

Spraying WATERBORNE



Same game, new rules. Shops that have converted to waterborne basecoat report that after a few weeks everyone adapts to the new rules of the game, and things return to business as usual. In preparation for your conversion, here's a rundown of the new rules.

By Cindy Macdonald, editor

In the grand scheme of things, the conversion to waterborne basecoat will be, for each shop, a temporary disturbance. A drop in the bucket, so to speak. A week or two of tumult, and then business as usual. So say those who have already completed their conversions.

Yvan Constantineau, the owner of a Quebec collision facility which converted last fall, says he would not go back to using solvent-borne basecoat. Although he was hesitant about switching at first, he says it only took about three weeks to get back to normal. Better than normal, really. With the Spies Hecker Permahyd® waterborne system and supplementary air movement in the booth, he's more productive than before (more details on page 22).

VOC rules still in development

As the paint suppliers begin the training and conversion of shops across the country, the VOC-limiting regulations which prompted the switch to waterborne basecoat remain under development at the hands of Environment Canada.

Michelle Raizenne, who has been Environment Canada's public voice during the industry consultation process, says the regulations will likely be published in Canada Gazette Part I in mid-2007. There is a 60-day comment period after that. Then Environment Canada considers the comments and publishes the final regulations in Canada Gazette Part II.

Right now, Environment Canada is considering the feedback it received from the industry in late 2006.

The regulations set limits on the VOC emissions level of various products used in the automotive refinish process. Currently, the only option to meet the proposed VOC levels is to use waterborne basecoat, and high solids primers and clearcoats.

A recent fact sheet published by Environment Canada explains that even though the effective date of the regulations is Jan. 1, 2009, collision repair shops will be allowed to use up any remaining non-compliant products purchased prior to the effective date.

So, over the next 18 months or so, collision repair facilities across the country need to assess their current equipment, undergo training, upgrade their shop with waterborne-compatible equipment, and make the switch to waterborne.

What follows are suppliers' suggestions regarding equipment upgrades, as well as Constantineau's story.

Drying of waterborne coatings is dependent on temperature and humidity, since the water vapor must evaporate from the sprayed material. But this process can be greatly accelerated by using air movement.

"The coating has a layer of water vapor sitting over it. You need to alleviate this, either by applying heat or moving the air, at a speed that won't cause it to skin over," explains Alexandra Haertler of Eurotech Spray Products Ltd., national distributor of SATA Spray Products. "We've found that SATA's dry jet portable air guns decrease drying time significantly."

Many suppliers are selling portable air dryers on stands to address the drying challenges of waterborne coatings. These generally consist of several air guns mounted on a pole with adjustable positions, and are variously referred to as mobile air movers, venturis, blow guns, air guns, air accelerators.

Bruce Henderson of DuPont Performance Coatings explains that air moving across the coating disturbs the

Air movement dictates productivity

vapor barrier and brings fresh, lower humidity air to the area. In evaluating the effectiveness of air velocity (comparing hot air, cold air and moving air plus infrared heating), DuPont concluded that the most important variable in the drying process is simply air velocity.

Knowing that air movement is critical, here are Henderson's suggested requirements for spray booths:

- Air flow greater than 11,000 ft³/min
- Minimum air speed of 0.6 ft/s
- Uniform air flow (no dead spots)
- Efficient/sufficient heating system
- Clean and sufficient process air (gun/blowers)

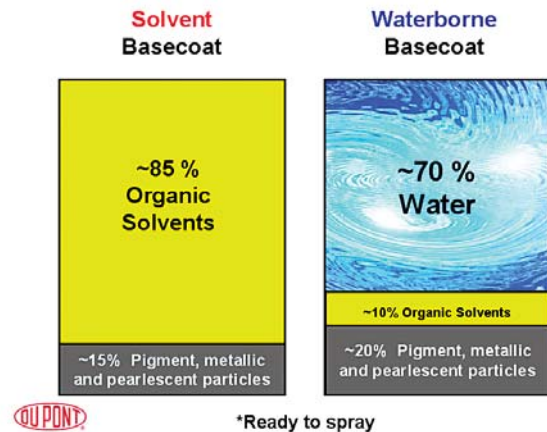
"Adequate airflow in the spray booth will play a significant role in the productivity of your paint line," adds Mark Sceeles of Sherwin-Williams Automotive Finishes. "Without supplementary airflow, some waterborne paints can take over 40 minutes to flash off in cool, damp conditions. Many bad things can happen in 40 minutes."

Sceeles also notes that shops should have the ability to control temperature and humidity, both in the shop and in the spray booth.

