



Selecting the Optimal Water Quality for Microbiology

In order to ensure accurate results, prevent false positives or negatives, and prevent contamination, microbiologists must carefully select their reagents, including water, when preparing liquid or solid culture media. Indeed, tap water may contain various impurities that could have an impact on bacteria growth or cause various abnormalities of the prepared media, such as incorrect pH, wrong color or precipitation. Since water is the predominant component of microbiology media formulations, the removal of these contaminants from water is of paramount importance for the preparation of culture media.

The water quality recommended for microbiology media preparation is well described in the ISO® 11133:2014 standard ("Microbiology of food, animal feed and water — Preparation, production, storage and performance testing of culture media"). The water selected should match the following criteria:

- The water should be purified, free from traces of chlorine, ammonia or metal ions, which are likely to inhibit the growth of microorganisms
- The conductivity of the water should be < 25 $\mu\text{S}/\text{cm}$, preferably below 5 $\mu\text{S}/\text{cm}$
- It is recommended that the water be used freshly purified, or stored in a container free from inhibiting substances
- The microbial contamination of the water should be < 10³ cfu/mL

By adhering to these pure water criteria when preparing media, microbiologists can improve the reliability and reproducibility of their microbial cultures.

The requirements for microbiology media preparation are supported by the Milli-Q® IX water purification system which provides consistently high-quality pure water thanks to its combination of innovative purification technologies. In addition, water from this system can feed lab equipment, such as autoclaves or dishwashers, making it a versatile solution for microbiology laboratories.



Advance your Purpose

With the Milli-Q® IX 7003/05/10/15

Pure Water System

Increase Lab Productivity

- Easy to use and maintain
- Smart touchscreen interactions
- Ergonomic dispensing options

Assure quality as you dispense

- Constant, reliable pure water quality
- Continuous quality monitoring
- Pure water quality meets Pharmacopeia and ISO® requirements

Simplify traceability

- Automatic e-record archiving
- Paperless data management
- Support audit preparation



Water quality specifications

Pure, Type 2 water specifications¹

Resistivity at 25 °C ²	>5 MΩ·cm; typically 10–15 MΩ·cm
Conductivity at 25 °C	0.2 µS/cm; typically 0.1 µS/cm
TOC	≤30 ppb
Production flow rate	3 L/h (Milli-Q® IX 7003) 5 L/h (Milli-Q® IX 7005) 10 L/h (Milli-Q® IX 7010) 15 L/h (Milli-Q® IX 7015)

From an E-POD® dispenser with final filter, the following water quality specifications are achieved:¹

Particulates ³	No particles with size >0.22 µm
Bacteria ⁴	≤10 cfu/L
Pyrogens (endotoxins) ⁵	<0.001 EU/mL
RNases ⁶	<1 pg/mL
DNases ⁶	<5 pg/mL
Proteases ⁶	<0.15 µg/mL
Flow rate	Up to 2 L/min

1. These values are typical and may vary depending on the nature and concentration of contaminants in the feed water.
2. Resistivity can also be displayed non-temperature-compensated as required by USP.
3. With Millipak® or Millipak® Gold filter.
4. With Millipak® or Millipak® Gold filters or Biopak® polisher when installed and used in a laminar flow hood.
5. With Biopak® polisher when installed and used in a laminar flow hood.
6. With Biopak® polisher.



Design that supports your sustainability initiatives.

For more information, contact your local Milli-Q® expert or visit SigmaAldrich.com/Milli-Q-IX

