

Lampiran 7. Spesifikasi Air Yang Dipakai

International Organization for Standardization specification for water for laboratory use ISO 3696: 1987

Parameter	Grade 1	Grade 2	Grade 3
pH value at 25°C inclusive range	N/A	N/A	5.0 to 7.5
Electrical conductivity $\mu\text{S}/\text{cm}$ 25°C, max.	0.1	1.0	5.0
Oxidizable matter Oxygen (O_2) content mg/L max.	N/A	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.	N/A	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 $0.2\mu\text{m}$ 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.

American Society for Testing and Materials (ASTM) D1193-91

	Type I*	Type II**	Type III***	Type IV
Electrical Conductivity Max. ($\mu\text{S}/\text{cm}$ @ 25°C)	0.056	1.0	0.25	5.0
Electrical Resistivity Min. ($\text{M}\Omega\text{-cm}$ @ 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

National Committee for Clinical Laboratory Standards (NCCLS) (1988)

	Type I	Type I I	Type III
Bacteria (CFU/ml)	< 10	< 1000	NA
pH	NA	NA	5.0 - 8.0
Resistivity (MΩ-cm @ 25°C)	> 10*	> 1	> 0.1
SiO ₂ mg/L	< 0.05	< 0.1	< 1
Total Solids mg/L	0.1	1	5
Total Oxidizable Organic Carbon mg/L	< 0.05	< 0.2	< 1

Type I water must be free of particulate matter larger than 0.2µm

* Resistivity of Type I must be measured in-line

Pharmacopoeia requirements for purity of 'purified water'

Properties	EP	USP
Nitrates	<0.2 ppm	-
Heavy metals	<0.1 ppm	-
TOC	<500 µg/L C	<500 µg/L C
Conductivity	<4.3 µS/cm at 20°C	<1.3 µS/cm at 25°C
Bacteria (guideline)	<100 CFU/ml	<100 CFU/ml

