

MATTE

The Flat-tering Finish



Mercedes-Benz Magno Matte paints create a soft sheen instead of a mirror-like shine. The matte finish is popular because it is both beautiful and unique. Heads turn when a matte-finish car goes by!

As more and more people are wowed by that stylish Mercedes-Benz matte finish, it's logical to assume that you'll soon be seeing this type of paint in your collision shop. Here's what you need to know to maintain that distinctive appearance when repairing this type of finish.

To begin with, regular gloss paint reflects 90% or more of the light that hits it. The reflection is uniform and mirror-like. Matte finishes reflect only 20% of the light. The remaining 80% is so diffused that the reflection of an object is not recognizable on a matte-finished surface.

IN THE CLEAR

Don't let the dramatically-different appearance of the Mercedes-Benz matte finish intimidate you. You'll be happy to hear that the matte effect is entirely in the clearcoat, and that the other paint layers are similar to those of traditional gloss finishes. The low sheen is obtained by the use of different hardeners, reducers, application methods, film thickness, and drying options. Polishing a flat finish results in significant differences in luster compared to non-polished areas, so any final coat errors cannot be buffed out. Dirt in the application of the clearcoat, mottling or striping due to improper spray technique, variations in film thickness, and other visible defects require

complete repainting of the final topcoat. For this reason, Mercedes-Benz strongly encourages the use of the procedures and materials recommended by matte paint system manufacturers.

MATCHING: MORE THAN JUST A FORMULA

Of course, the paint manufacturer's recommended mixing formula is important. Even minor deviations from the recommended ratio of hardener and reducer to the clearcoat paint itself will lead to significant changes in the level of "matting" (gloss reduction).

But matching a matte finish is more than just formula numbers. It requires careful visual inspection. You must pay attention to both color and gloss level. Different areas of the vehicle body may require different gloss levels. Film build can cause a color shift if painting over OE clearcoat.

Additionally, the gloss level for the vehicle being painted may have changed due to its age and cleaning history. This may, for example, necessitate painting the entire side of a vehicle instead of just the damaged panel in order to produce a matched gloss appearance on that side.

Other factors affecting the degree of gloss in your finished job include whether the hardener and reducer are slow- or fast-acting, whether you

This G63 makes a unique, individual statement with its matte black finish. The soft sheen gives a subdued, classy appeal while retaining its standout "Look at me, I'm the leader of the pack" attitude.





Color test panels are absolutely critical to match both color and gloss level to the vehicle being painted. Prepare several test panels, each featuring different mixing ratios of matting agent and clearcoat, and different wet/dry spraying methods.



PREPARATION IS YOUR QUALITY ASSURANCE

Paint will not stick to dirt or oil-based contaminants. Before and after sanding and between undercoats and topcoats, pre-clean the surface with wax and grease remover.

Proper preparation for a matte refinish is necessary to the success (and efficiency) of your paint job. Because you cannot sand or polish a matte finish, removal of any dirt or imperfections in the topcoat requires a complete re-do.

Even before you start sanding to level and prepping the surface for paint adhesion, you must remove any oil-based contaminants by wiping the surface with the wax and grease remover recommended by the approved matte paint system manufacturer. Do not substitute thinner or reducer in place of the wax and grease remover as this is likely to cause fisheyes when you apply the paint.

After sanding, remove any dust and residue with the cleaning agent recommended by your matte paint system manufacturer.

use a relatively dry or wet spray method, dry film thickness, ambient temperature, flash-off time, and drying method. Different combinations of these factors can alter gloss level by up to 20%.

This variability makes color/gloss test panels mandatory. After looking up the color formula recommended by the matte paint system manufacturer, spray at least three test cards with different ratios of matting agent (flattener) and clearcoat.

After drying (colors will appear significantly darker when dry), compare each test card to the vehicle, and evaluate both color and gloss level. Check in natural daylight. Hold the card against the vehicle surface to ensure that your viewing angle and light source are the same as for the area being repaired.

SPRAY CONSISTENCY IS KEY

“Mottling” describes a finish that looks streaked, spotty, or striped. It is often the result of an unbalanced spray pattern, or not observing the proper flash time between basecoat and clearcoat.

