

National Bureau of Standards

Certificate of Analysis

Standard Reference Material 949c

Plutonium Metal

Plutonium assay, percent 99.99 ± 0.06

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

Each sample consists of several pieces of metal sealed in a glass tube under a reduced-pressure argon atmosphere. The sample number and the weight of the sample are given on each tube. An overall accuracy of 0.05 mg is claimed for each sample weight. Because of the method used to fabricate the material, 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 70 ppm at the date of issue, and will increase less than 50 ppm per year. The total of other detected impurities is about 50 ppm. The limit indicated for the assay is at least as large as the 95-percent confidence level for a single determination. Impurity determinations indicate that the material is quite homogeneous and that the metal should approximate 99.99 percent. The average chemical assay of 100.01 ± 0.06 versus arsenic trioxide (SRM 83c) and the limits largely reflect the difficulties associated with assay of small amounts of plutonium.

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.

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J. Paul Cali, Chief
Office of Standard Reference Materials