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APPLICATION UPDATE 107

Direct Determination of Cyanide in Strongly Alkaline Solutions

Keywords
Industrial wastewater, hazardous waste, plating, metal finishing bath, ground water, drinking water, contamination, direct injection, ion chromatography, IC, Dionex IonPac AS7, Dionex ICS-5000+, Dionex Integrion

Performance

The minimum detection limit for a 200 µL sample injection is 10 ppb. The recommended working range for this volume injected is 30–1,000 ppb.

Application areas

- Applicable to distillation methods for determination of total cyanide in water
  - Industrial wastewater
  - Hazardous waste
  - Plating and metal finishing baths
  - Ground water and drinking water

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Conditions	
Columns:	Thermo Seientific™ Dionex™ IonPac AS7
Eluent:	0.5M Sodium acetate 0.1M Sodium hydroxid 0.5% Ethylenediamine
Flow Rate:	1 mL/min
Detector:	Thermo Scientific™ Dionex™ ED40 detector, silver working electrode, 0.00 V vs. Ag/AgCl reference

Comments

Determination of total cyanide in water is usually done by refluxing the sample in an acid digest and trapping the liberated HCN gas in a strongly alkaline-absorbing solution. Most methods for analyzing the trapping solution have an upper pH limit of about 12.5 to 13. This direct injection method can determine cyanide in solutions ranging up to pH 14. This allows absorbing solutions (such as the 1.25 M NaOH solution specified in U.S. EPA Method 335.2) to be quickly analyzed without dilution or other pretreatment. In addition, the technique is not subject to as many interferences as titrimetric or spectrophotometric methods, and it is well suited to automated analysis.

Recommended equipment

- Thermo Scientific™ Dionex™ DX-500* Ion Chromatograph equipped with an Dionex ED40 detector.

*Equivalent or improved results can be achieved using the Thermo Scientific™ Dionex™ ICS-5000+ system or the Thermo Scientific™ Dionex™ Integrion™ HPIC™ system with Electrochemical Detector (ED) and without RFIC™

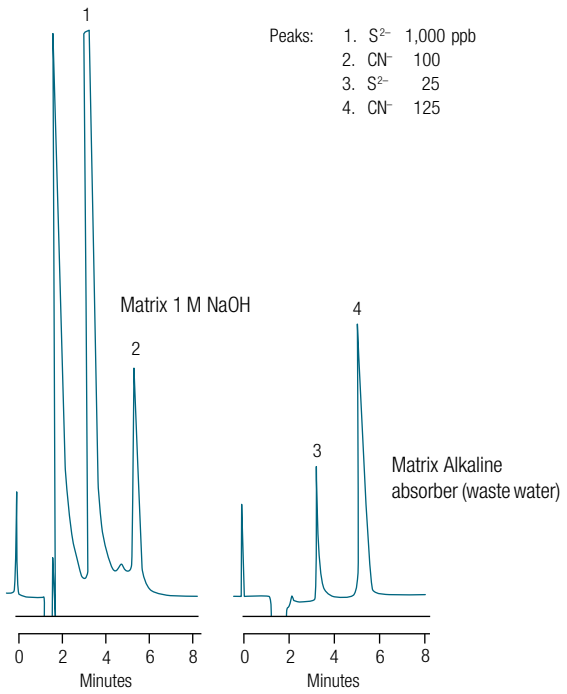

Figure 1. Cyanide in strongly alkaline solutions.

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