

Summary: Orthophosphate reacts with molybdenum(VI) and antimony(III) in an acidic solution to form an antimony-phosphomolybdate complex. This complex is subsequently reduced with ascorbic acid to form a blue color, and the absorbance is measured at 880 nm.

Interferences: Filter turbid samples prior to analysis. The presence of more than 40 mg/L of ferric iron, more than 10 mg/L of copper, or more than 10 mg/L of silica may interfere.

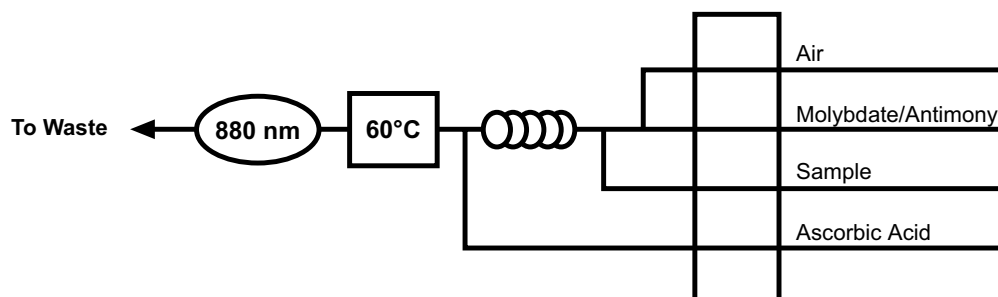
Performance Specifications:

Range:	0.02–10 $\mu\text{moles/L}$
Throughput:	40 samples/hour
Precision:	
0.02 $\mu\text{moles/L}$	3% RSD
10 $\mu\text{moles/L}$	<1% RSD
Method Detection Limit (MDL):	0.009 $\mu\text{moles/L}$

Chemicals:

Ammonium Molybdate Tetrahydrate, (NH_4) ₆ Mo ₇ O ₂₄ •4H ₂ O	Hydrochloric Acid, concentrated, HCl
Antimony Potassium Tartrate Hemihydrate, K(SbO)C ₄ H ₄ O ₆ •½H ₂ O	Magnesium Sulfate Heptahydrate, MgSO ₄ •7H ₂ O
Ascorbic Acid, C ₆ H ₈ O ₆	Potassium Phosphate Monobasic, KH ₂ PO ₄
DOWFAX® 2A1 (OI Analytical Part #A000080)	Sodium Chloride, NaCl
	Sodium Hydroxide, NaOH
	Sulfuric Acid, concentrated, H ₂ SO ₄

Basic Flow Diagram:



Selected References: Whitley, T.E., et al. *Automated Nutrient Analysis in Seawater*; Brookhaven National Laboratory: Upton, NY, 1986.

Methods for the Chemical Analysis of Water and Wastes; EPA-600/4-79-020; U.S. Environmental Protection Agency, Office of Research and Development, Environmental Monitoring and Support Laboratory: Cincinnati, OH, 1984; xvii.

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

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