

Chlorine Vacu-vials® Kit

K-2513: 0.40 - 5.00 ppm

K-2523: 0.40 - 5.00 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 515 nm and to use the ZERO ampoule supplied with this test kit to zero the instrument.

Safety Information

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

Free Chlorine Procedure

1. Fill the sample cup to the 25 mL mark with the sample to be tested (fig 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).
3. Mix the contents of the ampoule by inverting it several times, allowing the bubble to travel from end to end. Tap the bottom of the ampoule on a hard surface to cause any tiny bubbles that have collected on the ampoule wall to rise to the top of the liquid in the ampoule. 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) chlorine as Cl₂. Accuracy may be compromised if test results are outside the stated test ranges.

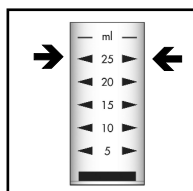


Figure 1

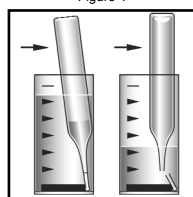


Figure 2

Total Chlorine Procedure (K-2513 only)

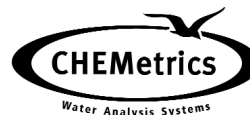
1. Fill the sample cup to the 25 mL mark with the sample.
2. Add 5 drops of A-2500 Activator Solution. Stir briefly. Wait **1 minute**.
3. Perform the **Free Chlorine Procedure** using this pretreated sample.

Test Method

The Chlorine Vacu-vials®¹ test kit employs the DPD chemistry.^{2,3} Free chlorine oxidizes DPD (N,N-diethyl-p-phenylenediamine) to form a pink colored species in direct proportion to the chlorine concentration. Results are expressed in ppm (mg/Liter) Cl₂. Halogens, ozone and halogenating agents will produce high test results. Chlorine, at >500 ppm may prevent color development.

K-2513 only: Total chlorine, the sum of free and combined chlorine, is determined by adding an excess of potassium iodide to the sample. Chloramines (combined chlorine) oxidize the iodide to iodine. The iodine then oxidizes DPD to the pink colored species.

1. Vacu-vials is a registered trademark of CHEMetrics, Inc. U.S. Patent No. 3,634,038
2. APHA Standard Methods, 21st ed., method 4500-Cl G (2005)
3. EPA Methods for Chemical Analysis of Water and Wastes, method 330.5 (1983)



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