Oxygen Vacu-vials® Kit

K-7503: 0.20 - 2.00 ppm

Important Note

The Vacu-vial ampoules contain a light sensitive reagent. They will remain stable only if stored in the dark.

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

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 615 nm and to use the ZERO ampoule supplied with this test kit to zero the instrument.

Sampling

The most critical part of any dissolved oxygen test is sampling. 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. If a flowing sample is not available, the sample must be handled with as little agitation as possible.

Test Procedure

1. To remove trapped air bubbles, 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. Insert a Vacu-vial ampoule so that the tapered tip is at the bottom of the sampling tube. Snap the tip by gently pressing the upper end of the ampoule toward the wall of the sampling tube (fig. 1). The ampoule will fill, leaving a bubble to facilitate mixing.
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 **2 minutes** for color development.

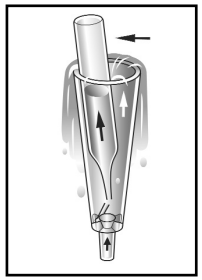

Figure 1

4. Read the Vacu-vial ampoule in your photometer. If applicable, use the calibration table to obtain test results in ppm (mg/Liter) oxygen as O_2. Accuracy may be compromised if test results are outside the stated test ranges.

Test Method

The Oxygen Vacu-vials®[1] test kit employs the indigo carmine method[2,3]. 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. Test results are expressed in ppm (mg/Liter) oxygen as O_2.

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

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