

# Oxygen Vacu-vials® Kit

**K-7553:** 0 - 1.000 ppm (Prog. # 142)

## 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, set the wavelength to 520 nm. A sealed ZERO ampoule is supplied in this kit for zeroing when the sample is colorless and not turbid. For improved accuracy with colored or turbid samples, Sample Zeroing Accessory Pack, Cat. # A-0503 is recommended. Snap the tip of the A-0503 ampoule in the sample. Invert the ampoule to mix. Dry the ampoule and use it in place of the supplied ZERO ampoule to zero the instrument.

## Sampling

The most critical part of any dissolved oxygen test is sampling. Incorrect sampling technique will cause false positive test results. For guidance on appropriate sampling protocol, view the video on the specific product page on the CHEMetrics website. 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.

## 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. Place the Vacu-vial ampoule, tip first, into the sampling tube. 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. Obtain a test result **within 30 seconds** after snapping tip.
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>).

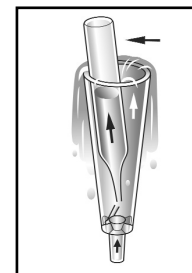


Figure 1

**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).

$$\text{ppm} = 0.118 (\text{abs})^2 + 1.092 (\text{abs}) - 0.014$$

## Test Method

The Oxygen Vacu-vials®<sup>1</sup> test kit employs the Rhodazine D™ Method.<sup>2,3,4,5</sup> Dissolved oxygen reacts with the pale yellow colored leuco form of Rhodazine D to produce a deep rose color. The resulting 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. Rhodazine D methodology was developed by and is a trademark of CHEMetrics, Inc.
3. ASTM D 5543 - 15, Low Level Dissolved Oxygen in Water
4. ASTM Power Plant Manual, 1st ed., p. 169 (1984)
5. Department of the Navy, Final Report of NAVSECPHILADIV Project A-1598; Evaluation of CHEMetrics Feedwater Dissolved Oxygen Test Kit (1975)

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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