

# Phosphate Vacu-vials® Kit

## K-8513

### Instrument Set-up

For CHEMetrics photometers, follow the **Setup and Measurement Procedures** in the operator's manual.

For spectrophotometers, follow the manufacturer's instructions to set the wavelength to 690 nm and to zero the instrument using the ZERO ampoule supplied.

### Test Procedure

1. Fill the sample cup to the 25 mL mark with the sample to be tested (fig. 1).
2. Add 2 drops of A-8500 Activator Solution (fig. 2). Cap the sample cup and shake it to mix the contents.
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.
5. Dry the ampoule and wait **3 minutes** for color development.
6. Insert the Vacu-vial ampoule into the photometer, flat end first, and obtain a reading.

**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).

$$\text{ppm PO}_4 = 5.08 (\text{abs}) - 0.07$$

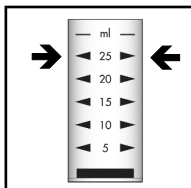


Figure 1

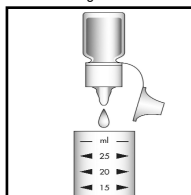


Figure 2

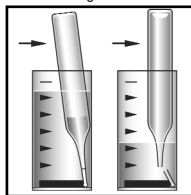


Figure 3

### Test Method

The Phosphate Vacu-vials®<sup>1</sup> test kit employs the stannous chloride chemistry.<sup>2</sup> In an acidic solution, ortho-phosphate reacts with ammonium molybdate to form molybdophosphoric acid, which is then reduced by stannous chloride to the intensely colored molybdenum blue. The resulting blue color is directly proportional to the phosphate concentration.

Condensed phosphates (pyro-, meta- and other polyphosphates) and organically bound phosphates do not respond to this test. Sulfide, thiosulfate, and thiocyanate will cause low test results.

1. Vacu-vials is a registered trademark of CHEMetrics, Inc. U.S. Patent No. 3,634,038
2. APHA Standard Methods, 22nd ed., Method 4500-P D - 1999

### Instrument Ranges

**V-2000 Photometer:** 0 - 8.00 ppm PO<sub>4</sub> (Prog. # 159)  
0 - 2.64 ppm P (Prog. # 160)

**V-3000 Photometer:** 0 - 5.00 ppm PO<sub>4</sub> (Prog. # 160)  
0 - 1.63 ppm P (Prog. # 160)

**Spectrophotometer:** 0 - 5.00 ppm PO<sub>4</sub>

### 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.



Simplicity in Water Analysis

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