

# Oxygen Vacu-vials® Kit

**K-7503:** 0 - 2.00 ppm (Prog. # 140)

## Safety Information

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

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

## Sampling

The most critical part of any dissolved oxygen test is sampling.

For flowing samples, the sample stream must be completely leak-free. To accomplish this, the sampling tube is vertically mounted with a tube of inert material connecting the sample point to the bottom of the sampling tube. Use stainless steel, type 304 or 316, or glass tubing with short neoprene connections. Do not use copper tubing, long sections of neoprene or other polymeric tubing.

When a flowing sample is not available, use the 25 mL sample cup supplied with the kit to collect the sample. Handle the sample with as little agitation as possible. The sample temperature should be at or below ambient temperature.

## Test Procedure

1. To remove trapped air bubbles in flowing samples, the system should be purged with water that is flowing at the fastest possible rate, and has a temperature of 180 - 210°F (80 - 100°C). New sampling systems should be purged for several hours, while those used routinely may require only a few minutes. When the system is fully purged, reduce the flow to 500 - 1000 mL per minute and cool the sample to ambient temperature.

2. Place the Vacu-vial ampoule, tip first, into the sampling tube or sample cup. Snap the tip. The ampoule will fill leaving a bubble for mixing (fig. 1).
3. Gently invert the ampoule several times, allowing the bubble to travel from end to end.
4. Dry the ampoule and wait **2 minutes** for color development.
5. Insert the Vacu-vial ampoule into the photometer, flat end first, and obtain a reading in ppm (mg/Liter) oxygen (O<sub>2</sub>).

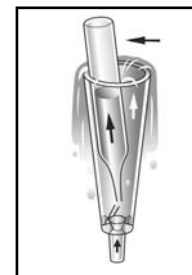


Figure 1

**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).

$$\text{ppm} = (-0.43)(\text{abs})^2 + 2.49(\text{abs}) - 0.01$$

## Test Method

The Oxygen Vacu-vials®<sup>1</sup> test kit employs the indigo carmine method<sup>2,3</sup>. In an acidic solution, oxygen oxidizes the yellow-green colored leuco form of indigo carmine to form a highly colored blue dye. The resulting blue color is proportional to the dissolved oxygen concentration in the sample.

1. Vacu-vials is a registered trademark of CHEMetrics, Inc. U.S. Patent No. 3,634,038
2. ASTM D 888 - 87, Dissolved Oxygen in Water, Test Method A
3. Gilbert, T. W., Behymer, T. D., Castaneda, H. B., "Determination of Dissolved Oxygen in Natural and Wastewaters," *American Laboratory*, pp. 119-134, March 1982

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



Simplicity in Water Analysis

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