

# Water-Based Car Paint - Waterborne Paints

## We Sprayed It Ourselves And Can Attest-There's No Need To Fear Waterborne Paints

By John McGann, Photography by John McGann  
Car Craft, July, 2009



People hate change, especially when the government forces it down their throats. Perhaps one of the most notorious regulation changes faced by the automotive refinishing industry in Southern California (but likely to be adopted nationwide eventually) was the lowering of the legal limits of Volatile Organic Compounds (VOCs) contained in products used to paint cars.

VOC is a very broad term used to label certain chemicals that evaporate very easily from the liquids they were mixed in solution with. Lots of products emit VOCs-stuff like paint, paint thinner, and gasoline all emit gases we often refer to as fumes or vapors. VOCs aren't just limited to paint products, though; plastics release VOCs as they age. In fact, VOCs are even emitted in nature by certain plants and trees. Nevertheless, these chemicals are believed to react with gases in the atmosphere and contribute to pollution, smog, toxic death from above, and all that doom and gloom stuff.

To lessen the amount of VOCs released into the atmosphere every year, the California Air Resources Board set tighter regulations. Basecoat paint was one item where a reformulation, switching to waterborne from solvent-based paint, would allow refinishers to meet the new standards. The new standard became waterborne paints, and manufacturers responded with new lines of automotive paint.

We got the lowdown from Brian Ferre, custom painter and instructor at Los Angeles Trade Technical Institute. He tells us waterborne paint is not a new invention-it's been around for more than a decade and has been in wide use in Europe for many years. Most of today's new cars are sprayed with waterborne paint at the factory, too. It received an undeserved bad reputation because of infamous problems that plagued a number of GM cars in the late '80s. The paint would peel off in sheets after a couple of years in the sun. Ferre tells us that particular paint-lifting problem was due to incompatibility between the paint and the primer. The paint itself was

OK. Much more development and testing have been done since then, and today's waterborne paint is at a quality level on par with traditional solvent paint.

Because this is an introduction to waterborne paint, we won't delve into the chemistry, but there are a few key points to remember that will make the process easier. The only step affected by the switch to waterborne paint is the basecoat. Though there are some waterborne primers, you'll generally still use traditional, solvent-based primer and clear. As a result, all current waterborne paint is intended for a basecoat/clearcoat system. The colors dry to a dull, satin finish, not a glossy one. You'll need to clear it if you want it to shine. Lastly, waterborne paint dries differently than solvent-based paint. It's critical to have enough airflow across the panel to allow the paint to dry fully before spraying the clearcoat.



We found an abandoned Camaro quarter-panel lying out behind our shop, cleaned it up, and prepped it for paint. The e-coat primer was still in good shape except for a few spots where it had chipped off and rust had started to form. We removed the rust with a wire brush on an air drill rather than using a grinder because we wanted to remove as little metal as possible. Once the rust was gone, we sprayed all the bare steel with Dupli-Color etching primer we bought at our local parts store.



After spraying the recommended four coats of primer and waiting 30 minutes, we scuffed the whole panel with 320-grit sandpaper.



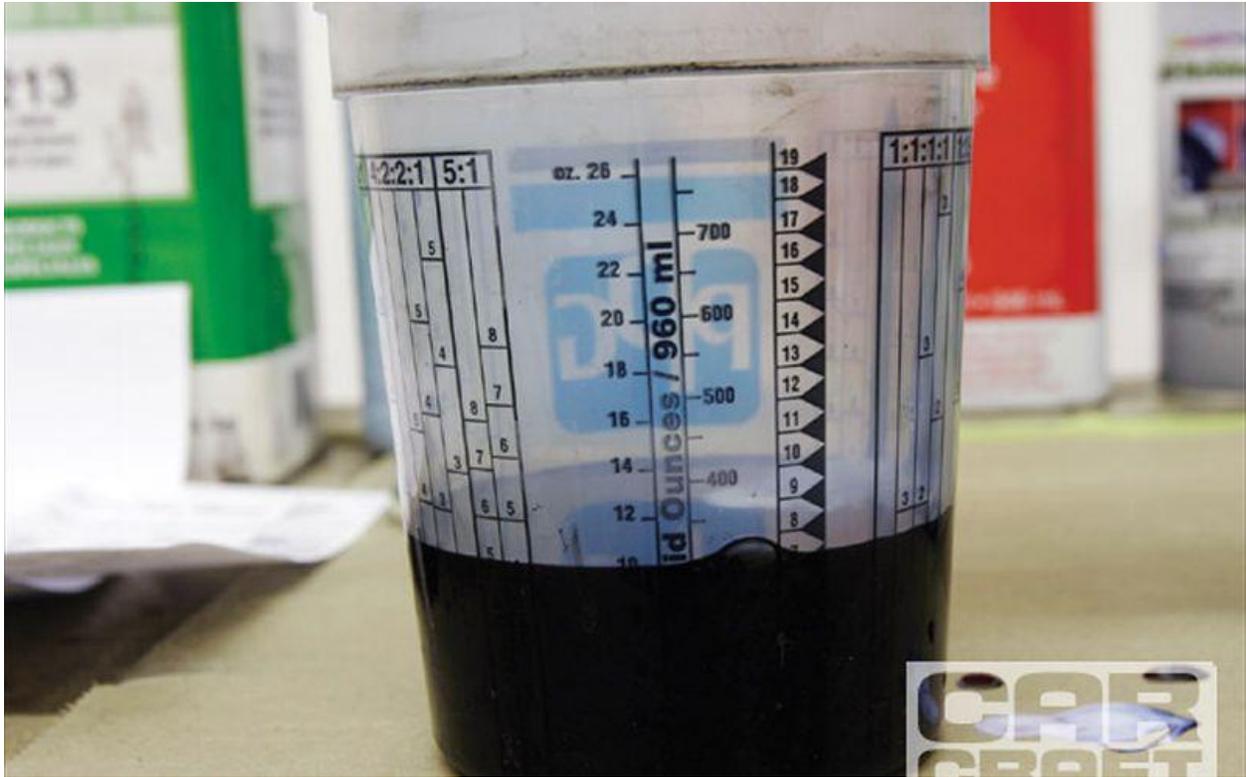
While there still is a little solvent in waterborne paint, there is a lot of water, so you need to use a paint gun designed to spray waterborne paint. The gun must have stainless innards that will not rust or corrode. We used Eastwood's new Concours HVLP gun and were pleased with its quality material and design, awesome spray pattern, and at about \$160, its extremely affordable price.



