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Gas Diffusion Ammonia Method (Water Based Samples) and Various Extracts

FIAlab standard method for the ammonia assay in fresh/salt waters and various food product extracts uses the FIAlab-2500/2600/ system or microSI. FIAlab 3600 system.

Assay	Typical Throughput	Concentration Range	Notes
Ammonia (flow method)	30 samples/hour	2..0 to 30 mg (N)/L NH_3	10 cm flow cell
Ammonia (stop flow method)	30 samples/hour	0.1 to 50 mg (N)/L NH_3	Sandwich sensor

Principle:

When samples containing ammonium ion or dissolved ammonia gas are injected into a basic carrier solution (pH > 10), NH_3 is formed and released. The NH_3 passes across a gas-permeable membrane into a acceptor stream containing bromothymol blue adjusted to pH 6.3 (light green color). Collection of NH_3 into the bromothymol blue raises the pH, creating a bluish color change, proportional to the initial ammonium or ammonia concentration. Monitoring wavelength for absorbance measurement is 620 nm. Recommended reference wavelength is 720 nm or 490nm. The sensitivity of the method depends on injected sample volume, and contact time between sample and gas diffusion membrane.

Continuous flow method uses **gas diffusion module combined with a long optical path (10 cm) flow cell** for spectrophotometric measurement. This configuration is compatible with the traditional FIA systems (FIAlab 2500 and FIAlab 2600). It operates at a flow rate of 1mL/min per channel, and uses 300 microliters of sample per assay. **For details** see Gas Diffusion Methods and Protocols in Manuals Section. (2- 30 ppm N)

Stop flow method uses **sandwich gas sensor attached to spectrophotometer by optical fibers.** This configuration is compatible with syringe driven systems (microSI, FIAlab 3600 and FIAlab 4002sp). It uses less than 1 ml of reagents per assay and 50 microliters of sample solution. (0, 1 to 50 ppm N)

For details see Gas Diffusion Methods and Protocols in Manuals Section.

NOTE#1. High sensitivity method for ammonia (below 1 ppm N level) is based on fluorescence measurement using OPA reagent. This method is available in two versions.
Direct reagent addition to sample solution, or ammonia diffusion followed by subsequent fluorometric detection. Please inquire.

NOTE#2. The limit of detection for ammonia method is often due to ammonia contamination of distilled water reagents or laboratory environment. **Avoid using ammonia containing laboratory cleaning materials.**

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