

Chloride Vacu-vials® Kit

K-2103: 0 - 40.0 ppm (Prog. # 26)

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 455 nm and to zero the instrument using the reagent blank ampoule generated below.

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 and for each new lot of Chloride Vacu-vials. Use a reagent blank ampoule from the same lot as the test Chloride Vacu-vials. To generate the reagent blank ampoule, perform **Steps # 1-5** of the test procedure using **distilled water** in place of sample in **Step # 1**.

Test Procedure

1. Fill the sample cup to the 20 mL mark with the sample to be tested (fig 1).
2. Using the syringe, add 1.0 mL of A-2100 Activator Solution. Stir to mix the contents of the cup.
3. Place the Vacu-vial ampoule, tip first, into the sample cup. Snap the tip. The ampoule will fill leaving a bubble for mixing (fig 2).
4. To mix the ampoule, invert it several times, allowing the bubble to travel from end to end.

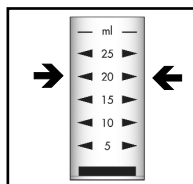


Figure 1

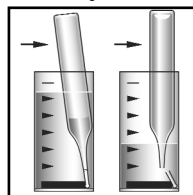


Figure 2

5. Dry the ampoule and wait **1 minute** for color development.
6. Insert the Vacu-vial ampoule into the photometer, flat end first, and obtain a reading in ppm (mg/Liter) chloride (Cl⁻).

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.

$$\text{ppm} = 29.68 (\text{abs})^2 + 10.10 (\text{abs}) + 0.23$$

Test Method

The Chloride Vacu-vials®¹ test kit employs the ferric thiocyanate chemistry^{2,3,4}. Chloride reacts with mercuric thiocyanate to liberate thiocyanate ion. Ferric ion reacts with thiocyanate ion to produce an orange-brown thiocyanate complex in proportion to the chloride concentration.

1. Vacu-vials is a registered trademark of CHEMetrics, Inc. U.S. Patent No. 3,634,038.
2. APHA Standard Methods, 22nd ed., Method 4500-Cl⁻ E - 1997.
3. Zall, David; Fisher, Donald; Garner, Mary; "Photometric Determination of Chlorides in Water", Analytical Chemistry; Vol. 28, No. 11, pp 1665-1668; November 1956.
4. O'Brien, James; "Automatic Analysis of Chlorides in Sewage", Wastes Engineering, pp 670-672, December 1962.

Important Note

The Vacu-vial ampoules contain a light sensitive reagent. Store in the dark when not in use.

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.



www.chemetrics.com
4295 Catlett Road, Midland, VA 22728 U.S.A.
Phone: (800) 356-3072; Fax: (540) 788-4856
E-Mail: orders@chemetrics.com

June 18, Rev. 11