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 μg/L
Detection Limit: 2 μg/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) 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) 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 μL 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 μg/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 μg Ba/L, the standard deviations were ± 2.5 and ± 2.2 μg, 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.