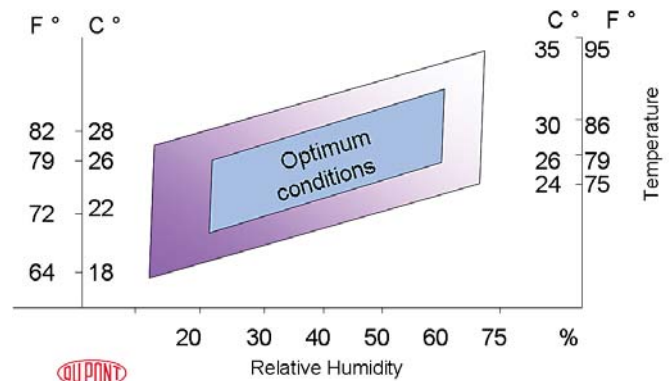
"With solvent-borne coatings, solvent selection can be adjusted to increase or decrease your flash and/or cure cycle times, but water has only one speed," he explains.

"Controlling the environment and application procedures are your only options to influence your productivity."

Waterborne Basecoat



Waterborne Basics - Application Targets



Waterborne basecoat is largely water, but generally has a higher concentration of pigments and other particles than solvent borne basecoat. Graphic courtesy of DuPont Performance Coatings.

The optimal conditions for applying waterborne coatings are defined by both temperature and humidity. Graphic courtesy of DuPont Performance Coatings.

“Any shop that’s using waterborne basecoat will need two separate cleaning systems — one for solvent-based coatings (clears and primers) and another for waterborne coatings,” explains Colin Hammacott of Hedson Technologies. Hedson sells a gun cleaner designed specifically for waterborne coatings.

Eurotech’s Haerter agrees. “We reinforce to people that you cannot mix the two systems — waterborne and solvent-based. Essentially, it is inefficient to switch the same gun back and forth between the two. We recommend two different cleaning and waste streams, in two separate areas.”

“The waterborne guns need to be cleaned right away after use, so that the material doesn’t settle. It is really hard to get it off if it dries,” she notes.

Hammacott also warns that cleaning up after waterborne painting is different from what painters are accustomed to. “Spray guns used with waterborne coatings need manual cleaning because the residue is more sticky than solvent-based coatings.”

Sceeles, of Sherwin-Williams, explains that waterborne paint cannot be dissolved with water, as dried solvent-based paint can be dissolved with thinner. “Waterborne paint dries quickly, and once dry it takes some manual brushing to get it off. Since the aqueous gun cleaners are used without solvent, the users will not be exposed to any hazardous material.”

Cleaning: keep water and solvent separate

Eliminate corrosion with stainless steel or plastic

Since water can corrode aluminum, “We will see more and more reliance on plastic cups or disposable cup systems. It prevents contamination from being introduced,” says Eurotech’s Haerter.

Stainless steel is another option for paint cups.

3M’s PPS disposable cup system has a new filtration system suitable for waterborne basecoat. The company has changed from a cylindrical filter to a flat filter which provides six times more surface area. For waterborne basecoat, a 125 micron filter is now available.

“I think you’ll see a resurgence of interest in this type of system,” says Paul Birchall, senior account representative for 3M’s Automotive Aftermarket Division.

With regard to spray guns, it is recommended that you use only guns with stainless steel passages for waterborne coatings. It is also recommended that shops have spray guns which are dedicated to waterborne coatings because of the difficulty of cleaning the guns if they were switched back and forth between solvent- and waterborne coatings. The result is that many shops are investing in additional spray guns when they convert.

Start with an assessment

“Step 1 in your conversion process should include a detailed assessment of your current shop conditions and equipment,” advise Mark Sceeles of Sherwin-Williams Automotive Finishes.

Working with their paint supplier, shops should establish goals and objectives for the facility. Ask yourself:

How many vehicles do you need to deliver each day?

What type of work do you typically perform: Small repairs? Heavy collision? Complete vehicle refinishing?

“Involve your paint supplier,” says Sceeles. “Every system is unique, they will have specific recommendations to get the most out of their products.”

Once the assessment or evaluation is complete, decisions can be made about equipment purchases and process changes. Then comes training and installation.

Filters: oil and water don’t mix

SATA recommends that shops install a three-stage filter system in spray booths and prep areas, consisting of pre-filter, fine filter and activated charcoal filter.

As compressed air travels through the air supply lines, contamination, such as lubricating oil, can be carried downstream with the air to the user. Oil residue, even in minute quantities, can contaminate the coating.

