MERCK MILLIPORE

Elix® Advantage Water Purification Systems

The best in pure water at your fingertips

Elix® Advantage systems: the choice of scientists worldwide

Today, Elix® Advantage systems are the choice of scientists around the world in environments as diverse as academic, pharmaceutical, clinical, and government labs, in both validated and non-validated environments. Elix® Advantage systems not only fulfill the needs of isolated laboratories, but also have been successfully used in many new or refurbished large research buildings as a more reliable and lower cost alternative to central water systems with delivery loops. Please read on to see why – and visit our website:
www.millipore.com/labwater

Elix® Advantage systems: the choice of scientists worldwide

"After discovering that the mouse brain cells we were using in our research appeared unhealthy due to poor RO water quality, we bought an Elix® Advantage system to supply feed water to our Milli-Q® Gradient system (with BioPak® final filter). When we started using the Elix® system, ultrapure water TOC levels dropped from over 30 down to 3 ppb, and we now have constant-quality pure water that matches our needs."
— Michael Beierlein, Ph. D., Department of Neurobiology and Anatomy, University of Texas Medical School, Houston, Texas, U.S.A.

"We chose the Elix® Advantage system as a solution to our lab water needs today — and also to prepare for the future. We'll need to apply for accreditation in less than six years, so we want to be ready ahead of time. The fact that Merck Millipore can assist us in the validation process was one of the reasons for our choice, as well as the quality control assurance we get with the Elix® system."
— Mr. Sasportes, biomedical lab co-owner, Laboratoire du Vert Galant, Paris area, France

"Today, main benefits of the system are without a doubt ease-of-use, and especially the flexible, volumetric water delivery we get with the compact E-POD® — no more carboys! I'd definitely recommend this system to other labs like us."
— Mr. Sasportes, biomedical lab co-owner, Laboratoire du Vert Galant, Paris area, France

"What we like most is the ability to place the POD unit in another room. It's really very convenient. Plus, we can choose the volume that we need, program the POD and leave the room. It's an advantage over the older systems we had previously."
— Monika Landeta, lab technician working on DNA-chip hybridization, Progenika Biopharma, S.A., Vizcaya, Spain

"When my lab was being renovated recently, I took the opportunity to purchase three Elix® Advantage systems. I didn't want a service DI system, because I had one in the past and I just don't trust this method. Before I could use it, it was necessary to run 40 liters of water through the system before the resistivity value stabilized — and then I still had bacteria counts of 10 cfu/ml ! In comparison, at 0.1 cfu/ml, the bacteria control of the Elix® Advantage is impressive!"
— Spencer Hiraki, Chemistry Department manager, Good Samaritan Hospital, San Jose, California, U.S.A.

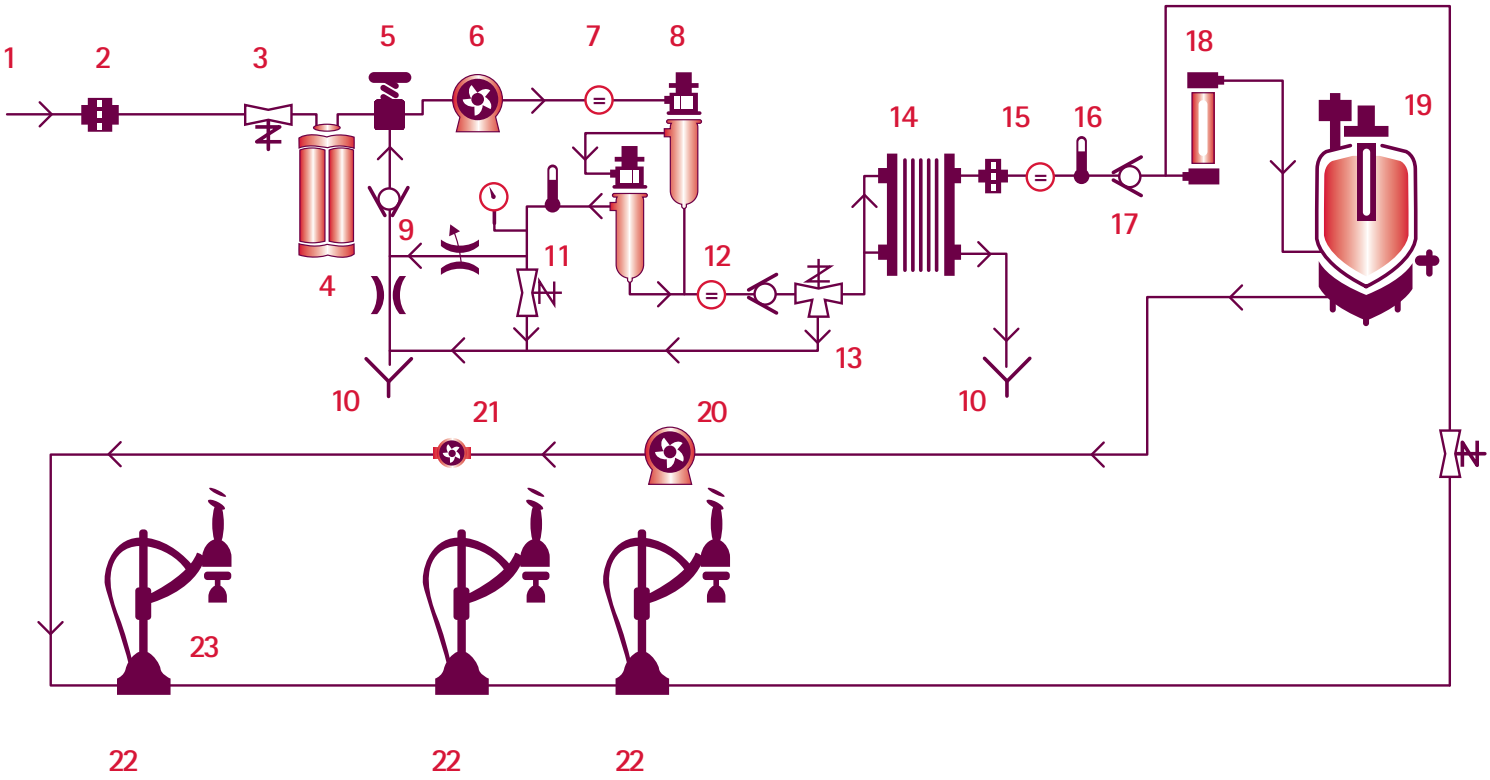
"The system is very easy to use, and the pretreatment packs are also simple to replace."
— Todd Lowings, lab manager at Abcam, manufacturer of monoclonal antibodies, Cambridge, UK

