
CHEMISTRY WATER SAMPLING GUIDELINES

1. Purpose

1.1. To specify procedures to be followed by trained personnel during sampling of water. This procedure addresses the factors that need to be controlled during sampling to ensure the validity of subsequent test results.

2. Scope and application

2.1. This procedure applies to all samples which are received by Analytical Laboratory Services (Pty) Ltd Microbiology sections, both in Walvis Bay and Windhoek.

3. Procedure

3.1.1 **Sample collection and submission:** Samples must be collected in clean containers and submitted to the laboratory by following the established procedure below.

3.1.2 **Sample-holding time:** Sample-holding time is the time period from sample collection to sample analysis, during which the testing results will not change.

3.1.3 **Sample contamination:** Prevent sample contamination. The most common causes of sample contamination during sample collection include poor sample handling techniques, inadequately cleaned bottles and equipment.

3.1.4 **Sample containers:** Sample containers can be obtained directly from the laboratory.

3.2 Different sample matrixes

3.2.1 For the analysis of major inorganic and physio-chemical parameters use bottles of 1L capacity with close-fitting clean stoppers. Avoid use of metal-lined caps

3.2.2 Before collecting samples from distribution systems, flush lines with tap fully open for 2 to 3 min before sampling

3.2.3 Rinse the bottle with the water being sampled before starting to collect the sample, unless the bottle contains a preservative, or supplied by the laboratory.

3.2.4 Fill up and close immediately.

3.2.5 Pump the water from a new borehole or well for at least 24h before taking a sample.

3.2.6 Label sample bottles clearly for the laboratory to refer to the source (Sample Name, Date, Time)

3.2.7 Deliver samples to the laboratory as soon as practicable after collection, typically within 48 hours. Where shorter holding times are required, special arrangements should be made to insure timely delivery to the laboratory.

3.2.8 Composite samples can be collected over a period of time and depth.

3.2.9 For Wastewater analyses, at least 2 liters of sample is needed.

3.2.10 500ml Glass bottles should be used for FOG analysis, and 250ml Glass bottles for TOC analysis.

The customers shall take full responsibility to ensure that correct sampling procedures are always followed for samples collected under their care. Samplers should be conversant with the relevant sampling procedures, to ensure that sample quality and integrity are not compromised.

This document is the property of Analytical laboratory Services (Pty) Ltd and shall not be published or reproduced except with written approval from the Managing Director.

4. Sample disposal

4.1 Without any specific request, samples will be stored for a period of 4 weeks after completion of test report(s) and will be disposed when that period has expired.

Table 1 Sample holding conditions, delivery time and acceptance temperature:

DETERMINATION	CONTAINER ^A	PRESERVATION	MAXIMUM HOLDING TIME
MICROBIOLOGICAL TESTS			
Coliform	P/G, sterile	Cool, ≤6°C, 0.008% Na ₂ S ₂ O ₃ ^b	6-24 hours ^c
E. coli	P/G, sterile	Cool, ≤6°C, 0.008% Na ₂ S ₂ O ₃ ^b	6-24 hours ^c
Heterotrophic colony count	P/G, sterile	Cool, ≤6°C, 0.008% Na ₂ S ₂ O ₃ ^b	6-24 hours ^c
INORGANIC TESTS			
Acidity	P/G	Cool, ≤6°C	14 days ^{EPA}
Alkalinity	P/G	Cool, ≤6°C	14 days ^{EPA}
Ammonium	P/G	Analyse as soon as possible or add H ₂ SO ₄ to pH<2; cool, ≤6°C, analyse within 48hrs	28 days
BOD	P/G	Cool, ≤6°C	48 hours
COD	P/G	Analyse as soon as possible or add H ₂ SO ₄ to pH<2; cool, ≤6°C	28 days
Chloride	P/G	None Required	28 days
Chlorine, total, residual	P/G	Analyse immediately	0.25 hours
Colour	P/G	Cool, ≤6°C	48 hours
Cyanide	P/G	Cool, <6°C Dechlorinate then NaOH to pH >10	14 days
Dissolved organic carbon	G, amber	HCl pH<<2; cool 6°C	28 days
Fluoride	P	None Required	28 days

The customers shall take full responsibility to ensure that correct sampling procedures are always followed for samples collected under their care. Samplers should be conversant with the relevant sampling procedures, to ensure that sample quality and integrity are not compromised.

This document is the property of Analytical laboratory Services (Pty) Ltd and shall not be published or reproduced except with written approval from the Managing Director.

Hardness	P/G	HNO ₃ to pH<2	6 months
Hydrogen Ion (pH)	P/G	Analyse immediately	0.25 hours
Nitrate	P/G	Analyse as soon as possible; Cool, ≤6°C	48 hours
Nitrite	P/G	Analyse as soon as possible; Cool, ≤6°C	48 hours
Kjeldahl nitrogen	P/G	Cool, <6°C, add H ₂ SO ₄ to pH<2	28 days
Oil & grease	G	Cool, <6°C HCl to pH<2	28 days
Oxygen, dissolved (electrode)	G	Analyse immediately	0.25 hours
pH	P/G	None	Analyse immediately
Phosphate	G Only	Cool, ≤6°C	48 hours
Phosphorus, Total	P/G	Add H ₂ SO ₄ to pH <2; Cool, ≤6°C	28 days
Total dissolved solids	P/G	Cool, ≤6°C	7 days
Total suspended solids	P/G	Cool, ≤6°C	7 days
Silica	P Only	Cool, ≤6°C, do not freeze	28 days
Specific Conductance	P/G	Cool, ≤6°C	28 days
Sulphate	P/G	Cool, ≤6°C	28 days
Sulphide	G	Zn acetate; NaOH pH>9; cool, 6°C	7 days
Temperature	P/G	None Required	Analyse immediately
Total dissolved solids	P/G	Cool, <6°C	7 days
Total organic carbon	G	HCl pH,2; cool 6°C	28 days
Total suspended solids	P/G	Cool, <6°C	7 days
Turbidity	P/G	Analyse the same day; store in dark upto 24 h; Cool, ≤6°C	48 hours
Metals			
Metals, except Cr VI and Mercury	P/G	HNO ₃ to pH<2	6 months
Chromium VI	P/G	Cool, ≤6°C	24 hours
Mercury	P/G	HNO ₃ to pH<2	28 days

For parameters not listed, use glass or plastic containers; refrigerate during storage and analyse as soon as possible.

The customers shall take full responsibility to ensure that correct sampling procedures are always followed for samples collected under their care. Samplers should be conversant with the relevant sampling procedures, to ensure that sample quality and integrity are not compromised.

This document is the property of Analytical laboratory Services (Pty) Ltd and shall not be published or reproduced except with written approval from the Managing Director.