type of collision repair, many negative results may occur when blending is removed as an option.

- **Increased cycle time based on added color match labor**
- **Decreased customer satisfaction based on poor color match results**
- **Increased costs based on re-repair to achieve acceptable color match**

Blending continues to be a proven part of every color match scenario. The industry standard for color match continues to be "Blendable Match." By definition that means if a color is close enough to blend and achieve a customer-pleasing, acceptable color match, it meets the standard.

Blending is an important part of any quality spot repair for the following reasons:

- **OEM vehicle manufacturers are utilizing new toners every year. It would be economically impossible to incorporate all these toners on a mixing system in a bodyshop**
- **Cars regularly "drift from standard" due to variations between batches of factory finishes.**
- **Different parts of the vehicle are painted at different times by different vendors resulting in variations from piece-to-piece. Bumper covers are an excellent example of this.**
- **Application factors such as airflow, temperature, humidity, spray equipment and painter technique can cause colors to vary substantially. A perfect color, as judged on a test panel, may vary when sprayed on a quarter panel.**
- **Different light sources can cause different pigments to react differently. This concept is referred to as metamerism and can be very problematic when attempting a panel match.**

On the rare occasion when the Blendable Match standard is not met because of variations in the OEM finish, some tinting may be necessary. Many companies, including Sherwin-Williams, utilize a "tint-to-blend" philosophy when it comes to color matching. That simply means that during the tinting process the goal is NOT to achieve a perfect panel match. The goal is to tint the color close enough so it becomes a blendable match. This promotes increased productivity, decreased cycle time and increased customer satisfaction.

Attempting to achieve a perfect, customer pleasing color match by panel painting is almost always a mistake, potentially costing time, money and customer goodwill.

**Sherwin-Williams Automotive Finishes Corp., 4440 Warrensville Center Road, Warrensville Heights, OH 44128-2637**

SHERWIN-WILLIAMS®
Automotive Finishes

April 20, 2007

ASA Refinish Subcommittee,

Please find attached a study we did at the Sherwin-Williams Dallas Automotive Training Center.

We have been hearing a lot of feedback from our customers regarding reduced refinish times on repaired "Blend Within Panel" or "Partial Refinish" panels.

This study was designed to discover the true time involved in those types of repairs. If you have any questions regarding the study please feel free to contact me via my e-mail at:

michael.d.pellett@sherwin.com.

Regards,

Michael Pellett
Training Center Manager
Dallas Automotive Training

SHERWIN-WILLIAMS.
Automotive Finishes

March 30, 2007

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All Sherwin-Williams Automotive Sales Managers

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- **Decreased customer satisfaction based on poor color match results**
- **Increased costs based on re-repair to achieve acceptable color match**

Blending continues to be a proven part of every color match scenario. The industry standard for color match continues to be "Blendable Match." By definition that means if a color is close enough to blend and achieve a customer-pleasing, acceptable color match, it meets the standard.

Blending is an important part of any quality spot repair for the following reasons:

- **OEM vehicle manufacturers are utilizing new toners every year. It would be economically impossible to incorporate all these toners on a mixing system in a bodyshop**
- **Cars regularly "drift from standard" due to variations between batches of factory finishes.**
- **Different parts of the vehicle are painted at different times by different vendors resulting in variations from piece-to-piece. Bumper covers are an excellent example of this.**
- **Application factors such as airflow, temperature, humidity, spray equipment and painter technique can cause colors to vary substantially. A perfect color, as judged on a test panel, may vary when sprayed on a quarter panel.**
- **Different light sources can cause different pigments to react differently. This concept is referred to as metamerism and can be very problematic when attempting a panel match.**

On the rare occasion when the Blendable Match standard is not met because of variations in the OEM finish, some tinting may be necessary. Many companies, including Sherwin-Williams, utilize a "tint-to-blend" philosophy when it comes to color matching. That simply means that during the tinting process the goal is NOT to achieve a perfect panel match. The goal is to tint the color close enough so it becomes a blendable match. This promotes increased productivity, decreased cycle time and increased customer satisfaction.

Attempting to achieve a perfect, customer pleasing color match by panel painting is almost always a mistake, potentially costing time, money and customer goodwill.

SHERWIN-WILLIAMS®
Automotive Finishes

April 20, 2007

ASA Refinish Subcommittee,

Please find attached a study we did at the Sherwin-Williams Dallas Automotive Training Center.

We have been hearing a lot of feedback from our customers regarding reduced refinish times on repaired "Blend Within Panel" or "Partial Refinish" panels.

This study was designed to discover the true time involved in those types of repairs. If you have any questions regarding the study please feel free to contact me via my e-mail at:

michael.d.pellett@sherwin.com.

Regards,

Michael Pellett
Training Center Manager
Dallas Automotive Training

# Blend Within Panel Analysis

## Analysis Premise:

To determine how the time necessary to perform a typical "Blend Within Panel" repair compares to other methods of refinishing the same panel.

The analysis was divided into five categories of repairs:

1) New Panel
2) Used Panel
3) Adjacent Blend Panel
4) Repaired Panel – Full Refinish
5) Repaired Panel – Blend Within Panel

(Refer to attached photos for examples of each type of repair.)

The definition of each type of category is listed below:

1) New Panel – New, undamaged part with factory e-coat primer. Assumes insoluble primer, no major imperfections in primer or damage to panel. Does not include bare, unprimed parts (like bumper covers) or panels coated with soluble primers.

2) Used Panel – LKQ part in good condition. Assumes no damage, excessive paint film thickness or previous repairs. Does not include R&I or disassembly of attached parts.

3) Adjacent Blend Panel – “Undamaged” adjacent panel. Assumes no damage, refinishing for color match only.

4) Repaired Panel – Full Refinish – A damaged panel that will require all or most of the panel to be refinished. Blending of adjacent panels may be necessary for color match.

Repaired panels will usually require some or all of the following additional operations:

- Grinding/Sanding to bare metal to expose repair area
- Bodyfiller
- Featheredging
- Corrosion Primer to replace factory e-coat
- Primer-Surfacer
- Block Sanding

5) Repaired Panel – Blend Within Panel – A damaged panel that will not require the blending of adjacent panels for color match due to the size and/or location of the repair area.

Repaired panels will usually require some or all of the following additional operations:

- Grinding/Sanding to bare metal to expose repair area
- Bodyfiller
- Featheredging
- Corrosion Primer to replace factory e-coat
- Primer-Surfacer
- Block Sanding

## Results:

The time to refinish each type of repair varied based on the operations required.

Items that times remained constant or near constant were:

- Time to look up color
- Time to mix color
- Time to confirm color match
- Time to mask repair area
- Time to pre-clean refinish area prior to paint
- Actual application time for sealer or adhesion promoter
- Actual application time of basecoat color
    - Adjacent blend panel refinish (#3) was less
- Actual application time of clearcoat

Items that varied based on type of repair were:

- Time to raise condition of repair area to new part condition
    - Repaired Panel – Full Refinish (#4)
    - Repaired Panel – Blend Within Panel (#5)
        - Featheredging repair area
        - Apply corrosion primer
        - Drytime for corrosion primer
        - Apply primer-surfacer
        - Drytime for primer-surfacer
        - Guidecoating repair area
        - Blocksanding repair area

## Analysis Summary

While the time to refinish all five scenarios varied, the largest variations occurred on the "repaired" panels (#4 & #5). This was caused by the gap between preparation steps needed to raise the condition of the repaired area to that of the undamaged new, used, or undamaged adjacent blend panel. Those labor and material items would normally be reimbursed under the "Feather, Fill & Block" line item. They are covered by neither the body labor reimbursement, nor the new part refinish times.

In reference to the perceived difference in refinish times between "Blend Within Panel" repairs (#5) and "Full Panel" repairs (#4), we found virtually no difference in the total repair time needed to accomplish the refinish operations.

In terms of the amount of material necessary, although it makes logical sense that less basecoat material would be needed for the blend within repair, our analysis found that the majority of the basecoat material was used to provide complete visual coverage over the repaired area (primer). Any additional material necessary to paint the rest of the fender was minimal because complete coverage was not necessary over the original factory finish. While the amount of basecoat actually used does vary based on the repair area size (primer size), the labor necessary to apply the basecoat did not vary substantially.

One additional advantage of the "Blend Within Panel" process was the elimination of blending adjacent panels for color match.

