



# National Institute of Standards & Technology

## Certificate of Analysis

### Standard Reference Material 3132

#### Spectrometric Standard Solution

#### Manganese

This Standard Reference Material (SRM) is intended for use in atomic absorption spectrometry, optical emission (plasma) spectrometry, spectrophotometry, or any other analytical technique that requires aqueous standard solutions for calibrating instruments. SRM 3132 is a single element solution prepared gravimetrically to contain 10.00 mg/mL of manganese with a nitric acid concentration (V/V) of 10 percent. The certified value is based on gravimetric procedures, i.e., weight per volume composition of the high-purity metal dissolved in NIST high-purity reagents.

Metal	Concentration mg/mL	Source Purity, %	Acid Conc. (V/V) Approximate
Mn	10.00 ± 0.03	Mn metal (99.98)*	HNO <sub>3</sub> , 10%

\* This high-purity material was analyzed by optical emission spectrometry and atomic absorption spectrometry and found to contain less than 200 µg/g total impurities.

#### Procedures for Use

**Stability:** This certificate is valid for one year from the shipping date provided the bottle is kept tightly capped and stored under normal laboratory conditions. NIST will monitor the stability of these solutions; if any changes occur that invalidate this certification, NIST will notify purchasers.

**Preparation of Working Standard Solutions:** All materials used in the preparation of working standard solutions should be brought to 22 ± 1 °C before use and all glass or plastic surfaces coming into contact with the materials must have been previously cleaned. A working standard solution can be prepared from the SRM solution by serial dilution. Dilutions should be made with certified volumetric class A flasks and 5 or 10 mL class A pipets. All volumetric transfers of solutions should be performed using a proven analytical technique. Each dilution should be acidified with an appropriate high-purity acid and diluted to calibrated volume using high-purity water. The stability of the working standard solution will depend on the final acid concentration; therefore, care should be exercised to insure that the final acid concentration of the dilution closely approximates that of the SRM. To achieve the highest accuracy, the analyst should prepare daily working solutions from 100 µg/mL dilutions of the original SRM solution.

SRM 3132 was prepared by T.C. Rains of the NIST Inorganic Analytical Research Division. Atomic absorption and emission spectrometry analyses were made by T.A. Butler, T.A. Rush, T.C. Rains and J.A. Norris.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Office of Standard Reference Materials by R.W. Seward.

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Materials

(Revision of certificate dated 12-22-86)

Stanley D. Rasberry, Chief  
Office of Standard Reference