

Fluoride Vacu-vials® Kit

K-4003: 0.50 - 2.00 ppm

Instrument Set-up

For CHEMetrics photometers, follow the instrument specific **Setup and Measurement Procedures** in the Operator's manual. For spectrophotometers capable of accepting a 13 mm diameter round cell, follow the manufacturer's specifications to set the wavelength to 580 nm and to set the instrument in absorbance mode. Using the reagent blank ampoule generated below, use the zeroing function to zero the instrument. All subsequent instrument readings on samples containing fluoride will be negative absorbance values.

Sample Pretreatment

If the sample is turbid, it must be filtered prior to performing this test procedure.

Generating Reagent Blank

A fresh reagent blank must be generated for each series of tests performed and with each new lot number of Fluoride Vacu-vials. Use a reagent blank ampoule from the same lot as the test Fluoride Vacu-vials.

To generate the reagent blank ampoule, perform **Steps # 1-3** of the test procedure as outlined below using **distilled water** in place of sample in **Step # 1**.

The resulting ampoule is the reagent blank (For CHEMetrics photometers, see instrument specific **Setup and Measurement Procedures**).

Test Procedure

1. Fill the sample cup to the 25 mL mark with the sample to be tested (fig 1).

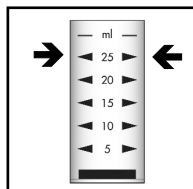


Figure 1

2. Place the Vacu-vial ampoule in the sample cup. Snap the tip by pressing the ampoule against the side of the cup. The ampoule will fill leaving a small bubble to facilitate mixing (fig 2).

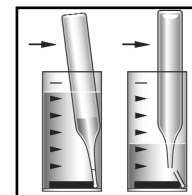


Figure 2

3. Mix the contents of the ampoule by inverting it several times, allowing the bubble to travel from end to end. Dry the ampoule and wait **1 minute** for color development.
4. Read the Vacu-vial ampoule in your photometer. If applicable, use the calibration table to obtain test results in ppm (mg/Liter) fluoride as F^- . Accuracy may be compromised if test results are outside the stated test range.

Test Method

The Fluoride Vacu-vials®¹ test kit is based on the reaction between fluoride and a red zirconium-dye lake that has been formed with SPADNS^{2,3,4}. The loss of color resulting from the reaction of the fluoride with the dye lake is a function of the fluoride concentration. Results are expressed in ppm (mg/Liter) F^- .

This method is approved by the EPA for NPDES and NPDWR reporting purposes when the samples have been distilled from an acid solution. Seawater and wastewater samples must be pre-distilled. Distillation removes most contaminating interferences except chlorine. Sodium Arsenite has been added to the reagent to remove up to 5 ppm chlorine.

1. Vacu-vials is a registered trademark of CHEMetrics, Inc. U.S. Patent No. 3,364,038.
2. APHA Standard Methods, 20th ed., p. 4-82, method 4500 F^- D (1998).
3. EPA Methods for Chemical Analysis of Water and Wastes, method 340.1 (1974,1978).
4. Thomas, L. C.; Chamberlain, G. J., Colorimetric Chemical Analytical Methods, 8th ed., pp 186-193, 1974.

Safety Information

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

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