

Water Purification Solutions for Clinical Laboratories

Consistency that Drives
Efficiency & Productivity



The life science business
of Merck operates as
MilliporeSigma in the
U.S. and Canada.

Milli-Q®
Lab Water Solutions

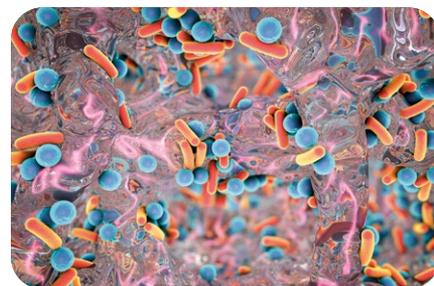


To produce accurate results on time that physicians can trust, clinical lab operators need to ensure efficient operation of their analyzers and automated chains.

Drive Lab Efficiency with Dedicated Technologies & Expert Support

Water contamination can interfere with clinical assays, potentially causing errors, unstable results, delays and downtime. Typical signs that water contamination is impacting your results include:

- Frequent re-run of specific assays
- Frequent re-calibrations
- Frequent disinfection of analyzers
- Frequent clogging of analyzer tubing



Bacteria and their by-products are a major source of water contamination that can impact clinical assays results. Bacterial contamination can come from tap water and air, resulting in bacterial growth in analyzer reservoirs, tubing and water baths.

Secure productivity by protecting every stage of the water purification process.

Patented and robust Milli-Q® water purification technologies ensure your clinical analyzers are fed with water that is contaminant free.

Water purification process	Targeted purification technology
Stage 1. Pure water production	
<ul style="list-style-type: none"> • Remove large particles, organic compounds, free chlorine 	<ul style="list-style-type: none"> • Progard®/IPAK Gard® pretreatment cartridges
<ul style="list-style-type: none"> • Remove 99% ions, bacteria, particles, organic compounds 	<ul style="list-style-type: none"> • Advanced reverse osmosis (RO)
<ul style="list-style-type: none"> • Remove remaining ions 	<ul style="list-style-type: none"> • Elix® electrodeionization (EDI)
<ul style="list-style-type: none"> • Inactivate bacteria 	<ul style="list-style-type: none"> • UV lamp
Stage 2. Storage in the tank	
<ul style="list-style-type: none"> • Prevent bacterial growth and biofilm formation 	<ul style="list-style-type: none"> • Automatic Sanitization Module (ASM) with UV lamp
<ul style="list-style-type: none"> • Prevent airborne contaminants 	<ul style="list-style-type: none"> • Vent filter
Stage 3. Distribution to analyzer	
<ul style="list-style-type: none"> • Remove ions and organic contaminants to trace levels 	<ul style="list-style-type: none"> • Q-Gard®/IPAK Quanta® polishing cartridges
<ul style="list-style-type: none"> • Prevent contamination of circulating water 	<ul style="list-style-type: none"> • UV lamp • Opticap®/Millipak® 0.22 µm sterilizing filters

Save time to focus on essential operations.

Decreasing the time you spend managing equipment, including lab water systems, can save precious time for more important laboratory operations and urgencies. Milli-Q® water purifications systems and our technical and digital services can support your drive for a more efficient working day.

- **Be alerted when needed.**

Receive notifications of water system alerts and alarms by SMS or email with MyMilli-Q™ Remote Care.

- **Easy cartridge changes.**

There's no need to open the water system to change purification cartridges. System care is rapid and can usually be managed in house.

- **Walk-away filling.**

No need to stand in front of your water system to feed a 5- or 10-L analyzer reservoir. Volumetric Dispense mode on our patented E-POD® and Q-POD® dispensers fill containers to your set volume.



Quick and easy cartridge changes with our ergonomic and patented pack-locking system.



The Milli-Q® Services hotline is supported by certified field service engineers worldwide.

- **Care-free system operation.**

Milli-Q® systems require minimal, once a year maintenance and are backed by a reliable, reactive and knowledgeable service team in every geography. Preventive maintenance is performed by certified field service engineers who provide user training and following auditable Standard Operating Procedures.

- **Online contract management.**

Quickly access contract information, manage consumable deliveries, schedule maintenance visits, and renew your service plan with MyMilli-Q™ online customer portal.



Consistency & Traceability—Any time, Anywhere

Clinical laboratories are highly regulated and digitalized environments that must be ready to adapt to evolving testing trends, whether due to the season, a new method, or a global pandemic. Even when working remotely, lab operators have to be confident that their analyzers are functioning correctly 24/7. In this context, a robust, reliable and digitalized water purification solution is essential to ensuring smooth and uninterrupted daily operations.

Consistent & uninterrupted water quality.

- **Consistent water quality.**

Despite seasonal and daily variations in tap water that can affect feed water temperature and conductivity, our Advanced RO and Elix® EDI technologies produce constant product flow rate and consistent water quality.

