



Polyvine Water Recycling System

All water used for washing and cleaning in the Polyvine Factory is recycled. Our water recycling system for paint/varnish washing waste uses chemical and physical processes to separate paint solids from water, allowing the water to be reused or safely disposed of, documented and inspected by the Water Board. The Polyvine system involves adding flocculants, to cause the paint/varnish solids to clump together, then filtering the mixture to remove the solids and leaving behind clear water. The separated, solid paint/varnish waste can then be disposed of as inert solid waste.

How the systems work:

Flocculation: Clay lies at the heart of our wastewater treatment solutions; special clays have been developed over a few years. These clays are blended formulations based on natural minerals; they are powdered semi-granular formulations which are added directly into the wastewater. The components of the formulations dissolve and react in sequence. They work by pH adjustment, precipitation, ion exchange, coagulation and flocculation.

Continued product development of blends have been tailored to treat paint/varnish wastewaters. These are added to the wastewater to cause the paint/varnish solids to clump together, or flocculate.

Separation: The clumped paint/varnish solids are then separated from the water. This is done through a filtration/moving grid machine, which removes the solid waste from the liquid.

Water Re-use/Disposal: The remaining clear water can be safely recycled back into the cleaning process, used for general cleaning, or disposed of without harming the environment. The solid waste is incinerated by a specialist company.

Benefits of water recycling systems:

Environmental Compliance: Prevents paint/varnish from entering the sewer system,.

Cost Savings: Reduces the costs associated with waste disposal and the purchase of new water.

Water Re-use: Allows for the re-use of water in a closed-loop system, conserving freshwater resources.

Safer Disposal: Produces solid, inert waste that is easier and safer to handle and incinerate than liquid paint/varnish waste.



Synthetic Polymer Microparticles

Synthetic Polymer Microparticles are tiny, manufactured plastic particles (less than 5mm) that are a key component of waterborne acrylic polymers, where they are dispersed as microscopic particles in a continuous water phase. These polymers are widely used in products like paints and coatings, and their microparticles are created during the synthesis process, primarily through emulsion polymerization. While these are not the same as the microplastic particles released from the wear of acrylic fabrics, they represent another form of synthetic polymer microparticles found in various products.

Key aspects:

Formation: Waterborne acrylic polymers are typically synthesized through emulsion polymerization, which involves dispersing monomers in water with emulsifiers and initiators, leading to the formation of polymer particles within the water.

Structure: These are two-phase systems, where the polymer particles are suspended in a continuous aqueous phase.

Purpose: The presence of these microparticles is fundamental to how waterborne acrylics function, creating the film and providing the properties of the final product.

Monomers: The properties of the resulting polymer particles can be precisely controlled by tailoring the types and ratios of monomers used, such as acrylic acid, methacrylic acid, and their esters.

Examples: Waterborne acrylics are used in a wide range of applications, including paints, adhesives, and other coatings, and their microparticles are integral to their composition.

Amendment to Annex XVII of the EU REACH Regulation came into force on the 17th October 2025 concerning coatings as a source of microplastics and information obligations in final use and disposal. More specifically, preventing the release of microplastics into waterways via wash water contamination.