



National Bureau of Standards

Certificate

Standard Reference Material 4301

Argon-37

This standard consists of argon-37, natural argon and 1/2% of methane at a pressure of approximately 70 cm of Hg, in a glass break seal ampoule having a volume of about 10 milliliters.

The activity of the argon-37 in nuclear transformations per second per mole as of 1200 EST May 15, 1972, was

$$* 33.08 \pm 5.3\% . *$$

These standards were prepared by volumetric dilution of the counting gas mixture for the high-level SRM 4300 standards.

The uncertainty in the decay rate, 5.38 percent, is the sum of 3.63 percent, the limit of the random error at the 99-percent confidence level (i.e., a Student t-factor of 5.841 times S_m , where S_m is the standard error computed from three degrees of freedom), as determined for the high level standard SRM 4300, and 1.75 percent, which is the estimated upper limit of the conceivable systematic errors in all measurements. The half-life value used in this determination was 35.1 ± 0.1 days.

In using this sample, it will be necessary to admit the argon gas into a portion of a gas-handling system of known volume and to measure both the temperature and pressure of the expanded argon. In order to calculate the number of moles of argon initially present, it will also be necessary to correct for the volume of the ampoule which may be determined subsequently.

This standard was prepared and calibrated in the Center for Radiation Research, Nuclear Radiation Division, by members of the Radioactivity Section, W. B. Mann, Chief.

Washington, D.C. 20234
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J. Paul Cali, Chief
Office of Standard Reference Materials

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