

FS No. 37-084-0321

WATER-BASED PAINT FORMULATIONS

1. BACKGROUND

Water-based paints, sometimes referred to as latex paints, have been evaluated as alternatives to solvent-based (i.e., oil-based) paints. The volatile organic compound (VOC) content of water-based paints is significantly lower than conventional solvent-based paints, thereby reducing VOC emissions. Water-based paints may include such resins as acrylics, vinyls, epoxies, and others. In addition to the resins, water-based paint contains some solvents, pigments, and additives.

Water-based paints contain small amounts of coalescing solvents that allow the resin particles to fuse together (coalesce) as the water evaporates, forming a continuous surface coating. These paints must be protected from freezing and applied at a minimum temperature of 50 degrees Fahrenheit. The paints are easily applied and cleanup is performed with soap and water. Water-based paints are less detrimental to the environment than oil-based paints because they contain fewer hazardous materials; thus reducing hazardous waste (HW) generation (depending on the type of paint used).

2. BENEFITS

Using a water-based paint decreases HW generation because the process does not generate spent solvents from cleanup (requiring only soap and water for cleanup instead) and most paints do not need to be managed as an HW. The paints will reduce the regulatory burden under the Resource Conservation and Recovery Act; therefore, reducing requirements such as recordkeeping, reporting, inspections, and accumulation time limits.

Because water-based paints contain less solvent than oil-based paints, reductions in VOC emissions and worker exposure can be expected, and it is less likely that a facility exceeds the reporting thresholds under the Superfund Amendments and Reauthorization Act (SARA Title III).

3. DISADVANTAGES

Water-based paints can rust steel and can adversely affect some aluminum surfaces. Application equipment must be constructed of a corrosion-resistant material. Water-based paint may have lower chemical and solvent resistance and has a reduced temperature resistance. Water-based paint coatings are also sensitive to humidity. Low humidity can cause coatings to dry extremely fast, creating craters in the final film. High humidity can cause very slow drying times, resulting in sagging.

4. DISPOSAL

Attempts should be made to turn in unused paints to the supporting installation Environmental Office's reissue program, if available. Unused paints that cannot be reused must be disposed of according to applicable environmental regulations. Never pour any unwanted or expired paint into sanitary or storm sewers! Depending on State and local regulations, it may be possible to air dry the waste paint and discard it as solid waste. However, you should always seek approval from the Environmental Office before doing so.

5. WATER-BASED PAINT TYPES

Because these coatings may not meet the requirements for solvent resistance and temperature, as required for some applications, other paint types may need to be used. The following is a description of some water-based (latex) paints and their possible applications:

- Exterior Acrylic Latex Paint. Suitable for use on concrete, masonry, stucco, and wood. It can also be used for interior applications.
 - Concrete Floor Sealer/Finisher. Resin-based, water emulsion sealing and finishing compound for use on cured and uncured concrete floors. It may also be used on other masonry, linoleum, rubber tile, magnesite, and troweled asphalt.
 - Traffic and Airfield Marking Paint. Water-based, 100% acrylic, suitable for application on traffic bearing surfaces such as Portland cement concrete, bituminous cement concrete, asphalt, tar, and previously painted areas of those surfaces.
 - Latex Stain. Intended for new or previously stained exterior wood surfaces.
 - Recycled Latex Paint. Reprocessed post-consumer waste paint intended for use on interior or exterior wallboard, concrete, stucco, masonry, and wood.
 - Stencil Paint. Water-emulsion paint intended for markings and for obliterating markings on wood and fiberboard containers.
 - Water-Based Metal Primer. Acrylic primer can be used on exterior or interior metal surfaces in all non-marine environments.
 - Water-Based Epoxy Coating Kits. Formulated for use on wood and concrete floors, these coatings are water-based, non-flammable, and non-toxic.
 - Semi-gloss Paint. Water-based for metal surfaces. Acrylic or modified acrylic topcoat paint is suitable for use on exterior or interior metal surfaces in all non-marine environments.
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