

I-CAR[®] ADVANTAGE Online™

Technical Information For The Collision Industry

VEHICLE REFINISHING, FINDING NEW WAYS TO SHINE: PART ONE

Refinishing techniques used by vehicle makers have evolved over the years. From the days of hand painting the first Ford Model A, to spraying acrylic lacquer, to using basecoat/clearcoat finishes, vehicle maker refinishing has come full circle. With more vehicles being built everyday, vehicle makers are looking at ways to improve not only the final appearance of vehicles, but also ways to lessen the environmental impact of vehicle refinishing.

Some of the information found in this Advantage Online article will be covered in the newly updated I-CAR Live training program - Color Theory, Application, Tinting, and Blending (REF03).

Technical information you will gain in this program includes:

- How to be more productive while being safe on the job.
- Learning how light affects color, how to evaluate refinish colors for matching, how tinting affects color movement, and blending techniques for topcoats to potentially increase refinishing operation efficiency.
- Keeping up-to-date on waterborne basecoats and UV-cure products, which are currently being used by vehicle makers and collision repair facilities.

The content found in this training program would benefit:

- Refinish technicians
- Collision repair estimators
- Insurance estimators

In part one of this two part article, let's look at some of the clearcoats that are being used by some vehicle makers to achieve the goals of improved final appearance and lessening environmental impact.

NANO-PARTICLE CLEARCOAT

Nano-particle clearcoat uses nanotechnology. What is this? Nanotechnology is a scientific research field that uses very small microscopic particles (nano-particles) to build larger, complex structures. In the case of automotive clearcoats, the nano-particles are made of ceramic. When the nano-particle clearcoat is applied, the ceramic nano-particles create a very hard, tightly cross-linked structure when the clearcoat cures, making it very durable. Mercedes-Benz introduced nano-particle clearcoats on their vehicles in 2004, and uses it currently for production (see Figure 1). Benefits include higher resistance to micro-scratching, such as from car wash brushes. Also, better stain resistance caused from debris such as tar, rail dust, and even bird droppings is another advantage of using nano-particle clearcoat.



Figure 1– Mercedes-Benz uses nano-particle clearcoat.



Figure 2– This BMW M6 has powder clearcoat from the factory.

Both of these characteristics contribute to longer gloss retention of the factory clearcoat application.

Some vehicle makers are using nano-particle clearcoat on wheel rims to better repel brake dust, while others are experimenting with nano-particle clearcoats that contain solar cells for powering some vehicle electrical systems.

POWDER CLEARCOAT

Powder clearcoat is being used by BMW for the 5, 6, and 7 series vehicle models (see Figure 2). Once the vehicle has the basecoat color applied, the vehicle has a static charge applied to it. The powder-based clearcoat is then pumped into the spraybooth. The vehicle's static charge attracts the powder to all areas of the vehicle. Once the vehicle body is covered with the powder, any powder that is not attached to the vehicle is reclaimed, so it can be used on the next vehicle body. The vehicle body is then heated, which causes the powder to melt and flow out. Once cooled, the powder is now the clearcoat. The ability for a vehicle maker to reclaim and re-use unneeded powder clearcoat is a major reduction in hazardous air pollutants and VOCs.

SELF-HEALING CLEARCOAT

Self-healing clearcoats are another new technology that is showing up on some vehicle maker products. Self-healing clearcoat has the capability to not only resist scratches, but also the ability to repair minor scratches on the surface. Depending on the depth of the scratch, the elastic resin-based product can reflow when exposed to warm enough temperatures and repair minor scratches, such as from car wash brushes or fingernails (see Figure 3). Self-healing clearcoat is being used by Infiniti on the 2008 EX.

REPAIRING NEW CLEARCOATS

When it comes to performing refinishing repairs on vehicles with these new types of clearcoats, there are typically no special materials or recommendations

required. These clearcoats can be sanded and scuffed with conventional methods currently used in the refinishing process. Some paint makers are offering clearcoats for refinishing repairs that have similar characteristics to some new clearcoats being used by the vehicle makers, to aid with returning the vehicle finish as close to original as possible (see Figure 4).

CONCLUSION

As vehicle makers continue to produce new vehicles, the demand to create high gloss, durable finishes while limiting adverse affects on the environment will continue to drive changes in finishes and clearcoats. As technicians, the need to stay informed on these changes is critical as well.

The newly updated I-CAR Live training program - Color Theory, Application, Tinting, And Blending (REF03) contains information on advances in refinishing technologies, such as new technologies being used at the vehicle maker level, waterborne basecoats, and UV-cure products for repair facilities. Refinish technicians, and collision repair and insurance estimators don't want to miss this class - Look for the program in your area, using the quick class search feature on the I-CAR web site homepage at www.i-car.com.

Part two of Vehicle Refinishing, Finding New Ways To Shine will focus on the increasing use of waterborne basecoat, not only by the vehicle maker, but also in the collision repair facility. Look for it in the next issue of the Advantage Online.

For comments or suggestions on the Advantage Online, please contact I-CAR Senior Instructional Designer Bob Jansen at bob.jansen@i-car.com.



Figure 3— Small scratches may “disappear” in a self-healing clearcoat.



Figure 4— Glasurit offers this self-healing clearcoat.

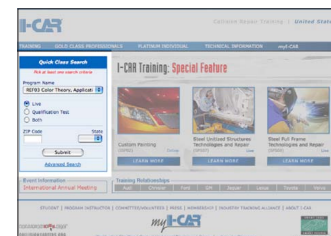


Figure 5— The I-CAR website has a quick class search feature.