The biggest misconception uncovered by this testing was the time necessary to refinish a “Repair Panel – Blend Within Panel” type repair was lower than a full refinish type repair. The assumption was that since only part of the panel was being refinished, less time was required. In actuality, we found the time to refinish either type of repaired panel was substantially longer than either a new panel or a used panel. Even disallowing for the featheredging, corrosion restoration, priming and blocking operations, the actual refinish time was equal to or more than all the other scenarios.

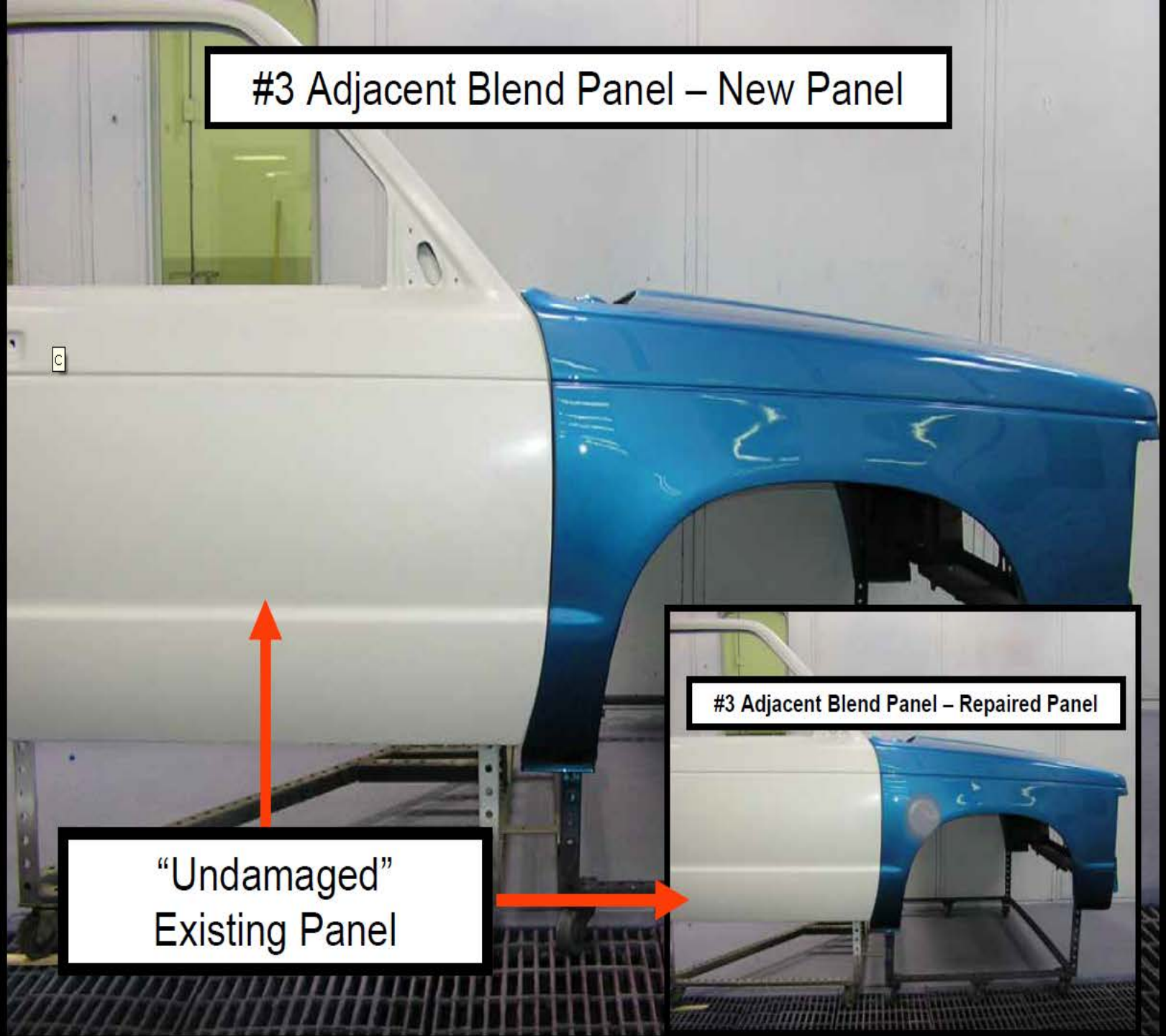
The explanation is quite simple. The majority of the time involved in all scenarios involves common operations that do NOT change based on what type of repair is being done. The actual basecoat application time is very standard for all repairs. The only variations occurred in the adjacent blend panel (a slightly lower application time) and when blending is required on a repaired panel (a slightly longer application time). The longer time is attributed to the additional care that must be taken during application to assure an invisible blend.

In terms of material used, we found that the Repair Panel – Blend Within Panel required nearly as much total material cost to complete, based on additional blending materials, as the complete panel refinish. Only the new and used fenders required more material, and that was for the jambs. This additional material would normally be compensated for by the addition of a line item “Refinish jambs”.

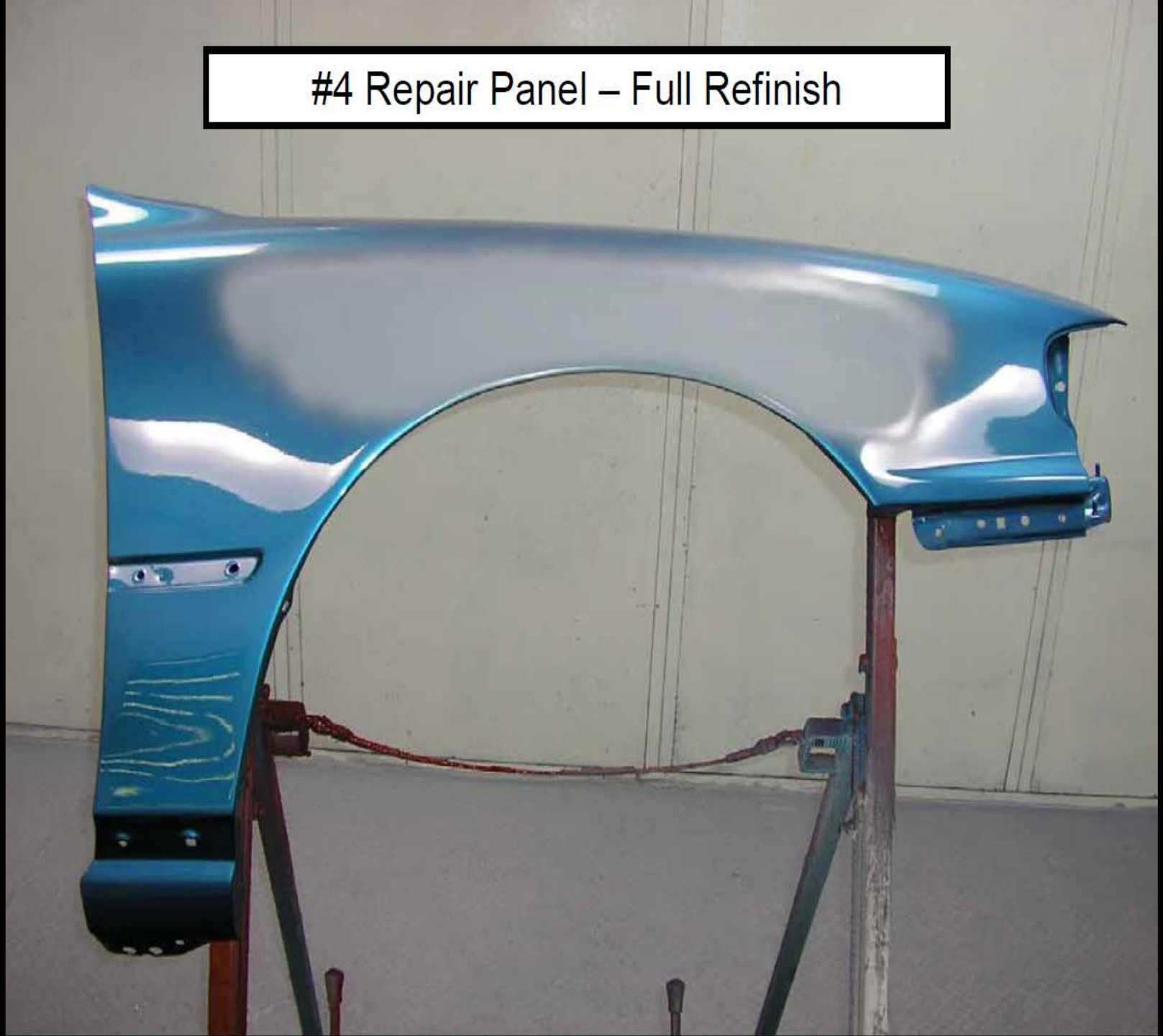
Since not every possible repair situation can be considered in an analysis like this, it’s important to consider each repair on a case-by-case basis to ensure the best possible repair procedure. “Blend Within Panel” repairs can only be accomplished when sufficient room is available to adequately blend the color. Every panel will need to be evaluated based on color, location, size and customer expectations.

