

How Does Aqueous Cleaning Work?



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Aqueous Cleaners

Aqueous cleaners are specially formulated detergents that are diluted in water and rely on heat, surfactants, and, at times, enzymes to break down and dissolve grease, bio-burden, and other wastes from stainless steel, ceramics, plastics, glass, rubber, and other hard surfaces.

Two Major Components of Aqueous Cleaners

Surfactants

Surfactants are one of the major components of cleaning products. They perform the basic job of breaking up stains, dirt, and wastes that normally do not dissolve in water alone.

The task of the surfactant molecules is to surround the dirt or waste, break it up, and force it away from the surface being cleaned. They then suspend and hold the waste particles in the wash water, preventing these particles from re-depositing onto the surface from which they were just removed.

Enzymes

Enzymes are proteins that catalyze or increase the rates of chemical reactions. Like all catalysts, enzymes work by lowering the activation energy for a reaction, thus dramatically increasing the rate of the reaction. Detergents that contain enzymes, therefore, break-down and remove wastes more rapidly than non-enzyme based detergents. It is important to note that enzyme activity can be affected by temperature, chemical environment (e.g., pH), and the concentration of dirt or waste.

Important Factors for Aqueous Cleaning:

1. Water Quality
Test tap water before use to ensure water quality is acceptable. If not, use alternative rinse water options.
2. Cleaning Solution Composition
Cleaning compounds which include surfactants and enzymes decrease cleaning time and eliminate residue.
3. Mechanical Force/Pressure
Ultrasonic cleaners, washing machines, warewashers, and pressure washers improve cleaning.
4. Water Temperature
Water temperature can have a significant impact on the effectiveness of aqueous cleaning. Increasing the temperature above ambient levels is often cited as the most common way to improve cleaning.
5. Proper Rinsing
Rinse baths or sprayers prevent residue build-up. Some processes use multi-staged, counter-current rinsing.
6. Adequate Drying
Towel drying, blow drying, oven drying, or use of centrifuges and autoclaves represent good methods for drying.