

National Bureau of Standards

Certificate

Standard Reference Material 4943

Radioactivity Standard

Radionuclide	Chlorine-36
Source identification	SRM 4943 (1)*
Source description	Solution in flame-sealed borosilicate-glass ampoule
Chemical form	0.2 g NaCl per liter of water
Volume	3 ml
Radioactivity concentration	1.095×10^4 Bq g ⁻¹ (2)
Reference time	December, 1984
Overall uncertainty	0.82 percent (3)
Photon-emitting impurities	None observed (4)
Half life	$(3.01 \pm 0.02) \times 10^5$ years (2)
Measuring instrument	4 π β gas-proportional counter

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
December, 1984

Stanley D. Rasberry, Chief
Office of Standard Reference Materials

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NOTES

- (1) This is a revised certificate for SRM 4943 which was originally prepared in 1962. The value was confirmed to within 0.32 percent by liquid-scintillation measurements made in February, 1980.
- (2) The half life and probability for beta minus decay (P_{β^-}) are given in Appendix A3 of NCRP Report 58, 1984 edition. The P_{β^-} used here is 0.981 ± 0.001 .
- (3) The overall uncertainty was formed by taking three times the quadratic combination of standard deviations of the mean, or approximations thereto, for the following:
 - a) 53 $4\pi\beta$ proportional-counting measurements 0.15 percent
 - b) background 0.05 percent
 - c) dead time 0.05 percent
 - d) stability 0.10 percent
 - e) self absorption 0.10 percent
 - f) film absorption 0.05 percent
 - g) density 0.05 percent
 - h) impurities 0.05 percent
 - i) plateau 0.10 percent
 - j) β^- branching ratio 0.10 percent
- (4) The detection limit for impurity x- and γ -rays is 5 s^{-1} for photon energies in the range 100 to 1900 keV.

For further information contact Dr. Bert M. Coursey at 301-921-2383.

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