



Section 11

Specialist Colour Processes



Specialist Colour Processes: EQB

Envirobase HP Waterborne Basecoat 3CT Colour Toners

The **T4851 Envirobase High Performance** is a particularly brilliant and deep orange colour toner, which has extremely clear light reflections and a particularly high depth effect.

This striking colour tone effect is created by a 3-layer paint process using special pigments and toners.

The T4800 Clear Mid-coat is a transparent toner to support the mid-layer. T4800 is a product similar to T490, but clearer/water-white.

*T4800 is not a blender that can be used as a wet bed during the blend process

Preparation of Substrate

- Degrease all surfaces to be painted with appropriate PPG waterborne substrate cleaner before wet sanding with P800 grade paper or dry sanding with P400-500 grade paper.
- Wash off residues and dry thoroughly before re-cleaning with appropriate waterborne PPG pre cleaner see - Technical Data Sheet Deltron Cleaners RLD63V.
- The use of a tack rag is recommended.
- Apply over original sanded and clean 2K finishes, or a range of PPG primers - refer to primer TDS for specific recommendations. The use of Greymatic primers is recommended for optimum results.
- Wash off residues and dry thoroughly before re-cleaning with an appropriate waterborne pre-cleaner see - Technical Data Sheet.

Pre-Application

- Hand-shake bottles of Envirobase HP tinter and T4900/T4910 for a few seconds before use. Do not shake vigorously.
- Mixed Envirobase RFU colour should be thoroughly hand-stirred before application. If not used immediately it should be hand-stirred again before use.
- Use nylon paint filters specially designed for use with waterborne paint materials.
- A 125-micron mesh is recommended.



Range:

T4851 Transparent Organic Orange
T4800 Clear Mid-coat



Renault Orange Valencia EQB
Process Video



Specialist Colour Processes:

EQB - Process

1. Repair and Preparation of Substrate

- 1.1 Prepare the damaged body parts with the appropriate PPG Refinish products. Please observe the information in the Technical Data Sheets of the respective product systems.
- Use Greymatic according to the colour shade. Greymatic G5 is required for this colour.

2. Groundcoat and Preparation of Substrate

- 2.1 When preparing the substrate as recommended below, suitable colour panels should be prepared alongside for use when checking the colour/ effect of the basecoat.
- To produce the colour panels, use the full panel application process described below.
- In order to define how many coats of step two are needed to achieve the best possible colour match, it is recommended to produce several spray-out cards.
- 2.2 For the current available colour formulations, a G5 ground coat colour is used.
- The G5 shade gives the best guide as to when full coverage is achieved.



ENVIROBASE® HP - Set Up & Processes

Mixing Ratios with <i>Envirobase</i> HP Standard (3CT colours).			
Step	Volume / Parts	Metallic Colours	Solid Colours
Step 1	<i>Envirobase</i> HP	100	100
	T494/T495	20	10-20
Step 2	T4800 + Mica / Solid	100	100
	T494 / T495	30	30

Optional Mix Ratios using hardener/D8260 in Step 1 RFU:

Metallic/Solid Colours: 100:10:5:5 (ENVHP+T492+T494/T495+D8260)

Mixing Ratios with <i>Envirobase</i> HP <i>OneVisit</i> Modifier (3CT colours)			
Step	Volume / Parts	Metallic Colours	Solid Colours
Step 1	<i>Envirobase</i> HP	100	100
	T4900 / T4910	20	5
	T494 / T495		15
Step 2	T490 + Mica / Solid	100	100
	T494 / T495	30	30

Optional Mix Ratios using hardener/D8260 in Step 1 RFU:

Metallic Colours: 100:20:5:5 (ENVHP+T4900/T4910+T494/T495+D8260)

Solid Colours: 100:10:15:5 (ENVHP+ T4900/T4910+T494/T495+D8260)



Specialist Colour Processes:

EQB - Process

Spray Gun Setup:

Conventional / RP STD Temp: 1,2mm
 Conventional / RP High Temp: 1,3mm
 HVLP STD Temp: 1,3mm
 HVLP High Temp: 1,4mm

Spray Pressure:

ENVHP STD: 2.0 bar – Light control coat: 1.2/1.5 bar
 ENVHP OVM: 1.8 bar

Number of Coats:

ENVHP STD: Express or Single coat (See TDS: RLD213V)
 ENVHP OVM: 1 Visit (See TDS: RLD490V)

Flash-off Time:

Fast dry or comparable flash-off systems.
 The basecoat must be completely flash-off matt.
 Alternatively 40° for 8 min.

