

ULTRAVIOLET DISINFECTION

Would you let just any water touch your family?



70% OF THE EARTH'S SURFACE IS WATER...

Radiant Energy of Light is Used for Water Purification

Radiant energy in the ultraviolet region of the spectrum, which has wavelengths shorter than visible light, is lethal to microorganisms. The radiant energy of light is the size of the light's wavelength, measured in nanometers. Wavelength of light can also be represented by colors like a rainbow. Germicidal disinfection by light falls between 200 and 300 nanometers with the most efficient wavelength at 260 nm. A typical germicidal ultraviolet lamp that's used residentially has a wavelength of 254 nanometers.

The UV light disinfects the water because it penetrates microorganisms, such as E. coli, and damages their DNA so that they are unable to reproduce and are technically dead. This is the preferred method of destroying bacteria because it achieves 99.999% reduction.

UV Unit Intensity

The unit's intensity is the product of the UV lamp's power, the diameter of the UV cylinder, and the treatment's flow rate in gallons per second. This is expressed in units called micro watt-seconds per square centimeter.

ULTRAVIOLET ENERGY INTENSITY (MICRO WATT SECONDS / cm²) REQUIRED TO DESTROY COMMON ORGANISMS

Bacillus anthracis	8,700	Escherichia coli (E. coli)	6,600	Serratia marcescens	6,160
S. enteritidis	7,600	Micrococcus candidus	12,300	Dysentery bacilli	4,200
B. Megatherium sp. (veg.)	2,500	Micrococcus sphaeroides	15,400	Shigella paradysenteriae	3,400
B. Megatherium sp. (spores)	5,200	Neisseria catarrhalis	8,500	Spirillum rubrum	6,160
B. paratyphosus	6,100	Phytomonas tumefaciens	8,500	Staphylococcus albus	5,720
B. subtilis	11,000	Proteus vulgaris	6,600	Staphylococcus aureus	6,600
B. subtilis spores	22,000	Pseudomonas aeruginosa	10,500	Staphylococcus hemolyticus	5,500
Corynebacterium diphtheriae	6,500	Pseudomonas fluorescens	6,600	Staphylococcus lactis	8,800
Eberthella typosa	4,100	S. typhimurium	15,200	Staphylococcus viridans	3,800
		Sacina lutea	26,400		

Microwatts is the measurement of the energy emitted from the lamp. The energy availability is also dependent on the UV transmission of the water. This varies with the color, metal particles, and turbidity. The more interference the UV light has reaching the microorganism, the less effective it is in disinfecting the water. Seconds is the time the contaminated water is exposed to the UV lamp. Flow rates are converted from gal/sec to a more common measurement of gallons/minute. Square centimeter is the area of the pressure vessel (cylinder). A typical UV unit should produce at least 30,000 MW-sec/cm² after 12 months of use.



The UV Lamp

Note: The high efficiency germicidal lamp lasts up to 1 year.

The UV lamps are made of special quartz glass that allows up to 90% transmission of the 254 nm wavelength of light. Standard glass will block almost all of light at this wavelength. The quartz obtains the optimum temperature of 104° F. needed for 100% UV output for bactericidal radiation. That means the lamp is very hot to the touch.

The inside of a UV lamp contains at least one metal coil to conduct the electrical energy from the ballast, an inert gas, typically mercury. When electrical energy enters the lamp through the metal coil, the mercury gas is vaporized and the 254 nanometer wavelength of light is formed. Pieces of metal mercury can be seen in a used UV lamp. This is normal during lamp operation.

Note: Follow Local Guidelines For Disposal Of UV Lamps Due To Mercury Content

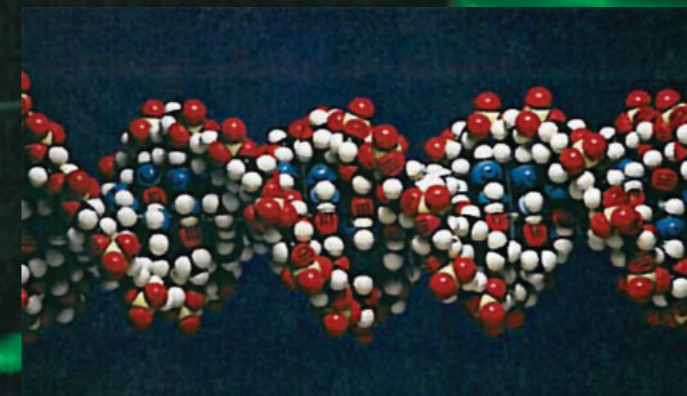
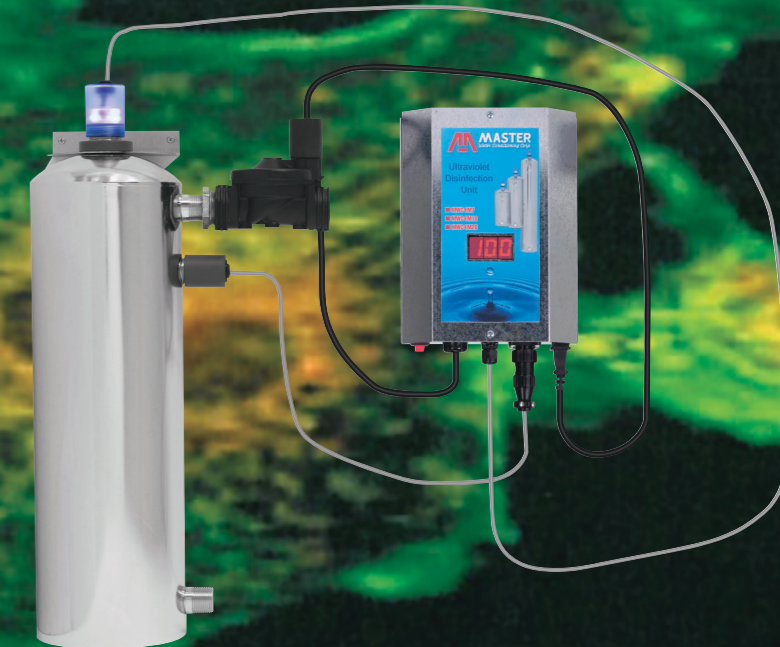
...ONLY 3% IS DRINKABLE!