The best in pure water at your fingertips

Your pure water needs	Our solution: the Elix® Advantage systems
Type 2 pure water with consistent and reliable water quality	Complementary water purification techniques, including state-of-the-art Elix® electrodeionization technology, ensure delivery of constant- and reliable-quality Type 2 pure water.
High-quality pure water meeting the specifications for your applications	With resistivity > 5 MΩ·cm at 25 °C (typically 10-15 MΩ·cm) and TOC < 30 ppb, Elix® Advantage system product water is of better quality than double distilled water.
Low and predictable running costs	With no resin packs to change, the self-regenerating Elix® electrodeionization module lowers running costs. Overall reduced water and electricity use also allow significant savings.
Pure water quality adaptable to a variety of needs	Application Pak final polishers exist to remove specific types of contaminants just before water is delivered from E-POD® dispensers.
Easy, convenient pure water delivery	Ergonomic E-POD® dispensers provide easy delivery of pure water. Choose manual or automatic volume delivery; high or low water flow to suit your needs and save time.
Optimized lab space	Designed for the best use of lab space, the Elix® Advantage water purification unit and E-POD® dispensers can be installed on the bench, under the bench, or on a wall.
Advanced water quality monitoring	Key water quality parameters are measured by the system's high-precision monitoring equipment.
Data tracking that meets your requirements	When activated, Millitrack® software provides data management, remote access to dashboard, and long-term archiving capabilities.
Compliance with the highest Quality Assurance demands	Elix® Advantage systems are manufactured in an ISO®-registered, cGMP manufacturing facility and are delivered with a Certificate of Conformity and a Certificate of Calibration for all built-in meters; consumables are delivered with a Certificate of Quality.
Intuitive operation	Intuitive system controls allow access to three levels of system information (regular use, maintenance, system management). A handy Quick Reference Guide inside the system door provides concise information on operation and maintenance.
Carefree maintenance procedures	Maintenance procedures are easy and straightforward, with consumable replacement dates signaled 15 days ahead of time by the system. RFID technology protects against use of an incorrect consumable and also enables automatic traceability.
Fast, efficient technical support	Merck Millipore is a partner you can count on. Watercare Pact service plans offer a full range of support, including qualification expertise and validation support.
Systems that evolve with lab changes	A large range of accessories and options is available to enable your Elix® Advantage system to evolve with changes within the laboratory.

Elix® Advantage water purification pathway

The Elix® Advantage system uses regular tap water as feed, and produces Type 2 pure water that is delivered by independent E-POD® dispensers.



1. Tap water feed
2. Strainer
3. Inlet solenoid valve
4. Progard® pretreatment pack
5. Pressure regulator
6. Booster pump
7. Feed water conductivity cell
8. RO cartridge with sanitization port
9. RO reject recycling
10. Drain
11. RO reject solenoid valve
12. Permeate conductivity cell
13. 3-way solenoid valve
14. Elix® electrodeionization module
15. Elix® resistivity cell
16. Thermistor
17. Check valve
18. 254 nm UV lamp
19. PE Reservoir, ASM, and Vent filter
20. Delivery pump
21. Flow meter
22. E-POD® dispenser
23. Final polisher Application Pak

Merck Millipore has concentrated our expertise in the Elix® Advantage system to bring you the best in pure water technology. This innovative system provides pure water to meet the most rigorous standards of regulatory bodies around the world.

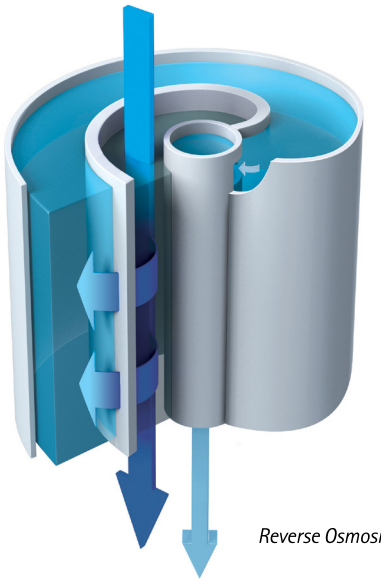
Combining Merck Millipore's patented Elix® electrodeionization technology with the most advanced purification technologies, the Elix® Advantage system uses potable tap water as feed to produce consistently high-quality pure water for all your lab's pure water needs. Ergonomic E-POD® (Elix® water Point-of-Delivery) dispensers let you benefit comfortably from efficient and reliable pure water delivery, where you need it, when you need it.

Consistently pure and reliable Type 2 water quality

By incorporating proven, patented Elix® electrodeionization (EDI) technology with other advanced complementary water purification techniques (Progard® pretreatment, advanced reverse osmosis, 254 nm UV lamp), Elix® Advantage systems make the best use of existing purification technologies – providing the ideal solution for every lab using pure water – from a few liters to several hundred liters per day.

All-in-one pretreatment pack

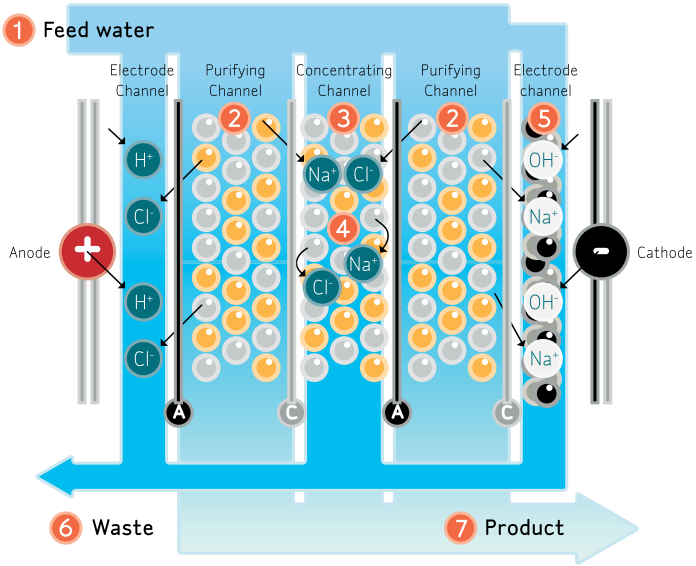
The Progard® pack efficiently removes the particles, free chlorine and colloids present in potable tap water, and provides the best protection for the system's Reverse Osmosis (RO) membrane, guarding it against clogging and helping to extend equipment lifetime. Pack changes are triggered in part by actual water consumption, letting you obtain optimal use from your pretreatment.



