

National Bureau of Standards Certificate

Standard Reference Material 4305

Radioactivity Standard Xenon-131m

This standard reference material consists of xenon-131m and inactive xenon, at a pressure of approximately 38 cm of Hg, in a stopcock-sealed glass shipping container, having a volume of about 10 milliliters.

The activity of this xenon-131m sample in nuclear transformations per second as of 1200 EST March 15, 1973, was

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Twenty-three ampoules and a sampling flask, having calibrated volumes, were mounted on a manifold and filled at the same time. The total gas content of each calibrated ampoule was transferred cryogenically and individually to the shipping containers. The activity of the gas in the sampling flask was then determined using the National Bureau of Standards length-compensated internal-gas counters and employing a total internal conversion coefficient of 56.8 for the 163.97 ± 0.02 keV transition.

The uncertainty in the activity, 4.0₂ percent, is the linear sum of 0.91 percent, which is the 99-percent confidence limit (i.e., $3.250 S_m$, where S_m is the standard error computed with nine degrees of freedom), and 3.1₁ percent, which is the estimated upper limits of the conceivable systematic errors in the measurements. The half-life value used in this determination was 11.96 ± 0.02 days.

This standard reference material was prepared and calibrated in the Center for Radiation Research, Radioactivity Section, W. B. Mann, Chief.

Washington, D. C. 20234

J. Paul Cali, Chief

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Office of Standard Reference Materials

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