U. S. Department of Commerce
Rogers C. B. Morton
Secretary

nal Bureau of Standards
rd W. Roberts, Director

National Bureau of Standards Certificate

Standard Reference Material 4300-B

Argon-37

Gaseous Radioactivity Standard

This Standard Reference Material consists of argon-37 and inactive argon in a pyrex shipping ampoule sealed by means of a high-vacuum stopcock, and provided with an "18/9-mm" ground-glass ball joint. The ampoule contains ± 0.2% cm^3 of the argon gas mixture at STP.

The total activity of the argon-37 in nuclear transformations per second as of 1200 EST April 23, 1975, was

* ± 1.7_8%.*

Argon-37, cryogenically mixed with inactive argon, was sealed at known temperature and pressure in ampoules of known volumes. Using liquid helium, the contents of all but one ampoule were totally transferred to the shipping ampoules. The material in the remaining ampoule was transferred to the National Bureau of Standards length-compensated internal-gas counters, and the activity measured.

The uncertainty in the activity, 1.7_8 percent, is the linear sum of 0.3_1 percent, which is the limit of the random error at the 99-percent confidence level (4.03_2 S_m, where S_m is the standard error computed from 6 measurements), and 1.4_7 percent, the estimated upper limits of conceivable systematic error. The half-life used in this determination was 35.1 ± 0.1 days.

This Standard Reference Material was prepared and calibrated in the Center for Radiation Research, Radioactivity Section, W. B. Mann, Chief.

J. Paul Cali, Chief
Office of Standard Reference Materials

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