

Certificate

Standard Reference Material 4201

Gamma-Ray Standard

Niobium-94

This standard consists of niobium-94 in the form of the oxide, on polyester tape approximately 0.006-centimeter thick, and covered by another layer of the same tape.

The total number of disintegrations per second in July, 1965, was

* $\pm 1.5\%$ *

This standard is a dried deposit of an accurately weighed aliquot of master solution whose disintegration rate per gram was obtained by means of gamma-gamma coincidence counting. Niobium-94 was assumed to decay with emission of gamma rays of 0.703 MeV and 0.874 MeV, 100 percent of the time.

The sample contains a niobium-93m impurity whose K-x-ray (~ 16 keV) emission rate, in July 1965, was 90 percent of the above-stated disintegration rate. The gamma-ray spectrum was examined and no other impurities were found.

The estimated overall uncertainty, 1.5 percent, is composed of 0.75 percent, which is three times the standard error, and 0.75 percent, which is the linear sum of the estimated upper limits of the systematic errors.

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