

U. S. Department of Commerce  
Rogers C. B. Morton  
Secretary  
National Bureau of Standards  
Richard W. Roberts, Director

# National Bureau of Standards

## Certificate of Analysis

### Standard Reference Material 949e

#### Plutonium Metal

Plutonium assay, percent . . . . . 99.996  $\pm$  0.100

This plutonium metal is issued to provide material for the chemical assay of plutonium. The atomic weight of the plutonium is 239.08.

Each unit of SRM 949e consists of several pieces of metal sealed in a glass tube under a reduced-pressure argon atmosphere. The unit number and weight are given on each tube. An overall accuracy within 0.05 mg is claimed for each unit weight. Because of the method used to fabricate the materials, very small pieces of metal may be separated from the larger pieces in the tube. These small pieces may be left behind unless the tube is carefully washed out, preferably with dilute hydrochloric acid.

The americium resulting from the decay of 14-year plutonium-241 is approximately 63 ppm, and will increase less than 28 ppm per year. The total of all detected impurities is about 100 ppm. The uncertainty indicated for the assay is the 95 percent tolerance limit\* for coverage of at least 99 percent of measured values of this lot of plutonium metal in tubes.

These samples were prepared and analyzed by the Los Alamos Scientific Laboratory of the University of California, Los Alamos, New Mexico, in collaboration with the National Bureau of Standards.

Mass spectrometric data used to determine the atomic weight of the plutonium metal were obtained at the Oak Ridge National Laboratory.

The certification and issuance of this Standard Reference Material was coordinated through the Office of Standard Reference Materials by W. P. Reed.

\*See page 14, *The Role of Standard Reference Materials in Measurement System*, NBS Monograph 148, 1975. The concept of tolerance limit is also discussed in Chapter 2, *Experimental Statistics*, NBS Handbook 91, 1966. In brief, if we had made measurements on all the samples, almost all (at least 99 percent) of these measured values should fall within the indicated tolerance limits with a confidence coefficient of 95 percent (or probability = .95).

Washington, D. C. 20234  
July 28, 1975

J. Paul Cali, Chief  
Office of Standard Reference Materials