

Summary: The water to be tested is directly sampled, delivering a known aliquot of each sample to the analytical cartridge. The sample is then diluted within the cartridge prior to the reaction. The orthophosphate in the sample reacts with molybdenum(VI) and antimony(III) in an acidic medium to form an antimony-phosphomolybdate complex. This complex is subsequently reduced with ascorbic acid, producing a highly colored blue product. The absorbance of the final product is measured at 880 nm.

Interferences: Iron, copper, and other metals may interfere with the accurate analysis of orthophosphate by binding with the orthophosphate in the sample, thus blocking the color formation reaction. Ethylenediaminetetraacetic acid (EDTA) is used in the buffer solution to eliminate this interference. Ferric iron at 50 mg/L or less, copper at 10 mg/L or less, and silica at 10 mg/L or less do not interfere.

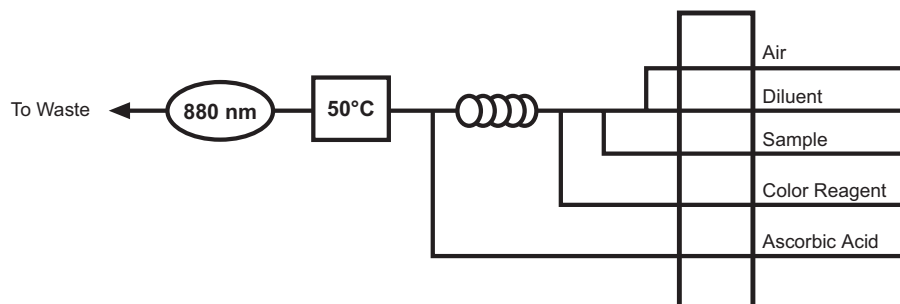
Performance Specifications:

Range:	10–700 mg/L PO ₄
Throughput:	36 samples/hour
Precision:	
10 mg/L	<0.5% RSD
300 mg/L	<0.5% RSD
700 mg/L	<0.5% RSD
Method Detection Limit (MDL):	0.05 mg/L PO ₄

Chemicals:

Ammonium Molybdate Tetrahydrate, (NH ₄) ₆ Mo ₇ O ₂₄ •4H ₂ O	Ethylenediaminetetraacetic Acid Tetrasodium Salt Hydrate, C ₁₀ H ₁₂ N ₂ Na ₄ O ₈ •xH ₂ O
Antimony Potassium Tartrate Hemihydrate, K(SbO)C ₄ H ₄ O ₆ •½H ₂ O	Hydrochloric Acid, concentrated, HCl
Ascorbic Acid, C ₆ H ₈ O ₆	Potassium Phosphate Monobasic, KH ₂ PO ₄
DOWFAX® 2A1 (OI Analytical Part #A000080)	Sodium Hydroxide, NaOH
	Sulfuric Acid, concentrated, H ₂ SO ₄

Basic Flow Diagram:



Selected References: *Methods for Chemical Analysis of Water and Wastewater*; EPA-600/4-79-020; U.S. Environmental Protection Agency, Office of Research and Development, Environmental Monitoring and Support Laboratory: Cincinnati, OH, 1984; Method 365.1.

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

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