Avoid the temptation to use regular lacquer thinner to clean the gun. It does not react well to waterborne paint and causes the paint to clump up rather than thin out. Guess how we know that. Clogs are the last thing you want forming in your spray gun, so we cleaned everything with rubbing alcohol. Special surface-prep cleaners are made to go with waterborne paints. Be sure to buy some when you're buying the paint.



We bought a quart of DuPont CroMax in PX8, a Chrysler black, from Annex Autobody Supply in Los Angeles. Note that waterborne paints will usually come in a plastic container instead of steel. Because we bought such a small amount, our supplier just used a regular steel can. The white stuff is called the controller and takes the place of activator and thinner in regular solvent paint.



We added 10 percent controller to the paint as specified by the mixing instructions on the data sheet. Using the volume scale on the mixing cup, we poured 10 ounces of paint and added 1 ounce of controller.



Because the paint doesn't dry until the water evaporates, waterborne paint tends to require longer drying times than solvent paints. To speed the process, Ferre recommended we warm the part with an infrared heat lamp for 15 minutes prior to spraying. We couldn't find our heater anywhere, so we skipped this step but did have a fan ready to blow across the panel once we were done spraying. You can see why it would probably be better to spray waterborne paints in a paint booth, especially if you were doing an entire car. Our shop isn't very clean, and we'd be blowing all kinds of junk onto our freshly painted car.



Ferre likens the spray technique to that of acrylic enamels some older painters may have used. "It goes on wet. You always want to keep a wet edge." Unlike urethane enamels, waterborne paints aren't supposed to be allowed flash time between coats. Start your second coat as soon as you're done with your first. Waterborne paints have a very high solids count and cover completely in one coat with a second, lighter coat. You may hear this described as one and a half coats. We're sure that's music to the ears of the EPA-waterborne paint emits far fewer VOCs by volume than solvent paint, plus you use less of it.



Once you're done spraying, turn on your fans and heaters. You can also buy handheld blowers that plug into your shop's air supply. If using a handheld one, hold it at a 45-degree angle to the panel. Always direct airflow across the panel. If you point straight at it, you can cause the paint to run.



As the paint dries, you'll start to see it change from a glossy appearance to a satin or matte finish.



Water-based paint dries differently than solvent paint, too. Instead of getting sticky and tacky, waterborne paint feels slimy and will come off in large blobs if you accidentally touch it. It takes a little longer to dry-about half an hour for our quarter-panel. Once it's dry, you can begin spraying the clearcoat.



Proving that this is really waterborne paint, it cleaned up with nothing but pure water. If you are going to be doing this often, don't just pour the stuff down the drain. There is a recommended disposal procedure. As we mentioned earlier, we cleaned out the gun with rubbing alcohol rather than lacquer thinner.

### **Conclusion**

After all the negative hype we'd heard about waterborne paint, we were pleasantly surprised at how easy it was to use. It was easy to spray and covered very well. We especially liked the easy cleanup and near absence of toxic fumes filling up our shop. Trust us, give waterborne a chance-you'll like the stuff.

## **Pros And Cons Of Waterborne Paint**

### **Pros**

Excellent coverage  
Uses less product  
Easy cleanup  
Saving the Earth one car at a time

### **Cons**

More expensive  
Different spray procedure  
Different drying procedure  
Need a dedicated spray gun

### **SOURCES**

#### **Annex Automotive Finishes**

Los Angeles, CA  
323/934-3177

#### **DuPont Automotive Refinishes**

pc.dupont.com

#### **Los Angeles Trade Technical Institute**

Los Angeles, CA  
213/763-7000  
lattc.edu

#### **The Eastwood Co**

Pottstown, PA  
800/343-9353  
eastwoodco.com