# #1 New Panel


#2 Used (LKQ) Panel


#3 Adjacent Blend Panel – New Panel
#3 Adjacent Blend Panel – Repaired Panel
"Undamaged"
Existing Panel

# #4 Repair Panel – Full Refinish



# #5 Repair Panel – Blend Within Panel

This type of repair assumes that there is sufficient room to adequately blend color considering the location of the repair area in relation to items like hood, bumper cover, door or other painted items.

# PPG

PPG Industries
19699 Progress Dr.
Strongsville, OH 44149
440-572-2800

PPG Industries

Date: March10, 2011

Aaron Schulenburg
SCRS Executive Director

Re: Tinting and Blending Recommendations

Dear Aaron,

Here are the answers to the questions in the letter you sent to PPG Refinish regarding tinting and blending recommendations.

1. Is blending the basecoat recommended by your company to achieve proper color match between panels?

*Answer - Yes.*

2. Is tinting the basecoat material a recommended procedure to achieve a proper color match to the vehicle's existing refinish?

*Answer - In some cases yes. Less often with the waterborne basecoats. With the solvent based basecoats tinting may be necessary a little more often.*

3. Are procedures such as tinting and blending commonly performed in conjunction with each other, or are they redundant processes?

*Answer -Yes, they are used in conjunction with each other. Always plan to blend. Tint when necessary. Sometimes the color blending is contained within a panel and sometimes onto an adjacent panel.*

4. Does your company recommend performing one, or both, of these processes to achieve a proper color match on the repaired vehicle?

*Answer - Always plan to blend the basecoat. Even if a sprayout shows a very close match, environmental factors such as air temperature, humidity, spray equipment and even the location and visibility of the repair almost always requires a blend to be considered an "invisible" repair.*

*Tinting may be necessary when there are variations in the OEM color from the factory and the recommended variant color is still not quite there.*

*In summary, blending the color can be done independently of tinting but is always recommended. Tinting the color may not always be necessary but is always done in conjunction with blending. The decision whether to tint is made by the experienced and trained professional technician.*

*So the options are "blend only" or "tint and blend".*

Sincerely,

Bob Burgess

Robert Burgess
Director of Refinish Training and Sales Development
PPG Industries

PPG Industries
19699 Progress Drive
Strongsville, Ohio 44149
Telephone (440) 572-2800

**PPG Industries**

June 15, 2010

Paul Duncan
Duncan's Collision
5801 Southern Blvd.
Boardman, Ohio 44512

Dear Mr. Duncan,

The following information describes PPG's recommendation for the proper distance needed for blending a repair area.

As a general guideline, PPG recommends that the technician mentally divide the panel being worked on into thirds (both by length and height). If the color repair extends into more than two of the thirds then the blend should continue into the adjacent panel. The objective is to maintain the original color on a third of the panel. If the repair area is in the third of the panel that is adjacent to another then it will be necessary to blend into the adjacent panel. Exceptions to this guideline can be made based on the size of the panel or the difficulty of the color to blend. The entire panel or panels should be clearcoated to ensure maximum durability of the repair.

The recommendation is the same for light and dark metallic, solid colors, solvent and waterborne products.

If you need additional information please don't hesitate to contact me.

Regards,

William Troyer
Manager, Training

**PPG Industries**

PPG Industries
19699 Progress Drive
Strongsville, OH 44149
USA
Telephone 440-572-6784

**Bill Troyer**
Manager, Training

Roy Schnepper
Butler's Collision Inc.
17878 13 Mile Road
Roseville, MI 48066

April 27, 2007

To: Roy Schnepper
Subject: Spot/blend within panel

Recently you requested our assistance regarding the estimating practice of reducing the refinish time on panels when the repair and paint/blend operation can be contained within the panel. We recognize that some of our customers have experienced difficulty reaching agreement with insurers regarding this practice. PPG understands your concern, however, it is our position that the estimate of the process time required to repair a damaged vehicle is best reserved for the judgment of the shop estimator and insurance appraiser based upon their review of the specific damage. Understandably, the negotiation of labor time is more clear-cut if both parties have reached agreement using knowledge based on available industry information relating to the repair of damaged vehicles.

PPG realizes that this issue has become a hot topic and that ASA is looking for further clarification from paint suppliers and estimating database providers on this subject. From our perspective, there is a difference in the number of process steps required to refinish a new, undamaged panel versus a repaired panel. On a new, undamaged panel, 12 steps are required in the refinish process to complete the repair. A repaired panel requires 18 steps in the refinish process to properly complete the repair. The additional steps also require more materials than what is used on the new, undamaged panel.

PPG has developed standard process documents for refinishing both new and repaired panels. These documents, outlined on the following page, provide a step-by-step overview of the necessary procedures and products that are required to properly refinish either type of panel. Originally intended for standardizing repair methods, these documents can be used to educate estimators/appraisers on the differences between the two types of repair.

To gain further clarification, our recommendation to ASA is that a time and material study be done on the two types of repair by the estimating database providers. PPG has identified the necessary steps in the process and the materials required to complete either repair. The information providers can evaluate the time required by performing a time study as they have done in the past on other procedures.

I hope that the information contained in this letter provides assistance to you in this matter. Please feel welcome to call me at 440-572-6784 if you have any questions or would like to discuss this topic further.

Sincerely,

Bill Troyer

Bill Troyer
Manager, Training

cc: Brett Candler

| Process – New Ecoat Panel | Process – Repaired Panel |
|---|---|
| 1. **Inspect part** and repair any damage. If bare metal is exposed apply etch primer (D8099) **only** to bare metal area<br>2. **Clean** with wax and grease remover D837 to remove solvent soluble contaminants followed by SX1005 Waterborne Cleaner to remove water soluble contaminants. Dry thoroughly.<br>3. **DA sand** black OEM primer with P400 grit Imperial Hookit II on painter pads (05251 & 05274). *Remove as little e-coat as possible to attain a uniformly dull finish. All edges and hard to reach areas must be scuffed with a 3M maroon Scotch-Brite pad (07521).*<br>4. **Mask vehicle as necessary** to protect vehicle from overspray<br>5. **Blow away sanding dust** while wiping with a clean cloth<br>6. **Thoroughly wash** off all traces of sanding paste with clean water<br>7. **Clean** with wax and grease remover D837 to remove solvent soluble contaminants followed by SX1005 Waterborne Cleaner to remove water soluble contaminants.<br>8. **Tack off** all panels<br>9. **Apply approved Sealer. Use G-Series Shades of Gray sealer** D8085) recommended for the basecoat color.<br>10. **Apply number of coats of basecoat** color as indicated by sprayout card<br>11. **Lightly tack off** all panels after sufficient flash time<br>12. **Apply 2 coats of clear (D8150) to prepared areas.** | 1. **Featheredge paint** – Initially DA sand the featheredge area with P320 grit Imperial Hookit II on (05251) pad, finish sanding using painter pads combo (05251 & 05274).<br>2. **Scuff sand all recessed areas and panel edges** with 3M maroon Scotch-Brite scuff pad (07521) for adhesion of primer surfacer<br>3. **Apply Self Etching primer to bare metal areas (D8099)**.<br>4. **Clean** with wax and grease remover D837 to remove solvent soluble contaminants followed by SX1005 Waterborne Cleaner to remove water soluble contaminants. Dry thoroughly.<br>5. **Mask vehicle as necessary** to protect vehicle from overspray<br>6. **Apply 2-3 coats of primer surfacer** to the repair area<br>a. **Apply surfacer just beyond edges of repair area** to minimize size<br>b. **Use reverse priming technique** by covering the largest area with the first coat and the following coats within that area<br>c. **Allow each coat to flash until uniformly dull** before applying next coat<br>d. **Allow the primer surfacer to air or force dry** according to the product sheet for that surfacer<br>7. **Apply 3M Dry Guide Coat** over primer surfacer<br>8. **Final sand the repaired area** wherein color will be applied<br>a. **Check hand block with** P320 grit Imperial Hookit II for major imperfections<br>b. **DA sand** with P400 grit Imperial Hookit II on painter pads (05251 & 05274)<br>c. **Finish DA sand with** P600 grit Imperial Hookit II with (05251 & 05274) pads<br>9. **Sand** the remainder of the panel(s)<br>a. **DA sand** with damp 3M Trizact P800 grit (02063) on painter pads (05251 & 05274)<br>b **Hand sand all edges** and areas where a DA won't fit the damp 3M Trizact P800 grit affixed to a hand pad (05292)<br>c. **Sand everywhere the clearcoat will go** - edge to edge of all panels involved<br>10. **Blow away sanding dust** while wiping with a clean cloth<br>11. **Thoroughly wash** off all traces of sanding paste with clean water<br>12. **Clean** with wax and grease remover D837 to remove solvent soluble contaminants followed by SX1005 Waterborne Cleaner to remove water soluble contaminants. Dry thoroughly.<br>13. **Tack off** all panels<br>14. **Apply approved Sealer. Use G-Series Shades of Gray sealer( D8085)** recommended for the basecoat color<br>15. **Apply number of coats of base color** as indicated by sprayout card<br>16. **Use** color blender (D895)and blending solvent (D8753) on metallic colors<br>17. **Lightly tack off all panels** after sufficient flash time<br>18. **Apply 2 coats of clear (D8150) to repaired areas** |

