

Chlorine Vacu-vials® Kit

K-2503: 0.40 - 4.00 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 565 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. 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 range.

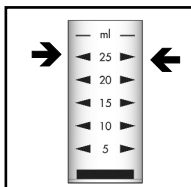


Figure 1

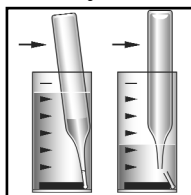


Figure 2

Total Chlorine Procedure

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 DDPD chemistry.² Free chlorine oxidizes DDPD to form a purple colored species in proportion to the chlorine concentration. Total chlorine, the sum of free and combined chlorine, is determined by adding potassium iodide to the sample. Results are expressed in ppm (mg/Liter) Cl₂.

It is not appropriate to use permanganate based standards to validate this test method. Standardized chlorine solutions must be used for this purpose.

Halogens and ozone will produce high test results. Chlorine, at >500 ppm may prevent color development. High levels of nitrite interfere with the free and total chlorine determinations. High levels of chloramines interfere with the free chlorine test. Use the following pretreatment to eliminate nitrite and chloramine interferences:

- A. Fill the sample cup to the 25 mL mark with the sample.
- B. Add 14 drops of A-2501 Solution. Stir briefly and wait **10 to 15 seconds**.
- C. Proceed with the **Free or Total Chlorine Procedure** using this sample.

1. Vacu-vials is a registered trademark of CHEMetrics, Inc. U.S. Patent No. 3,634,038
2. The DDPD methodology was developed by CHEMetrics, Inc.



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