

BORON

FIAlab standard method for boron assay using the FIAlab-2500/2600/2700 system.

Assay	Typical Throughput	Concentration Range	Notes
Boron (Mid to High))	120 samples/hour	1 to 50 mg B/L	10 cm flow cell
Boron (Low)	60 samples/hour	0.1 to 5 mg B/L	10 cm flow cell

Principle:

Boron reacts with azomethine-H to form a colored complex which absorbs at 430 nm.

Comments:

The Boron assay color development is very slow. The “M2” coil should be twice as long as standard (use two coils in series), both submerged in a water bath set to 65 C. The M1 coil should be the standard length. The peristaltic pump speed should be set to 25% and the sample loop of 12 inches utilized. The timing in the script should be adjusted accordingly. A 10 cm flow cell is required. Use 430 nm as the primary wavelength, and 480 nm as the reference. The pump speed can be increased to 45% for sample batches of Boron concentrations > 5 ppm.

Warning, the reagents in this assay have a very strong and possibly hazardous odor. It is recommended that preparation and use be performed in a well-ventilated location or under a fume hood.

Interferences:

High concentrations of color and turbidity interfere with this method. Iron or zinc in concentrations exceeding that of boron may give interference.

Reagents:

Carrier: Matrix Match

Matrix Match. If samples are water then use water as carrier. The salinity should be matched if applicable.

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Reagent 1: Buffer/Masking Solution

Measure out the following into a 1-liter beaker. 200 g ammonium acetate, 20 g tetrasodium salt of EDTA, 8.0 g disodium salt of NTA (nitrilotriacetic acid)

Add 500 mL distilled water and stir to dissolve.

Add 100 mL concentrated acetic acid (use hood). Add stir bar and mix well until the solution becomes transparent.

Transfer to a plastic bottle

Reagent 2: Azomethine-H Solution (use hood)

Measure out the following into a 1-liter beaker. 5 g ascorbic acid 2.25 g Azomethine-H, monosodium salt, monohydrate Add 600 mL distilled water and stir to dissolve.

Reagent 2 stays good for 3-5 days. Keep refrigerated in the dark

Standards:

100ml PLB1-100 (Boron standard)

Source: 727-524-7732 - www.exaxol.com