

# Chlorine Dioxide Vacu-vials<sup>®</sup> Kit

K-2703: 0 - 11.0 ppm (Prog. # 37)

## 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 515 nm and to zero the instrument using the ZERO ampoule supplied.

## Test Procedure

1. Fill the sample cup to the 15 mL mark with the sample to be tested (fig. 1).
2. Add 6 drops of A-2700 Neutralizer Solution (fig. 2). 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. 3).
4. To mix the ampoule, invert 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.
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) chlorine dioxide as (ClO<sub>2</sub>).

**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](http://www.chemetrics.com).

$$\text{ppm} = 1.16 (\text{abs})^2 + 8.14 (\text{abs}) - 0.06$$

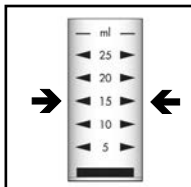


Figure 1

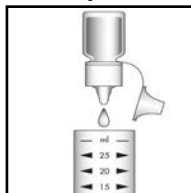


Figure 2

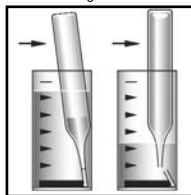


Figure 3

## Test Method

The Chlorine Dioxide Vacu-vials<sup>®1</sup> test kit employs the DPD chemistry.<sup>2,3,4</sup> Chlorine dioxide oxidizes DPD (N,N-diethyl-p-phenylenediamine) to form a pink colored species in direct proportion to the chlorine dioxide concentration. Interference from free Cl<sub>2</sub> is prevented (up to 6 ppm Cl<sub>2</sub>) by the addition of glycine to the sample. Glycine converts free chlorine to chloroaminoacetic acid. Bromine, iodine, ozone and halogenating agents will produce high test results. Chlorine dioxide at concentrations significantly above the test range may prevent proper color development, causing low test results.

1. Vacu-vials is a registered trademark of CHEMetrics, Inc. U.S. Patent No. 3,634,038
2. APHA Standard Methods, 20th ed., Method 4500-ClO<sub>2</sub> D - 1993
3. APHA Standard Methods, 22nd ed., Method 4500-Cl G - 2000
4. EPA Methods for Chemical Analysis of Water and Wastes, method 330.5 (1983)

## Safety Information

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

Visit [www.chemetrics.com](http://www.chemetrics.com) to view product demonstration videos.  
Always follow the test procedure above to perform a test.



[www.chemetrics.com](http://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](mailto:orders@chemetrics.com)

Mar. 18, Rev. 15