

Phenols Vacu-vials® Kit

K-8053: 0 - 20.0 ppm (Prog. # 153)

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. Add 10 drops of S-8000 solution (fig. 2). Stir to mix the contents of the cup.
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.

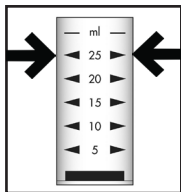


Figure 1

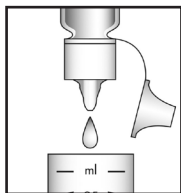


Figure 2

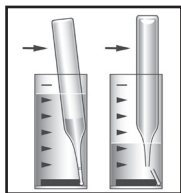


Figure 3

6. Insert the Vacu-vial ampoule into the photometer, flat end first, and obtain a reading in ppm (mg/Liter) phenol (C₆H₅OH).

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.

$$\text{ppm} = 19.6 (\text{abs}) - 0.08$$

Test Method

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

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 the accessory solution. 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, 23rd 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.