Reverse Osmosis

Intelligent Reverse Osmosis (RO)

Intelligent RO removes 95-99% of all dissolved organics (MW > 200 Dalton), microorganisms and particles. High water recovery, achieved with part of the RO reject water being recycled back to the RO membrane feed water stream, can be adjusted up to 50% to optimize water consumption. Elix® Advantage systems also benefit from a constant RO product flow rate, allowing the system to maintain a steady product flow rate – in contrast to standard RO-based systems that typically undergo temperature variations.



Best-in-class Elix® EDI technology

The Elix® module uses electrodeionization to remove the remaining ions. The patented Elix® EDI treatment provides the following benefits for Elix® Advantage system users:

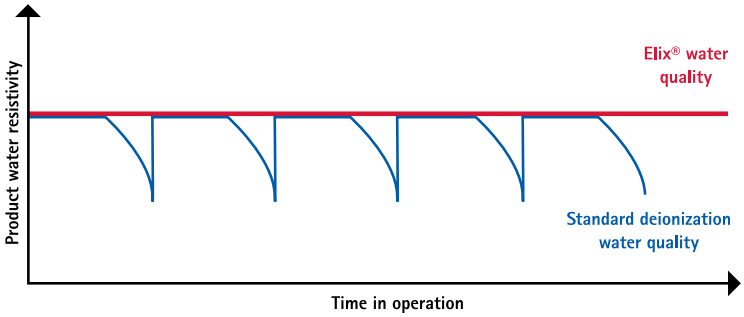
- Consistent high-quality water: Resins do not degrade, as they are not exposed to harsh regeneration chemicals or removed from the system.
- No extra softeners are needed, thanks to Elix® technology and its use of carbon beads.
- Minimal electricity consumption: The Elix® module uses the equivalent of the energy required by an electric light bulb.
- Uninterrupted water production: Continuously regenerated ion-exchange resins eliminate hazardous chemical regeneration or costly resin replacement.

Optimum water quality at the point of use

At regular intervals, the stored pure water is recirculated and sanitized by a UV lamp in order to minimize bacterial growth in the storage reservoir. Before delivery, pure water from the Elix® Advantage system is again sanitized by a UV lamp and then filtered through a 0.22 µm final filter at the dispensing point. This reduces the bacterial count to less than 0.1 cfu/ml to provide optimum water quality for bacteria-sensitive applications.

High-quality pure water to match your applications

Consistency and reliability in pure water quality is crucial in laboratory applications. The Elix® Advantage system helps you meet the most challenging requirements. The system is designed to produce pure water that meets or exceeds requirements as described by ISO® 3696 (Grade 2 water); ASTM® D1193 (Type II resistivity and TOC Table I specifications); and by the United States, European, and Japanese Pharmacopeias for Purified Water.



The graph shows the superiority of Elix® technology over systems using ion-exchange resin packs Resistivity drops dramatically when these packs are exhausted.

Pure water, such as the water produced by Elix® Advantage systems, is used throughout the lab for:

- Feed to laboratory equipment (e.g., Milli-Q® Type 1 ultrapure water systems, weatherometers, autoclaves, glassware washers, and dissolution testing units)
- Preparation of microbiological media, buffer and pH solutions
- Histology
- Chemical reactions run in water
- Manual glassware rinsing

With resistivity values that are greater than 5 MΩ·cm at 25 °C, and with less than 30 ppb TOC, the quality of Elix® Advantage water exceeds that of double distilled water. In general, water that has been purified using Elix® technology is suitable for use with analyses at the parts per million (ppm) or high parts per billion (ppb) levels.

Low and predictable running costs

Elix® systems are the only systems available today that use electrodeionization technology in a way that is dependable, efficient, and robust. Budget-conscious users will appreciate Elix® Advantage systems for their low and predictable running costs:

- Integrated Elix® electrodeionization technology requires no costly resin replacement or regeneration.
- Only a single Progard® pretreatment pack is needed to remove particles, free chlorine and colloids from tap water.
- No polishing pack needed for pure water production; no extra softeners or anti-scaling cartridge needed upstream of the Elix® module.
- Electricity consumption is 200 times less than that of conventional distillation equipment.
- The system's efficient RO-reject water recirculation loop significantly reduces tap water use and helps extend the lifetime of the Progard® pack.
- No strong chemicals must be purchased for resin regeneration or cleaning purposes.
- There are no transportation and storage costs (as with bulky and cumbersome resin cartridges or bottled water).

Pure water quality adapted to a variety of needs

The versatile E-POD® dispensers can be adapted to a variety of laboratory applications with our point-of-use Application Paks. These final filters "fine-tune" your pure water by removing specific types of contaminants just before water is delivered from E-POD® dispensers.

Application Paks can be easily connected to E-POD® dispensers, letting you match your water quality to your specific research and application. With the appropriate Application Pak point-of-use polisher in place, the Elix® Advantage system will provide water suitable for applications requiring particulate-free or bacteria-free pure water.

For example, a BioPak® ultrafiltration cartridge fitted at the point of use will produce water suitable for genomics applications (quality at least equivalent to DEPC-treated water) and cell culture.

Application Paks available for E-POD® dispensers

BioPak® Polisher

Pyrogen-free and nuclease-free water

Millipak® Polisher

Bacteria-free and particulate-free water

Easy, convenient pure water delivery

Easy operation allows researchers to save valuable time. Pure water delivery with Elix® Advantage E-POD® dispensers is simple and intuitive, matching your requirements without compromising quality. As many as three independent E-POD® dispensers per system can be conveniently located at different places in the laboratory.

E-POD® units can be used with a variety of laboratory glassware, and easy operation allows scientists to select either manual or automatic delivery to save valuable time. You can be sure to have the daily volume of water you require at the flow rate you need — up to 360 liters of pure water per day and up to two liters per minute when needed!

E-POD® units are placed on a recirculation loop, and can be located up to 290 cm from the main unit or from the previous E-POD® on the loop. In each unit, water recirculates through an 80 cm loop up to the water dispenser outlet.

