

**METHOD #: 243.2** Approved for NPDES (Issued 1978)  
**TITLE:** Manganese (AA, Furnace Technique)  
**ANALYTE:** CAS # Mn Manganese 7439-96-5  
**INSTRUMENTATION:** AA  
**STORET No.** Total 01055  
Dissolved 01056  
Suspended 01054  
**Optimum Concentration Range:** 1-30  $\mu\text{g/L}$   
**Detection Limit:** 0.2  $\mu\text{g/L}$

#### 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 be 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 Ashing Time and Temp: 30 sec-1000°C.
- 4.3 Atomizing Time and Temp: 10 sec-2700°C.
- 4.4 Purge Gas Atmosphere: Argon
- 4.5 Wavelength: 279.5 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 non-pyrolytic graphite. Smaller size furnace devices or those employing faster rates of atomization can be operated using lower atomization temperatures for shorter time periods than the above recommended settings.
- 6.2 The use of background correction is recommended.
- 6.3 Nitrogen may also be used as the 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 Data to be entered into STORET must be reported as  $\mu\text{g/L}$ .

## 7.0 Precision and Accuracy

- 7.1 Precision and accuracy data are not available at this time.