Mixing Ratios with Blending Adjuster:

When preparing the substrate as recommended below, colour check panels should be prepared for use when checking the colour/effect of the *Envirobase* High Performance basecoat as OEM colour variation can differ significantly for this colour.

Volume / Parts	Volume / Parts
T490 Blending Adjuster	100
T494 / T495	20
T4904 Blending Adjuster	100
T4900 / T4910	20



Viscosity will vary depending on the colour/toner combinations and mix ratio.
 (If needed viscosity can be adjusted accordingly using T494 or T495)
 Potlife RFU: 1 month.
 Stir well before use.

Note:

Please check the colour before application. The layer thickness and number of spray coats of the effect / second layer significantly affect the colour match to the standard paint.

It is not recommended to apply more than 3 coats of effect/second coat.
 Details on the processing of the colour for coating complete vehicle parts as well as the blending process are described below.

Specialist Colour Processes: EQB - Process

ENVIROBASE® HP - Application Processes

Application of the basic tone (step one) in *Envirobase High Performance* (full panel application)

Number of Coats:

ENVHP STD: Express(Cascade) or Single coat (See TDS: RLD213V)

ENVHP OVM: 1 Visit (See TDS: RLD490V)

Flash-off Time::

Fast dry or comparable flash-off systems.
The basecoat must be completely flash-off matt.
Alternatively 40° for 8 min.

Step 1: Final appearance (Renault EQB)



Application of the second layer (step two) in *Envirobase High Performance* (full panel application)

First coat step two: After Flash-off.

Step 2: Final basecoat appearance (wet)



Specialist Colour Processes: EQB - Process

Clearcoat Application:

Any conventionally drying PPG UHS clearcoat can be used for the final coating. Please observe the information in the Technical Data Sheets of the respective clearcoat.

Final appearance T4851



3-Coat Colour – Blend Process

Colour Blending Process:

Preparation of the substrate in Greymatic G5. Mix and process the primer materials according to the above or the technical data sheet.



Specialist Colour Processes:

EQB - Process

Blend Process Step 1:

1. Wet bed step 1:

Apply the T4904 Blending Adjuster RFU in the area to be blended. The Blending Adjuster need to be applied as a wet layer to enable the pigments/ RFU colour to get the correct lay-down and metallic orientation (purple ring marked in photo).

2. Apply 1 coat one thin coat of Step 1 RFU colour in the repair area, followed by reverse blend in process to opacity. Avoid heavy layers. Blend the fading-out area as smoothly as possible using the reverse technique.

NOTE Step 1 RFU Colour must be focused as limited as possible into the adjacent panel

3. End Step 1 RFU colour process with a light control coat in the blend area. (If the blend looks smooth, a control coat is not needed.)



Application of the second layer (step two) in ENVIROBASE® High Performance (blend)

3CT Step 2:

Apply the T4904 Blending Adjuster RFU on the adjacent panel or only in the area to be blended. The Blending Adjuster has to be applied as a wet layer to enable the pigments/RFU colour to get the correct lay-down and metallic orientation.

Apply 1 coat thin coat of Step 2 RFU colour in the repair area extending the blend area over Step 1, hereafter, followed by the reverse blend in process to correct appearance. Avoid heavy layers. Blend the fading-out area as smoothly as possible using the reverse technique.

End the process with a light control coat in the blend area.

Note:

Try to let the layers flow out over a wide area, otherwise there is a risk that this will become streaky/colourful, or visible at certain angles.



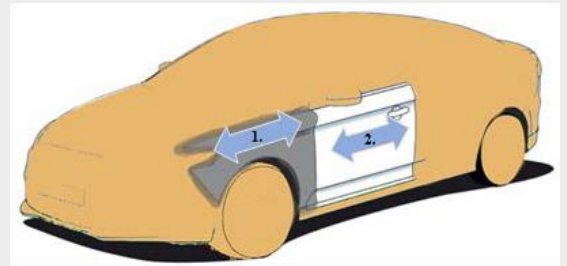
Step 2: Final appearance prior clearcoat process



Specialist Colour Processes: EQB - Process

Animated Overview:

