



National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material 3150

Spectrometric Standard Solution

Silicon

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 calibration instruments. SRM 3150 is a single element solution prepared gravimetrically to contain 10.00 mg/mL of silicon in water. The certified value is based on a gravimetric assay of the prepared solution.

Metal	Concentration ^a (mg/mL)	Source Purity, %	Acid Conc. (V/V) Approximate
Si	9.94 ± 0.05	Na ₂ SiO ₃ ·9H ₂ O(99.99)*	Water

*This high-purity material was analyzed by optical emission spectrometry and atomic absorption spectrometry and found to contain less than 50 µg/g total impurities.

^aThe uncertainty listed is based on judgement and represents an estimate of the combined effects of any errors, attributable to weighing, dilutions, purity of the salt and transpiration through the container walls for one year from the date of shipment from NIST. (No attempt was made to derive exact statistical results as the imprecisions of most analytical methods are much larger than the errors listed above).

Procedures and Storage for Use

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

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

SRM 3150 was prepared by T.A. Butler of the NIST Inorganic Analytical Research Division. Gravimetric and emission spectrometric analyses were made by T.W. Vetter and T.A. Butler.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Standard Reference Materials Program by J.S. Kane.

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William P. Reed, Chief
Standard Reference Materials Program