- **Highly reliable systems.**

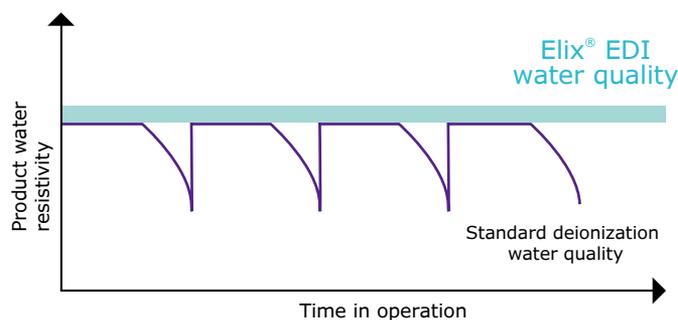
Fulfill both daily volume requirements and cover peak-use periods with our robust systems, manufactured in a Merck site that has been ISO 9001:2015 and ISO 14001 certified.

- **Emergency solutions.**

In case your system is non-operational, the emergency bypass procedure is easy to set up. Available on Milli-Q® CLX 7000 systems.

- **Decrease and predict the running cost of deionization.**

Removing remaining ions from RO water requires deionization (DI) technology. When standard DI water packs are exhausted, resistivity drops dramatically and unpredictably causing unstable results and generating downtime. Our unique, patented Elix® EDI module continuously self-generates its ion-exchange resin, eliminating the need for hazardous chemical regeneration procedures and frequent replacement of costly resins.

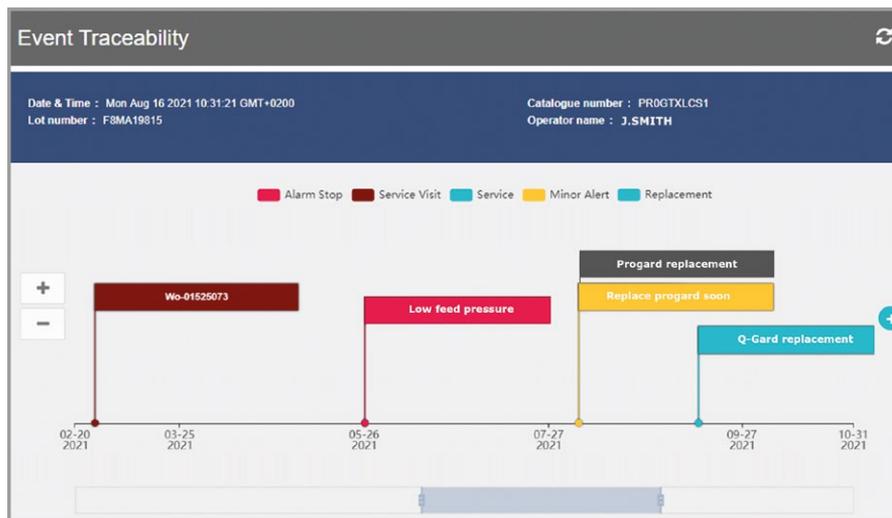


With Elix® EDI technology, deionization quality and cost remain constant, and are independent of feed water quality, RO membrane efficiency, and pure water use.

Improved quality management with total traceability.

Never miss a data point again. Milli-Q® water purification systems automatically record all water quality parameters, volumes and any system events directly in the system. Events include alerts, setting modifications, purification cartridge replacements, service activities, and more. This is especially critical for clinical laboratories, as water quality must be documented for labs seeking to conform to CLSI® and accreditation (or reaccreditation) to the ISO 15189:2012 standard supported by CAP 15189SM accreditation.

- **E-record archiving** facilitates accreditation as all data generated are automatically stored in the system memory.
- **RFID technology** ensures automatic traceability of purification cartridges and prevents the insertion of an incorrect consumable.
- An **Event Traceability tool**[†] makes it easy to view events by type and over a specified timeline, and supports planning for future maintenance.
- **Water quality parameters** (resistivity, temperature, and TOC) are rapidly searchable and graphable over any specified timeline.[†]



Past and future maintenance actions are clearly displayed on the interactive MyMilli-Q™ Event Traceability tool.

Reduce environmental impact

It's possible to reduce your lab's environmental footprint by selecting greener products and equipment. Innovative Milli-Q® systems are designed to reduce water and chemicals waste, and associated costs.

- **Up to 50% water savings.**

Reject RO water is recycled by E.R.A.® technology, reducing water use up to 50% vs. other RO systems. Recycling RO water also extends the lifetime of pre-treatment cartridges, further reducing waste.

- **No chemical waste.**

Elix® EDI technology eliminates the need for hazardous chemical regeneration procedures, associated waste, and costly resin cylinders.

Top 1% for Sustainability Management.

We are proactively engaged in reducing the environmental footprint of our products. In 2020 and 2021, Merck KGaA, Darmstadt, Germany was awarded Platinum status from EcoVadis, placing us in the top 1% of all companies assessed.