Each E-POD® unit has a color backlit screen enabling the user to check system operation and water quality at a glance. Day after day, your water quality remains constant, matching the most stringent specifications, and helping you achieve optimum reproducibility in your work.

Manual water dispense

Water can be obtained by pressing the plunger of the E-POD® unit, from low flow for fine adjustment of the level in calibrated flasks, to high flow for fast filling. Additionally, the dispenser can be removed from its support to facilitate water delivery for applications such as glassware or plate washing.

Automatic volumetric water dispense

Volumetric water dispensing is set on the base of the E-POD® unit. The user can adjust the volume to be delivered with the (+) and (-) keys, and then press the volumetric dispensing button to start delivery of the selected volume, with excellent accuracy (< 1 %) and reproducibility (cv < 1 %).

The mast and the arm supporting the E-POD® dispensers are designed to accommodate all commonly used glassware — from a 250 mL Erlenmeyer flask to a 5 L calibrated flask — and even a 20 L carboy!

For hands-free water delivery, an optional footswitch can be connected to the base of the E-POD® dispensers or directly to the Elix® Advantage system. Press once to start and once to stop.

Optimized lab space

Today's laboratories are used for multiple activities, with bench space for researchers' critical experiments often at a premium. To make the best use of the lab space you have available, Merck Millipore designed the Elix® Advantage system water purification system as two separate components:

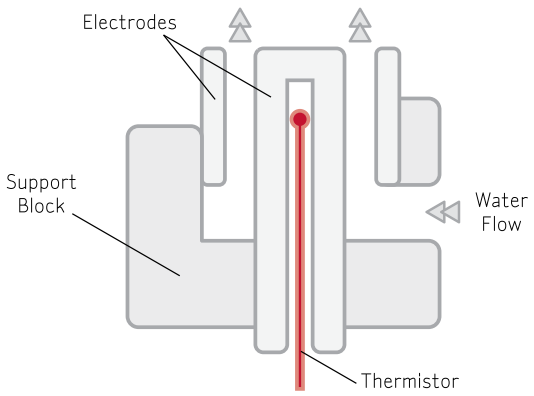
- Elix® Advantage system water purification unit can be conveniently on or under the bench, or on a wall.
- The system's E-POD® water delivery units take up little bench space, or if you prefer, they can also be installed on a wall.

Pure water requires a storage system that prevents degradation of your water quality. Elix® Advantage system users can select from a range of high-quality polyethylene reservoirs (30-100 liters) to match water usage. Reservoirs maintain consistent purity of stored water and provide effective protection against airborne contaminants. An optional Automatic Sanitization Module (ASM) can further protect the integrity of stored water with regular exposure to a bactericidal 254 nm UV lamp.

Advanced water quality monitoring

Resistivity monitoring for high-precision measurement of ionic concentration

The proper measurement of resistivity is key to making sure that ionic contamination of purity water remains at sub-ppb level. Elix® Advantage system high-precision resistivity meters have specific features to ensure that the value displayed on the system screen is meaningful.



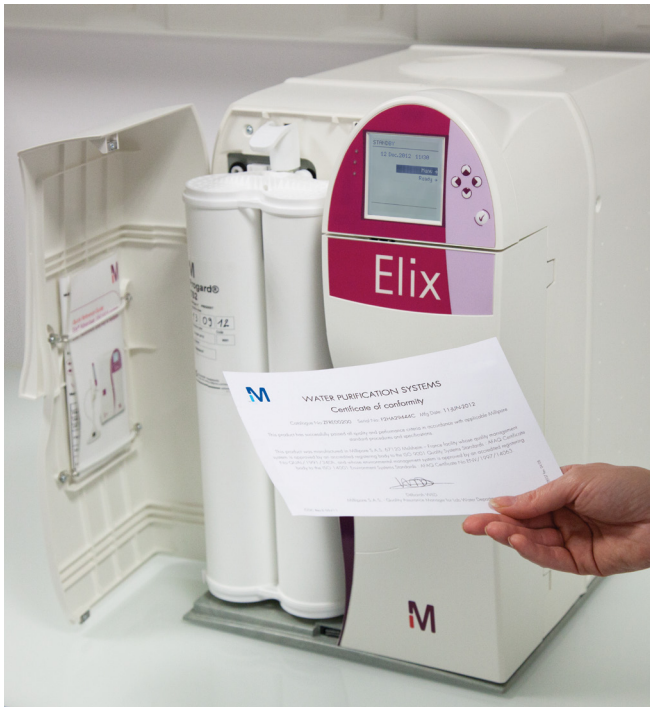
- Patented cell design with coaxial electrodes to warrant cell constant stability.
- Flow-through design to make sure that the measurement is representative of the actual ionic concentration in the water.
- Low cell constant (0.01 cm^{-1}) for optimum measurement accuracy of low ionic contamination as required by ASTM® D 1125-95 (2009).
- Temperature measurement with a 0.1°C resolution for proper report of temperature-compensated resistivity, as recommended in ASTM® D 1125-95 (2009).
- Automatic warning messages if the resistivity measurement is compromised by a defect.
- Design allowing performance of a resistivity suitability test as required by USP (§ 645).

Data tracking that meets your requirements

When activated, Millitrack® software provides enhanced data management control, remote access capabilities to the system dashboard, and long-term electronic archiving for your Elix® Advantage system.

Compliance with the highest Quality Assurance demands

To assist you in following industry requirements, Elix® Advantage systems are delivered with specific Certificates of Quality and Calibration for temperature and resistivity meters. Merck Millipore's manufacturing site is ISO® 9001 v2000 and ISO® 14001 certified.



Certificate of Conformity – The product has been assembled and tested according to Merck Millipore's stringent Quality Assurance procedures.

Certificates of Calibration – Included for the built-in resistivity meter.

Declaration of Conformity – European Union EC Directive for safety and electromagnetic compatibility

Certificate of Quality – Consumables are delivered with a Certificate of Quality ensuring that they will deliver the water quality and quantity expected.

Application Pak validation – Application Paks are validated for efficient removal of the specific contaminants that they target. Validation Guides with test results are available upon demand.

ISO® 9001 v. 2000- and ISO® 14001-registered manufacturing site – Certificates are available upon request.

