Total Iron Vacu-vials® Kit

K-6023: 0 - 2.50 ppm (Prog. # 102)

Instrument Set-up

For CHEMetrics photometers, follow the **Setup and Measurement Procedures** in the operator's manual. For spectrophotometers, follow the manufacturer's specifications to set the wavelength to 560 nm and to zero the instrument using the ZERO ampoule supplied.

Test Procedure

1. Fill the sample cup to the 25 mL mark with the sample to be tested (fig 1).
2. Add 5 drops of A-6000 Activator Solution (fig 2). Stir to mix the contents of the cup.
   NOTE: Store the A-6000 Activator Solution in the glass bottle when not in use.
3. Wait **1 minute**.
4. Place the Vacu-vial ampoule, tip first, into the sample cup. Snap the tip. The ampoule will fill leaving a bubble for mixing (fig 3).
5. To mix the ampoule, invert it several times, allowing the bubble to travel from end to end.
6. Dry the ampoule and wait **5 minutes** for color development.
7. Insert the Vacu-vial ampoule into the photometer, flat end first, and obtain a reading in ppm (mg/Liter) iron (Fe).
   NOTE: **If using a spectrophotometer** that is not pre-calibrated for CHEMetrics products, then use the **equation below** or the **Concentration Calculator** found under the Support tab at *www.chemetrics.com*.

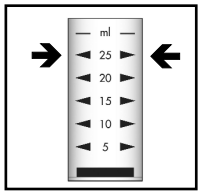

Figure 1

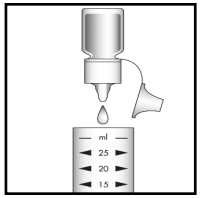

Figure 2

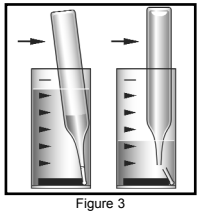
Figure 3

ppm = 2.57 (abs) - 0.02

Test Method

The Total Iron Vacu-vials®[1] test kit employs the PDTS chemistry.[2,3] The sample is treated with a mixture of thioglycolic acid and ammonia. This mixture dissolves most forms of particulate iron. The resulting ferrous iron then reacts with PDTS (3-(2-pyridyl)-5,6-bis(4-phenylsulfonic acid)-1,2,4-triazine disodium salt) to form a pink-purple colored complex in direct proportion to the total iron concentration. Various metals will produce high test results. Certain forms of very insoluble iron (magnetite, ferrite, etc.) require the following digestion procedure prior to running the test procedure:

a. Fill a heat-resistant, glass container to 25 mL with the sample to be tested.
b. Add 5 drops of A-6000 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. Using this pretreated sample, perform the **Test Procedure,** beginning with Step 4.

1. Vacu-vials is a registered trademark of CHEMetrics, Inc. U.S. Patent No. 3,634,038
2. G. Frederick Smith Chemical Co., The Iron Reagent, 3rd ed., p. 47 (1980).
3. J.A. Tetlow and A.L. Wilson, "The Absorptiometric Determination of Iron in Boiler Feed-water, "Analyst. Vol. 89, p 442 (1964).

Safety Information

Read SDS (available at www.chemetrics.com) before performing this test procedure. Wear safety glasses and protective gloves.

Visit www.chemetrics.com to view product demonstration videos.
Always follow the test procedure above to perform a test.

CHEMetrics
Simplicity in Water Analysis

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