PPG Industries

| Materials – New Ecoat Panel | Materials – Repaired Panel |
|---|---|
| D8099 Etch Primer<br>D837 Wax and Grease Remover<br>SX1005 Waterborne Cleaner<br>D8085 Sealer<br>BC Basecoat Color<br>D8150 Clearcoat<br>3M maroon Scotch-Brite Pad (07521)<br>P400 Grit Sandpaper<br>05251 3M Hookit II Pad<br>05274 3M Hookit II Pad<br>Clean towels<br>Masking Materials<br>Tack Rag | D8099 Etch Primer<br>D837 Wax and Grease Remover<br>SX1005 Waterborne Cleaner<br>D8085 Sealer<br>BC Basecoat Color<br>D8150 Clearcoat<br>3M maroon Scotch-Brite Pad (07521)<br>P400 Grit Sandpaper<br>05251 3M Hookit II Pad<br>05274 3M Hookit II Pad<br>Clean towels<br>Masking Materials<br>Tack Rag<br>3M Dry Guide Coat<br>D8005 Primer Surfacer<br>D895 Color Blender<br>D8753 Blending Solvent<br>P320 Grit Sandpaper<br>P600 Grit Sandpaper<br>P800 Grit Sandpaper<br>Trizact P800 Grit Sandpaper<br>05292 3M Hand Sanding Pad |

# DuPont

Performance Coatings

4417 Lancaster Pike
Wilmington, DE 19805

## Color Blending

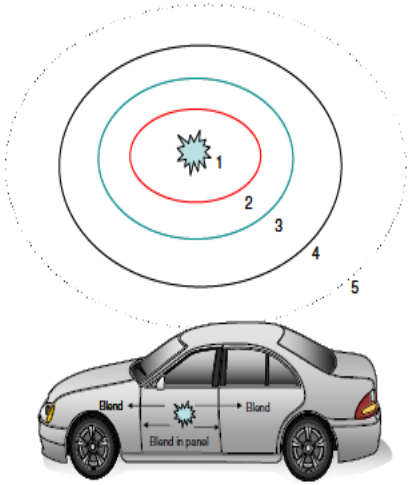
In collision repair, the practice of blending color to achieve an acceptable match is an industry standard. Blends must be extended a sufficient length beyond the repair so that an invisible color match is produced. Blending within a panel or into an adjacent panel is the paint technician's decision. The factors that influence that decision are:

- Size and location of repair
- Type of damage, replace vs repair, and size of finished bodywork
- Color - some colors will require larger blend areas or ground coats
- 3 stage colors
- Paint technology, manufactures recommendations
- Hiding properties of color coats
- Spray equipment used
- Spray environment and conditions
- Application technique
- Technician skill level

While it is acceptable to blend color for repairs, DuPont Performance Coatings does not recommend nor warrant blending clearcoats. Always consult your paint manufacturer for current technical data and/or OEM manufacturer for warranted and approved refinish processes.

### Repair process steps that determine size of blend area

1. Extent of damaged area
2. End of properly sanded feather edges
3. End of properly applied and sanded primer filler
4. Multiple basecoat color applied to hiding
5. Basecoat blend transition to existing finish to give successful color match



DuPont Refinish

DuPont Refinish Training Center
500 Eagleview Blvd.
Exton, PA 19341

April 11, 2011

Mr. Aaron Schulenburg
Executive Director
Society of Collision Repair Specialists
PO Box 346
Smyrna, DE. 19977

Aaron:

This letter is in response to your organizations request for DuPont Performance Coatings recommended procedures for blending and tinting of color during the refinishing process.

In collision repair, the practice of blending color is an industry standard. Blending is recognized and recommended as the most productive and efficient method to achieve a commercially acceptable color match. The decision to blend lies with the paint technician and the decision process is dependent upon the technician's evaluation of a number of critical factors.

- Size of the repair
- Size of the finished body work
- Type of damage – repair vs. replace
- OEM Color – solid colors vs. metallic colors – 3 stage colors
- Condition of the OEM color at the time of repair
- Styling lines of the vehicle and the plane of the adjacent panel
- Productivity – tinting to achieve a panel match vs. blending

Tinting a color is not the primary recommendation when preparing to refinish a vehicle. Tinting involves a series of color adjustments and the spraying of test panels to determine color accuracy. Tinting a color is an accepted practice when the available color formulas or alternates are not representative of the car being repaired.

Blending and tinting are most often mutually exclusive, but under certain conditions can be mutually inclusive especially when the color variance is so great that tinting in combination with blending, in the judgment of the paint technician, is the most efficient and productive procedure for insuring a quality color match and repair. When a color is tinted, blending is always recommended to produce an acceptable color match.

The paint technician must always use good judgment when establishing a strategy for the repair/refinish. DuPont Performance Coatings does recommend blending as the most productive and efficient procedure to achieve an acceptable color match and a quality repair. Under certain circumstances and conditions noted above, tinting in conjunction

DuPont Refinish Training Center
500 Eagleview Blvd.
Exton, PA 19341

with blending is an accepted and recommended practice when, in the paint technician's judgment, it is the most efficient and effective procedure to deliver a quality repair.

Aaron, thank you for your request and for your support of the collision repair industry. Please call me if you have any questions.

Sincerely,

James B Evans
National Training Manager
DuPont Performance Coatings
Office – 610-458-6323
Cellular – 610-299-4312

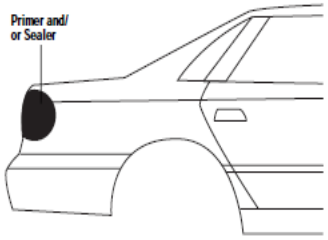
DuPont Automotive Finishes

# Clearcoat Blending Procedure

Panel repair is the approved procedure for clearcoat warranty repairs. This allows the refinisher to attain the recommended film builds. If the refinisher chooses to blend the clear, use the appropriate Reducers or Blender and follow the steps below.

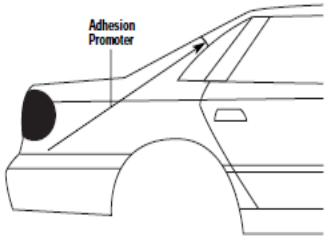
## Step 1: Prepare the Surface

- Prepare the repair area according to the Surface Prep guidelines in the General Procedures section.
- Perform repair using primer and/or sealer as necessary.



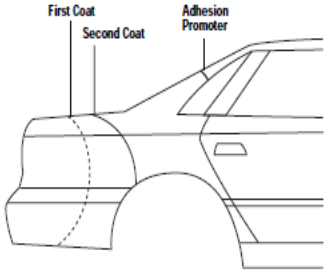

## Step 2: Apply Adhesion Promoter

- Sand area for adhesion promoter application with 1200 - 1500 grit.
- Apply adhesion promoter over the sanded area.