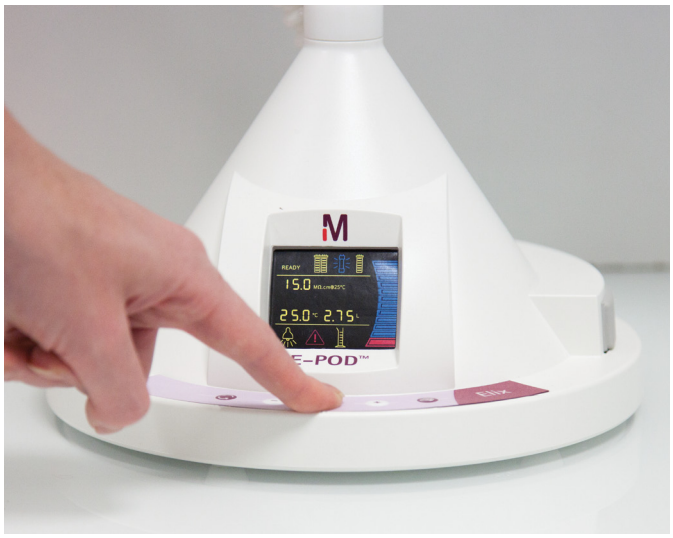
CE, cUL, FCC – To ensure efficiency and safety of operation, the Elix® Advantage system is certified for safety and electromagnetic compatibility.

Traceability and remote access
To facilitate your daily work in a GLP and GMP (Good Manufacturing Practices) environment, all quality and events-related data is available. The user can access this data via PC for on-screen consultation. Data can also be directly printed out from a printer connected to the E-POD® unit.

Intuitive operation

Researchers must be able to access required information immediately — whenever they need it. Elix® Advantage systems offer three levels of information, so that users have easy and convenient access to all the data they require:

- **Regular use:** all information required is directly visible on the E-POD® screen.
- **Maintenance:** information is available from the main screen with step-by-step directions (text and drawings) indicating the actions to be performed.
- **System management:** critical parameters, such as set points, are protected by an ID login and a password in the "Manager" menu.



In addition, a **Quick Reference Guide** (located inside the door of the Elix® Advantage system) provides all the information required to understand the operation and maintenance of the system.

Carefree maintenance procedures

Low-maintenance Elix® Advantage systems free you to concentrate on your laboratory work. Elix® technology eliminates the need for extra polishing packs or conditioning cartridges, so there is just one Progard® purification pack to change — and the system's ergonomic pack locking system makes this easier than ever to do.

Automatic self-maintenance functions (i.e., flush mode, rinsing mode, sanitization cycle) keep the system's reverse osmosis membrane in top operating condition, and ensure optimal water quality. System sanitization is recommended approximately four times a year, and takes just a few minutes to perform.

The Elix® Advantage system provides information on replacement of consumables at 15 days' notice, ensuring that you have enough time to obtain the required products. Thanks to the system's innovative RFID technology, catalogue and serial numbers for Progard® consumables are automatically registered in memory upon insertion, which ensures optimal traceability and also prevents insertion of an incorrect consumable.

Additionally, the system is able to manage its own service agenda. If you request this option, you will receive a warning 30 days in advance prompting you to schedule a maintenance service visit.

Fast, efficient technical support

Comprehensive Service Program

Watercare Pact service plans offer a range of support, from a single annual checkup to a full system cover. Merck Millipore's certified Field Service Support Engineers provide expert, professional support for the installation and maintenance of your Elix® Advantage water purification systems, and our technical hotline support experts are available to investigate, diagnose and solve customer issues. Available services include:

- Installation
- Technical and scientific assistance
- Troubleshooting visits
- Customized user training
- Verification and/or calibration of monitoring devices
- US & EU Pharmacopeia Resistivity & TOC suitability test support
- Validation support
- Maintenance plans

Qualification expertise

With experience in water system qualification services since 1998, Merck Millipore can assist you in complying with regulatory standards applicable to your industry.

Validation support is provided by trained Merck Millipore Field Service Support Engineers using calibrated equipment and Qualification Workbooks.

Systems that evolve with lab changes

Laboratory needs can change quickly, making it necessary for you to adapt your water purification system to fit within a new configuration or to provide high purity water for additional applications.

To meet your specific needs, Elix® Advantage systems can be customized with a wide range of accessories and options:

Millitrack® software
Enhanced data management control, remote access capabilities, and long-term electronic archiving.

Additional E-POD® units / Application Pak point-of-use polishers
Add more E-POD® units and / or Application Pak polishers to provide additional points of dispense or to customize pure water to match a new application in your lab.

Reservoirs /Storage & Distribution Systems (SDS)
Select from the full range of Merck Millipore reservoirs (30-350 L) designed for optimum pure water storage.

Washer Distribution Kit
Cost-effective solution ensuring pressurized pure water feed to common laboratory appliances with flow rates between 15 - 16.2 L/min (at 1 bar or 15 psi, depending on voltage)

Automatic Sanitization Module (ASM)
The ASM device uses a 254 nm germicidal UC lamp to efficiently prevent the development of biofilm inside the reservoir.

Lab Close connection kit
The unique Lab Close kit maintains the system in operating condition with minimum water and electricity usage when the facility needs to be closed for extended periods such as vacations.

Water sensor
Placed on the floor, this sensor stops water feed to the system if there is water on the floor.

Wall-mounting brackets for Elix® Advantage purification unit and E-POD® dispensers
Save space by installing the Elix® Advantage system on the wall. E-POD® units can also be installed on the wall for further space saving.

Footswitch
Connect the footswitch to the base of a POD dispenser for hands-free water delivery: press once to start and once to stop.

Silicone E-POD® cover
This cover protects your E-POD® dispenser from harsh chemicals, such as strong acids and bases, aggressive solvents, or etchants.

Elix® Advantage System Water Specifications

The Elix® Advantage system is designed to meet or exceed requirements as described by ISO® 3696 (Grade 2 water); ASTM® D1193 (Type II resistivity and TOC Table I specifications); and by the United States, European and Japanese Pharmacopeias for Purified Water.

