



Fluorometric Based Ammonia (Ultra Low for Fresh and Saline Waters)

FIALab standard method for the Ultra Low Ammonia Assay in fresh and seawater using the FIALab-2500/2600/2700 system. This method is also ideally suited to be run on the MicroSIA SIA system.

Assay	Typical Throughput	Concentration Range	Notes
Ammonia (Ultra Low)	45 samples/hour	0.001 to 0.5 mg (N)/L H_3	Fluorometric

Principle:

Fluorometric ammonium orthophthaldialdehyde (OPA) analysis. Excitation around 370 nm, emission 420- 500 nm.

Comments:

A water bath heater is recommended and should be turned on to 70 C. The flow rate of the pump should be set to 30. The FIA LOV connections B should be bridged by short green tubing.

There are several variations of this method, with optimal settings depending on the type of samples and concentrations. Please review the following references for further discussions.

For low level 0.001 to 0.5 mg (N)/L NH_3 use a fluorometric detector such as with the PMT-FL.

References:

A Flow Injection-Fluorometric Method for the Determination of Ammonia in Fresh and Saline Waters with a View to In Situ Analysis. Alain Aminot, Roger Kerouel, Dominique Birot, Ifremer-Brest, BP 70, 29280 Plouzane', France First received 18 October 1999; accepted in revised form 29 August 2000.

Fluorometric determination of ammonia in sea and estuarine waters by direct segmented flow analysis Roger Khouel *, Alain Aminot IFREMER-Brest, BP 70, 29280 Plouzanf France Received 5 November 1996; revised 14 April 1997; accepted 16 April 1997.

Interferences:

Salinity concentrations of the sample comparing fresh and salt water can affect the response by ~10%. This is overcome by having the standards in a similar matrix as the samples.

Reagents:

Carrier:

Milli-Q water spiked with 0.5% (v/v) ammonia free seawater or 0.2 g/l NaCl.

Reagent 1: OPA Reagent:

* Borate buffer solution: 30 g/l of disodium tetraborate decahydrate. The solution was slightly turbid and was filtered using a Whatman GF/C membrane. It remains stable for several months in a polyethylene vial.

* OPA solution: 2 g of standard grade ophtaldialdehyde (P- 1378 Sigma Chemical) in 50 ml of ethanol (Carlo Erba 414607). Dissolution, performed in the dark by shaking, took a few minutes. This solution can be stored refrigerated in a glass bottle for at least 2 months.

* Sulfite solution: 8 g/l of sodium sulfite. The solution was found to be stable for at least 2 months at room temperature in a glass bottle.

The working reagent Working reagent (WR). In a borosilicate bottle, 500 ml of borate buffer were introduced and the following reagents added, with mixing after each addition: 10 ml of OPA solution, 1 ml of sodium sulfite solution and 0.1 ml of a 30% Brij solution. This reagent, rapidly protected from light, was left to stand several hours. It can be stored in the dark at room temperature for at least 2 months.

Reagent 2: Not used

Plug R2 port with Teflon Plug

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