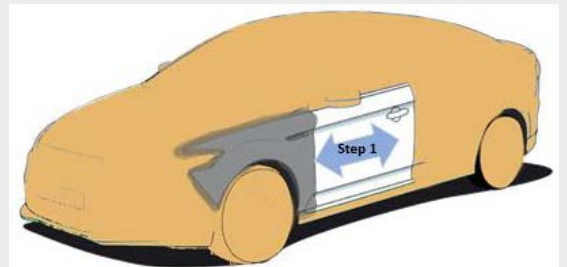
1. Repaired or new panel
2. Adjacent panel



Blending Adjuster

1. Apply the blend bed adjuster as a wet coat on the adjacent panel or in only in blend/fade-out area

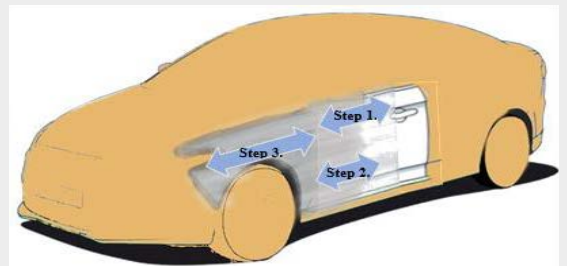
(The Blending Adjuster will allow the correct pigment lay down in the blend area).



WBBC Colour RFU

Step 1 - Apply a light coat into the blending area.

Step 2 - Apply STD blend process into the blending area. Blend/fading-out as smooth as possible. End the blend process with a light control coat on blend area.



Clearcoat Application:

Any conventionally drying PPG UHS clearcoat can be used for the final coating.

Please observe the information in the Technical Data Sheets of the respective clearcoat.



Specialist Colour Processes:

EQB - Process

Repair and Recoating

Overcoating:

ENVIROBASE® HP ready for use mix can be overcoated with a PPG clearcoat after flash off till mat.

De-nib:

It is possible to de-nib *Envirobase* HP OneVisit™ Modifier, after flash off, with fine sanding paper – P1000-1500 (dry paper) using air blowing and a tack rag to remove sanding dust and followed by a spot repair (see FADING-OUT section) prior to the clearcoat application.

Equipment Cleaning

- Clean all mixing equipment immediately after use, preferably using a dedicated waterborne equipment cleaning machine.
- Use tap water, with a final rinse using deionized water or an alcohol-based cleaner such as D846.
- Ensure all equipment is completely dry before storage or use.

Storage & Handling

- ENVHP tinters, mixed colour & OneVisit Modifier should be stored in a cool, dry place away from sources of heat. During storage and transportation temperatures must be maintained at a minimum of +5°C and a maximum of +35°C. Avoid exposure to frost or freezing conditions.
- ENVHP should be mixed in clean, dry containers and equipment. Do not use mixing vessels or spray equipment that contains solvent residues. Mixing vessels should ideally be plastic - if metallic they should have an internal anti-corrosion coating.

VOC Information:

The EU limit value for this product (product category: IIB.d) in ready-to-use form is max. 420g/litre of VOC. The VOC content of this product in ready-to-use form is max. 420g/litre.

Depending on the chosen mode of use, the actual ready-to-use VOC of this product may be lower than that specified by the EU Directive code.

Specialist Colour Processes:

Mazda 46G Machine Grey

Product Description:

Mazda 46G Machine Grey is a special effect colour and requires a specific application process.

Repair and preparation of substrate and using a black groundcoat

- The damaged body work of the vehicle should be repaired using the PPG recommended repair and undercoating system for the substrate of the body panels being repaired. (Aluminium, Steel, Plastic etc.)
- Sealing the repair with G7 Greymatic primer shade as a first step is recommended followed by the use of T409 ENVIROBASE® High Performance Deep Black tinter as the groundcoat colour over repaired areas.

Best Practice & Application:

When preparing the substrate as recommended below, colour check panels should be prepared for use when checking the colour/effect of the *Envirobase* High Performance basecoat as OEM colour variation can differ significantly for this colour.

- For the Mazda 46G Machine Grey *Envirobase* High Performance colour process, T409 Deep Black tinter thinned @ 20% is to be applied prior to the topcoat colour. This also needs to be applied to the G7 colour panels when being prepared for the colour check process.
- 46G *Envirobase* High Performance mixed colour thinned @ 20%, full coverage must be achieved.
- If only part of a body panel is repaired and primed, DP4000 Primer should be applied over the sanded/primed repair areas first.
- This should be followed by using D8430 / D8731 Spot Blender, applied and blended on the G7 edges.
- This should be followed by the T409 Deep Black tinter groundcoat applied over complete primed areas.
- Where blending of the basecoat will occur as part of the repair, the area of the panel from the basecoat blend to the edge of the panel should be finished with a P1000 film disc used with Bodyshine liquid or waterborne cleaner preferably on a 125mm orbital sander.