Water quality

Parameter	Value
Resistivity	> 5 MΩ.cm @ 25 °C
TOC	< 30 ppb
Bacteria	< 0.1 cfu/ml*
Particulates > 0.22 µm	< 1 particulate/ml*
Pyrogens (endotoxins)	< 0.001 EU/ml**
RNases	< 0.01 ng/ml**
DNases	< 4 pg/µl**

** With Millipak® filter with Millipore Express® membrane or BioPak® ultrafilter as Application Pak*

*** With BioPak® ultrafilter as Application Pak*

Water Delivery

Elix® Advantage system	3	5	10	15
Pure water production (Max l/h)	3	5	10	15
Pure water delivery at E-POD® (l/min)	Up to 2.0	Up to 2.0	Up to 2.0	Up to 2.0

Installation Specifications

Parameter	Value
Production unit dimensions (H x W x D)	500 x 346 x 484 mm (19.7 x 13.6 x 19.1 in)
E-POD® delivery unit dimensions (H x D)	579 x 230 mm (22.8 x 9 in)
Production unit operating weight	21.5 – 26.4 kg (47 - 58 lb)
E-POD® unit operating weight	4.7 kg (10.36 lb)
Distance from production unit to E-POD®	2.7 m (8.9 ft)
E-POD® dispenser[d] tubing length	80 cm (2.6 ft)
Electric power cable length	250 cm (8.2 ft)
Electric power supply voltage	100-230 V +/- 10%
Electric power supply frequency	50-60 Hz

Storage Tanks and Accessories

Storage with a Difference

Guarantee the purity of your stored water

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

Prevent contamination

Water stagnancy can cause bacterial proliferation. Our optimal Automatic Sanitization Module (ASM) provides the ideal solution for the prevention of bacterial growth and biofilm formation on the inner surface of the storage tank. In addition, our advanced vent filter protects pure water from airborne contamination.

Distribute your stored water where it is needed

To provide pure water for use with all of their applications, laboratories need to be able to distribute stored water from their water purification system storage tanks.

- For distribution of **non-pressurized pure water,** a valve is conveniently located on the front of the Merck Millipore storage tanks.
- For convenient **distribution** of **pressurized pure water** from the storage tank, an E-POD® point-of-delivery dispenser can be connected to an Elix® Advantage or Milli-Q® Integral water purification system.
- For **automatic feed** of pure water, distribution valves on the base of the storage tank allow connection to other laboratory equipment such as glassware washing machines. Distribution pumps are also available if needed.

** A complete line of storage tanks is available, ranging in capacity from a few liters to several hundred liters. Your nearest Merck Millipore office will be able to guide you in the choice of the tank best suited to your needs.*

Optimized pure water storage

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

Innovative storage tank design

Merck Millipore 30-, 60-, and 100-liter polyethylene storage tanks incorporate the latest technical developments and advanced features for stored water of consistent purity.

All tanks have a small footprint and are designed for wall-mounting if required. Underbench installation is also possible for some models.

Unique features

- Polyethylene selected for its minimum release of extractables
- Opaque walls block sunlight to prevent algae development
- Smooth inner surface prevents biofilm formation
- Cylindrical shape minimizes surface area in contact with water
- Conical bottom allows complete draining for cleaning and rinsing
- Pure water smoothly fed in at the bottom of the tank prevents absorption of carbon dioxide
- Front valve enables manual dispense of pure water
- Distribution valves permit connection to other laboratory equipment
- Hermetically sealed lid blocks air from entering the tank
- Large top opening allows manual cleaning during sanitization procedure
- Compact space-saving design

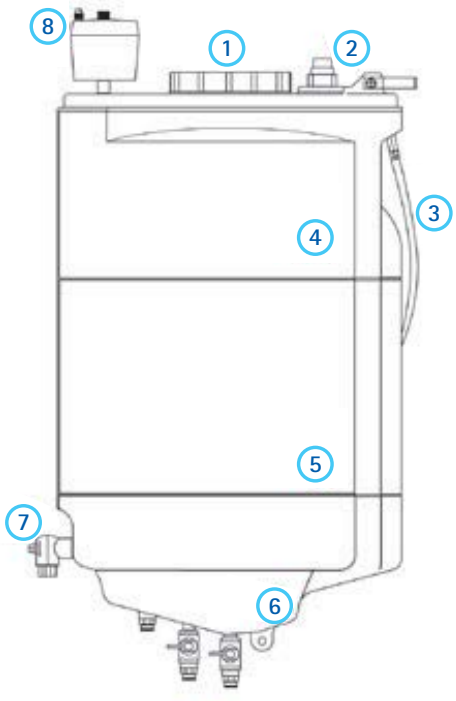
Fail-safe protection

- Sensor rod float switch system for automatic storage tank refill and indication of water level (% full)
- Overflow connected to the drain, in the unlikely event of a water system malfunction
- Direct display of stored water level on water purification system units
- Water sensor

Storage tanks designed for efficiency

Designed for efficiency

1. Hermetically sealed lid
2. Sensor rod float switch
3. Sanitary overflow
4. Blow-molded storage tank
5. Cylindrical shape
6. Conical bottom with distribution valves
7. Front dispensing valve
8. Advanced vent filter



For details of the tests performed during the storage tank development process, please request the publication "R&D Notebook 1: Optimizing the storage of purified water for laboratory applications" (Ref. No.: RD001EN00) from your local Merck Millipore representative.

Storage Tank Accessories

In order to help ensure optimum purity and distribution of your stored water, Merck Millipore offers a range of accessories and connections for your storage tank, including the following items:

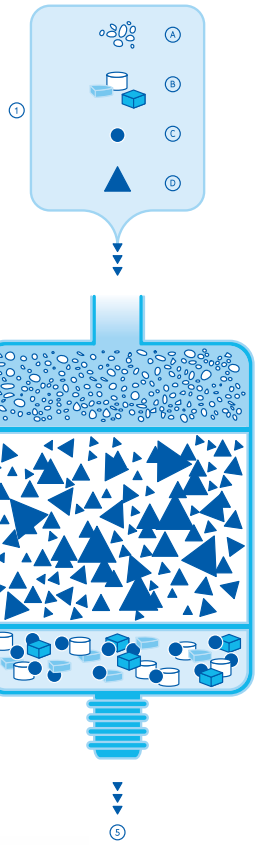
- Advanced Vent Filter
- Automatic Sanitization Module
- Air Gap Device
- E-POD® pure water remote dispenser
- Washer Distribution Kit
- Water Sensor
- Lab Close Kit

Advanced vent filter: important protection against airborne contaminants

Air is contaminated by carbon dioxide, particles, microorganisms, and volatile organic compounds that come mainly from the laboratory atmosphere. To protect pure water from all these contaminants, Merck Millipore has developed an advanced storage tank 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 CO_2
- 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. To protect RiOs™ reverse osmosis-quality water, a Durapore® 0.45 µm hydrophobic membrane vent filter is also available.



