

UV Sanitization: A sound investment for stored water purity

Maintaining high purity water with low bacteria levels during storage is critical.

If left to proliferate, trace level of microorganisms present in purified water compromise water purity.

This bacterial contamination is responsible for the formation of a biofilm, an accumulation of organic material made up of active and dead organisms, on the inner walls of the storage reservoir.

Even though chemical sanitization and mechanical scrubbing may be periodically performed, this biofilm is difficult to remove and is a frequent source of recontamination in stored water.

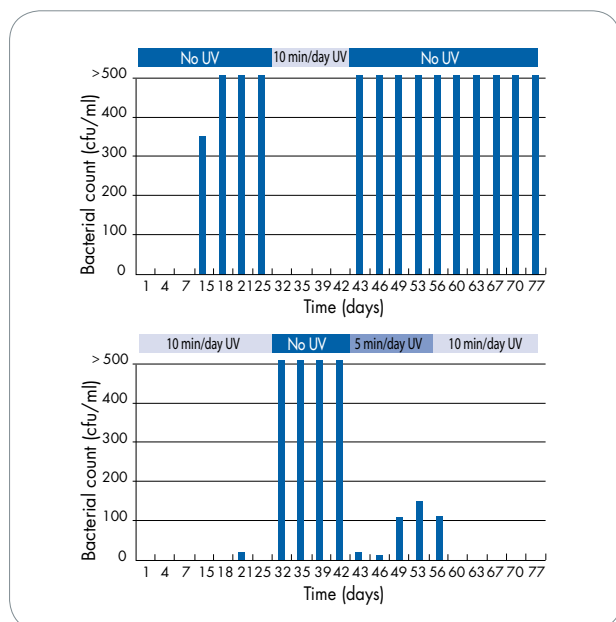
10 minutes/day of UV is enough!

During development of the A.S.M., the UV lamp exposure cycles were optimized by examining the resulting bacterial reduction after exposure.

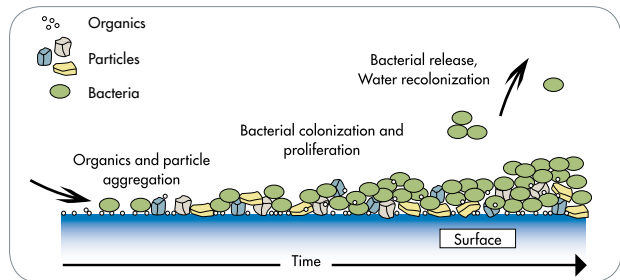
Two 60-liter reservoirs were fed by an intentionally contaminated reverse osmosis water purification system. The reservoirs were then emptied and refilled each day and alternately equipped with an A.S.M. into which variable illumination times were programmed.

As shown in the graphs, 10 minutes per day of UV exposure were enough to make the reservoirs return to their original low bacterial levels.

Germicidal effectiveness of the UV lamp



Biofilm formation over time



Say "No!" to bacterial proliferation

Millipore's Automatic Sanitization Module (A.S.M.) is designed to prevent the growth and proliferation of bacteria and the resulting biofilm on the inner surface of Millipore PE reservoirs. The A.S.M. makes use of the germicidal properties of an ultraviolet (UV) light at 254 nm, which is produced by a low-pressure mercury vapor lamp fitted inside the reservoir.

