

Silica Vacu-vials® Kit

K-9003

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 **815 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 15 mL mark with the sample to be tested (fig. 1).
2. Add 10 drops of S-9001 Activator Solution (fig. 2). Cap the sample cup and shake it to mix the contents. Wait **4 minutes**.
3. Add 5 drops of S-9000 Neutralizer Solution (fig. 2). Cap the sample cup and shake it to mix the contents. Wait **1 minute**.
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 **2 minutes** after snapping tip.

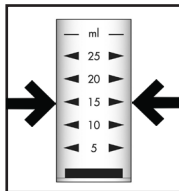


Figure 1

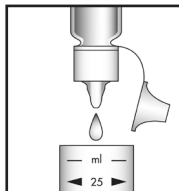


Figure 2

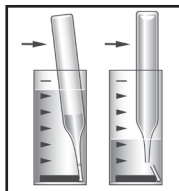


Figure 3

7. Insert the Vacu-vial ampoule into the photometer, flat end first, and obtain a reading in ppm (mg/Liter) silica as SiO₂.

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.

$$\text{ppm} = 3.58 (\text{abs}) - 0.04$$

Test Method

The Silica Vacu-vials®¹ test kit employs the heteropoly blue chemistry.^{2,3,4} Silica reacts with ammonium molybdate at a pH of 1.2 to form molybdosilicic acid, which is then reduced by aminonaphtholsulfonic acid to form heteropoly blue. The resulting blue color is directly proportional to the silica concentration in the sample. Interferences from phosphate (up to 60 ppm) are masked by the addition of S-9000 Neutralizer Solution (citric acid). This method determines “molybdate reactive” silica.

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 4500-SiO₂-D - 1997
3. EPA Methods for Chemical Analysis of Water and Wastes, Method 370.1 (1983)
4. ASTM D 859-05, Silica in Water

Instrument Ranges

V-2000, V-3000: 0 - 10.00 ppm (Prog. # 168)

Spectrophotometer: 0 - 4.00 ppm

Safety Information

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

