

New ASTM Standard: Recommended operating conditions for the Agilent Capillary Electrophoresis system

Maria Serwe

Environmental

Abstract

ASTM Subcommittee D19.05 on Inorganic Constituents in Water approved a new standard test method for determination of dissolved inorganic anions in aqueous matrices using capillary ion electrophoresis and chromate electrolyte¹. The Agilent Capillary Electrophoresis system provided equivalent performance during the inter-laboratory study preceding approval (c/w sect. 17.6 in test method). This document (reference B1.16 in test method) describes equivalent method parameters specific for the Agilent system equipped with DAD detection and computer control through Agilent ChemStation.

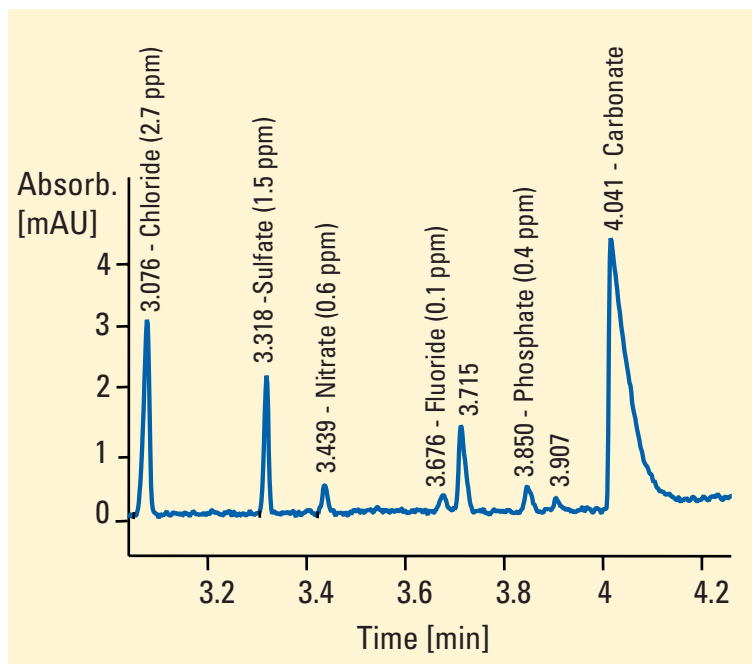


Figure 1
Analysis of waste water from a municipal waste treatment plant

Method Entries

Lift offset	4 mm
Cassette temp.	25° C
Preconditioning	
flush 1.1 min from flush buffer vial into waste vial	
Electric	on
Polarity	negative
Voltage	system limit
Current	0.00 µA
Power	system limit
Low current limit	0.00 µA
Time table	
0.3 min, current = 14.00 µA	
Injection	
by pressure, 50 mbar x 6.2 sec (37 nl)	
UV-detection	
Signal = 470/50 nm, reference = 275/10 nm, response time = 0.2 sec (PW > 0.01 min)	
Integration	
peak top type = center of gravity	
Calibration	
calculate with corrected areas	



Agilent Technologies

Innovating the HP Way

Method parameters

The parameters described here are supplementary to the test method (see also reference 2).

Capillary

Standard bare fused silica capillary ($L = 64.5$ cm, $l = 56$ cm, $75\text{ }\mu\text{m}$ id), fitted with a blue alignment interface. A new capillary is prepared by flushing 0.5 N NaOH for 5 min, water for 1 min and run buffer for 3 min (at 1 bar). If the current on a new capillary must be tested (c/w sect. 11.4), a voltage of 18.5 kV should be applied. If the system is idle overnight, leave the capillary in buffer. For long-term storage flush the capillary with water followed by air.

Vials

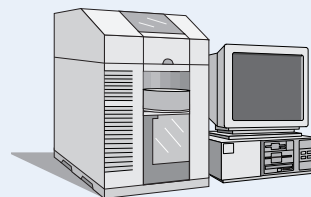
2-mL glass vials with polyurethane caps are used as buffer or waste container. 1-mL capped polypropylene vials are used as sample container. The buffer vials (inlet, outlet and flush buffer vial) are filled to 1 mL, the waste vial is filled with 0.6 mL buffer. For best migration time stability the run buffer vials should be replaced after 10 runs. It is not recommended to use the replenishment system with the Waters IonSelect™ High Mobility Anion Electrolyte.

Sample preparation

The waste water samples were diluted (1:20) and filtered through a $0.45\text{ }\mu\text{m}$ filter prior to injection.

Equipment

- Agilent Capillary Electrophoresis system
- Agilent ChemStation



References

1. D6508-00 (2000)
2. M. Serwe and J. Krol, "Determination of Dissolved Inorganic Anions in Aqueous Matrices Using Capillary Ion Electrophoresis and Chromate Electrolyte" Poster presentation at HPCE 2000 in Saarbrücken, Germany.

Maria Serwe is an application chemist at Agilent Technologies, Waldbronn, Germany.

For more information on our products and services, visit our worldwide website at <http://www.agilent.com/chem>

© Copyright 2000 Agilent Technologies
Released 03/2000
Publication Number 5968-8660E



Agilent Technologies

Innovating the HP Way