Ordering Information

Description	Catalogue No.
Polyethylene Reservoirs	
Reservoirs	
30-liter PE reservoir	TANK PEO 30
60-liter PE reservoir	TANK PEO 60
100-liter PE reservoir	TANK PE1 00
Accessories	
Vent Filter 0.22 µ	TANK MPK 22
Advanced vent filter (for Elix water system)	TANK MPK 01
Standard vent filter (for RiOs water system)	TANK MPK 02
Reservoir wall-mounting bracket (for 30 L/60 L reservoirs)	TANK FIX 01
Automatic Sanitization Module	
120 V	
ASM (standard)	TANK S60 UV
ASM complete (with water sensor and solenoid valve)	TANK S6L UV
230 V	
ASM (standard)	TANK S50 UV
ASM complete (with water sensor and solenoid valve)	TANK S5L UV
ASM accessories	
Replacement UV lamp	ZFRE S00 UV
Water sensor with cable	TANK LKO 02
Distribution Pump	
Complete kit	
120 V/60 Hz distribution pump with connection kit	TANK REC 56
230 V/50 Hz distribution pump with connection kit	TANK REC 50
Distribution pump alone	
120 V/60 Hz	PUMP 056 01
230 V/50 Hz	PUMP 050 01
Pump connection kit alone	
(12 m long PE tubing: Ø = 12 mm , check-valve, connectors, elbows and tees)	PUMP KIT 01
Accessories	
12 mm-12 mm elbow connector	FTPF 070 34
1/2 "M -12 mm-12 mm tee	FTPF 070 36
12 mm x 9 mm black PE tubing (1 m length)	FTPF 070 38

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Reservoirs and Accessories

Storage with a Difference

Guarantee the purity of your stored water

Pure water requires a storage system which prevents the degradation of your water quality. Millipore's 30-, 60-, and 100-liter polyethylene (PE) reservoirs are designed to maintain consistent purity of stored water and provide effective protection against airborne contaminants.

A complete line of reservoirs is available, ranging in capacity from 30 liters to several hundred liters. Your nearest Millipore office will be able to guide you in the choice of reservoir best suited to your needs.

Prevent bacterial growth

Water stagnancy can cause bacterial proliferation. Our optional Automatic Sanitization Module (A.S.M.) is the ideal solution for the prevention of bacterial growth and biofilm formation on the inner surface of the reservoir.

Distribute your stored water where it is needed

Laboratories use pure water to feed equipment such as Milli-Q® ultrapure water systems and washing machines. An optional distribution pump can be fitted into the reservoir base to enable feed to all laboratory equipment or simply to filter the pure water before use.

Optimized pure water storage

The main concern when storing purified water is degradation of water purity over time. Only a strict choice of reservoir materials, associated with careful design and appropriate protection against airborne contaminants, can ensure consistent water quality during storage.

Innovative design

Millipore 30-, 60- and 100-liter polyethylene reservoirs incorporate the latest technical developments and advanced features to guarantee stored water of consistent purity:

UNIQUE FEATURES

- Polyethylene selected for its minimum release of extractables
- Smooth inner surface prevents biofilm formation
- Cylindrical shape minimizes surface area in contact with water
- Conical bottom allows complete cleaning and rinsing
- Purified water smoothly fed in at the bottom of the reservoir prevents absorption of carbon dioxide
- Front valve for manual dispense of purified water
- Hermetically-sealed lid prevents air from entering the reservoir
- Large top opening allows manual cleaning during sanitization procedure
- Compact space saving design

FAIL-SAFE PROTECTION

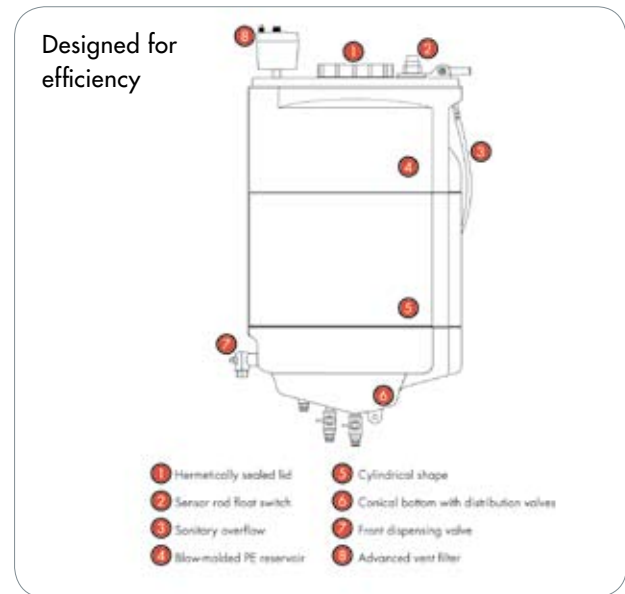
- Sensor rod float switch system for automatic reservoir refill and indication of water level (% full)
- Sanitary overflow in the unlikely event of a water system malfunction
- Direct display of stored water level on RiOs™ or Elix® system units
- Water sensor (option with A.S.M. module) to prevent any leakages

