

The Role of UV Light in Ensuring Fluid Cleanliness: A Case Study of PolyScience DuraChill Chillers

Ultraviolet (UV) light is a powerful tool for fluid disinfection in laboratory settings. Its ability to effectively inactivate microorganisms without the use of chemicals makes it an attractive choice for maintaining fluid quality. The environmental benefit and reduced maintenance have considerable benefits in many applications.

Laboratories across various disciplines such as hospitals and water utility companies rely on high-quality fluid solutions for experiments, sample preparation, and equipment maintenance. Contaminated devices or plumbing can compromise research outcomes, affect equipment performance, and even pose health and environmental risks. When fluid is irradiated with UV light, it breaks down the DNA and related molecules of harmful microorganisms. Specifically, UV-C light damages nucleic acids, rendering bacteria, viruses, and other pathogens inactive. And unlike chemical disinfectants, UV light does not introduce harmful residues into the process equipment or algaecides into waterways.

PolyScience, a leading manufacturer of laboratory equipment, has revolutionized liquid purification in their award-winning DuraChill portable recirculating chillers. By incorporating their patent pending UV-C light technology, they have effectively engineered a system that continually controls biological growth within the fluid path without relying on chemical additives.

UV light spans a range of wavelengths, from approximately 100 nanometers (nm) to 400 nm. For perspective, humans perceive visible light from violet (around 400 nm) to red (about 750 nm), but UV light lies beyond our visual spectrum. Traditional polychromatic UV sources emit light at multiple wavelengths, including low, UV-A, UV-B, and UV-C wavelengths. The PolyScience UV-C lamps emit light primarily at a single wavelength (278 nm).

To confirm this theory, PolyScience did a side-by-side comparison with and without the UV-C light and some typical process fluids. A biological contaminant and supplemental nutrient were added to the chillers to represent a heavy biological growth scenario. As you can visually see in two samples below, after only four days of operation, the fluid, on the right, protected with the UV-C LED is substantially clearer.





Innovation and precision are the keys to the success of the PolyScience UV light in the DuraChill line of Chillers. UV-C light is a precision tool with strict efficacy requirements. It cannot be wielded haphazardly like a “disinfection lightsaber.” Biologists understand that UV-C light causes tangible damage to nucleic acids, making it a valuable resource for targeted disinfection.

In laboratories across the world, DuraChill chillers play a crucial role in supporting process equipment. Researchers benefit from the precise temperature control provided by these chillers, while the UV-C light system ensures that the fluid path remains free from harmful microorganisms.

Beyond the laboratory PolyScience’s commitment extends to any application needing clean, temperature controlled process fluids. By adopting UV-C light technology, they contribute to cleaner waterways, reduced chemical usage, and a healthier environment. By understanding its mechanisms, optimizing equipment, and implementing best practices, researchers can enhance safety, protect experiments, and contribute to scientific progress.

The UV-C light offered in the DuraChill line of chillers provides laboratories with a powerful and sustainable solution for disinfection. PolyScience’s award-winning line of DuraChill chillers set a new industry standard by integrating UV-C light for process fluid disinfection. Researchers, scientists, and environmentalists alike can appreciate the impact of this innovative approach. As laboratories continue to prioritize sustainability, PolyScience remains at the forefront of providing the most current technology to meet our customers’ needs for safeguarding fluid quality.

To Learn More Click Here - <https://www.youtube.com/watch?v=mS0WbSo8ZP4&t=3s>