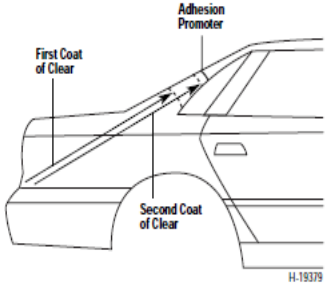

## Step 3: Apply the Basecoat

- Apply the first coat of color beyond the repair area. Apply a second coat of color, extending it beyond the first coat.
- Continue until full hiding and color match are achieved.




## Step 4: Apply the Clearcoat

- Apply the first coat of clear beyond the final basecoat.
- Blend subsequent coat(s) of clear within the edge of the adhesion promoter using the remaining clearcoat in the cup, over-reduced with ChromaSystem* Blender. (Use 1-2 parts ChromaSystem* Blender to 1 part ready-to-spray clear.)
- After the final coat of clear has been blended with the mixture of ChromaSystem* Blender and clear, further reduce the mixture and use the same gun to finish melting in the edge.

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E-R 3009 (10/02)

Performance Coatings

4417 Lancaster Pike
Wilmington, DE 19805

## Color Blending

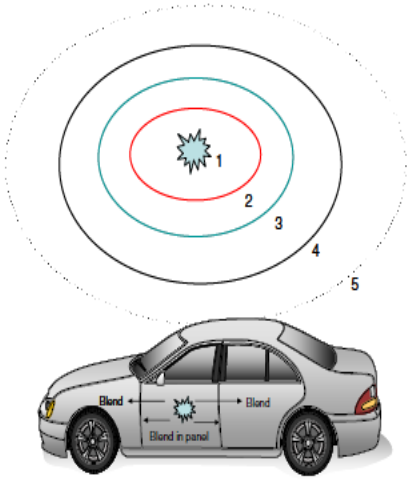
In collision repair, the practice of blending color to achieve an acceptable match is an industry standard. Blends must be extended a sufficient length beyond the repair so that an invisible color match is produced. Blending within a panel or into an adjacent panel is the paint technician's decision. The factors that influence that decision are:

- Size and location of repair
- Type of damage, replace vs repair, and size of finished bodywork
- Color - some colors will require larger blend areas or ground coats
- 3 stage colors
- Paint technology, manufactures recommendations
- Hiding properties of color coats
- Spray equipment used
- Spray environment and conditions
- Application technique
- Technician skill level

While it is acceptable to blend color for repairs, DuPont Performance Coatings does not recommend nor warrant blending clearcoats. Always consult your paint manufacturer for current technical data and/or OEM manufacturer for warranted and approved refinish processes.

### Repair process steps that determine size of blend area

1. Extent of damaged area
2. End of properly sanded feather edges
3. End of properly applied and sanded primer filler
4. Multiple basecoat color applied to hiding
5. Basecoat blend transition to existing finish to give successful color match



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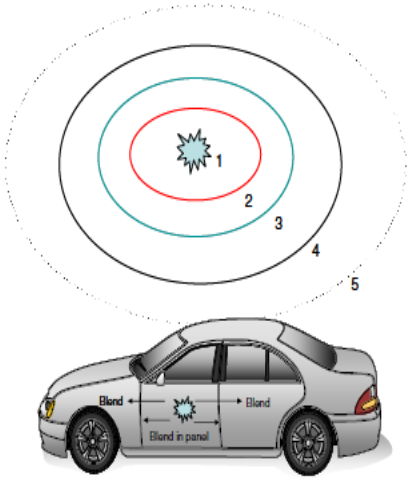

DuPont Automotive Finishes

# Clearcoat Blending Procedure

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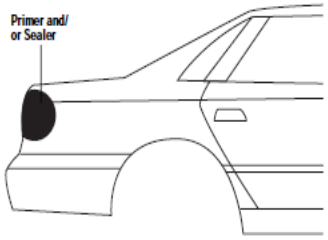
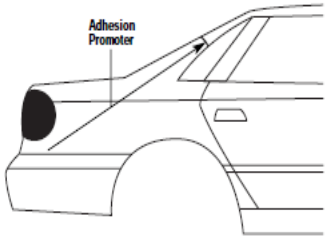
## Step 1: Prepare the Surface

- Prepare the repair area according to the Surface Prep guidelines in the General Procedures section.
- Perform repair using primer and/or sealer as necessary.



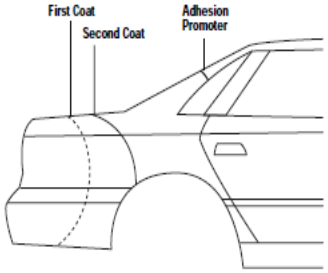

## Step 2: Apply Adhesion Promoter

- Sand area for adhesion promoter application with 1200 - 1500 grit.
- Apply adhesion promoter over the sanded area.



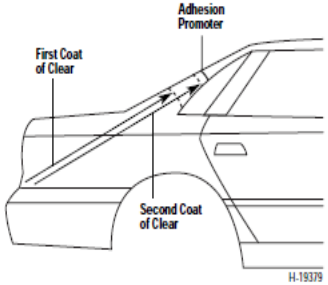

## Step 3: Apply the Basecoat

- Apply the first coat of color beyond the repair area. Apply a second coat of color, extending it beyond the first coat.
- Continue until full hiding and color match are achieved.




## Step 4: Apply the Clearcoat

- Apply the first coat of clear beyond the final basecoat.
- Blend subsequent coat(s) of clear within the edge of the adhesion promoter using the remaining clearcoat in the cup, over-reduced with ChromaSystem* Blender. (Use 1-2 parts ChromaSystem* Blender to 1 part ready-to-spray clear.)
- After the final coat of clear has been blended with the mixture of ChromaSystem* Blender and clear, further reduce the mixture and use the same gun to finish melting in the edge.




H-19379
E-R 3009 (10/02)

# Spies

02/06/02

To Whom it may concern:

Please note the Spies Hecker, Inc. position on the following subjects:

**Blending of Basecoat**

- Metallic, solid, and pearl basecoats should be blended to achieve the perception of a perfect color match. With solid colors, it is the practice of some shops to panel paint with no blending, once the color match has been verified through a sprayout. There are many things that can affect the way a color appears between the time it is mixed and the time it is applied to the vehicle. The amount of reducer added, the air pressure used to apply, as well as the application technique can all change the appearance of the color. This makes blending the best way to insure customer satisfaction.

**Blending Clearcoat**

- Blending clearcoat in the middle of a panel, such as a sail panel is common practice in body shops today. However it is our position that the only way to have the highest quality repair is to always apply clearcoat to the entire panel, meaning to the next breakpoint. For example, in the case of a quarter panel being repaired, because on most cars there is not a panel breakpoint, it would become necessary to apply clear to the entire roof and opposite quarter panel. Blending clearcoat on the sail panel will result in an area of low film thickness, which may become a weak link in the repair. The blended area may deteriorate and become obvious over time.

**Disassembly before painting**

- Molding, trim, and door handles etc., should be removed whenever possible. Leaving parts on the car can lead to finish failure due to the substrate not being thoroughly sanded close to a molding or trim, etc. Also there is the possibility that inadequate masking, or masking materials coming loose during a job, will lead to overspray getting on the trim or moldings. In some cases, when using 2K materials, this overspray cannot be cleaned off without destroying the part in question.

SPIES HECKER, INC.
47818 West Anchor Court • Plymouth, MI 48170 USA
Tel.: (888) 371-3313 • Fax: (734) 354-3540

04/01/2005

## Blending of Basecoat

Metallic, solid, and pearl basecoats should be blended to achieve the perception of a perfect color match. There are also some difficult colors that may need to be tinted prior to blending. There are many things that can affect the way a color appears between the time it is mixed and the time it is applied to the vehicle. The amount of reducer added, the air pressure used to apply, as well as the application technique can all change the appearance of the color. This makes blending the best way to insure customer satisfaction.

**Spies Hecker**
47818 West Anchor Court • Plymouth, MI 48170
Tel: 888-371-3313 • Fax: 734-354-3540

**Product Management**

**47818 West Anchor Court**
**Plymouth, MI 48170**
**Tel: (888) 371-3313**
**Fax: (734) 354-3540**

**Spot Repair and Blending Processes**

**To Whom It May Concern,**

Regarding your questions about "spot repair" and blending, we recommend the following processes.