Advanced storage tank vent filter

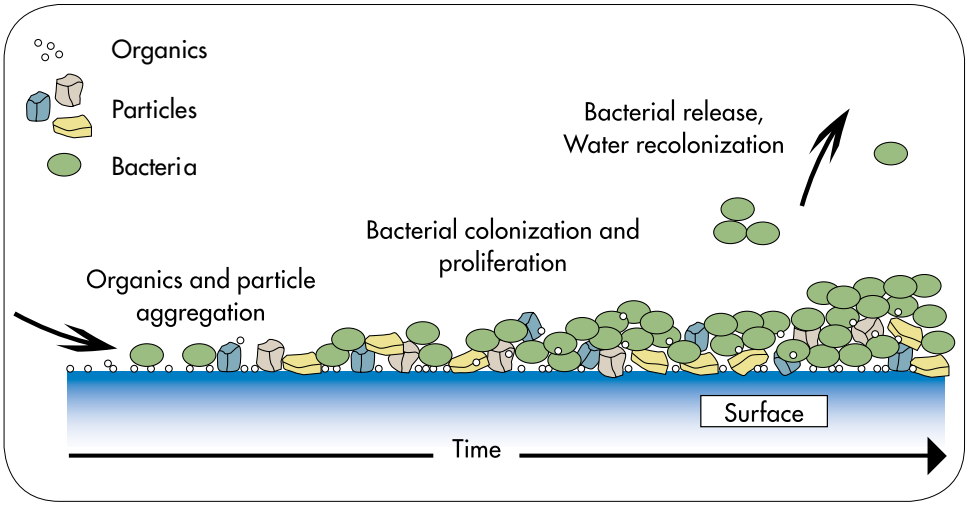
1. Airborne Contaminants
   - A. Volatile Organics
   - B. Particles
   - C. Bacteria
   - D. CO_2
2. Volatile Organics absorption
3. CO_2 removal
4. Particle and Bacterial retention
5. Storage tank inlet
   Purified air enters the storage tank

Complete Merck Millipore water purification chain with the ASM and water sensor

Automatic Sanitization Module (ASM): say "No!" to bacterial proliferation

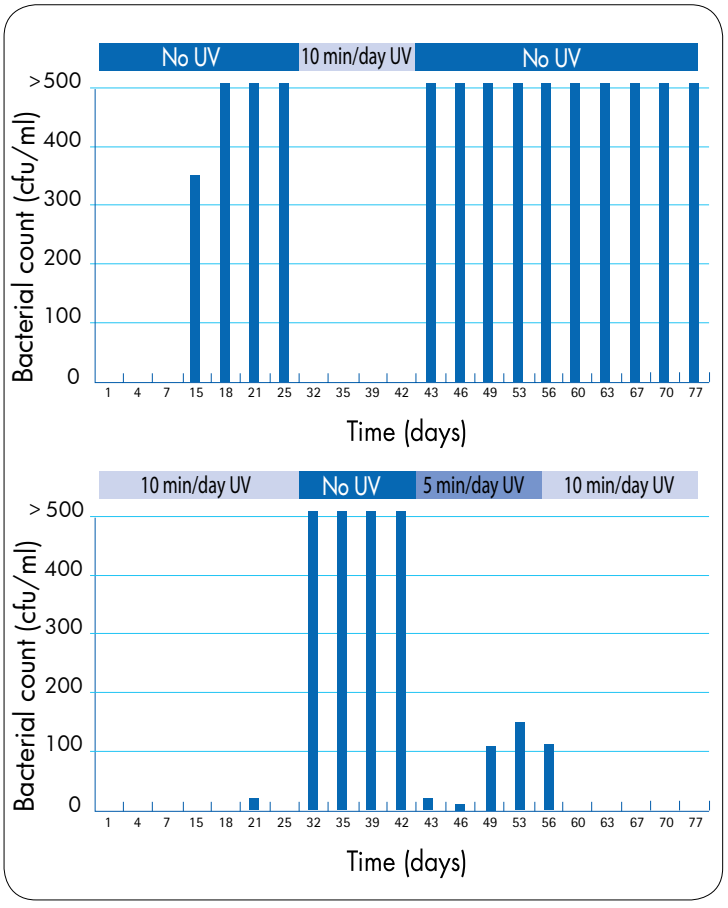
Maintaining high purity water with low bacteria levels during storage is critical. If left to proliferate, trace levels of microorganisms present in pure water compromise water purity. This bacterial contamination is responsible for the formation of a biofilm – an accumulation of organic material made up of active and dead organisms, on the inner walls of the storage tank.

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.



Biofilm formation over time

Merck Millipore's ASM is designed to prevent the growth and proliferation of bacteria and the resulting biofilm on the inner surface of Merck Millipore PE storage tanks. The ASM makes use of the germicidal properties of an ultraviolet (UV) light at 254 nm, which is fitted inside the tank.



Germicidal effectiveness of the UV lamp

The ASM provides full flexibility for guaranteed results

- 254 nm UV lamp; selected for its germicidal effectiveness
- Pre-programmed 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 45 min /day of UV exposure for total flexibility
- Program daily time settings, UV cycles, and UV lamp operation displayed on the Millitrack® e-Solution dashboard
- UV lamp exchange alarm for easy maintenance
- Compact design allowing installation on top of the storage tank

10 minutes of daily UV exposure is sufficient

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

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

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

Air gap device for protection against bacteriological contamination

Water purification systems and storage tanks sometimes require a connection to the drain.

Drains are typically dirty environments contaminated by microorganisms, and in particular, bacteria. Therefore, when the outlet of the water system reject tubing is pushed into the drain, there is a risk that bacteria could contaminate the inside of the reject tubing, and then progressively move to the water system.

One way to prevent this from occurring is to install an air gap device on the reject tubing. This allows the reject water flow to move through the tubing without touching the inside of the contaminated drain environment. Installing an air gap device is an easy and safe way to prevent the development of bacteria above the air gap level.

Air Gap Device

E-POD® pure water remote dispenser: pure water where you need it

The E-POD® Elix® water point-of-delivery unit can be connected to an Elix® Advantage pure water system or Milli-Q® Integral pure and ultrapure water system to dispense pure water wherever it is needed in the lab.

