



# National Institute of Standards & Technology

## Certificate of Analysis

### Standard Reference Material 3141a

#### Spectrometric Standard Solution

#### Potassium

Batch Code 493101

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 3141a is a single element solution prepared gravimetrically to contain 10 mg/mL of potassium with a nitric acid concentration (V/V) of 1 percent. The certified value is based on gravimetric procedures, i.e., weight per volume composition of the high-purity salt dissolved in NIST high-purity reagents. The uncertainty is based on gravimetric and volumetric uncertainties in the preparation and the effect of solvent transpiration through the container walls for one year after the bottle is removed from the plastic sleeve. The density of the solution at 22 °C is 1.019 g/mL.

Metal	Concentration (mg/mL)	Source Purity, %	Acid Conc. (V/V) Approximate
K	10.00 ± 0.03	SRM 999 (99.98)	HNO <sub>3</sub> , 1%

#### Procedures for Use

**Stability:** This certification 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 any changes occur that invalidate this certification, NIST will notify purchasers.

**Preparation of Working Standard Solutions:** All solutions should be brought to 22 ± 1 °C before use and 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 ensure 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 3141a was prepared, and atomic absorption and emission spectrometric analyses were made, by T.A. Butler of the NIST Inorganic Analytical Research Division.

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

Gaithersburg, MD 20899  
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Thomas E. Gills, Acting Chief  
Standard Reference Materials Program