O·I·Analytical

Method Abstract

Summary: Silica in solution as silicic acid or silicate reacts with a molybdate reagent in acid media to form ß-molybdosilicic acid. This complex is reduced by ascorbic acid to form molybdenum blue. The absorbance is measured at 660 nm.

Interferences: Add oxalic acid to suppress interference from phosphate. Remove hydrogen sulfide by boiling an acidified sample prior to analysis. Large amounts of iron interfere. Filter or centrifuge turbid samples prior to determination. Samples with background absorbance at the analytical wavelength may interfere. Avoid using borosilicate glassware for sample collection or reagent storage. Use polyethylene containers whenever possible.

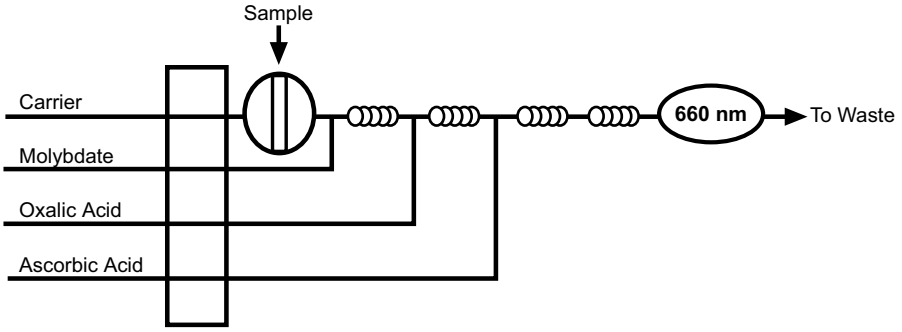
Performance Specifications:

Range:	0.10–100 mg/L SiO_2
Throughput:	60 samples/hour
Precision:	
0.1 mg/L	<2% RSD
4.0 mg/L	<2% RSD
Method Detection Limit (MDL):	0.035 mg/L SiO_2

Chemicals:

Ammonium Molybdate Tetrahydrate, $(NH_4)_6Mo_7O_{24}•4H_2O$
Ascorbic Acid, $C_6H_8O_6$
DOWFAX® 2A1
(OI Analytical Part #A000080)
Magnesium Sulfate Heptahydrate, $MgSO_4•7H_2O$
Oxalic Acid, $C_2H_2O_4$
Sodium Chloride, NaCl
Sodium Hydroxide, NaOH
Sodium Metasilicate Pentahydrate, $Na_2SiO_3•5H_2O$
Sulfuric Acid, concentrated, H_2SO_4

Basic Flow Diagram:



Selected References:

Methods for Determination of Inorganic Substances in Water and Fluvial Sediments; I-2700-85; U.S. Geological Survey; 552–558.

Standard Methods for the Examination of Water and Wastewater, 20th ed.; American Public Health Association: Washington, D.C., 1998.

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