CAP, College of American Pathologists; CLSI, Clinical and Laboratory Standards Institute; E.R.A., evolutive reject adjustment; TOC, total organic carbon.

[†]Available with subscription to MyMilli-Q™ Remote Care.



Define and design your total water purification solution in collaboration with our Commercial Engineering and Design team.

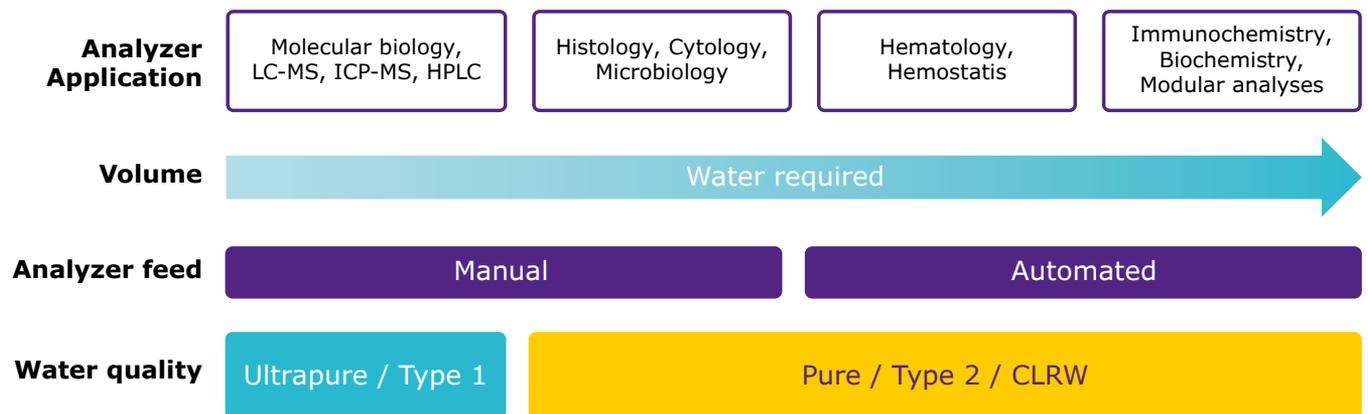
Adaptable Solutions for Every Lab

In every clinical laboratory, whether in a large testing facility, hospital or small clinic, the water system set up must:

- Fit the laboratory's space
- Meet volume demands
- Comply with quality requirements of the analyzers and their various applications

Optimize the integration of your total water purification solution with expert advice.

Consult with our water experts for building project management advice that is adapted to your local water quality, lab setting and space constraints. Your local Merck team has a depth of engineering and project management capabilities, and can design and customize your installation to exactly meet your requirements.



Find your total water solution with the support of our lab water specialists.

Our comprehensive range of water purification systems and customizable solutions can be adapted to fit your needs. No matter the laboratory size, set up, or quality requirements, solutions are available that produce from a few liters to up to several thousand liters per day of pure, Clinical Laboratory Reagent Water (CLRW), and ultrapure quality water.

Water quality	Feed to analyzer	Max. daily volume	System range	System water specifications
CLRW	Automated	3000 L	Milli-Q® CLX 7000	Resistivity > 15 MΩ·cm @ 25°C Bacteria < 1 cfu/mL TOC < 30 ppb Filtration 0.22 μm
	Automated	300 L	AFS®, AFS® D/E	
Pure (Type 2) water	Automated	9000 L	Milli-Q® HX 7000 SD Milli-Q® HX 7000	Resistivity > 5 MΩ·cm @ 25°C, typically 10-15 Bacteria < 10 cfu/mL ⁽¹⁾ TOC < 30 ppb
	Manual ²	300 L	Milli-Q® IX 7003/05/10/15	
Ultrapure (Type 1) water	Manual ²	300 L	Milli-Q® IQ 7000/03/05/10/15	Resistivity 18.2 MΩ·cm @ 25°C Bacteria ≤ 0.01 cfu/mL (≤ 10 cfu/L) ⁽³⁾ TOC typically ≤ 5 ppb No particles with size > 0.22 μm ⁽⁴⁾

CLRW, clinical laboratory reagent water; TOC, total organic carbon.

1. For Milli-Q® IX, bacteria ≤ 0.01 cfu/mL (≤ 10 cfu/L) with Millipak®, Millipak® Gold or Biopak® filter when installed and used in a laminar flow hood.
2. With semi-automated volumetric dispensing.
3. With Millipak®, Millipak® Gold or Biopak® filter when installed and used in a laminar flow hood.
4. With Millipak® or Millipak® Gold filter.



Milli-Q® IX systems deliver consistent-quality pure (Type 2) water with both manual with semi-automated volumetric dispensing.



Milli-Q® CLX 7000 systems can deliver up to 3000 L/day of CLRW to analyzers by automated feed.

Milli-Q® products are for laboratory use only and are not medical devices.

Milli-Q®

Lab Water Solutions

For more information, please visit our website:

SigmaAldrich.com/labwater

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