U. S. Department of Commerce
Malcolm Baldrige
Secretary

National Bureau of Standards
Ernest Ambler, Director

National Bureau of Standards

Certificate of Analysis

Standard Reference Material 2123

Spectrometric Standard Solutions

Lithium, Potassium, Sodium and Rubidium

This Standard Reference Material (SRM) is intended as standard stock solutions 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 2123 consists of four single element solutions of Li, K, Na and Rb. Each solution was prepared gravimetrically at 22 °C to contain 10.00 ± 0.01 mg/mL of the metal ion in a 1 percent acid medium. The certified values (Table 1) are based on gravimetric procedures, i.e., weight per volume composition of high-purity salts dissolved in NBS high-purity acids.

Table 1

Solution	Metal	Concentration (mg/mL)	Source (Purity, %)	Acid Conc. (V/V)
2123-1	Li	10.00±0.01	SRM 924 100.0	HCl, 1%
2123-2	K	10.00±0.01	SRM 999 99.98	HCl, 1%
2123-3	Na	10.00±0.01	SRM 919 99.9	HCl, 1%
2123-4	Rb	10.00±0.01	RbCl (99.7*)	HCl, 1%

* This high-purity material was analyzed by atomic emission spectrometry and found to contain 0.23% K, 0.058% Cs, 0.0071% Ca, 0.0030% Na, 0.0024% Mg, 0.0014% Ba and 0.00019% Sr.

SRM 2123 was prepared by T.C. Rains of the Inorganic Analytical Research Division. Atomic absorption and emission spectrometric analyses were made by T.A. Butler, T.A. Rush, T.C. Rains, and M.S. Epstein.

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.

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 proper laboratory conditions. NBS will monitor the stability of these solutions; if any changes occur that invalidate this certification, purchasers will be notified by NBS.

Preparation of Working Standard Solutions:

All solutions should be at 22 ± 1 °C and all glass or plastic surfaces coming into contact with the standard must have been previously cleaned. The working standard solution is prepared from the SRM solutions by serial dilution. The dilution should be made into certified volumetric class A flasks with 5 or 10 mL class A pipets. All volumetric transfers of solutions should be by a proven analytical technique. Each dilution is 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 upon the acid concentration added. For the highest accuracy, it is recommended that the analyst prepare daily working solutions from the 100 μg/mL dilution previously prepared from the original SRM solutions.

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Stanley D. Rasberry, Chief
Office of Standard Reference Materials