

**METHOD #: 208.2** Approved for NPDES and SDWA (Issued 1978)

**TITLE:** Barium (AA, Furnace Technique)

**ANALYTE:** CAS # Ba Barium 7440-39-3

**INSTRUMENTATION:** AA

**STORET No.** 01007  
Dissolved 01005  
Suspended 01006

**Optimum Concentration Range:** 10-200  $\mu\text{g/L}$

**Detection Limit:** 2  $\mu\text{g/L}$

#### 1.0 Preparation of Standard Solution

- 1.1 Stock solution: Prepare as described under "direct aspiration method".
- 1.2 Prepare dilutions of the stock solution to be used as calibration standards at the time of analysis. These solutions are also to used for "standard additions".
- 1.3 The calibration standard should be diluted to contain 0.5% (v/v)  $\text{HNO}_3$ .

#### 2.0 Sample Preservation

- 2.1 For sample handling and preservation, see part 4.1 of the Atomic Absorption Methods section of this manual.

#### 3.0 Sample Preparation

- 3.1 Prepare as described under "direct aspiration method". Sample solutions for analysis should contain 0.5% (v/v)  $\text{HNO}_3$ .

#### 4.0 Instrument Parameters (General)

- 4.1 Drying Time and Temp: 30 sec-125°C.
- 4.2 shing Time and Temp: 30 sec-1200°C.
- 4.3 Atomizing Time and Temp: 10 sec-2800°C.
- 4.4 Purge Gas Atmosphere: Argon
- 4.5 Wavelength: 553.6 nm
- 4.6 Other operating parameters should be set as specified by the particular instrument manufacturer.

#### 5.0 Analysis Procedure

- 5.1 For the analysis procedure and the calculation, see "Furnace Procedure" part 9.3 of the Atomic Absorption Methods section of this manual.

#### 6.0 Notes

- 6.1 The above concentration values and instrument conditions are for a Perkin-Elmer HGA-2100, based on the use of a 20  $\mu\text{L}$  injection continuous flow purge gas and pyrolytic graphite.
- 6.2 The use of halide acid should be avoided.
- 6.3 Because of possible chemical interaction, nitrogen should not be used as a purge gas.
- 6.4 For every sample matrix analyzed, verification is necessary to determine that method of standard addition is not required (see part 5.2.1 of the Atomic Absorption Methods section of this manual).
- 6.5 If method of standard addition is required, follow the procedure given earlier in part 8.5 of the Atomic Absorption Methods section of this manual.
- 6.6 For quality control requirements and optional recommendations for use in drinking water analyses, see part 10 of the Atomic Absorption Methods section of this manual.
- 6.7 Data to be entered into STORET must be reported as  $\mu\text{g/L}$ .

## 7.0 Precision and Accuracy

- 7.1 In a single laboratory (EMSL), using Cincinnati, Ohio tap water spiked at concentrations of 500 and 1000  $\mu\text{g Ba/L}$ , the standard deviations were  $\pm 2.5$  and  $\pm 2.2 \mu\text{g}$ , respectively. Recoveries at these levels were 96% and 102%, respectively. A dilution of 1:10 was required to bring the spikes within the analytical range of the method.