

# National Bureau of Standards

## Certificate of Analysis

### Standard Reference Material 985

#### Assay-Isotopic Standard for Potassium

Absolute abundance ratios, $^{39}\text{K}/^{41}\text{K}$ . . . . .	13.8566 ± 0.0063
$^{40}\text{K}/^{41}\text{K}$ . . . . .	0.0017343 ± 0.0000061
Potassium - 39, atom percent . . . . .	93.2581 ± 0.0029
Potassium - 40, atom percent . . . . .	0.01167 ± 0.00004
Potassium - 41, atom percent . . . . .	6.7302 ± 0.0029
Atomic weight of Potassium . . . . .	39.098304 ± 0.000058

This Standard Reference Material is supplied as highly purified potassium chloride with a certified purity of 99.9 weight percent based on determination of the potassium content by a combination of gravimetric and isotope dilution analysis and the chloride content by a coulometric argentimetric procedure. The above value for the purity of the material is based on a sample dried over magnesium perchlorate for 24 hours. The absolute isotopic abundance ratios were determined by two analysts using two different mass spectrometers. Samples of known isotopic composition, prepared from nearly isotopically pure separated potassium-39 and potassium-41 isotopes, were used to calibrate the mass spectrometers. The indicated uncertainties are overall limits of error based on 95 percent confidence limits for the mean and allowances for the effects of known sources of possible systematic error. The details of the measurements are described in a published paper: J. Res. NBS(U.S.), 79A (Phys. and Chem.), No. 6, 713-725 (Nov.-Dec. 1975).

The overall direction and coordination of the analytical measurements leading to this certificate were performed in the Analytical Chemistry Division under the chairmanship of I. L. Barnes.

Mass spectrometric measurements were made by E. L. Garner and J. W. Gramlich on samples prepared by T. J. Murphy.

Assay measurements were made by T. J. Murphy and P. J. Paulsen for potassium, and by G. Marinenko for chloride.

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 W. P. Reed.

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George A. Uriano, Chief  
Office of Standard Reference Materials