

# Actinium-225

## Nitrate ( $^{225}\text{Ac}(\text{NO}_3)_3$ ) in solid form

Method of production: Thorium-229 (Th-229) decay.

### Characteristic

Characteristic	Description
Nuclide	Ac-225
Half-life	9.91 days
Decay Mode	Alpha/Beta Decay
Maximum Alpha Energy	5.935 MeV
Chemical form	Ac <sup>3+</sup> nitrate in solid form
Shelf-life	Minimum of 15 days from date of manufacture. Note: Upon completion of stability studies, the final published shelf will be determined.
ART	Reference to 12:00 (EST) from 0-15 days after production.

### Test

Test	Specification
Appearance	Slight yellowish tinted, layered film
Radionuclidic Purity	- $^{225}\text{Ra} \leq 0.02\%$ , $^{224}\text{Ra} \leq 0.02\%$ - Sum activity of other isotopes $\leq 0.008\%$
Radiochemical Purity	$\geq 99.9\%$ as $^{225}\text{Ac}(\text{NO}_3)_3$
Non-active impurities	$< 10 \mu\text{g/mCi}$
Radionuclidic ID	- 218 keV gamma – daughter (Fr-221) major peak - 441 keV gamma – daughter (Bi-213) major peak or - 5935 KeV Alpha (Ac-225) Note: The specification will be based on the use of either gamma or alpha spectroscopy for the measurement.
Radiolabeling Yield	$\geq 99.0\%$ (based on radiolabeling with DOTA-derivate)
Vial Activity <sup>1</sup>	0.1mCi - 5mCi at ART
Activity per Vial	90-110% of $^{225}\text{Ac}$ activity stated on label at ART

**'Vial activity is variable and can be adjusted based upon order quantity.'**

**Note:** Actinium-225 is currently being validated for use as a cGMP product. This product has **not** necessarily received approval from all authorities depending on use. The product must be considered as a radiochemical limited to the claims made in the specifications. The company makes no product claims for use in clinical applications.

cGMP: Current Good Manufacturing Practices  
ART: Activity Reference Time or Calibration