Advantages of the E-POD® remote dispenser include:

- Improved bacterial water quality (less than 0.1 cfu/mL, with final filter)
- Versatility enabling use for multiple applications or users when a Millipak® or Biopak® polisher is fitted to the dispenser outlet
- Volumetric dispensing to save time
- Ergonomic design and ease of use
- Flexibility, with installation of up to three E-POD® units per system
- Information at a glance thanks to the color backlit screen on the dispenser base
- Space-saving small footprint

E-POD® pure water remote dispenser

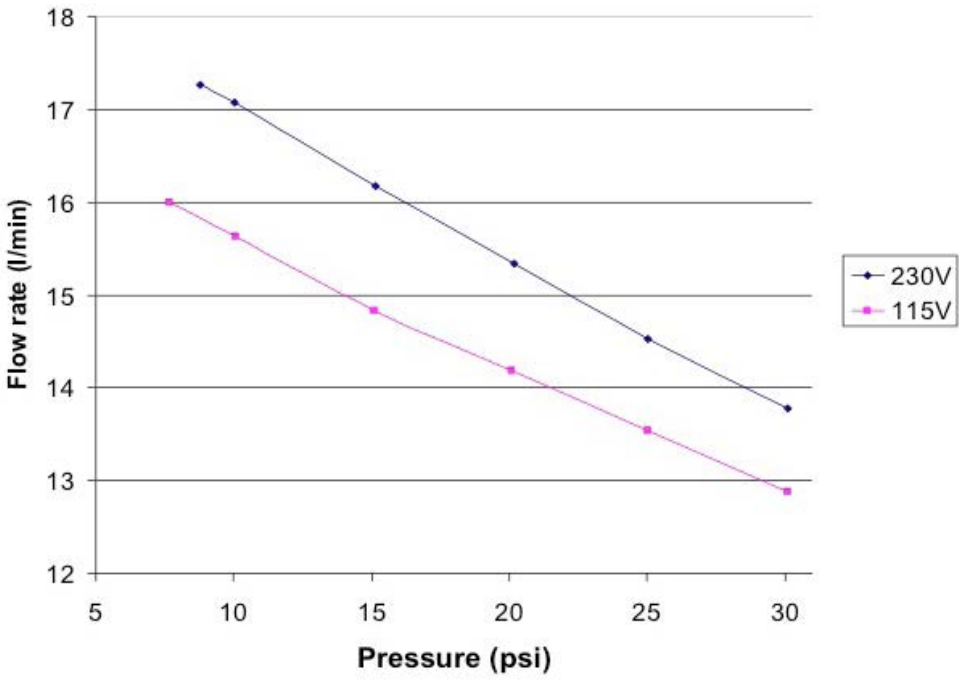
Distribution pumps to meet increased demands

Washer Distribution Kit

A key use of pure water is as feed to laboratory appliances such as glassware washers, autoclaves, sterilizers and weathering devices.

The Merck Millipore Washer Distribution Kit provides cost-effective and convenient distribution of pure water to common laboratory appliances, with flow rates between 12.5 – 13.5 L/min (at 2 bar or 30 psi, depending on voltage).

Installation of the small-footprint kit is fast, easy, and universal, with bench, underbench, or wall-mounted options. Users profit from a silent, automatic supply of pure water when required.



The graph shows characteristics of Merck Millipore distribution pumps. Pumps provide a long service lifetime and quiet operation.

Washer Distribution Kit

Water sensor for control over feed water supply

If there is water on the floor, the water sensor enables shutdown of the feed water supply in order to prevent a lab flood.

Lab Close Kit keeps your system in top condition when you're away

When your facility is closed for an extended time – such as vacation periods – the Lab Close Kit will avoid water purification system standstill during these long periods. The Lab Close Kit intelligently optimizes the consumption of water and electricity by your system, preventing the negative effects of nonuse, such as bacteria buildup. Your water purification system remains in top condition, ready for immediate use upon your return.

Specifications & Ordering Information

Specifications for Polyethylene Storage Tanks

There are several different storage tank sizes available in this range:

30-liter Storage Tank*

Diameter	380 mm (14.82 in.)
Height	600 mm (23.4 in.)
Maximum Usable Capacity	25 L
Weight (full)	30 kg (66.14 lb)

60-liter Storage Tank

Diameter	380 mm (14.82 in.)
Height	840 mm (32.76 in.)
Maximum Usable Capacity	54 L
Weight (full)	59 kg (130.07 lb)

100-liter Storage Tank*

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)

* For 30-liter and 100-liter storage tanks, underbench models are also available.

Ordering Information

Description	Catalogue No.
Polyethylene Storage Tanks	
30-liter PE tank	TANKPE030
30-liter PE underbench tank	TANKBI030
60-liter PE tank	TANKPE060
100-liter PE tank	TANKPE100
100-liter PE underbench tank	ZBITANK01

Accessories

Description	Catalogue No.
Advanced Vent Filter	
Advanced vent filter (for Elix® water purification systems)	TANKMPK01
Standard vent filter (for RiOs™ water purification systems)	TANKMPK02
Automatic Sanitization Module	
Milli-Q® Integral; Milli-Q® Direct, Elix® Advantage, and Elix® Reference water purification systems	TANKASMIN
ASM for RiOs™ / Elix® / AFS® Essential water purification systems	TANKASMES
Air Gap Device	
Air Gap Device	AIRGAP001
E-POD® Pure Water Remote Dispenser	
E-POD® pure water dispenser	ZRXSP0D01
Washer Distribution Kit	
Washer Distribution Kit (Left) 230 V	ZWDK5L100
Washer Distribution Kit (Left) 115 V	ZWDK6L100
Washer Distribution Kit (Right) 230 V	ZWDK5R100
Washer Distribution Kit (Right) 115 V	ZWDK6R100
Water Sensor	
Connection from the system	ZFWATDET4
Connection from the tap water source	ZFWATDET1 (120 V) or ZFWATDET2 (230 V)
Water sensor with cable	TANKLK002
Lab Close Kit	
Milli-Q® Integral; Elix® Advantage; Elix® Reference; and Milli-Q® Direct water purification systems	LABCL0SE1
RiOs™ / Elix® / AFS® Essential water purification systems	Included, setting to be activated

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Pricing on any accessories shown can be found by keying the part number into the search box on our website.

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct.
If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.

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Please contact us if this literature doesn't answer all your questions.