

# Silica 4

Range(s): 0-4.00 ppm SiO<sub>2</sub>



## Procedure

Note: When testing multiple samples simultaneously, a separate sample cell with an unreacted sample of the water tested must be used to zero the colorimeter. Please note that varying the test procedure from the original can affect the precision of the test.

Note: Glassware that has not been properly cleaned may contaminate the sample and affect test results. Clean glassware thoroughly before use with phosphate-free detergent (available at local stores); then rinse with Sodium Hydroxide Reagent (R-0740) followed by an acid wash with Hydrochloric Acid 3N (R-0737) or Hydrochloric Acid 1N (R-0738). Next, rinse thoroughly with DI Water (R-0833) or sample water.

1. Turn on the Colorimeter.
2. Select a test menu (ALL TESTS, RECENT TESTS, or FAVORITES) containing Silica 4 using ◀▶.
3. Select Silica 4 using ▲▼; then press ENTER ⊙.
4. Rinse and fill 25 mm sample cell to 10 mL mark with sample; then cap.
5. Insert sample cell into sample cell compartment. Align marks per User's Manual.
6. Select ZERO using ◀▶; then press ENTER ⊙. Zero will be displayed.
7. Remove sample cell from sample cell compartment; then remove cap.
8. Add 0.5 mL Silica 4 - Reagent A; then swirl to mix.
9. Add 0.5 mL Silica 4 - Reagent B; then cap and swirl to mix thoroughly.
10. Select TIMER using ◀▶; then press ENTER ⊙.
11. Select START using ◀▶; then press ENTER ⊙. (A 5-minute [05:00] countdown will begin.)

12. When the timer beeps, remove cap and add 0.5 mL Silica 4 - Reagent C; then cap and swirl to mix thoroughly.
13. Select TIMER 2 using ▲▼; then press ENTER ⊙. (A 1-minute [01:00] countdown will begin.)
14. When the timer beeps, remove cap and using the 0.05 g dipper spoon, add 1 level dipper Silica 4 - Reagent D; then cap and swirl to dissolve powder.
15. Insert sample cell into sample cell compartment. Align marks.
16. Select TIMER 3 using ▲▼; then press ENTER ⊙.
17. (A 5-minute [05:00] countdown will begin.) Immediately select AUTO using ◀▶; then press ENTER ⊙.
18. When the timer beeps, the instrument will read the sample and the result will be displayed.

## Interferences

Phosphonate (HEDP) ≥ 20 ppm – positive interference

Polymer > 500 ppm – negative interference

Polyphosphate ≥ 5 ppm – positive interference

The following analytes were tested to the levels listed and found not to cause any interference up to the specified values:

Alkalinity, Total (CaCO<sub>3</sub>) – 200 ppm

Azole (BT) – 10 ppm

Azole (TT) – 10 ppm

Chloride – 1000 ppm

Chlorine – 5 ppm

Copper – 5 ppm

Fluoride – 5 ppm

Hardness, Calcium (CaCO<sub>3</sub>) – 1250 ppm

Iron, Ferric – 10 ppm

Iron, Ferrous – 10 ppm

Nitrate – 2000 ppm

Nitrite – 2000 ppm

Sulfate – 1000 ppm

Sulfite – 100 ppm

**Test Method**

Heteropoly Blue

Under acidic conditions, molybdate reacts with silica and any phosphate present to produce the heteropoly acids molybdophosphoric acid and molybdosilicic acid. Molybdophosphoric acid is destroyed and the remaining molybdosilicic acid complex is reduced to form intensely colored heteropoly blue proportional to the silica concentration in a sample.

**Estimated Detection Limit**0.05 ppm SiO<sub>2</sub>**Precision**

Using two lots of reagent and a standard solution of 2 ppm SiO<sub>2</sub>, an individual analyst obtained a standard deviation with the instrument of ± 0.05 ppm SiO<sub>2</sub>.

**Application**

Industrial Water

**Ordering Info****Reagent Pack**

K-8008 Silica 4

Formulated for exclusive use with Taylor's TTi® Colorimeter.

**Reagent Pack Components**

R-8008A Silica 4 - Reagent A

R-8008B Silica 4 - Reagent B

R-8008C Silica 4 - Reagent C

R-8008D Silica 4 - Reagent D

**Optional Reagents & Accessories**

R-0737 Hydrochloric Acid 3N

R-0738 Hydrochloric Acid 1N

R-0740 Sodium Hydroxide Reagent

R-0833 DI Water



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