For the complete detailed process information please refer to the product technical data sheet.



These products are for professional use only.

For full technical specification refer to TDS: RLD500V.

Specialist Colour Processes:

Alubeam 047 Mercedes

Alubeam 047

Alubeam 047 for Mercedes is a special-effects grey tint that gives the vehicle a 'liquid metal' appearance.

Preparation:

1. Mix Alubeam 047 for Mercedes (via PAINTMANAGER® XI or LINQ Color) using Liquid Metal 2 - T4705 ENVIROBASE® HP and T4XX Envirobase HP basecoat.
2. Dilute to 50% with T494 (2/1).
3. SATA HVLP 4000 spray gun, nozzle 1, pressure 1.2 bar max 1.8, flow 0.75 at 1 revolution or IWATA LPH 300 gun, LV4 cap, 1 nozzle, pressure 1.5 bar, flow 1.5 turns.

APPLICATION IS MADE IN LIGHT COATS (to obtain a satin finish):

1. Apply a 1 light coat and pre-dry to a matt shade (with an air blower).
2. Apply a light 2nd coat and pre-dry to a matt shade (using an air blower).
3. If, on inspection, the metallic finish appears to be even, with no stains at this stage, proceed to the next step. If not, repeat the previous step.
4. If necessary, apply a light double/triple coat, reducing pressure and flow, then pre-dry to a matt shade (using an air blower).
5. This final base shade should be applied to a very dry surface, even if the base shade has not been "wetted".
6. Allow to soak for 20 - 30 minutes before apply Clearcoat.
7. To match the basecoat colour, apply the first double-coat crosswise over the primed area, then stretch each subsequent coat over the match area using a classic flood match technique to achieve a consistent match with the original colour. As with a full sheet, this final joint should be applied to a thoroughly dry surface.



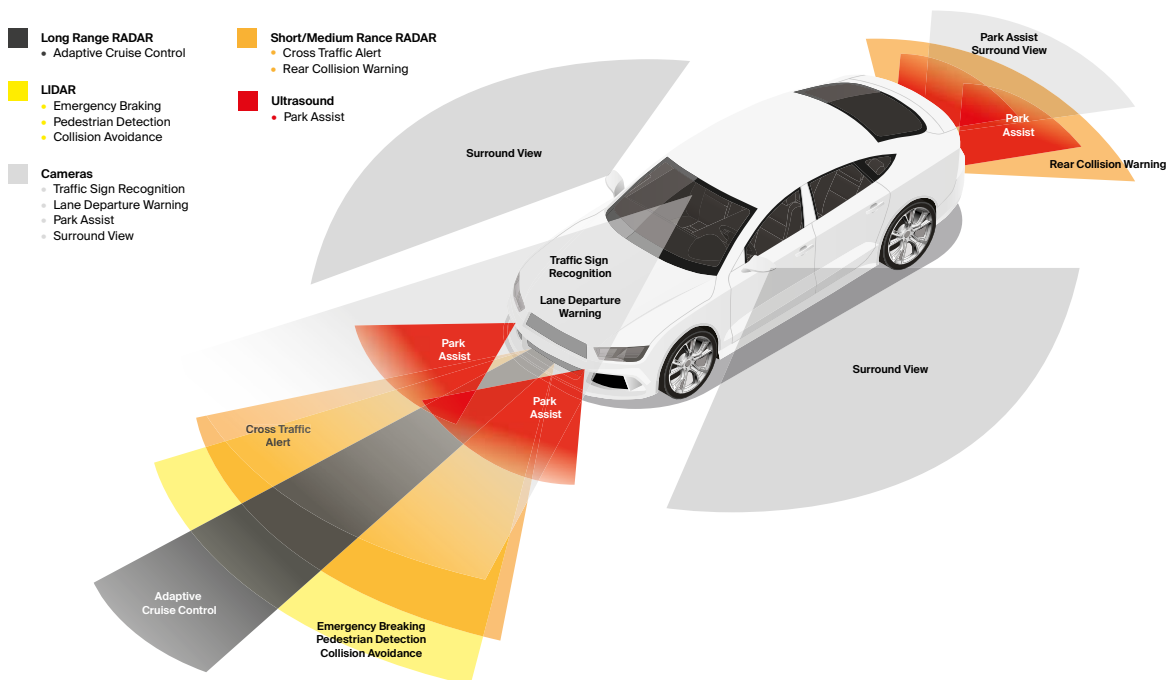
Specialist Colour Processes: RADAR

Advanced driver assistance systems:

