

## Method

References: APHA Standard Methods, 20<sup>th</sup> ed., pp. 4-158, Method 4500-SiO<sub>2</sub> D (1998). ASTM D 859-00, Silica in Water. USEPA Methods for Chemical Analysis of Water and Wastes, Method 370.1 (1983).

Silica (SiO<sub>2</sub>) is the oxide of silicon, the second most abundant element in the earth's crust. Silica is present as silicates in most natural waters. Typical concentrations lie between 1 and 30 mg/L. Higher concentrations may exist in brackish waters and brines. The silica content of water should be determined prior to its use in a variety of industrial applications. Silica can form a harmful scale on equipment and heat transfer surfaces, particularly steam turbine blades.

CHEMetrics' test method determines *molybdate reactive silica*. The heteropoly blue chemistry is employed. Silica reacts with ammonium molybdate under acidic conditions to produce heteropoly acids, which are then reduced to form a blue color. Phosphate interferences are masked with the addition of citric acid. Results are expressed as ppm (mg/L) SiO<sub>2</sub>.



## Instrumental Kits

### V-2000 Multi-Analyte Photometer

(See page 8 for instrumental features)

Range: V-2000: 0.50-10.00 ppm / Spec: 0.25-4.00 ppm  
Method: Heteropoly Blue

	Cat#
Vacu-vials Kit	K-9003

Kit comes in a cardboard box and contains everything needed to perform 30 tests: thirty ampoules, Neutralizer Solution, Activator Solution, 25 mL sample cup, sample cup top, ampoule blank, instructions, calibration table, and MSDS.

*Vacu-vials Kits require the use of the V-2000 Photometer or a spectrophotometer capable of accepting a 13 mm diameter round cell. Instrument sold separately.*

### V-1000 Multi-Analyte Photometer

(See page 10 for instrumental features)

Range: 0.5-10.0 ppm  
Method: Heteropoly Blue

	Cat#
VVR Module	V-9003
Vacu-vials Refill, 30 ampoules	R-9003
Neutralizer Solution Pack, six 10 mL bottles, Shelf-life 2 years	A-9000 <sup>1</sup>
Activator Solution Pack, six 20 mL bottles, Shelf-life 2 years	A-9001 <sup>1</sup>
VVR Filter, Shelf-life 2 years	F-9003

Module comes in a cardboard box and contains everything needed to perform 30 tests: Refill, VVR Filter, Neutralizer Solution, Activator Solution, 25 mL sample cup, sample cup top, instructions, and MSDS.

*VVR Modules require the use of the V-1000 Photometer. Instrument sold separately.*

### Kit Components common to Silica

Description	Cat#
Sample Cup Pack, 25 mL (6 ea)	A-0013
Sample Cup Top Pack for 25 mL Cup (6 ea)	A-0014
Ampoule Blank Pack (5 ea)	A-0023
VVR Zero Ampoule Pack (5 ea)	A-0128
VVR Zero Test Tube Pack (5 ea)	A-0129

<sup>1</sup>The accessory pack supplies enough solution to perform at least 200 tests.

<sup>2</sup>This shelf-life can be extended by 18 months if the ampoules are stored in the refrigerator when not in use.



## Visual Kits

Range: 0-0.20 ppm  
MDL: 0.02 ppm / Method: Heteropoly Blue

	Cat#
ULR CHEMetrics Kit	K-9011
ULR CHEMetrics Refill, 30 ampoules, Shelf-life 2 months	R-9011 <sup>2</sup>
Neutralizer Solution Pack, six 10 mL bottles, Shelf-life 2 years	A-9000 <sup>1</sup>
Activator Solution Pack, six 20 mL bottles, Shelf-life 2 years	A-9001 <sup>1</sup>
Comparator, Shelf-life 2 years: 0, 0.02, 0.04, 0.06, 0.08, 0.12, 0.16, 0.20 ppm	C-9011

Kit comes in a plastic case and contains everything needed to perform 30 tests: Refill, Comparator, Neutralizer Solution, Activator Solution, 25 mL sample cup, sample cup top, instructions, and MSDS.

Range: 0-1 & 1-10 ppm  
MDL: 0.05 ppm / Method: Heteropoly Blue

	Cat#
CHEMetrics Kit	K-9010
CHEMetrics Refill, 30 ampoules, Shelf-life 1 year	R-9010 <sup>2</sup>
Neutralizer Solution Pack, six 10 mL bottles, Shelf-life 2 years	A-9000 <sup>1</sup>
Activator Solution Pack, six 20 mL bottles, Shelf-life 2 years	A-9001 <sup>1</sup>
Low Range Comparator, Shelf-life 2 years: 0, 0.1, 0.2, 0.3, 0.4, 0.6, 0.8, 1.0 ppm	C-9001
High Range Comparator, Shelf-life 2 years: 1, 2, 3, 4, 5, 6, 7, 8, 10 ppm	C-9010

Kit comes in a plastic case and contains everything needed to perform 30 tests: Refill, Low and High Range Comparators, Neutralizer Solution, Activator Solution, 25 mL sample cup, sample cup top, instructions, and MSDS.