

Sulfate Vacu-vials® Kit

K-9203: 8.0 - 100.0 ppm

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

Different instrument platforms vary widely in their ability to measure turbidity. Since this method is a turbidimetric determination, the supplied calibration table is for reference only. It is strongly recommended that sulfate standards be run to validate the supplied calibration or to generate an instrument specific calibration.

Sample Pretreatment

If the sample is turbid, it must be filtered prior to performing this test procedure.

Test Procedure

1. Fill the sample cup to the 20 mL mark with the sample to be tested (fig 1).

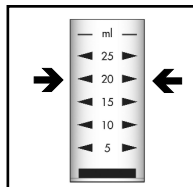


Figure 1

2. Add 7 drops of A-9200 Acidifier Solution (fig 2). Stir to mix the contents of the cup.

NOTE: The appearance of bubbles on the side and bottom of the sample cup is an indication of extremely high alkalinity levels, (>2000 ppm as CaCO₃). Under these conditions stir the sample for approximately 1 minute to allow this gas to be dispersed.

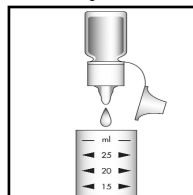


Figure 2

3. Add 1 scoop of A-9202 Activator Powder to the sample. Stir for 10 seconds with the tip of the ampoule.

NOTE: It is not critical that all of the crystals dissolve.

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).

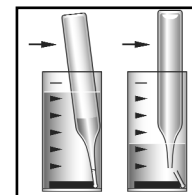


Figure 3

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 **1 minute** for color development.

6. Read the Vacu-vial ampoule in your photometer. If applicable, use the calibration table to obtain test results in ppm (mg/Liter) sulfate as SO₄. Accuracy may be compromised if test results are outside the stated test range.

Test Method

The Sulfate Vacu-vials®¹ test kit employs the turbidimetric method.^{2,3,4} Sulfate ion reacts with barium chloride in an acidic solution to form a suspension of barium sulfate crystals of uniform size. The resulting turbidity is proportional to the sulfate concentration of the sample. Results are expressed in ppm (mg/Liter) SO₄.

1. Vacu-vials is a registered trademark of CHEMetrics, Inc. U.S. Patent No.

3,634,038.

2. APHA Standard Methods, 15th ed., p 436 method 426 C (1980).

3. EPA Methods for Chemical Analysis of Water and Wastes, method 375.4 (1983).

4. ASTM 516 - 02, Sulfate Ion in Water.

Safety Information

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



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