

# Phenols Vacu-vials® Kit

**K-8003:** 0 - 8.00 ppm (Prog. # 152)

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

## Sample Temperature

Sample temperatures that deviate significantly from 20°C (68°F) may introduce test result bias.

## Test Procedure

1. Fill the sample cup to the 25 mL mark with the sample to be tested (fig. 1).
2. Dissolve the crystals on the tip of the ampoule in the sample by stirring the sample briefly with the ampoule tip (fig. 2).
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. Obtain a test result **1 minute** after snapping tip.

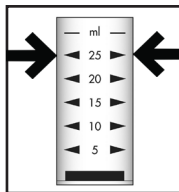


Figure 1

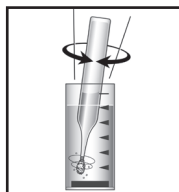


Figure 2

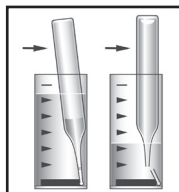


Figure 3

6. Insert the Vacu-vial ampoule into the photometer, flat end first, and obtain a reading in ppm (mg/Liter) phenol (C<sub>6</sub>H<sub>5</sub>OH).

**NOTE:** If using a spectrophotometer that is not pre-calibrated for CHEMetrics products, then use the **equation below** or the **Concentration Calculator** on the website.

$$\text{ppm} = 8.47 (\text{abs}) - 0.07$$

## Test Method

The Phenols Vacu-vials®<sup>1</sup> test kit employs the 4-aminoantipyrine chemistry.<sup>2,3,4</sup> In an alkaline solution, phenols react with 4-aminoantipyrine to produce a red colored complex. The color forming reaction is initiated by potassium ferricyanide (tip coating).

Most parasubstituted phenols do not produce a color with this reagent. Ferrous iron causes a blue color which can be eliminated by adding several drops of 1% EDTA to the sample before dissolving the tip coating. Sulfide, in excess of 100 ppm, causes a yellow turbidity. Highly contaminated waste waters may require distillation to separate phenols from nonvolatile impurities.

1. Vacu-vials is a registered trademark of AquaPhoenix Scientific, LLC U.S. Patent No. 3,634,038
2. APHA Standard Methods, 23<sup>rd</sup> ed., Method 5530 D - 2010
3. ASTM D 1783 - 01, Phenolic Compounds in Water, Test Method B
4. EPA Methods for Chemical Analysis of Water and Wastes, Method 420.1 (1983)

## Safety Information

Read SDS before performing this test procedure. Wear safety glasses and protective gloves.

