

NITRATE / NITRITE IN SOILS by Cd Reduction

Method Abstract

Summary: Nitrate is reduced quantitatively to nitrite by cadmium metal in the form of a cadmium column, (FIA) or an open tubular cadmium reactor. The nitrite thus formed plus any originally present in the sample is determined as an azo dye at 540nm following its diazotization with sulfanilamide and subsequent coupling with N-1-naphthylethylenediamine dihydrochloride. Without the introduction of the sample to the cadmium reactor, nitrite singly is determined. These reactions are affected in acidic (pH 2.0) solution.

Interferences: Pre-filter turbid samples prior to analysis. EDTA is added to eliminate interference from iron, copper or other metals. Adjust samples to pH 5 to 9 with either concentrated HCl or NH_4OH . Samples containing large concentrations of oil and grease must be extracted with an organic solvent. Samples containing sulfide cannot be determined by this method without first removing the sulfide by precipitation with cadmium salts.

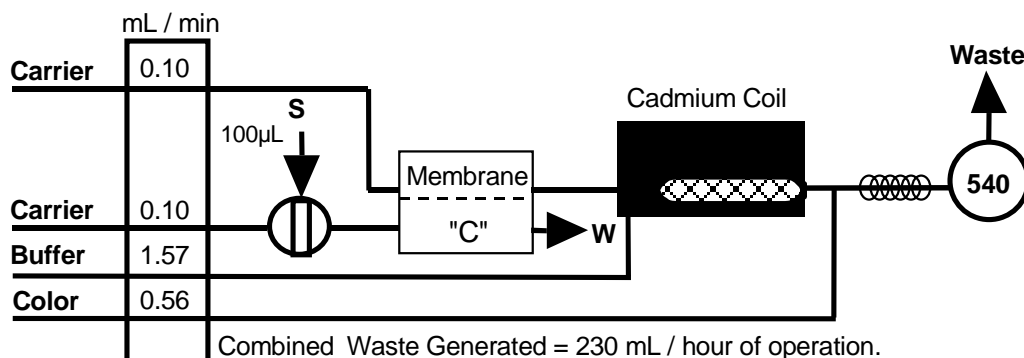
Performance Specifications:

Range:	0.10 - 50.0 mg/L $\text{NO}_2 + \text{NO}_3\text{-N}$ and $\text{NO}_2\text{-N}$
Rate:	60 / hour
MDL:	0.09 mg/L

Chemicals:	Ammonium Chloride, NH_4Cl	Sulfanilamide, $\text{C}_6\text{H}_8\text{N}_2\text{O}_2\text{S}$
	Ammonium Hydroxide, NH_4OH	Ethylene diaminetetraacetic Acid, Disodium Salt Dihydrate, $\text{C}_{10}\text{H}_{14}\text{N}_2\text{Na}_2\text{O}_8 \cdot 2\text{H}_2\text{O}$
	Brij-35®, 30% w/v	N-1-naphthylethylenediamine Dihydrochloride, $\text{C}_{12}\text{H}_{14}\text{N}_2 \cdot 2\text{HCl}$
	Cadmium 30-60 Mesh	Phosphoric Acid, H_3PO_4
	Chloroform, CHCl_3	Potassium Nitrate, KNO_3
	Cupric Sulfate, $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$	Potassium Nitrite, KNO_2
	Deionized Water (ASTM Type I or II)	
	Hydrochloric Acid, Concentrated, HCl	

Parameter Settings:

Injection Volume:	100 μL	Inject Time:	30 seconds
Cycle Time:	60 seconds	Load Time:	30 seconds



NOTE: This method complies with the requirements of USEPA Method 353.2.



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