evoqua
WATER TECHNOLOGIES

ETS-UV™ ULTRAVIOLET DISINFECTION SYSTEMS

THE MOST EFFECTIVE WAY TO INACTIVATE HARMFUL PATHOGENS IN YOUR AQUATICS AND RECREATIONAL WATER

WHAT IS ULTRAVIOLET LIGHT?

Ultraviolet (UV) light is technically energy in the electromagnetic spectrum (100–400 nm) with wavelengths shorter than those visible to the human eye. UV is used in a wide variety of applications across many industries. In aquatics, UV systems are used to accomplish disinfection and chloramine reduction.

UV & DISINFECTION

UV light inactivates microorganisms such as bacteria, viruses, molds and other pathogens without the use of chemicals. UV light inflicts permanent damage to DNA/RNA contained in all living species. Once damaged, chlorine resistant organisms such as Cryptosporidium are unable to sustain routine cell functions such as respiration, food assimilation and replication. With cells rendered non-viable, the organism quickly dies.

UV & CHLORAMINE REDUCTION

Chlorine in pool water reacts with organic compounds to form disinfection byproducts (DBPs) such as mono-, di-, and tri-chloramines. Volatile in nature, chloramines off-gas and concentrate at the water/air interface, where swimmers breathe, causing burning eyes and respiratory issues that can affect both performance and long-term health. Chloramines further dissipate into the natatorium causing corrosion and that offensive "chlorine smell."

TYPES OF UV SYSTEMS

We offer both medium and low pressure UV systems in aquatic applications from our trusted ETS-UV™ product portfolio. The term pressure refers to the pressure of gas inside the UV lamp—and ultimately wavelength(s) of light produced. Both low and medium pressure UV systems produce emissions in the 200–280 nm "UV-C" spectrum. Monochromatic low-pressure UV systems emit a single 254 nm energy wave, whereas polychromatic medium pressure UV systems emit energy waves across the entire UV-C spectrum. As a result, energy emitted by medium pressure UV systems break down all three chloramine species and demonstrate higher germicidal disinfection efficiencies.

NSF CERTIFICATION & CRYPTOSPORIDIUM VALIDATION

NSF-50 certification for UV systems is required by many states in the US and increasingly becoming a mandate due to the rising number of Cryptosporidium outbreaks. NSF-50 has two UV performance test protocols:

NSF-50 for Secondary Disinfection
GOLD STANDARD

- Strictest, most exacting of the two standards and is much harder to pass than the base standard
- 3-Log Crypto validation or reduction of 99.9% Cryptosporidium in a **single** pass
- Includes testing of UV dose monitoring system performance

NSF-50 for Supplemental Disinfection
BASE STANDARD

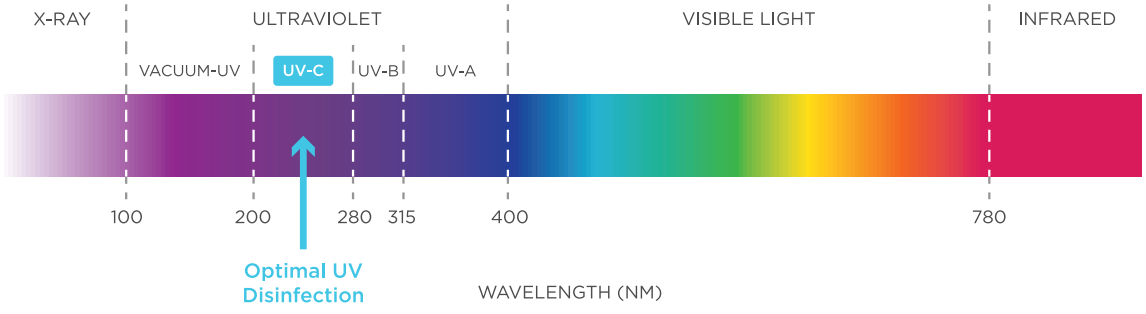
- 3-Log reduction of Pseudomonas aeruginosa and Enterococcus faecium in **six** passes

When Selecting a UV System, ALWAYS ENSURE:

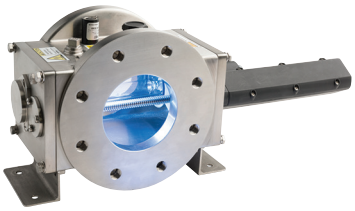
1. System is rated for Secondary Disinfection, not just Supplemental Disinfection. Be sure to verify on NSF website (nsf.org).

2. System has validated UV dose monitoring, which will guarantee effectiveness of treatment system when properly operated.

THE ELECTROMAGNETIC SPECTRUM



Which UV System is Right For You?



	Barrier™ Ti Low Pressure UV System	Wafer® Medium Pressure UV System
Approved for secondary disinfection	●	●
Third party validated to inactivate Cryptosporidium	3-Log	3-Log
NSF-50 certified for supplemental disinfection	●	●
NSF-50 certified for secondary disinfection	●	●
In accordance with USEPA/UVDGM	●	●
Improve water quality	●	●
Improve air quality	—	●
Chloramine reduction	Low (monochloramines)	High (mono, di, tri)
Bather load	Moderate	High
Simple and easy to maintain	●	●
Compact footprint for easy retrofit	—	●
Saltwater resistant/suitable for high TDS applications	Highly resistant	Resistant with options
Plug-and-Play for containerized systems (splash pads, fountains)	●	—
Flow rate	Up to 506 gpm	Up to 3,082 gpm
Construction materials	Titanium + Polypropylene	316L SS
Lamp technology	Low pressure amalgam lamps	Medium pressure lamps
High-spec control panel	●	●
Variable power and dose pacing	●	●
Vertical or horizontal installation	●	●
Inlet/outlet configuration	Flexible	Fixed
Electrical Installation	110-240 VAC	220/400 VAC, varies by model
Easy mechanical installation	●	●
Tool free routine maintenance	Lamp and quartz	Lamp
Remote access/data logging	●	●
Available IO (inputs/outputs)	●	●
Replacement parts/spares across model range	Common	Multiple sizes
Wiper	Manual (2 and 4 lamp units only)	Automatic
5-year warranty (subject to terms & conditions)	●	●

Please contact us to further discuss your specific application and what UV solution is the best fit.

Evoqua Barrier Ti and Wafer UV disinfection generator systems undergo third-party validation testing in accordance with NSF/ANSI 50. Validated products are tested to confirm a minimum inactivation equivalent of 3 log (99.9%) for Cyptosporidium, Pseudomonas aeruginosa, and Enterococcus faecium. Performance limitations depend on feed conditions, overall installed system design, and operation and maintenance processes; please refer to Operations Manuals. For more information: contactus@evoqua.com.

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