



# National Institute of Standards & Technology

## Certificate of Analysis Standard Reference Material 3109

### Calcium

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 3109 is a single element solution prepared gravimetrically to contain 10.00 mg/mL of calcium with a hydrochloric acid concentration (V/V) of 10 percent. The certified value is based on a gravimetric procedure, i.e., weight per volume composition of the high-purity salt dissolved in NIST high-purity reagents.

Metal	Concentration (mg/mL)	Source Purity, %	Acid Conc. (V/V) Approximate
Ca	10.00 ± 0.03	SRM 915 (99.99)	HCl, 10%

#### Procedures for Use

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

**Preparation of Working Standard Solutions:** The SRM solution should be brought to  $22 \pm 1$  °C before use. All glass or plastic surfaces coming into contact with the standard 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 solution. To achieve the highest accuracy, the analyst should prepare daily working solutions from 100 µg/mL dilutions of the original SRM solution.

**Notice to Users:** The same acid mixture as listed on this SRM certificate should be used in making appropriate dilutions and working standards. For some instrumental techniques, small differences in acid type and concentration of the standard and sample may lead to erroneous results.

SRM 3109 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, and T.C. Rains.

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 T.E. Gills.

Gaithersburg, MD 20899  
September 11, 1989  
(Revision of certificate dated 11-3-86)

Stanley D. Rasberry, Chief  
Office of Standard Reference Materials