ACCESSORIES & CONNECTIONS

- Choice of vent filters to protect stored water against external airborne contaminants
- Upgradeability: distribution pump, UV sanitization module (A.S.M.) and water sensor
- Two additional bottom valves enable connection to a polishing system and a washing machine

To find out about all the tests performed during the reservoir development process, request the publication

"R&D Notebook 1: Optimizing the storage of purified water for laboratory applications" (Ref. No.: RD001EN00)



Specifications

There are 3 different reservoir sizes available in this range.

30-liter Reservoir

Diameter	380 mm (14.82 in.)
Height	600 mm (23.4 in.)
Maximum Usable Capacity	25 L
Weight (full)	30 kg (66.14 lb)
Secured to Wall	Yes
Wall-Mounted	Yes

60-liter Reservoir

Diameter	380 mm (14.82 in.)
Height	840 mm (32.76 in.)
Maximum Usable Capacity	54 L
Weight (full)	59 kg (130.07 lb)
Secured to Wall	Yes
Wall-Mounted	Yes

100-liter Reservoir

Diameter	380 mm (14.82 in.)
Height	1255 mm (48.95 in.)
Maximum Usable Capacity	91 L
Weight (full)	98.5 kg (217.15 lb)
Secured to Wall	Yes
Wall-Mounted	Shelf recommended

Automatic Sanitization Module (A.S.M.)

Full flexibility for guaranteed results

- 254 nm low pressure mercury vapor UV lamp, selected for its germicidal effectiveness
- Pre-programmable intervals of 10-min / day automatic UV illumination for optimized efficiency
- Additional programmable and manual UV exposure possible to meet critical application requirements
- Up to 60 min / day of UV exposure for total flexibility
- Choice of language display and real time clock for maximum convenience

Additional accessories

The A.S.M. is also available with an added security option, where it can isolate the water system from the main line, should any leakage be detected. The A.S.M. display will show the time and date water was detected along with instructions on how to reset this function.



Complete water purification chain with the A.S.M. and water sensor option



Automatic Sanitization Module control panel

- Clear LCD display and control panel to program date and time settings, UV cycles and UV lamp operation
- UV lamp exchange alarm for easy maintenance
- Automatic recovery of all operating parameters in case of power failure
- Compact design to save laboratory space

Specifications

Millipore's Automatic Sanitization Module is available in 120 V and 230 V options and is easily fitted onto the reservoirs.

A.S.M. specifications

Maximum height above tank	143 mm (5.58 in.)
Total length end to end	381 mm (14.86 in.)
Length of quartz housing	286 mm (11.15 in.)
Width	261 mm (10.18 in.)
Depth	379 mm (14.78 in.)
Minimum height above A.S.M. top	240 mm (9.36 in.)
Weight	2.2 kg (4.85 lbs)

Electrical requirements

120 V / 60 Hz or 230 V / 50 Hz
Fuse (120 V unit): 0.25 A, 5 x 20 mm
Fuse (230 V unit): 0.16 A, 5 x 20 mm

Water sensor option specifications:

