

Road Striping Paint Regulation Changes

Special Equipment Needed for Soon-To-Be Required Waterborne Paints

New Rules Coming Soon

For over five years, various federal regulations have been proposed which would virtually eliminate striping US roads with traditional traffic marking paints. The current proposed effective date is January 1, 1998. The pending rule limits the volatile organic compound (VOC) content of a broad range of coatings. Traditional traffic paints use solvents to keep binder and pigments in suspension. The common solvent-borne paints will violate the new rules. Waterborne paints will meet them, but the equipment used to apply solvent-borne paints is unsuitable for waterborne paints.

To help New Hampshire municipalities with old traffic striping equipment prepare for the new regulation, this article describes retrofit versus new purchase considerations. (If the rules become effective on January 1, 1998, articles in the Spring 1998 issue will deal with the different types of paints and their applications.)

Advantages of Waterborne Paints

Many states and large cities have already converted to waterborne paints. Their experience has shown that 100% acrylic waterborne paints, commonly called latex paints, have some advantages over traditional solvent-borne paints.

- Performance. Waterborne paints are more durable than the traditional solvent-borne, up to twice as long in some studies.
- Easier cleanup. Solvent-borne paints require strong chemicals for cleaning. Waterborne paint spills and equipment can be cleaned with water.
- Worker safety. Solvent-borne paints are toxic and can injure unprotected skin. Chemicals required to clean solvent-borne paints are particularly dangerous.
- Disposal. Solvent-borne paints, and their residues from cleanup, are hazardous materials. Dry waterborne paints are not hazardous materials. Their cleanup residues often are not but should be tested.

Temperature and humidity impacts on waterborne paint application. Highway agencies have overcome limitations by careful scheduling of painting activities.

Equipment Modification versus New

For road managers with equipment manufactured to apply solvent-borne paints, there are several retrofit versus new purchase considerations.

There are several basic rules for handling waterborne systems.

- All metal surfaces that come into contact with 100% acrylic waterborne paints should be grade 304 or higher stainless steel. Galvanized, mild steel, brass, copper, or aluminum metals should not be used. Their reaction with acrylic paints can cause gelation which coats heat exchangers and reservoirs as well as clog filters, lines, and guns.
- Flexible hoses should be similarly non-reactive. Teflon or nylon lines are resistant to heat and alkalis. Most hose suppliers offer a kit to check to metals in existing hoses.
- Diaphragm pumps work best. They must be constructed of stainless steel with teflon inner lining. Gear pumps are not suitable for waterborne paints.
- Because waterborne paints are heavier than solvent-borne, slightly higher reservoir and atomization pressures are needed. Best results with airless equipment occur with lower pump pressures and smaller nozzle sizes than for solvent paints.

If the existing machine has sprayed solvent-borne paint satisfactorily at less than the maximum pump pressure, pump capacity and piping sizes are probably adequate. If the machine has operated near its limit, a larger pump and/or piping will be needed.

Guns must be stainless steel for waterborne paints, and cost about \$500. New non-truck mounted equipment will cost from \$3600 to \$5400. The higher costs are for airless equipment; which spray the paint more efficiently than air pressure sprayers and enable better operational control.

Sources

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2. Douglas C. Cinoman. "Acrylic Water-borne Paints in Road Striping." *FHWA Technology Development News*. April 1996
3. Roadway Delineation Practices Handbook. 1994. FHWA-SA-93-001.