- In order to obtain an acceptable color match, blending into an adjacent, undamaged panel is the preferred process. An acceptable panel to panel color match is sometimes difficult to achieve by varying application technique and or tinting the color. It is too time consuming and not a practical repair technique. For three-stage colors, we recommend to extend the blend area to a minimum of 36 inches, and preferably to the next adjacent panel for the optimum results.
- It is also highly recommended to blend into adjacent panels when using products with the addition of elastic additives to achieve and acceptable color match.
- Blending within a panel is a good way to minimize the color tone deviation because it keeps the color away from adjacent panels. Because the entire panel must be clearcoated, there is little difference in preparation for this repair compared to applying color and clear to the entire panel. Cleaning, sanding, and molding removal are essentially unchanged.
- We recommend clearcoating entire panels. There may be times, such as when no break line exists between the roof and quarter panels, that this is not practical. There are techniques that can be used to blend the clearcoat into a sail panel, but results in this repair are not as durable. You have received a statement that describes our clearcoat blend policy and how it affects our warranty.

If you have any questions or require any additional information, please feel free to contact Product Management at the number above.

**Product Management**

**Customer Service**
**888-371-3313**

**Color Matching and Importance of Basecoat Blending**

To Whom It May Concern,

With today's automotive styles it is becoming increasingly difficult to deal with day-to-day color match issues in the collision repair industry. The increased complexities of today's color technologies have made it more difficult to panel paint vehicles. There are several reasons that may decrease the chance of a successful butt match in today's finishes. It is not uncommon to have several variances for a particular paint code. For a painter to pick the correct variant and then duplicate the OEM finish using non-OEM spray techniques is extremely difficult.

The following are just a few reasons for these color variations:

1) OEM tolerances
2) Multiple suppliers
3) Different paint technologies
4) Application differences
5) Drying methods
6) Production variances (temperature, humidity, air)
7) Time exposure (durability relative to color and UV protection)
8) Line stoppages
9) HS Acrylic Enamel
10) Waterborne basecoats
11) Over/under baking
12) Off line repair etc.
13) Metallic pigment variation (extra fine to coarse)
14) Mica pigment variations (paliochomic, Mystic)

Because of so many variants affecting color match, DuPont strongly recommends that all colors be blended to adjacent panels when ever possible. With today's technology blending is the most efficient, cost effective method of repair to ensure an undetectable repair to the customer.

If you have any questions or require any additional information please feel free to contact Product Management at the number above.

# Standox

Product Management

**Standox**
47802 West Anchor Court
Plymouth, MI 48170
Tel: (800) 551-9296
Fax: (734) 454-4983

## Spot Repair and Blending Processes

To Whom It May Concern,

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- In order to obtain an acceptable color match, blending into an adjacent, undamaged panel is the preferred process. An acceptable panel to panel color match is sometimes difficult to achieve by varying application technique and or tinting the color. It is too time consuming and not a practical repair technique. For three-stage colors, we recommend to extend the blend area to a minimum of 36 inches, and preferably to the next adjacent panel for the optimum results.
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Product Management

**Standox**
47802 West Anchor Court
Plymouth, MI 48170
Tel: (800) 551-9296
Fax: (734) 454-4983

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If you have any questions or require any additional information please feel free to contact Product Management at the number above.

# DuPont

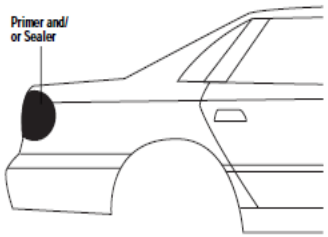
DuPont Automotive Finishes

# Clearcoat Blending Procedure

Panel repair is the approved procedure for clearcoat warranty repairs. This allows the refinisher to attain the recommended film builds. If the refinisher chooses to blend the clear, use the appropriate Reducers or Blender and follow the steps below.

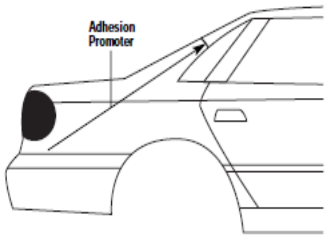
## Step 1: Prepare the Surface

- Prepare the repair area according to the Surface Prep guidelines in the General Procedures section.
- Perform repair using primer and/or sealer as necessary.




## Step 2: Apply Adhesion Promoter

- Sand area for adhesion promoter application with 1200 - 1500 grit.
- Apply adhesion promoter over the sanded area.




## Step 3: Apply the Basecoat

- Apply the first coat of color beyond the repair area. Apply a second coat of color, extending it beyond the first coat.
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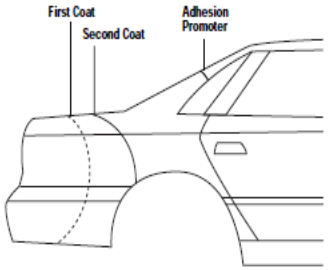


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- Apply the first coat of clear beyond the final basecoat.
- Blend subsequent coat(s) of clear within the edge of the adhesion promoter using the remaining clearcoat in the cup, over-reduced with ChromaSystem® Blender. (Use 1-2 parts ChromaSystem® Blender to 1 part ready-to-spray clear.)
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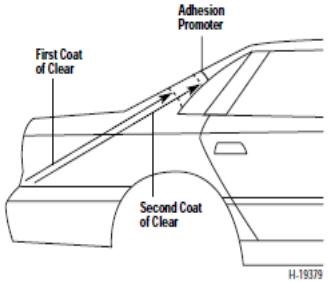



H-19379
E-R 3009 (10/02)

3M

New 3M Collision Repair Website
3M Automotive Aftermarket dwadhams 03/22/2011 06:32 AM

Please respond to "3M_ITB"

See 3MCollision.com Today!
Can't see Images? Click Here.

# Introducing the New 3M Collision Repair Website!

**3M**, longtime innovator and leader in the collision repair industry, has launched a new website – located at 3MCollision.com – that will allow users to more easily find products, solution guides and how-to videos.



3M Automotive Aftermarket Division
3M Center, Building 0223-06-N-01
St. Paul MN, 55144-1000
1-877-MMM-CARS (877-666-2277)

3MCollision.com

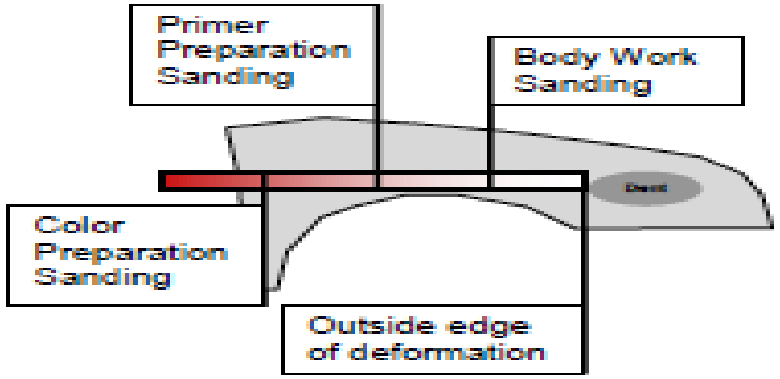
# 3M™ Magnetic Blend Prep Ruler

**Standard Work – For use during the Damage Analysis Process to help determine the surface area required for proper preparation and application of undercoats and top-coats**

1. Place the edge of the Blend Prep Ruler labeled "Deformation Ends" at the outer edge of the dent.
2. The next label past Deformation Ends is "Body Work & Sanding". This area is about where the outer edge of the sanding process using grades 80, 180 and final featheredge with grade 220 ends.
3. The next label past Body Work Sanding is "Primer Preparation Sanding". This area is where the primer sanding procedure will prepare the substrate for the application of 2 Part Primer. Primer will be applied within this area.
4. The next label past Primer Preparation Sanding is "Basecoat Color Sanding". This area is where the color sanding procedure will prepare the substrate for the application of basecoat color. Color may be applied within and/or beyond this area in order to achieve an acceptable color-match.
5. Mark the adjacent panel at the points where blending would begin and end in order to document and acknowledge the need for primer or color to be applied onto the next adjacent panel.
6. Take a picture for the repair file at this point and again before masking tape and paper is removed to validate the blend was performed as written according to the initial repair plan.

Example showing the potential need to blend color into the next adjacent panel.

Repair planners can use the blend prep ruler to mark the damaged panel, helping the technician understand how far the repair area could extend so they can make every effort to keep the repair within the damaged panel.