For example, if one pass is heavier than the others, that area may appear glossier after curing. Try to spray so that you maintain a wet edge, but that no one pass is heavier than the others.

Tilting the spray gun can place more paint at the top or bottom of the pattern, making film thickness uneven in that area. If you paint while too tired (don't expect sympathy from the boss), you may inadvertently allow your arm to drop while spraying. This tilts the spray fan up, resulting in more paint being deposited on the bottom portion of the pass than at the top, and, bingo, you've created a horizontal stripe in your finish.

Experiment with overlap. If a 50% overlap leaves light streaks between passes, try 75%. Be sure to maintain consistency with each pass.

To further reduce the appearance of striping, spray in two different directions in the same coat. After you've completely covered the panel with horizontal passes, cover again in that same wet coat using vertical strokes.

You can also help prevent mottling by using the correct spray gun settings (needle/nozzle/pressure), holding the gun perpendicular to the surface being sprayed, and following the matte paint system's recommended flash and dry times.

SPOT REPAIRS? POLISHING? NOT WITH MATTE PAINT!

All manufacturers of matte paint systems recommend edge-to-edge application of matte clearcoat on panels being repaired. Differences in film build, paint age, cleaning history and other factors make a spot repair likely to reflect light differently from surrounding areas. The blended section stands out, which is by definition unsatisfactory with matte or flat finishes.

There can be no de-nibbling or polishing of matte or flat finish topcoats. Any rubbing or polishing to eliminate imperfections will increase the gloss level in the area where mechanical pressure is applied.

Dirt can be removed at the basecoat stage, or after the first coat of clear has flashed off.



Evaluate test panels on the surface to be painted. Try to judge the test panel's color and gloss level at the same light angle and intensity as the finish on the vehicle.



Matte clearcoats flash off faster than traditional gloss paint, so you must maintain a wet edge as you spray. Experiment with the amount of overlap in each spray pass.

If inspection reveals any dirt in the final clearcoat, the job must be re-prepared, and the full repair area clearcoated again.

LOVIN' FROM THE OVEN

Matte finishes are often baked or air dried. Oven-dried finishes may have slightly more gloss than those that are air-dried, so be sure to follow the paint manufacturer's drying recommendations. Never use infrared (IR) drying as it does not allow the proper solvent die-back. For the same reason that you don't like die-back in a traditional paint job – it flattens color by reducing gloss – you want it in a matte or flat finish.

Similarly, be careful not to spray your clearcoat too wet. A heavy spray may leave too much solvent remaining during the curing process, which prevents gloss die-back to the proper level for the desired soft matte sheen.

You won't be able to tell if you have too much gloss until curing is complete. The clearcoat goes on glossy as normal and dries flat. By then, if you notice too much gloss it is too late for anything but a removal and re-spray of the last clearcoat application.

Pay attention to the paint manufacturer's recommended flash-off and drying times. These companies invest a lot in research

MERCEDES-BENZ APPROVED MATTE PAINT SYSTEM MANUFACTURERS

- Glasurit
- R-M
- Standox
- Spies Hecker
- PPG Refinish
- Henkel (Teroson)

Refer to the After-sales Paint Technology Guide at <https://portal.aftersales.i.daimler.com> for further details about approved matte paint systems.

FACTORS AFFECTING DEGREE OF GLOSS

- HIGHER GLOSS LEVEL
- LOWER GLOSS LEVEL
- Hardener with higher solids content
- Hardener with lower solids content
- Slower hardener
- Faster hardener
- Slower reducer
- Faster reducer
- Higher application viscosity
- Lower application viscosity
- Thicker dry film
- Thinner dry film
- More flash-off time
- Less flash-off time
- Force drying
- Air drying

(Source: Adjusting the Degree of Gloss of Permasolid 2K Clearcoats, Spies Hecker)

and field testing to make sure that their recommended mixing, spraying, and curing techniques produce the best finish.

PASSING INSPECTION

The final matte finish should have a uniformly low gloss. The surface may appear on close inspection to have small patterns and a slight texture, but these are normal matte-finish characteristics.