Vehicle manufacturers around the world are increasingly incorporating advanced driver assistance systems (ADAS) into their products, including RADAR, ultrasound, cameras and LiDAR.

The various ADAS systems offer adaptive/traffic-dependent cruise control, parking assistance, lane departure warning, traffic sign recognition, forward collision warning, cross traffic warning, emergency braking and collision avoidance.

By 2025, it is expected that 85% of new passenger cars and light commercial vehicles will be equipped with at least one type of ADAS.



ADAS and coatings:

ADAS devices are typically located behind the painted surfaces of cars and light trucks, so there can be an interaction between the devices, the panels (metal or plastic), and the coatings.

RADAR equipment:

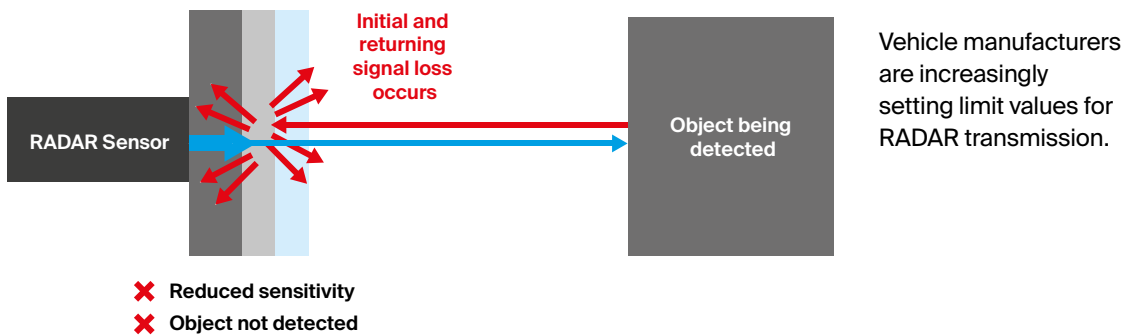
RADAR devices are increasingly being used in new cars and light trucks at long-range, adaptive cruise control (also known as traffic-dependent cruise control) and warning of cross-traffic and rear-end collisions are being used at short-range.

Specialist Colour Processes: RADAR

Coatings and RADAR:

RADAR devices are typically located behind the bumpers of cars and light trucks. The RADAR signals penetrate the bumpers and the coatings as they are transmitted into the environment, and the reflected signals re-penetrate the coatings and the bumpers before being received by the RADAR equipment.

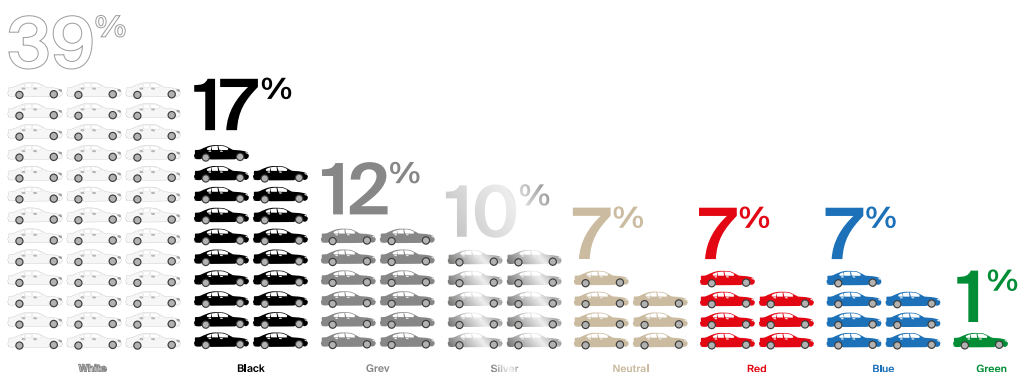
Under certain circumstances, there may be a loss of transmission of RADAR signals passing through painted substrates (plastic bumpers). If the loss of RADAR transmission through the painted plastic bumper exceeds a certain threshold/layer thickness, the RADAR may become impaired and may not function as intended.