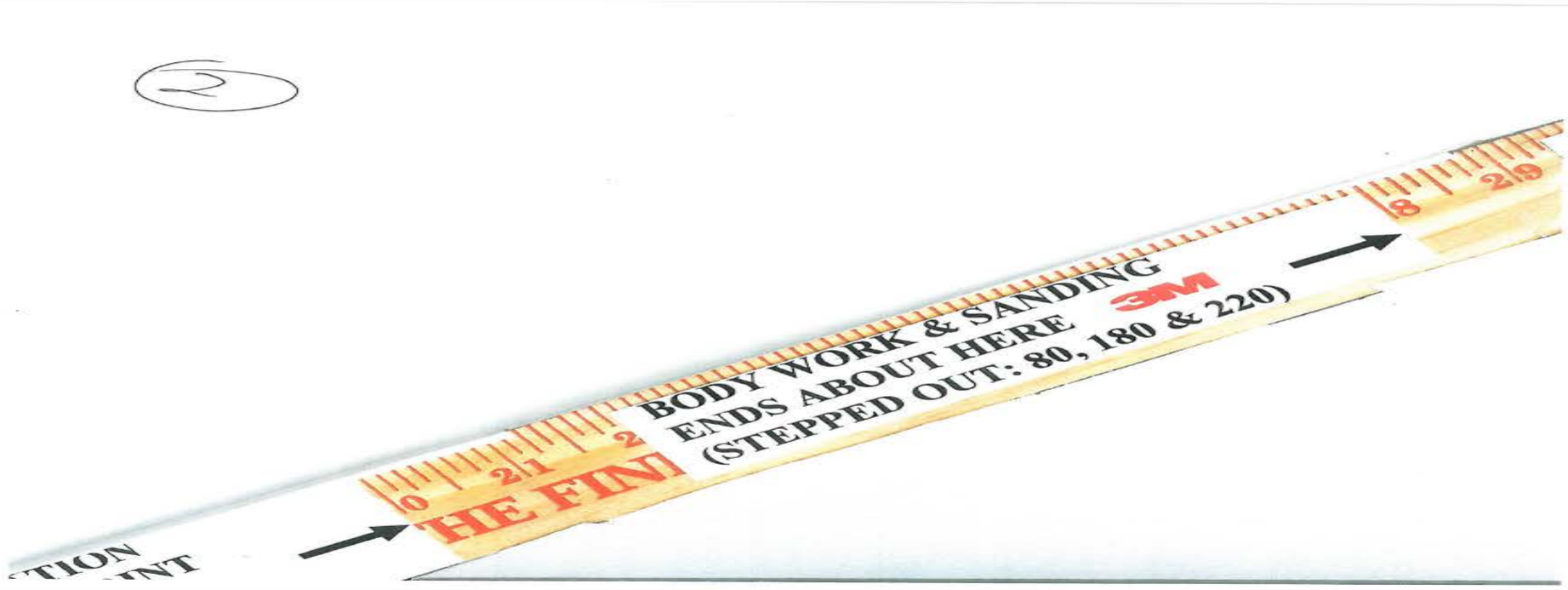


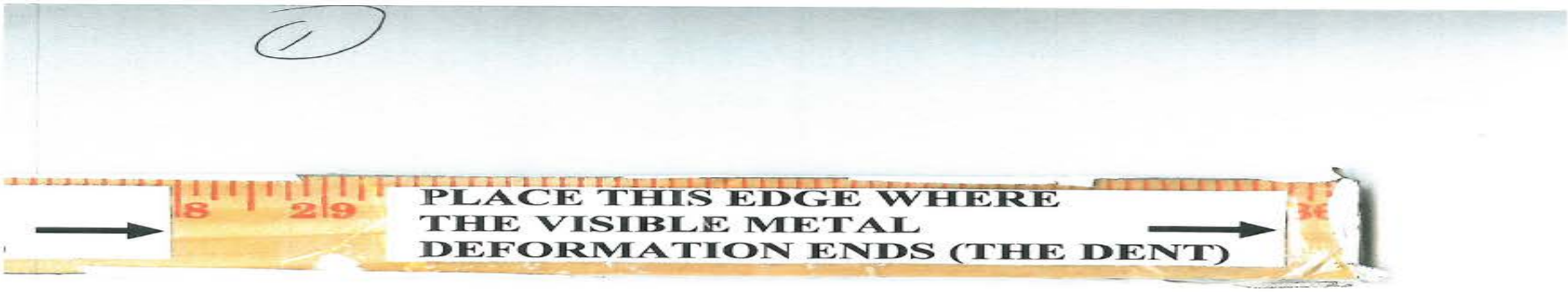

(4)


BASECOAT COLOR
SANDING TO THIS POINT
(SAND WITH 400 To 500 OR
GRAY / GOLD SCOTCHBRITE)

(3)


10 11 12 13
HOME DEP
PRIMER PREPARATION
SANDING TO THIS POINT
(SAND WITH 320 TO RED
SCOTCHBRITE) 3M
0
H


BODY WORK & SANDING
ENDS ABOUT HERE
(STEPPED OUT: 80, 180 & 220)
3M
HE FIN
TION


PLACE THIS EDGE WHERE
THE VISIBLE METAL
DEFORMATION ENDS (THE DENT)

# 3M Ruler Picture -Part#538904

Catalog » 3M / NASCAR Gear » Merchandise » 3M(TM) Magnetic Blend Prep Ruler #538904

## 3M(TM) Magnetic Blend Prep Ruler #538904

SKU: 538904

Based on **0 reviews** read reviews write a review

A magnetic guide that helps determine the surface area required for proper preparation and application of undercoats and top-coats

$9.99

Qty: ADD TO CART

Cost Adjustments

| Description | Range | Amount |
|---|---|---|
| Quantity Pricing | 0-11 | **$9.99** |
| | 12-47 | **$9.70** |
| | 48-143 | **$9.50** |
| | 144+ | **$9.20** |

*Your shopping cart will reflect the correct value

# Seam Sealer Standard Work

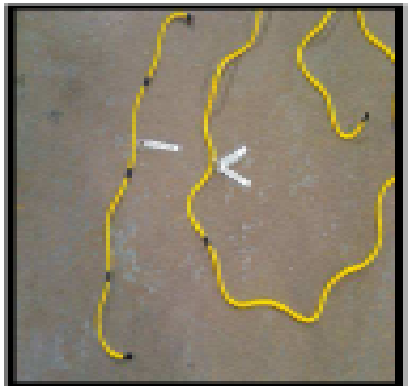
**Standard Work – For use during the Damage Analysis Process to help measure and determine the amount of Seam Sealer required to properly repair the vehicle, restoring and maintaining the initial state of Crash-Worthiness.**

**Long Rope** – For 3M **(PN 8310)** Bare Metal Beige or 3M **(PN 08308)** Heavy Bodied Seam Sealers.

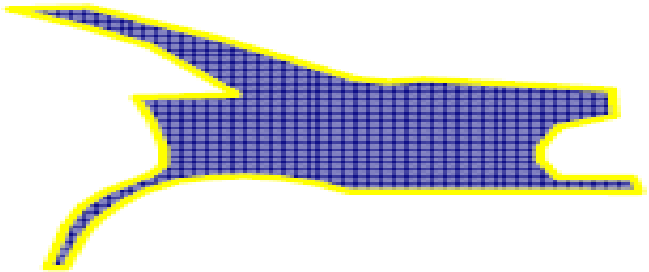
1. After vehicle has been disassembled, indentify all areas where Seam Sealer is required.
2. Use the **Long Rope** for all panels except roof ditches when planning the application of 3M **(PN 8310)** Bare Metal Beige or 3M **(PN 08308)** Heavy Bodied Black Seam Sealers.
3. Lay the **Long Rope** to trace or outline the area where Seam Sealer will be applied in order to determine the amount required for the repair areas.
   - Each mark on the rope equals a ¼, ½, and ¾, up to 1 complete tube of Seam Sealer.
   - Take a picture for documentation and add it to the repair order file.
4. Once the amount of Seam Sealer required for the repair has been determined, mark the Seam Sealer sheet by circling the quantity and dollar amount of the material required.
5. After the required quantity and cost has been documented, add a line item to the estimate for *"Seam Sealer"* along with the repair area or areas and enter the corresponding dollar amount based on the measurement from the rope and information from the price document sheet.

