

# National Bureau of Standards

## Certificate

### Standard Reference Material 4904S-G

#### Alpha-Particle Standard

|                         |                       |
|-------------------------|-----------------------|
| Radionuclide            | Americium-241 (1)*    |
| Source identification   | 4904S-G               |
| Activity                | Bq (s <sup>-1</sup> ) |
| Reference time          | March 3, 1987         |
| Half life               | 432.2 years (2)       |
| Measuring instrument    | "0.8π"α counter (3)   |
| Radionuclide impurities | None detected (4)     |
| Overall uncertainty     | 1.3 percent (5)       |

This Standard Reference Material was prepared in the Center for Radiation Research, Ionizing Radiation Division, Radioactivity Group, Dale D. Hoppes, Group Leader.

Gaithersburg, MD 20899  
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Office of Standard Reference Materials

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NOTES

- (1) A practically weightless source electroplated onto a 0.016-cm-thick platinum foil 0.6 cm in diameter which is cemented to a stainless-steel disk 2.54 cm in diameter and 0.16-cm thick.
- (2) From the Evaluated Nuclear Structure Data File, August, 1980. One mean tropical year = 365.2422 d.
- (3) Defined-solid-angle counter with scintillation detector.
- (4) Lower detection limits  
alpha particles:  $10^{-4}$  of the americium-241  
alpha-particle-emission rate.
- (5) The overall uncertainty is three times the value from combining quadratically the standard deviations of the mean, or approximations thereof, of the following:
  - a) one standard deviation of the mean 0.1 percent
  - b) efficiency calibration 0.4 percent
  - c) count-rate vs. energy  
extrapolation to zero energy 0.05 percent
  - d) system live time 0.05 percent

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