

Water for Analytical Laboratory Use

According to

**International Organization for Standardization ISO 3696
And Israeli Standard 902**

Specifications Summary

Parameter	Grade 1	Grade 2	Grade 3
pH Value at 25°C Inclusive Range	Not Applicable	Not Applicable	5.0 - 7.5
Electrical Conductivity μS/cm at 25°C	0.01	0.1	0.5
Oxidizable Matter Oxygen (O) Content mg/L, Max.	Not Applicable	0.08	0.4
Absorbance at 254 nm and 1 cm Optical Path Length absorbance units, Max.	0.001	0.01	Not Specified
Residue after Evaporation on Heating at 110°C mg/kg, Max.	Not Applicable	1	2
Silica (SiO ₂) content mg/L, Max.	0.01	0.02	Not Specified

Grade 1 - Essentially free from dissolved or colloidal ionic and organic contaminants. It is suitable for the most stringent analytical requirements including those of high performance liquid chromatography (HPLC). It should be produced by further treatment of grade 2 water for example by reverse osmosis or ion exchange followed by filtration through a membrane filter of pore size 0.2μm to remove particle matter or re-distillation from a fused silica apparatus.

Grade 2 - Very low inorganic, organic or colloidal contaminants and suitable for sensitive analytical purposes including atomic absorption spectrometry (AAS) and the determination of constituents in trace quantities. Can be produced by multiple distillation, ion exchange or reverse osmosis followed by distillation.

Grade 3 - Suitable for most laboratory wet chemistry work and preparation of reagent solutions. Can be produced by single distillation, by ion exchange, or by reverse osmosis. Unless otherwise specified, it should be used for ordinary analytical work.

Water for Analytical Laboratory Use

According to

American Society for Testing and Materials (ASTM)

Specifications Summary

Parameter	Type I*	Type II**	Type III***	Type IV
Electrical Conductivity, Max. ($\mu\text{S}/\text{cm}$ at 25°C)	0.056	1.0	0.25	5.0
Electrical Resistivity, Min. ($\text{M}\Omega\text{-cm}$ at 25°C)	18.0	1.0	4.0	0.2
pH @ 25°C	-	-	-	5.0 - 8.0
TOC, Max. ($\mu\text{g}/\text{L}$)	100	50	200	No Limit
Sodium, Max. ($\mu\text{g}/\text{L}$)	1	5	10	50
Silica, Max. ($\mu\text{g}/\text{L}$)	3	3	500	No Limit
Chloride, Max. ($\mu\text{g}/\text{L}$)	1	5	10	50

* Requires the use of 0.2 μm membrane filter

** Prepared by distillation

*** Requires the use of 0.45 μm membrane filter

When bacterial levels need to be controlled, reagent grade types should be further classified as follows:

Parameter	Type A	Type B	Type C
Total Bacterial Count, Max. CFU / 100 mL	1	10	1000
Endotoxin, Max. EU / mL	0.03	0.25	-

Purified Water

According to

U.S. Pharmacopoeia and European Pharmacopoeia Standards

Specifications Summary

Properties	USP	EP
Electrical Conductivity	$\leq 1.3 \mu\text{S/cm}$ at 25°C	$\leq 1.1 \mu\text{S/cm}$ at 20°C
TOC	$\leq 500 \mu\text{g/L C}$	$\leq 500 \mu\text{g/L C}$
Nitrates	-	$\leq 0.2 \text{ ppm}$
Heavy Metals	-	$\leq 0.1 \text{ ppm}$
Aluminum	-	$\leq 10 \mu\text{g/L}$
Endotoxins	$\leq 0.25 \text{ EU / mL}$	$\leq 0.25 \text{ EU / mL}$
Bacteria (guideline)	$\leq 10 \text{ CFU / 100 mL}$	$\leq 10 \text{ CFU / 100 mL}$