

## DETERMINATION OF INORGANIC ANIONS IN AQUEOUS MATRICES ACCORDING TO EPA 6500 AND ASTM D6508-15 TEST METHODS

EPA 6500  
ASTM D6508-15

### INTRODUCTION

This test method is applicable for determination of the dissolved inorganic anions; fluoride, bromide, chloride, nitrite, nitrate, ortho-phosphate, and sulfate in aqueous matrices using capillary ion electrophoresis with indirect UV detection. The method can be applied to **drinking water**, **wastewater** and **ground water**.

### MEASUREMENT METHOD

The capillary electrophoresis method for determination of inorganic anions' concentrations is based on differential migration and separation of anions in the electric field due to different electrophoretic mobility. Identification and quantitative determination of the analyzed anions are performed using indirect detection by measuring the UV absorption.

### MEASUREMENT RANGE

| Anions  | Measurement range, mg/L |
|---|-------------------------|
| Chloride, bromide, nitrite, sulfate, nitrate, <i>ortho</i> -phosphate | 0.1–50                  |
| Fluoride  | 0.1–25                  |

### EQUIPMENT AND REAGENTS

The CAPEL<sup>®</sup> capillary electrophoresis system is used in measurements. Data acquisition, collection, processing and output are performed using a personal computer running under WINDOWS<sup>®</sup> XP/7/8 operating system with installed dedicated software package ELFORUN<sup>®</sup>. All reagents must be of analytical grade or better.

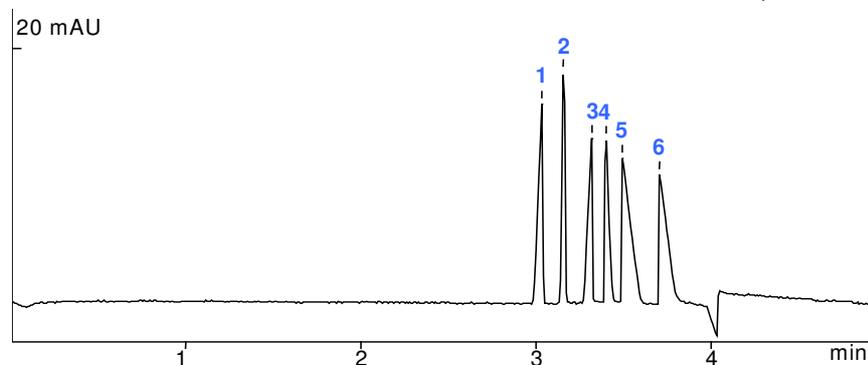
### EXAMPLE OF A REAL ANALYSIS

**BGE:** chromate, with TTAOH, CHES, and calcium gluconate  
**Capillary:**  $L_{\text{eff}}/L_{\text{tot}}$  50/60 cm, ID 75  $\mu\text{m}$   
**Injection:** 300 mbar x sec

**Voltage:** – 15 kV  
**Temperature:** RT  
**Detection:** 254 nm, indirect

**Sample:** test solution

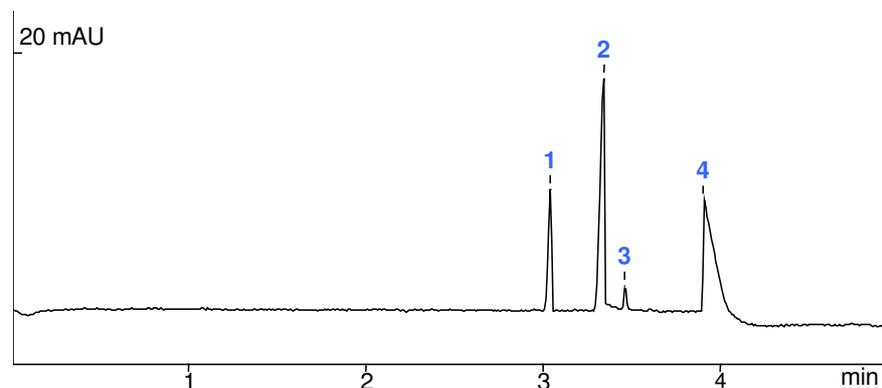
- 1 – chloride (20 mg/L)
- 2 – nitrite (20 mg/L)
- 3 – sulfate (20 mg/L)
- 4 – nitrate (20 mg/L)
- 5 – fluoride (10 mg/L)
- 6 – phosphate (20 mg/L)



**Sample:** tap water

#### Measurement results:

- 1 – chloride (7.78 mg/L)
- 2 – sulfate (26.3 mg/L)
- 3 – nitrate (1.66 mg/L)
- 4 – carbonate



The information in this leaflet is supplemental. To get more specific, please contact the manufacturer of CAPEL<sup>®</sup> CE systems Lumex Instruments Group.