Nitrate Vacu-vials® Kit

K-6903: 0 - 1.50 ppm N (Prog. # 119)
K-6923: 0 - 7.50 ppm N (Prog. # 120)
K-6933: 0 - 50.0 ppm NO_3 (Prog. # 121)

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 520 nm and to zero the instrument using the ZERO ampoule supplied.

Test Procedure

1. **K-6903:** Fill the reaction tube (screw cap tube) to the 15 mL mark with the sample to be tested.
   K-6923: Using the syringe provided, dispense **3 mL** of the sample to be tested into the empty reaction tube (screw cap tube), then dilute to the 15 mL mark with distilled water.
   K-6933: Using the syringe provided, dispense **2 mL** of the sample to be tested into the empty reaction tube (screw cap tube), then dilute to the 15 mL mark with distilled water.
2. Empty the contents of one Cadmium Foil Pack into the reaction tube (fig 1). Cap the reaction tube and shake it vigorously for exactly **3 minutes.** Allow the sample to sit undisturbed for **2 minutes**.
3. Pour 10 mL of the reacted sample from Step 2 into the empty **25 mL sample cup** (fig 2), being careful not to transfer any cadmium particles to the sample cup.

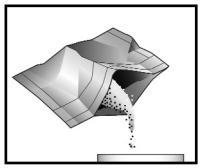

Figure 1

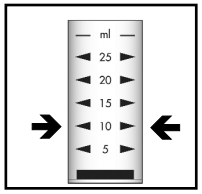

Figure 2

4. 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).
5. To mix the ampoule, invert it several times, allowing the bubble to travel from end to end.
6. Dry the ampoule. Obtain a test result **10 minutes** after snapping tip.

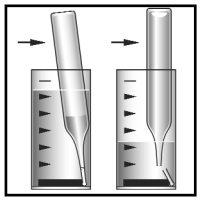

Figure 3

7. Insert the Vacu-vial ampoule into the photometer, flat end first, and obtain a test result.

   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*. If instrument response is > 2 absorbance (abs), dilute sample and retest.

   K-6903: ppm N = $-0.39\ (abs)^2 + 1.66\ (abs) + 0.02$
   K-6923: ppm N = $-1.95\ (abs)^2 + 8.32\ (abs) + 0.09$
   K-6933: ppm NO_3 = $-13\ (abs)^2 + 55.2\ (abs) + 0.64$

Safety Information

Read SDS (available at www.chemetrics.com) before performing this test procedure. Wear safety glasses and protective gloves.

Test Method

The Nitrate Vacu-vials®[1] test kit employs the cadmium reduction method.[2,3,4] Nitrate is reduced to nitrite in the presence of cadmium. In an acidic solution, the nitrite diazotizes with a primary aromatic amine and then couples with another organic molecule to produce a highly colored azo dye. The resulting pink-orange color is proportional to the nitrate concentration.

Samples containing nitrite will give erroneous, high test results. Samples containing in excess of 2000 ppm chloride will give low test results. Certain metals, chlorine, oil and grease will also give low test results.

1. Vacu-vials is a registered trademark of CHEMetrics, LLC U.S. Patent No. 3,634,038
2. APHA Standard Methods, 23rd ed., Method 4500-NO_3^- E -2016
3. ASTM D 3867 - 09, Nitrite-Nitrate in Water, Test Method B
4. EPA Methods for Chemical Analysis of Water and Wastes, Method 353.3 (1983)

www.chemetrics.com
4295 Catlett Road, Midland, VA 22728 U.S.A.
Phone: (800) 356-3072; Fax: (540) 788-4856
E-Mail: orders@chemetrics.com
Feb. 23, Rev. 24