Looking down on the hood and then across the roof from the same standing position, the gloss level of the two different surfaces will appear different even if they are not. Viewing the surface at approximately 60 degrees reveals less gloss than at a flatter angle. To judge gloss level, try to view an entire side of the vehicle at a consistent angle. Do the same for all horizontal surfaces. When you get it right, seeing that classy matte finish you just applied is very satisfying.

Finally, it is important before embarking on this new procedure (or any other, for that matter) that you carefully read everything about it in WIS, the ultimate authority. |



Matte painting requires edge-to-edge application on the panel being repaired. A blended section would reflect light differently compared to surrounding areas, making the repair unsatisfactory.

DYNAMIC SEAT FUNCTION

Now comes the more complicated part: What if the Dynamic Seat function doesn't work? For this you almost certainly need SDS. The first step, as always, is to perform a short test. Also, search for any available software updates for the Dynamic Seat Control. If there is a code for a steering angle sensor, address that first. If you have fault codes for a leak in the system, SDS will help you find it. As mentioned before, the bladders are inflated with air individually. This is regulated by a control module and air distribution center called a Module Carrier. A pump supplies the needed air. The first thing to do is check the pressures in the bladders using SDS. Under "Actuations," you'll have the ability to inflate the cushions (Figure 4).

Using this screen, you can check whether or not the pump is working, and also check for leaks. If one or more cushions does not inflate, find the location of the leak. Is it a line? Is it a bladder? Usually, you can listen for this, or use a smoke machine. If the bladder leaks, then the entire bladder package has to be changed. This is a bit of work since you basically have to take the leather cover off to replace the bladder. All this can also be used to find a fault with the massage function.

If you don't have SDS handy, you can enlist the built-in functions of the vehicle to do a quick leakage check. Use the Command Controller in the center console to select the "Seat" menu in the Command screen. Here, you can select all the individual cushions and inflate them. If one or more do not inflate or deflate right away, you have a leak.

At times, you will get codes for a defect in the module itself. There are a series of 'Guided Tests' in SDS that will help you find the problem (Figure 5).

Process these in order to find the problem. We mentioned software updates earlier. Before you get too crazy, flash the control module using SDS and clear the codes. Remember that battery voltage is critical -- low voltage can trigger phantom fault codes.

Vehicle	221.177	Control unit	DS-LF
Complete list of guided tests			
Check power supply of component: N32/19			
Test CAN wiring for Short circuit or open circuit.			
Check alternator.			
Check of 220-V supply to module carrier for seat cushion			
Check of 220-V supply to module carrier for seat backrest			
Check of 220-V supply for module carrier for massage function			
5 V supply			
Test plug connection 3.			
Test plug connection 2.			
Test plug connection 4.			
Module carrier for backrest			
Module carrier for seat cushion			
Module carrier for massage function			
Interior CAN check:			
CAN test between control units DS-LF and SCM [MRM]			
CAN test between control units DS-LF and ESP			
CAN test between control units DS-LF and DSP			

Figure 5

SQUEAKS, CREAKS, AND RATTLES

Let's talk about a very common and very annoying problem: noise, as in squeaks, creaks, and rattles. No matter how well engineered and built a seat is, there's always the possibility of noises occurring. With leather, plastic, and metal all interacting with each other, chances are somewhere a squeal will develop. What to do? Mercedes-Benz sells a kit (Part #000-580-0350) to treat this. The kit includes different types of lubricants and felt tape. Whether it's the leather seat bottom rubbing against the plastic seat trim, or a plastic guide sliding on metal rails, or wherever else two types of materials meet, there is a lubricant in the kit to address it. Think of the noises as vibrations. When the leather rubs against the plastic, it makes a noise. Adding the right lubricant between them will reduce the friction, and, therefore, the vibration. No vibration, no noise. Felt tape can be used where seat covers go over the frame, or where the air bladders contact the seat covers.

Lastly, what to do when the seat refuses to move and you can't get to all the bolts to remove the seat? Before you break out the power tools and hammers, try this: If one of the motors is detached from the rail, try to reach under and reattach it temporarily to move the seat. You can also try powering up motors individually using a battery pack. Just make sure to isolate the motor from the rest of the car and be sure to use a fused connection. |