

# Waterborne Paint Fact Sheet

pacific northwest  
POLLUTION PREVENTION  
resource center



## Reasons to Switch

Waterborne automotive paint is becoming the wave of the future. The majority of OEM's use waterborne paint and about **70% have been using it for a decade or longer**. Why the switch? There are many reasons, but here are some of the most compelling:

- 1. Personal Risk:** Most solvent-based automotive paints contain isocyanates. These easily penetrate the skin and are absorbed through the eyes. Isocyanates even penetrate latex gloves. While today's personal protective equipment has never been better, it is common to see career auto painters with chronic exposure issues such as asthma or central nervous system damage (shaky hands). Less visible can be liver or kidney damage and impaired coordination.
- 2. Business Risk:** Most collision repair shops are located near other businesses or even near residential areas. Odor complaints are common and occasionally neighborhood groups petition to have the business relocate. **One large paint company was driven out of a major metropolitan area and forced to relocate 15 miles away.** In addition, more and more states are increasing permit costs for shops that continue to use solvent.
- 3. Environmental Risk:** Solvent-based paint releases VOCs and hazardous air pollutants during application and clean-up. Automotive painting releases about 70,000 tons of VOCs annually, which are contributors to smog and poor air quality. In 1999, when virtually all painting was with solvent, collision repair shops released 45,500 tons of known and suspected cancer causing chemicals into the air.

## Waterborne Myths

Waterborne paints had the unfortunate experience of being brought to market before they were really ready. As a result, the decade of the 1980's saw numerous coating failures, most prominently poor adhesion that caused peeling. This has created a perception problem among many painters. The fact is, that while waterborne paints are less tolerant of surface imperfections, adhesion to a properly prepared surface is every bit as good as solvent-based paints.



**Waterborne paints are more expensive.** This one is true if you are comparing purchase price. Waterborne paints cost more up front, but the excess does not have to be immediately thrown away, may not have to be treated as hazardous waste and more often than not water requires fewer coats than solvent. Also, as the economies of scale change, water will become cheaper and solvent more expensive as time goes on.



**Waterborne paint dries slower.** This is also true if you use the air make-up and exhaust system in your old booth. However, you can purchase fairly low-cost dryers that create turbulent airflow and the result is that drying times can be reduced and throughput increased with water. Hand-held dryers generally run under \$100.00



**Waterborne paints are only available as basecoats.** There are areas of the country that require the use of waterborne primers and primer/sealers and these perform just fine. Some OEM's are using waterborne clear coats at the factory and they are slowly becoming available as an aftermarket product. Clear coats will improve with time, but waterborne primers are effective and here now.



**Waterborne requires special equipment to spray.** Waterborne requires dedicated equipment to spray and there are things to consider, like making sure your equipment choices are not corroded by water and the tip size is proper. If you are using stainless steel HVLP guns to spray solvent you can generally use the same to spray water. With time, but waterborne primers are effective here and now.

## Waterborne Advantages



**“It wasn’t a difficult decision. The common thought is that it’s difficult to make the switch. It’s not. Or people think that it’s too expensive to switch. It’s not.” - Lisa Thompson, President, Heitzman Body & Paint Inc.**

We have already discussed the personal, business and environmental advantages of using waterborne automotive paints. Here are some other advantages:

- Not only is it better for the painter, but shop staff all report feeling happier and enjoying work more with the solvent smell gone.
- There is near absolute consensus that the color match with waterborne paints is superior to that of solvent-based. When it comes to the actual color with waterborne, it comes out cleaner/brighter than a solvent-based paint.
- Because water is the main ingredient, waterborne paints are much less flammable than the solvent-based counterparts, reducing the risk of fire. Due to this fact, some shops get a break on their insurance rates.
- Where solvent-based paints may require 3-4 coats to get good coverage, water-based paint would use two.
- Water-based paints have better metallic lay-down on body surfaces.
- Many waterborne paints do not require mixing systems.

## Waterborne Challenges

To be sure, there are some challenges to a waterborne paint conversion. Among them is the fact that while most makers of solvent-based paint have similar instructions for mixing, application, etc., these same things may vary greatly among different manufacturers of waterborne paint. Because of this, it would be misleading to suggest a single learning curve. Each paint vendor would be better able to provide this information and they all offer training and guidance on conversion. Shops considering conversion report receiving quality advice and assistance from their vendors.

To successfully convert to waterborne paint frequently requires an upfront capital expenditure. This is most often true of smaller shops, as larger shops and franchises make upgrades on a more regular basis. In particular, here are some areas that may need upgrading:

- Air make-up system – waterborne paints require better airflow and if the current system cannot be upgraded then a new system or even whole new booth may be necessary.
- Because they are less forgiving of imperfections, waterborne paints require a much cleaner air supply. This may be as simple as adding more efficient or larger dryers to the compressor if the current compressor can withstand the added load. If not.....
- If the current compressor cannot handle the extra load it may need to be replaced. This can run from \$3,000 to \$10,000 dollars plus installation cost. It is possible that rebates for new energy efficient equipment may be available from your local utility. This can lower the price dramatically, so be sure and check with them.
- Upgrading the compressor may only be step one. Some smaller shops have found that they are not able to upgrade the compressor until they first upgrade their electrical service.
- There will be smaller operational changes, such as switching to tack rags made for waterborne paint or switching to 125 micron filters if you currently use larger. Clotted particles in solvent-based paint re-wet when immersed in solvent, while waterborne clots do not re-wet and must be filtered out.

## For More Information....

If you have questions about regulatory issues and technical assistance, please contact the following people:

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**Visser’s Collision Center (Chicago) case study:** [https://www.epa.gov/sites/production/files/2013-12/documents/auto\\_refinishing\\_waterborne\\_basecoats.pdf](https://www.epa.gov/sites/production/files/2013-12/documents/auto_refinishing_waterborne_basecoats.pdf)

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