Thermo Scientific Orion AQUAfast IV® AC4078 Ampoules

Program ID #010

Iron Total & Soluble Auto-Test™

0.45 – 7.0 mg/L

The Orion AQUAfast IV Auto-Test kit is intended for use with the Orion AQ4000 Advanced Colorimeter. For detailed setup and measurement procedures for the Orion AQ4000, consult your colorimeter manual.

NOTE: *Before testing, zero the Orion AQ4000 using a sealed zero vial from the Orion AQUAfast IV Zero Auto-Test kit, AQ4ZER. If the sample is colored, use the sample cup provided to dilute the sample using the following steps: 1) Add 10 mL of sample and 5 mL of DI water to the sample cup for a total of 15 mL. 2) Transfer the diluted sample to a clean, dry screw top vial from the Orion Zero Auto-Test kit and use that vial to zero the meter. 3) See the colorimeter manual for details on the Zero Procedure for the Orion AQ4000. Discard the diluted sample after the zero procedure. Repeat for each colored sample. Re-zero with the sealed zero vial before testing any colorless samples.*

Safety Information

Read MSDS before performing this test procedure. Wear safety glasses and gloves.

Soluble Iron Procedure

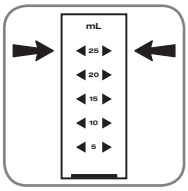

Figure 1

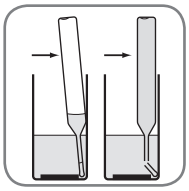

Figure 2

1. Fill the sample cup to the 25 mL mark with the sample. **See Fig 1**.
2. Place the Auto-Test cuvette in the sample cup. Snap the tip by pressing the cuvette against the side of the cup. The cuvette will fill, leaving a small bubble to facilitate mixing. **See Fig 2**.
3. Mix the contents of the cuvette by inverting it several times, allowing the bubble to travel from end to end each time. Wipe all liquid from the exterior of the cuvette.
4. Insert cuvette into Orion AQ4000. Align the ▼ on the Auto-Test cuvette with the ◆ on the adapter to obtain a continuous beeping and view ******* across the display. If ******* and beeping is not observed, rotate cuvette right or left to initiate the measurement.
5. Immediately cover the cuvette with the cuvette cover.
6. The Orion AQ4000 will be begin a 1 minute countdown. After the countdown is completed, the Orion AQ4000 will automatically proceed to the measure mode.
7. Record the concentration reading from the Orion AQ4000 display as either mg/L or ppm Fe or log measurement into the data logger by pressing the **log** key.

Total Iron Procedure

1. Fill the sample cup to the 25 mL mark with the sample. **See Fig 1**.
2. Add 5 drops of Iron Activator solution. Stir briefly. WAIT 4 MINUTES.
3. After 4 minutes, stir the sample once again and then perform the Soluble Iron Procedure. Starting with step 2 using this pre-treated sample.

Thermo SCIENTIFIC

Test Method

The Iron Total & Soluble Auto-Test method employs the phenanthroline chemistry.[1,2] Ferrous iron reacts with 1,10-phenanthroline to form an orange colored complex in direct proportion to the ferrous iron concentration. Total iron is determined by adding a mixture of thioglycolic acid and ammonia to the sample. This mixture dissolves most forms of particulate iron. Results are expressed in ppm (mg/Liter) Fe.

Various metals will produce high test results. Certain forms of very insoluble iron (magnetite, ferrite, etc.) require the following digestion procedure in place of the Total Iron test procedure:

a. Fill a heat-resistant, glass container to 25 mL with sample.

b. Add 5 drops of Iron Activator solution. Stir briefly.

c. Gently boil the sample to reduce volume to 10-15 mL.

d. Cool the sample and dilute to 25 mL with iron-free water.

e. Perform the Soluble Iron Procedure, starting with step 2, using this pretreated sample.

1. APHA Standard Methods, 18th ed., p. 3-66, method 3500-Fe D (1992)
2. ASTM D 1068 - 88, Iron in Water, Test Method A

Ordering Information

Cat. No.	Description
AC4078	Orion AQUAfast IV Iron Total & Soluble Auto-Test Kit
AQ4ZER	Orion AQUAfast IV Zero Vial Auto-Test Kit
AQ4CBL	Orion AQUAfast IV RS232 Cable
AQ4000	Orion AQUAfast IV Advanced Colorimeter

Environmental Instruments
Water Analysis Instruments

166 Cummings Center
Beverly, MA 01915 USA

Toll Free: 1-800-225-1480
Tel: 1-978-232-6000
Dom. Fax: 1-978-232-6015
Int'l Fax: 978-232-6031
www.thermo.com/water

256446-001 Rev.A 0108

Thermo SCIENTIFIC