

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
WASHINGTON, D. C. 20234

PROVISIONAL CERTIFICATE OF ANALYSIS
STANDARD SAMPLE 948
PLUTONIUM SULFATE ISOTOPIC STANDARD

Isotope	Pu ²³⁹	Pu ²⁴⁰	$\frac{1}{\text{Pu}}$ ²⁴¹	Pu ²⁴²
Atom				
Percent	91.365 ±0.010	7.907 ±0.010	0.695 ±0.002	0.0330 ±0.0003
Weight				
Percent	91.329	7.937	0.700	0.0334

1/ The value for plutonium-241 will slowly (half-life 13 years) decrease, and the other values increase proportionately, because of the decay of plutonium-241 to americium-241. The value given is for June 1, 1964, and was obtained on samples from which the americium was removed. Satisfactory values averaging 11.55 for the atom ratio plutonium-239 to plutonium-240 were obtained without the removal of americium.

The sample was prepared in the form of plutonium sulfate tetrahydrate from high-purity metal at the New Brunswick Laboratory of the Atomic Energy Commission. The values given above were obtained from mass-spectrometry measurements at the National Bureau of Standards by Ernest L. Garner and William R. Shields, using chemical preparations by Lawrence A. Machlan, Rolf A. Paulson, and Martha S. Richmond. The values were calculated from measurements made on a multiplier-equipped spectrometer of the ratios Pu-239 to Pu-240, Pu-241 to Pu-240, and Pu-242 to Pu-240, corrected for discrimination effects from measurements under similar conditions on known mixtures of uranium isotopes. The limits indicated were calculated from the data obtained at NBS and are for a 95-percent confidence level for a single determination. They are dependent on uranium and plutonium exhibiting similar behavior since high-purity plutonium isotopes were not available in quantity to prepare synthetic mixtures.



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