

IRON

FIAlab standard method for dissolved Iron (Fe) assay using the FIAlab-2500/2600/2700 system.

| Assay | Typical Throughput | Concentration Range | Notes |
|------------------|--------------------|---------------------|-----------------|
| Iron (Mid) | 140 samples/hour | 0.025 to 100 ppm | 1 cm flow cell |
| Iron (Low) | 70 samples/hour | 0.0025 to 10 ppm | 10 cm flow cell |
| Iron (Ultra Low) | 45 samples/hour | 0.0005 to 0.2 ppm | 50 cm flow cell |

Principle:

1,10-phenanthroline chelation chemistry to Fe²⁺. This Fe-complex has an absorbance maximum around 510nm.

Comments:

A heater is not necessary. The flow rate of the pump should be set to 55 for Iron. The FIA LOV connections B should be bridged by a simple tubing. For typical Iron assays (0.5 to 100 ppm), make the sample loop from three inches of .03" ID tubing.

Low Concentration Assays: For low concentrations (below 0.5 ppm) consider using the 10 cm flow cell. Also for lower concentrations (0.01 to 0.2 ppm) use longer sample loop (e.g., 12 inches of .03" ID tubing).

For ultra low concentrations use a 36" sample loop.

For the low end of these ranges, care must be taken to use clean glassware and extended washouts of tubing on the system to prevent crossover contamination.

Recommended wavelengths 510 nm primary and 650 nm reference.

For seawater based assays, standards must match the salinity of the samples as close as possible.

Alternative method: A common alternative Iron method is based on Ferrozine, For use with Iron (II) and total dissolved iron, especially for ultra low level (< 100 nmol/l), consider using the method described in this paper: "COLORIMETRIC FLOW-INJECTION ANALYSIS OF DISSOLVED IRON IN HIGH DOC

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Interferences:**Reagents:****Carrier: DI Water**

1-Liter DI Water with surfactant. 4 drops of dishwashing liquid, or Brij per 500 ml.

Reagent 1: 1,10-phenanthroline chelation chemistry

AQUANAL-plus reagent kit for iron analysis is used and is based on 1,10-phenanthroline chelation chemistry to Fe²⁺. (Source - product number 37404 or 37444 at <http://www.sigmaaldrich.com>)

Dilute reagent by mixing one drop per one ml of DI water.

Reagent 2: Not used

Plug R2 port with Teflon Plug

Standards:

500ml I-4784-500 (Iron standard)

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