

Glycol Vacu-vials® Kit

K-4423: 5.0 - 65.0 ppm Propylene Glycol

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

Test Procedure

1. Fill the sample cup to the 20 mL mark with the sample to be tested (fig 1).
2. Add 5 drops of A-4400 Activator Solution (fig 2). Cap the cup and shake it to mix the contents. Wait **5 minutes**.
3. Add 6 drops of A-4406 Activator Solution and 10 drops of A-4405 Stabilizer Solution (fig 2). Cap the cup and shake it vigorously for 30 seconds.
4. Place the Vacu-vial ampoule in the sample cup. Snap the tip by pressing the ampoule against the side of the cup. The ampoule will fill leaving a small bubble to facilitate mixing (fig 3).
5. 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 **12 minutes** for color development.
6. Read the Vacu-vial ampoule in your photometer. If applicable, use the calibration table to obtain test results. Accuracy may be compromised if test results are outside the stated test range.

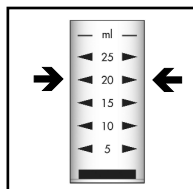


Figure 1

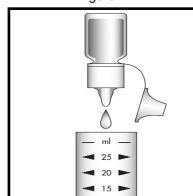


Figure 2

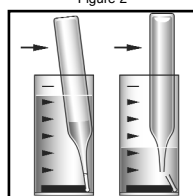


Figure 3

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

Activator Solution Preparation

Add 10 mL of distilled water to the A-4406 Activator Solution bottle. Shake the bottle until the dry chemical dissolves completely. If the solution will be stored at room temperature, label the bottle with a **6 week** expiration date. If it will be stored in the refrigerator, label it with a **4 month** expiration date.

Sample Dilution - use distilled water only

Dilute the sample if the contents of the reacted ampoule are cloudy or there is a precipitate in the reacted ampoule or if the glycol concentration of the sample exceeds the range of the test. Measure out the required volume of sample and dilute to **50 mL total volume** with distilled water. Perform the Test Procedure on this diluted sample. Multiply the test result obtained in Step 6 of the test procedure by the corresponding multiplication factor.

Volume of Sample used: 10 mL	Multiplication Factor: 5
Volume of Sample used: 5 mL	Multiplication Factor: 10
Volume of Sample used: 1 mL	Multiplication Factor: 50

Test Method

The Glycol Vacu-vials®¹ test kit employs the Purpald®²/Periodate chemistry³. Periodic acid oxidizes ethylene and propylene glycol to formaldehyde. In a highly alkaline solution, and in conjunction with an oxidizing agent, formaldehyde reacts with Purpald to form a purple colored complex. A citrate/tartrate buffer is added to the sample to prevent interferences from up to 700 ppm total dissolved solids. Results are expressed in ppm (mg/Liter) propylene glycol. For test results in ppm (mg/Liter) ethylene glycol, multiply the final test result by a factor of 0.5.

For best results, samples should be less than 100°F. Certain aldehydes and alcohols will cause high test results.

1. Vacu-vials is a registered trademark of CHEMetrics, Inc. U.S. Patent No. 3,634,038
2. Purpald is a registered trademark of Aldrich Chemical Company. The reagent methodology was developed by Aldrich Chemical Company.
3. Fritz, James S. and Schenk, George H., Quantitative Analytical Chemistry, 4th ed., p. 277, 1979.



www.chemetrics.com
4295 Catlett Road, Calverton, VA 20138-0214 U.S.A.
Phone: (800) 356-3072; Fax: (540) 788-4856
E-Mail: orders@chemetrics.com
May 09, Rev. 9