



# National Bureau of Standards

## Certificate

### Standard Reference Material 4361-B Radioactivity Standard

Radionuclide	Hydrogen-3
Source identification	4361-B
Source description	Tritiated water in flame-sealed glass bottle <sup>(1)</sup> *
Mass	grams
Radioactivity concentration	1.123 Bq g <sup>-1</sup>
Reference time	0830 EST August 27, 1987
Overall uncertainty	0.97 percent <sup>(2)</sup>
Half life	12.43 ± 0.05 years <sup>(3)</sup>
Calibration method	Liquid-scintillation counting calibrated by 4πβ internal-gas-proportional counting <sup>(4)</sup>

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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Stanley D. Rasberry, Chief  
Office of Standard Reference Materials

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## NOTES

- (1) Source consists of tritiated water flame-sealed in a "500-mL" borosilicate-glass bottle. The neck of the bottle is equipped with a 19/38-mm standard-taper glass joint to allow the user to reseal the bottle after opening.
- (2) The overall uncertainty was formed by taking three times the quadratic combination of standard deviations of the mean, or approximations thereof, for the following:
- |  |              |
|--|--------------|
| a) dilutions   | 0.21 percent |
| b) $n = 6$ gas counting measurements                               | 0.04 percent |
| c) gram-mole measurements  | 0.08 percent |
| d) extrapolation of and length compensation in gas counting        | 0.05 percent |
| e) liquid-scintillation intercomparison of 1961 and 1978 standards | 0.10 percent |
| f) half-life correction for $t = 3280$ days                        | 0.20 percent |
- (3) NBS half-life value.
- (4) SRM 4361-B is a dilution of SRM 4926-C. Gas-counting measurements of SRM 4926-C are described in Unterweger, M.P., Coursey, B.M., Schima, F.J. and Mann, W.B., Int. J. Appl. Radiat. Isotopes, 31, 611 (1980).

For further information please call J.M. Calhoun at (301) 975-5538 or Dr. B.M. Coursey at (301) 975-5539.

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