



EBERLINE

SERVICES

CERTIFICATE OF CALIBRATION

Electroplated Beta Standard

S.O.# 7286
P.O.# 13-0166

Description of Standard:

Model No. DNS-12 Serial No. 5634-05 Isotope Tc-99
Electroplated on polished SS disc, 0.79 mm thick.
Total diameter of 4.77 cm and an active diameter of 4.45 cm.

The radioactive material is permanently fixed to the disc by heat treatment without any covering over the active surface.

Measurement Method:

The 2pi beta emission rate was measured using an internal gas flow proportional chamber. Absolute counting of beta particles emitted in the hemisphere above the active surface was verified by counting above, below, and at the operative voltage. The calibration is traceable to NIST by reference to an NIST calibrated beta source S/N 75323-201.

Measurement Result:

The observed beta count rate from the surface of the disc per minute (cpm) on the calibration date was:

6,170 ± 308

The total disintegration rate (dpm) assuming 25 % backscatter of beta particles from the surface of the disc, was:

9,860 ± 493 (0.00444 μ Ci)

The uncertainty of the measurement is 5 %, which is the sum of random counting error at the 99% confidence level, and the estimated upper limit of systematic error in this measurement.

Calibrated by: ART REUST Reviewed by: Charlotte Mett

Calibration Technician: Art Reust Q.A. Manager: Don Johnson

Calibration Date: 2-25-2013 Reviewed Date: 02-25-2013



EBERLINE SERVICES

CERTIFICATE OF CALIBRATION

Electroplated Beta Standard

S.O.# 6361
P.O.# 06-356

Description of Standard:

Model No. DNS-12 Serial No. 5634-05 Isotope Tc-99

Electroplated on polished SS disc, 0.79 mm thick.

Total diameter of 4.77 cm and an active diameter of 4.45 cm.

The radioactive material is permanently fixed to the disc by heat treatment without any covering over the active surface.

Measurement Method:

The 2pi beta emission rate was measured using an internal gas flow proportional chamber. Absolute counting of beta particles emitted in the hemisphere above the active surface was verified by counting above, below, and at the operative voltage. The calibration is traceable to NIST by reference to an NIST calibrated beta source S/N 4002-02.

Measurement Result:

The observed beta count rate from the surface of the disc per minute (cpm) on the calibration date was:

7,910 ± 237

The total disintegration rate (dpm) assuming 25 % backscatter of beta particles from the surface of the disc, was:

12,600 ± 379 (0.00570 μ Ci)

The uncertainty of the measurement is 3 %, which is the sum of random counting error at the 99% confidence level, and the estimated upper limit of systematic error in this measurement.

Calibrated by: ART REUST Reviewed by: Tom Searby

Calibration Technician: Art Reust Q.A. Representative: Anthony W. Roth

Calibration Date: 12-27-2005 Reviewed Date: 12-28-05