“With waterborne paint, air quality becomes very, very important. Our biggest emphasis is on making painters realize how important filtration is,” says Haerter.

She notes that many Canadian shops only have two-stage filtration.

“It’s also important to make sure the hoses are clean, and that they haven’t been saturated with oil or oil vapor.”

Training is critical

Because the rules are different for waterborne coatings, training is essential. Most paint suppliers are suggesting a two-day session at their training facility, and then offering technical support on-site for the conversion.

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“It’s important that all safety precautions recommended for solvent-borne coating be maintained when transitioning to waterborne basecoats,” says Debbie Nucciarone of PPG. “Waterborne coatings still have solvents and pigments in the formulation, although at a lower level.”

Nucciarone further adds that some of the solvents in waterborne paint may be even more absorptive to skin because they are in a water-based carrier.

She reminds painters that they should still wear gloves, protective glasses and an air-fed mask.

Still the same safety gear



Painters adapt quickly to changes

Waterborne paint uses water instead of solvent as a means of applying the pigment, so it does behave a little differently when sprayed.

For application of waterborne basecoat, SATA suggests a HVLP spray gun with company’s WSB nozzle. According to Haerter, “The WSB nozzle straddles the 1.2 and 1.3 mm nozzle size with a slightly larger spray fan. It allows painters to apply thinner coats, and in turn, allows for faster flash-off of waterborne materials. This combination keeps them from putting on too much material at first.”

Comparison of drying times

Conventional air drying	32 min.
Spray booth heating	17 min.
Air drying with SATA dry jet portable air accelerators	6 to 15 min.

Source: SATA

Post-waterborne, it’s business as usual

“I wouldn’t go back to the old system,” says Yvan Constantineau, one of the early adopters of waterborne basecoat.

“For the sake of my employees’ health, I wanted to convert as soon as possible,” says Yvan Constantineau. His medium-sized shop in Piedmont, QC, J.M.Y. Constantineau Inc., has two paint booths and nine employees. They completed the conversion to Spies Hecker’s Permahyd® waterborne basecoat in October, 2006. He commends Spies Hecker for its technical support during the conversion.

“It is very important that painters take training courses before they even spray the paint,” counsels Constantineau. In fact, he believes training is one of the critical factors in a successful conversion.

Constantineau chose to retrofit his two downdraft spray booths with Junair QAD systems. These redirect booth air through corner-mounted air nozzles. He also installed three-stage filtration and a refrigerated air dryer for compressed air, and purchased additional spray guns. A new gun wash station was also added. The shop already used 3M’s PPS sys-

tem of disposable plastic cups, so paint contamination from aluminum cups was not an issue.

He estimates the total investment for the conversion was \$40,000.

Constantineau’s other bit of advice is that shops should not attempt a gradual transition, where they’re switching back and forth between waterborne and solventborne basecoat. Better to make a clean break.

And you won’t regret the switch, says Constantineau. “We were a little hesitant at first, but now, I wouldn’t want to go back to the old paint system.”

He says the Junair QAD air movement system has been particularly useful for reducing drying times, for both the waterborne basecoat and the solvent-based clearcoat.

Plus, the Permahyd coatings produce a better end product. “We’ve noticed the finish is better than our previous paints. It’s more smooth.”

LOW-VOC PRODUCTS UPDATE

Spies Hecker introduces Permahyd® — an efficient waterborne system

Spies Hecker Permahyd® waterborne basecoat is a practical solution that allows refinishers to comply with Environment Canada's pending low VOC legislation, proposed to become effective Jan 1, 2009. Now available across Canada, Spies Hecker Permahyd® is a highly productive, OEM-approved basecoat system.

With its higher pigment content, Spies Hecker Permahyd® can cover most colors in 1½ coats — reducing basecoat consumption, shortening process times and increasing shop productivity.

“Spies Hecker Permahyd® represents the ideal solution for a straightforward and trouble-free changeover to help you

comply with the new proposed regulations,” said Brian Edwards, Spies Hecker country manager. “The sooner a shop converts to waterborne basecoat, the less pressure they will face to meet the legal deadline.”

Pro-Spray offers lean waterborne system

Pro-Spray H₂O is a practical, easy-to-use waterborne basecoat system formulated and manufactured in England. It is a lean system, with only 63 toners and binders. According to Pro-Spray, a full system contains only 41.5 L of paint. Pro-Spray is capable of creating solids, metallics, pearls and xirallics. The H₂O basecoat is supported by a full line of compliant primers, clearcoats and associated products. **B**