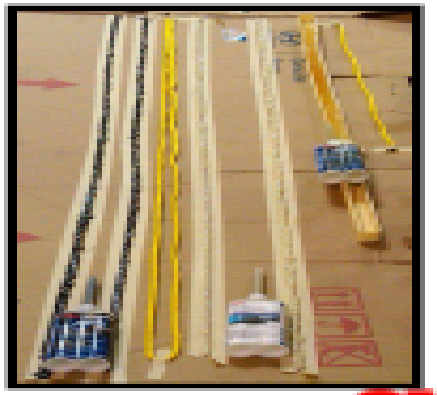
**Short Rope** – For 3M **(PN 08307)** Self-Leveling Seam Sealer

1. After vehicle has been disassembled, indentify all areas where Seam Sealer is required.
2. Use the **Short Rope** for Roof Ditches and "Quarter Troughs when planning the application of 3M **(PN 08307)** Self-Leveling Seam Sealer. "(Divide quantity and price by 2 for Quarter Troughs)
3. Lay the **Short Rope** to trace or outline the area where Self Leveling Seam Sealer will be applied in order to determine the amount required for the repair areas.
   - Each mark on the rope equals a ¼, ½, and ¾, up to 1 complete tube of Seam Sealer.
   - Take a picture for documentation and add it to the repair order file.
4. Once the amount of Self-Leveling Seam Sealer required for the repair has been determined, mark the Seam Sealer sheet by circling the quantity and dollar amount of the material required.
5. After the required quantity and cost has been documented, add a line item to the estimate for *"Seam Sealer"* along with the repair area or areas and enter the corresponding dollar amount based on the measurement from the rope and information from the price document sheet.

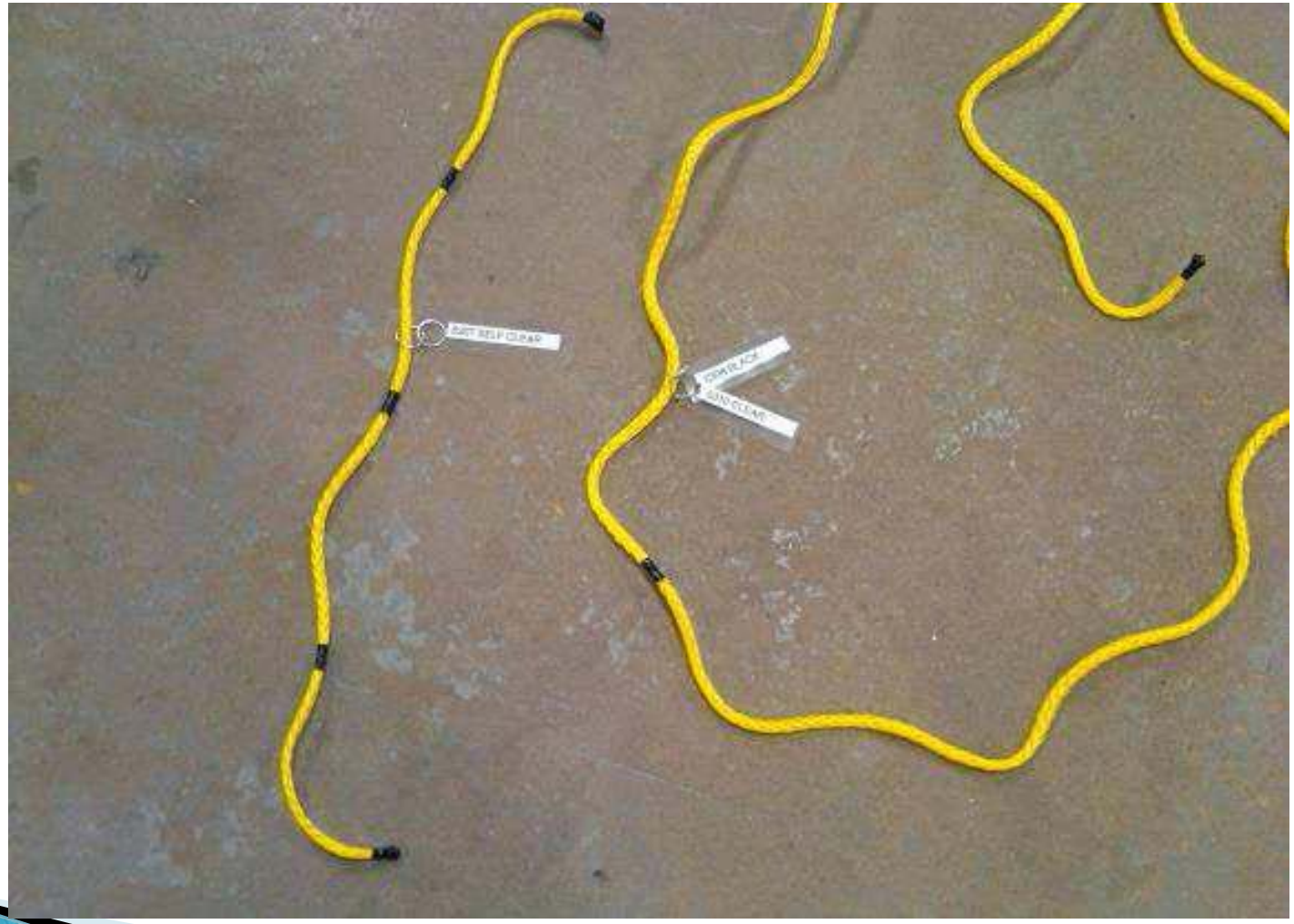


**Trace Outline Area to Seam Seal**

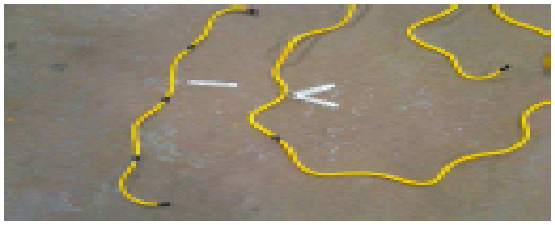


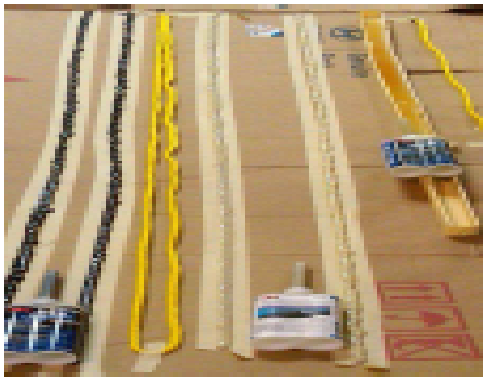


# 3M Seam Sealer Rope



| | |
|---|---|
| DATE | |
| REPAIR ORDER | |





| Sealer Application | Part Number | Description | Quantity | Price Per Billing Unit | Line Total |
|---|---|---|---|---|---|
| | | | | | |
| | 8310 | Direct To Bare Metal Seam Sealer | 1.0 | $53.40 | $ 53.40 |
| | | | 0.75 | $53.40 | $ 40.05 |
| | | | 0.50 | $53.40 | $ 26.70 |
| | | | 0.25 | $53.40 | $ 13.35 |
| | | | | | |
| | 8308 | Heavy Body Seam Sealer | 1.0 | $50.97 | $ 50.97 |
| | | | 0.75 | $50.97 | $ 38.23 |
| | | | 0.50 | $50.97 | $ 25.49 |
| | | | 0.25 | $50.97 | $ 12.74 |
| | | | | | |
| | 8307 | Self Leveling Seam Sealer | 1.0 | $50.97 | $ 50.97 |
| | | | 0.75 | $50.97 | $ 38.23 |
| | | | 0.50 | $50.97 | $ 25.49 |
| | | | 0.25 | $50.97 | $ 12.74 |
| | | | | | |

Notes:

"Establishing the standard by raising the bar to deliver the highest quality repair in the Collision Repair Industry today!"

# Questions & Answers


Thank you for your time and attention!

COLLISIONADVICE

For more information on Collision Advice Consulting Services or speaking engagements please contact:


Mike Anderson
mike@collisionadvice.com
Cell 301-535-3333

Tiffany Driggers
tiffany@collisionadvice.com
Cell 703-898-0715


***Check out Mike's New Consulting Calendar on our website!***

**www.collisionadvice.com**