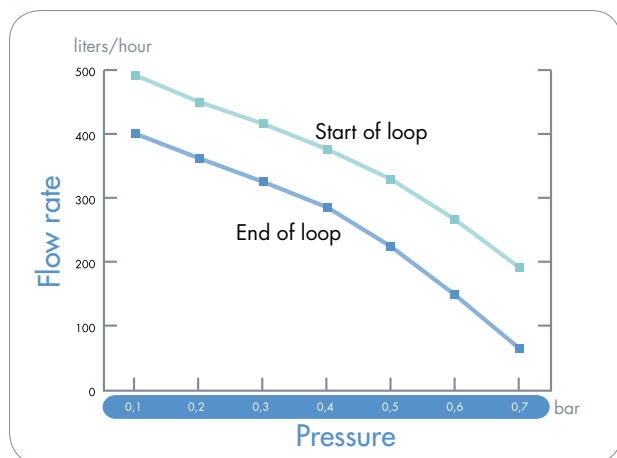
A.S.M. water sensor cable	3.2 m (10.50 ft.)
A.S.M. solenoid valve cable	4.2 m (13.78 ft.)
Additional water sensor cable	3.5 m (11.48 ft.)

Advanced protection against airborne contaminants

Air is contaminated by carbon dioxide, particles, microorganisms, and volatile organic compounds that come mainly from the laboratory atmosphere itself. To protect purified water from all these contaminants, Millipore has developed an advanced vent filter that includes:

- Activated carbon to adsorb volatile organics (including lab solvents such as acetone, chloroform and methanol)
- A soda-lime bed to remove CO₂
- A Durapore® hydrophobic membrane for particle and bacteria retention

This advanced vent filter is recommended for the protection of high-resistivity water, such as Elix product water, during storage. A standard 0.65 µm membrane vent filter is available to protect reverse osmosis-quality water.



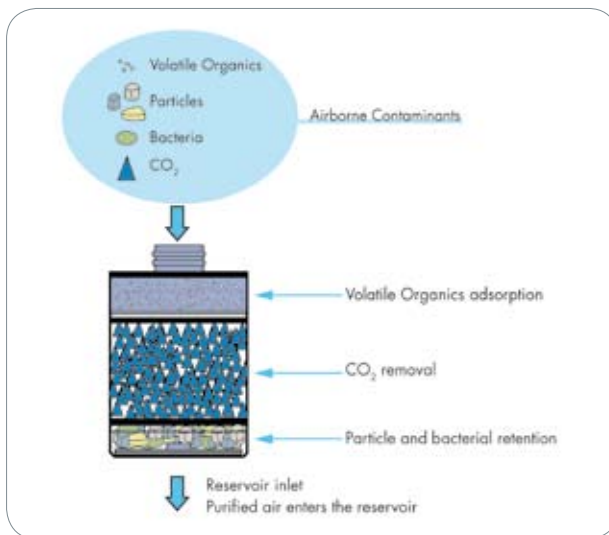
Distribution pump: typical performance
(Water temp.: 22 °C, Loop length: 12 m)

Specifications

Pump specifications

Water temperature range	0-65 °C
Body maximum pressure	2.5 bar (35 psi)
Flow rate at 0.6 bar	5 L/min
Inlet/outlet connections	3/8 in. M BSP Threaded
Dimensions:	
Total length	225 mm (8.78 in.)
Total height	145 mm (5.66 in.)
Total width	115 mm (4.49 in.)
Electrical requirements	230 V, single phase, 50 Hz, 0.4 A 100/120 V, single phase, 50/60 Hz, 0.8 A
Environmental protection	IP44

Advanced reservoir vent filter



Distribution pump meets increased demands

Compact in size, an optional distribution pump can be fitted into the reservoir base to meet various application demands, such as feed to a Milli-Q ultrapure water system, feed to a washing machine or other equipment, and filtration at point-of-use.

Long service lifetime and quiet operation

The distribution pump is a magnetically-coupled centrifugal pump. This simple and safe operating principle ensures long service (up to 35,000 operating hours) and low noise level during operation. The pump has the ability to deliver water continuously without generating significant temperature increases.

Recirculation loop specifications:

Tubing material	Black PE
Maximum length	12 m (39.37 ft.)
Tubing diameter	12 mm (0.47 in.)