RADAR transmission loss:

RADAR transmission loss through painted bumpers does not affect all colours and is mostly associated with metallic effect paints. The aluminium pigments used to create metallic paint effects interfere with the transmission of RADAR signals.

According to PPG's Global Automotive Color Trend information, approximately 25% of all new passenger cars and light trucks are painted metallic colours (see silver and grey below).



Specialist Colour Processes:

RADAR

Repair and overhaul of RADAR-equipped vehicles:

To determine if a vehicle is equipped with RADAR, please refer to the vehicle manufacturer's equipment/equipment manual. In addition, your collision repair estimate system can provide information about the presence of RADAR devices on the vehicle being repaired.

RADAR-capable colour formulations:

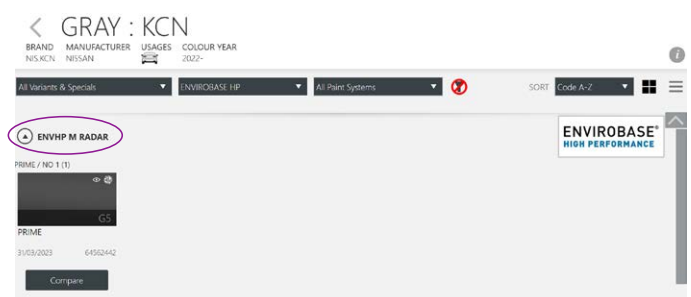
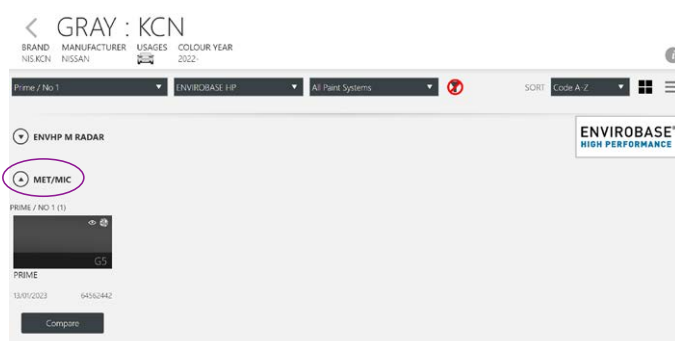
During the colour toning process, PPG's Refinish colour labs now measure vehicle colour formulas for RADAR transmittance. Most colours can pass RADAR signals with little or no loss and the standard colour formula can be used.

For the few colours where the measured RADAR transmission loss is above the threshold set by the vehicle manufacturer, PPG offers a special, additional "RADAR Enabled".

Colour Formula:

When searching for a shade using the vehicle manufacturer's colour code using PAINTMANAGER® XI or PPG LINQ™ Colour software, the results screen will indicate if a RADAR-enabled match formula is available. If a RADAR-enabled colour formula is available, it will also be displayed when using a colour chip or RAPIDMATCH® search.

When searching for a colour, the available paint systems will be displayed in the *PaintManager XI* or *PPG LINQ* Colour software (in this case MET/MIC is the default paint system).



Specialist Colour Processes: RADAR

RADAR-enabled colour matching:

For those few colours that have a measured RADAR transmission loss above the limit set by the vehicle manufacturer, PPG offers a special “RADAR Ready” paint system and paint formula. This is usually done by replacing some or all of the aluminium mixing paints with existing, alternative mixing paints, such as Pearls.

There may be some colour differences between the standard colour formula and the RADAR-enabled formula.

This is because the standard colour formula prioritises colour alignment, while RADAR-enabled matching also needs to consider RADAR transmission loss. It is recommended to first create a spray pattern card to check the colour (see below).

The screenshot shows the 'Formula & Mixing' software interface. A warning dialog box is displayed in the center, stating: 'Warning: This is a RADAR capable formula, please spray a test panel before use.' The background interface shows the 'Formula Details' for 'GRAY : KCN : PRIME' with various fields like CODE, MANUFACTURER, COLOUR YEAR, MATCH DATE, PAINT LINE, and PAINT SYSTEM. Below this, there is a table of ingredients with columns for 'INCREMENTAL' and 'CUMULATIVE' weights. The ingredients listed are: 4 x 472 FINE LENT. METALLIC, 5 x 443 VIOLET, 6 x 411 BLUE, 7 x 440 TRACE RED OXIDE, and 8 x 4281 SOLID YELLOW. The total weight is 1018.327 g.

