

## Understanding the basics of water quality

This quick reference is intended to clarify the terminology and the basics of quality measures for water that can be present in a health care facility. This quick reference does not cover [water for pharmaceutical purposes](#).

	What is it?	What is the quality?
<b>Tap water</b>	Water that comes from the municipality that does not undergo treatment before its intended use	Unknown, although the municipality is required to measure water quality that it distributes in accordance with EPA <a href="#">National Primary Drinking Water Regulations</a>
<b>Potable water / Drinking water</b>	Water that has been treated and delivered to the point of use in a manner that it meets EPA guidelines – water intended for direct or indirect human consumption	Defined by EPA in the <a href="#">National Primary Drinking Water Regulations</a>
<b>Distilled water</b>	Water has been treated using a process using vaporization and subsequent condensation to purify water	Unknown**
<b>Filtered water</b>	Water that has passed through a filter	Unknown**
<b>RO water</b>	Water that has been treated using a membrane separation process for purifying water that is based on molecular sieving and ionic rejection and that is effective in removing ions and dissolved organic contaminants with molecular weights above 100 Daltons	Unknown**
<b>DI water</b>	Water that is been treated using deionization, a process that uses ion-exchange resins to produce high purity water	Unknown**

<b>Utility Water</b>	Water that is treated,* monitored, and controlled to meet predetermined quality measures	See water quality measurement chart below
<b>Critical Water</b>	Water that is treated,** monitored, and controlled to meet predetermined quality measures	
<b>Sterile Water</b>	Water that has been exposed to the conditions and sterilization methods that have been validated to produce water that is free from viable microorganisms	Contains no viable microorganisms

<b>Water Quality Measurement</b>	<b>Utility Water</b>	<b>Critical Water</b>
pH @ 25 C	6.5 – 9.5	5 – 7.5
Bacteria (CFU/mL)	< 500	< 10
Endotoxin (EU/mL)	N/A	< 10
Total organic carbon (mg/L) (ppm)	N/A	< 1
Conductivity (µS/cm)	< 500	< 10
Iron (mg/L)	< 0.1	
Copper (mg/L)	< 0.1	
Aluminum (mg/L)	< 0.1	
Zinc (mg/L)	< 0.1	
Chloride (mg/L)	< 250	< 1
Nitrate (mg/L)	< 10	< 1
Phosphate (mg/L)	< 5	< 1
Sulfate (mg/L)	< 150	< 1
Silicate (mg/L)	< 50	< 1
Total hardness (mg/L)	< 150	< 1
Color and turbidity	Colorless, clear, no visible sediment/residues	

---

**Reference:** ANSI/AAMI ST108:2023. *Water for the Processing of Medical Devices*. Arlington, VA: Association for the Advancement of Medical Instrumentation; 2023.

**Notes:**

\*Some water that is delivered from the tap can meet the definition of Utility Water without requiring treatment. The use of water from any source as Utility Water requires monitoring and control because the water that is delivered from the municipality can and does change with changing conditions at the municipality's treatment facility, and with changes to the quality of water that the municipality receives from the source (eg, seasonal changes can change water components requiring different treatment at the municipality and those changes can influence quality measures downstream where it comes from the tap in homes, businesses, and health care facilities).

\*\*There is not a quality measurement because this describes a water treatment mechanism and not a quality of treated water. Filters, RO and DI systems can be components of water treatment systems that produce water for use in health care facilities.

\*\*\*This does not mean that RO/DI/filtration alone can produce Critical Water, see ANSI/AAMI ST108 for more information about water treatment systems.