

AQ-1 Nutrients in Seawater

Year: 2024	Participants: 55 laboratories expected
Number of rounds: 2 per year	Start exercise: 1 April, 1 October
Number of materials: 3 per round	Sample size: 250 ml

[Participation form](#)
[Timetable](#)
[PT Scheme](#)
[Costs](#)

This study covers the determination of nutrients in seawater test materials. The test materials are prepared in bulk, following the well-defined methods of A. Aminot and R. Kerouel (Analytical Chimica Acta 248(1991), pp.277-283 and Marine Chemistry 49(1995) pp.221-232).

Test Materials

Low nutrient seawater (LNSW), collected from the Eastern Atlantic Ocean during the late spring and summer months after the main plankton bloom, is used to prepare the test materials. This seawater is filtered to remove bacteria and particles. The pH of the seawater is adjusted to pH~7.2 using 0.1M hydrochloric acid. The seawater is spiked, mixed thoroughly and dispensed into appropriate 250 ml bottles for distribution. The dispensed materials are sterilised by autoclaving.

Homogeneity testing is performed on each batch of test materials produced. The nutrient test materials are stable for the period of the test and have also been shown to be stable for a period of some months even after opening but used under the correct conditions following the storage instructions.

Determinands and Concentration Ranges

The nutrients to be determined are given in the table below. The nitrogen species should be analysed in the distributed glass bottle and the silica and phosphorus species in the distributed plastic bottle. The table below also shows:

- The expected concentration range for the determinands in the spiked seawater materials.
- The constant and proportional error that will be used for assessment of the results.

Constant error for salinity established by the SAB members

Determinand*	Unit	Concentration range		Error	
		Seawater	Seawater (spiked)	Const	Prop
Ammonia	µmol/L	0.05-5	0.1-10	0.2	15.0%
Nitrate	µmol/L	0.05-15	0.1-25	0.1	7.5%
Nitrite	µmol/L	0.01-2	0.1-5	0.02	5.0%
Phosphate	µmol/L	0.02-5	0.1-10	0.04	5.0%
Silicate	µmol/L	0.2-20	0.2-50	0.2	6.0%
Total-N	µmol/L	2.5-25	5-50	1.5	10.0%
Total-P	µmol/L	0.05-5	0.2-10	0.08	10.0%
TOxN	µmol/L	0.05-15	0.1-25	0.08	6.0%
Salinity	psu			0.02	
Salinity indicative	psu			0.1	

*Determinands which are not in bold are not in the scope of accreditation.