	INCREMENTAL	CUMULATIVE
4 x 472 FINE LENT. METALLIC	323.1 g	323.1 g
5 x 443 VIOLET	260.6 g	583.7 g
6 x 411 BLUE	200.6 g	784.3 g
7 x 440 TRACE RED OXIDE	177.3 g	961.5 g
8 x 4281 SOLID YELLOW	28.5 g	990.1 g
	16.9 g	1007.0 g
	9.6 g	1016.6 g
	1.7 g	1018.3 g

In addition, the “Comments” section will include the following statement related to this technical bulletin.

RADAR Enabled Formula: Specially formulated to minimize RADAR transmission loss. Observe the vehicle manufacturer’s repair guidelines and the PPG technical data sheet.

Specialist Colour Processes:

RADAR

Using a RADAR-enabled colour formula:

It is important to use the RADAR-enabled paint formula when painting a bumper that has RADAR equipment located behind the bumper. This ensures that the RADAR continues to function as intended by the vehicle manufacturer.

If the repair includes a bumper and additional parts such as fenders and/or hood, the RADAR-enabled paint formula can be used for the bumper and other parts.

If the vehicle to be repaired is RADAR equipped but the damaged area does not include the bumper (behind which the RADAR is located), it is not necessary to use the RADAR-enabled paint formula.

Thus, a mixture of one colour can be the most efficient way to repair the vehicle. i.e the bumper with adjoining areas to use the RADAR colour formula and transition to the general formula outside of the bumper / fade-in.

It is recommended to spray a test area first to check the colour.

Additional Information:

Always be sure to follow the manufacturer's guidelines for repairing vehicles with RADAR.

It is also important to follow the manufacturer's guidelines for testing the correct operation of RADAR and/or other ADAS before returning the repaired vehicle to service.

Legal notice

When refinishing RADAR-equipped vehicles, two paint formulas may be available for the paint. The standard formula may have a more accurate colour match but could affect the performance of the RADAR. The RADAR-enabled colour formula is specially formulated not to interfere with the functioning of RADAR, but the colour match may not be as precise.

Please check whether the vehicle to be repaired is equipped with RADAR and observe the vehicle manufacturer's repair guidelines. In case the vehicle is equipped with RADAR, please ensure that the vehicle owner is aware of the two formulas available. PPG makes no guarantee or responsibility for the selection of the formula and assumes no liability for it.

Specialist Colour Processes:

3-Stage Pearl Application Process

Mixing Ratios with *Envirobase HP OneVisit* Modifier (3CT colours).

Step	Volume / Parts	Metallic Colours	Solid Colours
Step 1	<i>Envirobase HP</i>	100	100
	T4900 / T4910	20	5
	T494 / T495		15
Step 2	T4800 or T490 + Mica / Solid	100	100
	T494 / T495	20	20

Optional Mix Ratios using hardener/D8260 in RFU: (2CT and 3CT)

	Volume / Parts
Metallic Colours	100:20:5:5 (ENVHP+T4900/T4910+T494/T495+D8260)
Solid Colours	100:10:15:5 (ENVHP+ T4900/T4910+T494/T495+D8260)

Mixing Ratios with Blending

	Volume / Parts
T4904 Blending Adjuster	100
T4900 / T4910	20

Application Process 3CT

Step 1: Preparation for Light Metallic Colors

Blending Adjuster Application (only needed for light metallic colours):

- Apply the T4904 Blending Adjuster RFU in the area to be blended.
- Ensure the Blending Adjuster is applied as a wet layer to enable the pigments/RFU color to achieve the correct lay-down and metallic orientation.

Step 2: 3CT Step 1

Initial Color Application:

- Apply one thin coat of Step 1 RFU color in the repair area.
- Follow with a reverse blend-in process to achieve opacity.
Avoid heavy layers.
- Blend the fading-out area as smoothly as possible using the reverse technique.

Note: Focus the Step 1 RFU color as limited as possible into the adjacent panel.

Control Coat:

- End the Step 1 RFU color process with a light control coat in the blend area.
- If the blend looks smooth, a control coat is not needed.

