U. S. Department of Commerce
Malcolm Baldrige
Secretary
National Bureau of Standards
Ernest Ambler, Director

National Bureau of Standards

Certificate

Standard Reference Material 4327

Radioactivity Standard

Radionuclide	Polonium-208
Source identification	4327
Source description	Liquid in a 2-ml, flame-sealed borosilicate-glass ampoule
Solution composition	Polonium-208 in 1-molar hydrochloric acid
Solution mass	1.118 ± 0.002 grams (1)*
Reference time	1200 EST, June 29, 1984
Radioactivity concentration	76.7 Bq g^{-1}
Overall uncertainty	1.4 percent (2)
Alpha-particle-emitting impurities (Activities at reference time)	^{209}Po: 0.5 ± 0.2 Bq g^{-1} (3)
Measuring instrument	NBS "0.8π" alpha defined-solid-angle counter with scintillation detector
Half life	2.8976 ± 0.0016 years (4)

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

Gaithersburg, MD 20899
January, 1985

Stanley D. Rasberry, Chief
Office of Standard Reference Materials

*Notes on back

NOTES

(1) The average of ten individually weighed masses of solution.

(2) The overall uncertainty is three times the value found from combining quadratically the standard deviations of the mean, or approximations thereto, of the following:

a)	6 alpha-particle measurements	0.05 percent
b)	gravimetric measurements	0.10 percent
c)	system live time	0.05 percent
d)	background	0.01 percent
e)	detection efficiency	0.25 percent
f)	count-rate-vs-energy extrapolation to zero energy	0.25 percent
g)	impurities	0.25 percent

The uncertainties in the "Solution mass" and in "Alpha-particle-emitting impurities", quoted on the certification page, have the significance of approximately one standard deviation of the mean.

(3) The limit of detection for alpha-particle-emitting impurities is 10^{-4} of the polonium-208 alpha-particle emission rate.

(4) "Table of Isotopes", Edited by C.M. Lederer and V.S. Shirley, John Wiley and Sons, New York, 1978.

For further information contact J.M.R. Hutchinson at (301) 921-2396 or FTS-921-2396.