UV Disinfection is a proven highly efficient method for water purification without the use of chemical additives.

Our units destroy bacteria and virus in the water by bombarding them with 254 nanometers of ultraviolet energy as the water passes through its stainless steel chamber.

Since no chemicals are needed, the taste of the water doesn't change and less maintenance is required.

The only maintenance required with our ultraviolet purifier is the annual changing of the germicidal lamp and the cleaning of the quartz tube sleeve.



Eye exposure to a UV lamp can cause serious eye injury. Protective goggles or glasses rated to protect your eyes from the harmful light range should always be worn. If using safety glasses, contact manufacturer to confirm its UV protection rating.

Performance and Maintenance

The UV system is equipped with a lamp sensor and alarm to insure that the lamp is working. Otherwise, the lamp would have to be physically inspected to see if light is being produced. All units are equipped with a power supply that incorporates an alarm system to indicate proper voltage going to the UV lamp. If the alarm sounds, the UV lamp or power supply has malfunctioned. The power supply provides an electrical connection that operates an optional normally closed solenoid valve to stop water flow when the lamp fails.

Most UV lamp manufacturers rate their lamps for 9000 hours or one year of operation. That doesn't mean the lamp won't last longer, but an annual replacement is recommended. The quartz tube should always be removed from the cylinder for cleaning when replacing a lamp. A clean quartz provides maximum UV energy transfer from the lamp to the water..

FEATURES:

Stainless Steel Ultraviolet Chamber

- Plasma welded and electro-polished surfaces that enhance system's disinfection performance.
- Durable 304 stainless steel chamber.
- Built-in gallon per Minute (GPM) flow control to guarantee proper treatment flow rate.
- Blue "glowing" gland nut which confirms the germicidal lamp is operating.

Solid State Power Supply

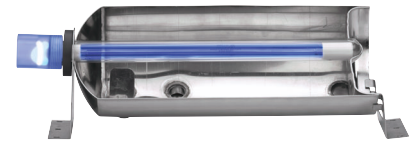
- Electronic ballast instantly starts the germicidal lamp.
- Provides continual power management to the germicidal lamp for years of service.
- Germicidal Lamp monitor system protects you by actuating an audible alarm after 9000 hour lamp usage and if there is lamp failure.
- Electrical connection which operates an optional normally closed solenoid valve to stop water flow when lamp fails.

Germicidal Lamp and Quartz

- High efficiency germicidal lamp emitting 254 nanometers of UV energy for up to 9,000 hours (1 year). The 254 Nanometers is the optimum wave length of UV light for destroying bacteria.
- Easily accessible quartz tube can be removed from the stainless steel UV chamber in minutes for easy cleaning.



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Three Series to Choose From All Series use our high Quality UV Chamber, Solid State Power Supply, Quartz and Germicidal Lamp.

- **The MWC-E Series** - Our standard UV unit. Comes with Stainless Steel Chamber, Power Supply, Germicidal lamp & Quartz and is equipped with an audible alarm to warn of lamp failure.
- **The MWC-ES Series** - All features of our standard UV unit plus a 1" normally closed solenoid to shut off water supply during a power failure.
- **The MWC-EM Series** - All features of our ES Series, plus a narrow band UV meter which monitors the 254 nanometer's wavelength. It features a visual monitor, an audible alarm, a 30 second delay and fail safe circuitry designed to activate the normally closed 1" solenoid valve, which will shut off the water supply during periods of inadequate UV intensity as monitored by the narrow band UV meter.

**Detailed warranty information accompanies each UV unit.

SPECIFICATIONS

Model	Flow Rate GPM	Lamp Wattage	Power Supply Amps/Volts	UV Intensity MW-SEC/CM²	Maximum Water PSI	Maximum Water Temperature	Inlet Pipe	Outlet Pipe	Depth	Width	Height
MWC-E7 MWC-ES7 MWC-EM7	7.0 gpm	14 watts	0.5 / 115V	30,000	100 psi	100° F	3/4" NPT	3/4" NPT	6"	8"	16"
MWC-E10 MWC-ES10 MWC-EM10	10.0 gpm	25 watts	0.5 / 115V	30,000	100 psi	100° F	3/4" NPT	3/4" NPT	6"	8"	22"
MWC-E20 MWC-ES20 MWC-EM20	20.0 gpm	40 watts	0.5 / 115 V	30,000	100 psi	100° F	1" NPT	1" NPT	6"	9"	37"

COMMERCIAL ULTRAVIOLET UNITS ARE AVAILABLE IN FLOW RATES FROM 30 TO 500 GPM. DEALER, CALL FOR MORE INFORMATION