Specialist Colour Processes:

3-Stage Pearl Application Process

Step 3: 3CT Step 2

Blending Adjuster Application:

- Apply the T4904 Blending Adjuster RFU on the adjacent panel or only in the area to be blended.
- Ensure the Blending Adjuster is applied as a wet layer to enable the pigments/RFU color to achieve the correct lay-down and metallic orientation.

Second Color Application:

- Apply one thin coat of Step 2 RFU color in the repair area, extending the blend area over Step 1.
- Follow with a reverse blend-in process to achieve the correct appearance. Avoid heavy layers.
- Blend the fading-out area as smoothly as possible using the reverse technique.

Control Coat:

- End the process with a light control coat in the blend area.

Step 4: Full Panel Application

Final Application:

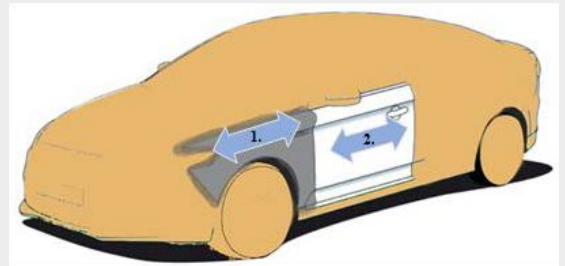
- Apply the full panel application process on the new/repaired panel.

Specialist Colour Processes:

3-Stage Pearl Application Process

Animated Overview:

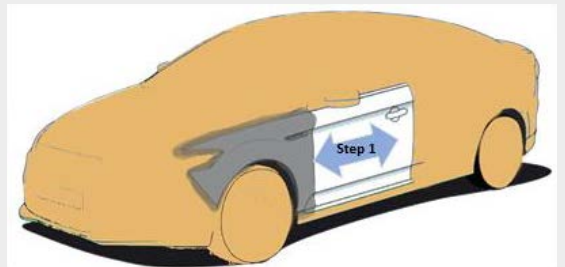
1. Repaired or new panel
2. Adjacent panel



Blending Adjuster

1. Apply the blend bed adjuster as a wet coat on the adjacent panel or in only in blend/fade-out area.

(The Blending Adjuster will allow the correct pigment lay down in the blend area).

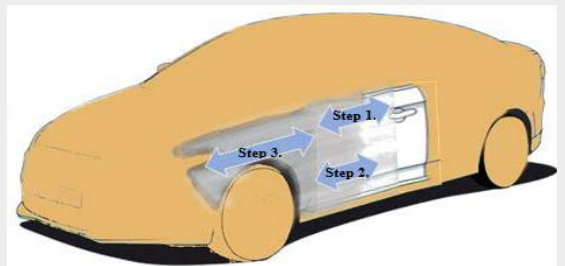


WBBC Colour RFU

Step 1 - Apply a light coat into the blending area.

Step 2 - Apply STD blend process into the blending area. Blend/fading-out as smooth as possible. End the blend process with a light control coat on blend area.

Step 3 - Apply WBBC colour on repaired panel to opacity.



Specialist Colour Processes:

Matt Textured and Semi-Gloss Finishes

The matt textured clearcoat system consists of two versatile 2K acrylic clearcoats and a texture additive. It has been designed to reproduce a range of low gloss levels and textures, for specialized repairs to initially finished vehicles or vehicle areas, with a low gloss textured clearcoat over a single or multi-stage colour basecoat system (e.g. Peugeot full-body matte textured system).

The matt textured mix can also be used on rigid plastics without the need for special additives.

D844 and D843 GRS textured additive blends can be used with D8302 HS hardener.

Range:

- D8115 Matt Clearcoat
- D8117 Satin Clearcoat
- D8135 UHS Rapid Clearcoat
- D8302 UHS Hardener
- D843 / D844 Texture Additives
- D8718 / D8719 Low VOC Thinner

Due to the technical nature of this type of colour, the application process can vary and may change and evolve as experience and understanding are gained in the field.

For standard application methods, please refer to the product data sheet. Standard thinner D8718 should only be used on small surfaces/components (e.g. mirror covers, wheel arches, etc.).

Gloss levels and texture obtained with this process can vary according to film thickness and application. Low film thickness and dry application will give lower gloss and more texture. A high film thickness and wet application will give a higher gloss level and hide some of the texture.

Care must be taken to avoid excessively high clear film thicknesses, as the final colour may be affected. In this situation, the repair will require further sanding and coating with a topcoat and Clearcoat.

Dirt cannot be removed from the final matt textured finish.

