

Chlorine Dioxide Analysis Using CHEMetrics® Chlorine Vacu-vials® Test Kit, Cat. No. K-2513

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Overview

Chlorine dioxide can be measured in water samples with the standard DPD chemistry for free chlorine analysis using CHEMetrics K-2513 Chlorine Vacu-vials Kit. Interference from up to 6 ppm free chlorine is prevented by the addition of glycine (A-2700 Neutralizer Solution) to the sample prior to analysis.

Required Equipment

Chlorine Vacu-vials Kit, Cat. No. K-2513
Chlorine Dioxide Neutralizer Solution, Cat. No. A-2700
CHEMetrics photometer (V-2000, V-3000, I-2001 Chlorine SAM or I-2005 Chlorine Dioxide SAM) or a spectrophotometer that accepts 13-mm round cells.

Chlorine Dioxide Test Procedure using K-2513 Chlorine Vacu-vials Kit, Test Range 0 - 11.0 ppm (mg/L) ClO₂

Instrument Set-up

For CHEMetrics photometers, follow the Setup and Measurement Procedures in the operator's manual. For V-2000 and V-3000 photometers, choose Program #37 if available; otherwise, choose Prog #32. For spectrophotometers, follow the manufacturer's instructions to set the wavelength to 515 nm and to zero the instrument using the sealed ZERO ampoule supplied in the Vacu-vials kit.

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. Obtain a test result 1 minute after snapping tip.
6. Insert the Vacu-vial ampoule into the photometer, flat end first, and obtain a reading.

If using the I-2005 Chlorine Dioxide SAM or program #37 with the V-2000 or V-3000:

Test results are expressed as ppm (mg/L) chlorine dioxide (ClO₂).

If using the I-2001 Chlorine SAM or program #32 with the V-2000 or V-3000:

Test results are expressed as ppm chlorine. To convert results to ppm chlorine dioxide (ClO₂), multiply by 2.3.

$$\text{ppm ClO}_2 = 2.3 \times \text{ppm Cl}_2$$

If using a spectrophotometer that is not pre-calibrated for CHEMetrics products:

Use this equation to convert results from absorbance to ppm chlorine dioxide.

$$\text{ppm ClO}_2 = 0.80 (\text{abs})^2 + 8.76 (\text{abs}) - 0.04$$

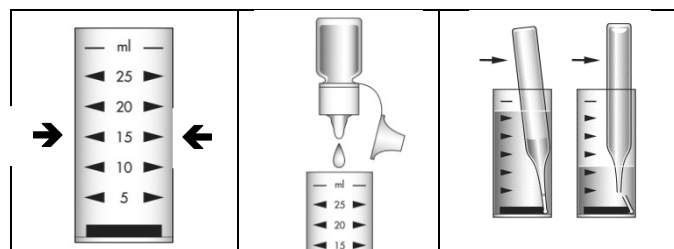


Fig. 1

Fig. 2

Fig. 3