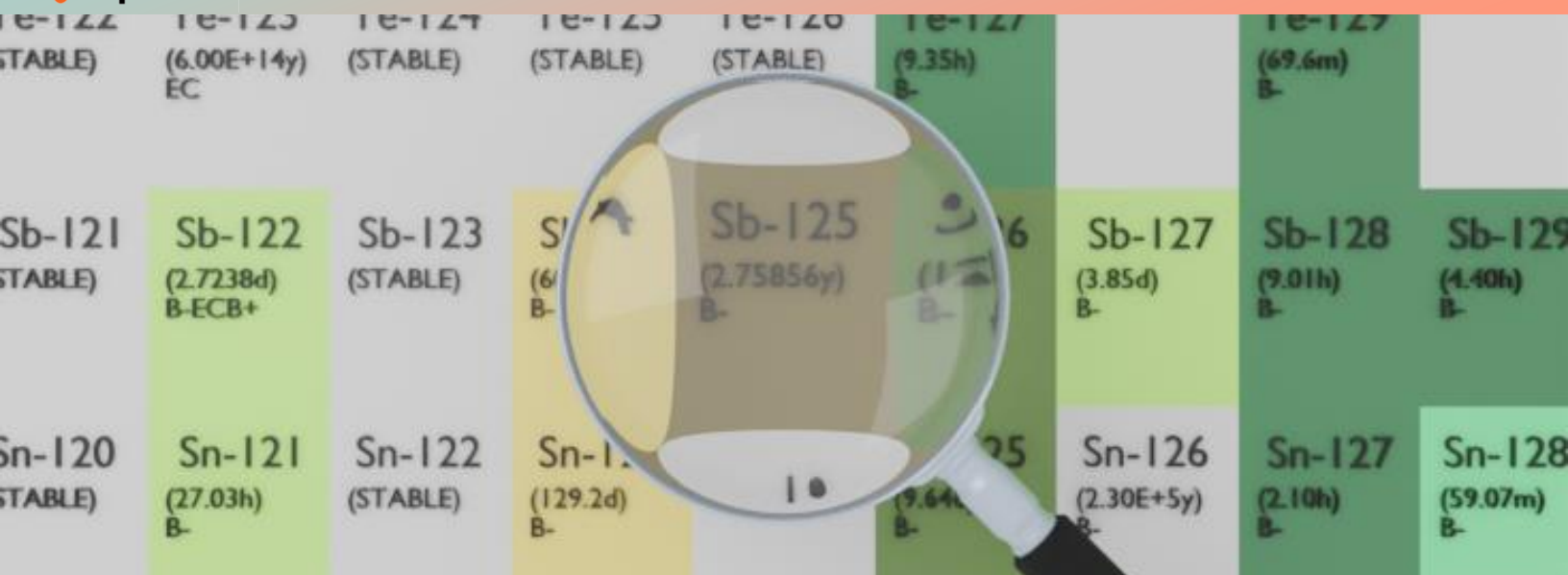




ANTIMONY-125

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Sb-125
Atomic number (Z): 51
Mass number (A): 125
Neutron number (N): 74

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 2.759 [y]
Decay constant: $7.9625\text{e-}09$ [1/s]
Daughters: Te-125m (23.1%), Te-125 (76.9%)
Radioactive daughters: Te-125m

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.10098 [MeV]
Mean photon energy: 0.43731 [MeV]
Air kerma rate constant, Γ_{10} : $1.939\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Air kerma coefficient, K_{air} : $1.939\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $1.618\text{e-}14$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta+, e-}$: 1.618×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 7.006×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

Dose point kernel source: **Graves, et al. Medical Physics. 2019 Nov.; 46(11):5284-5293.**

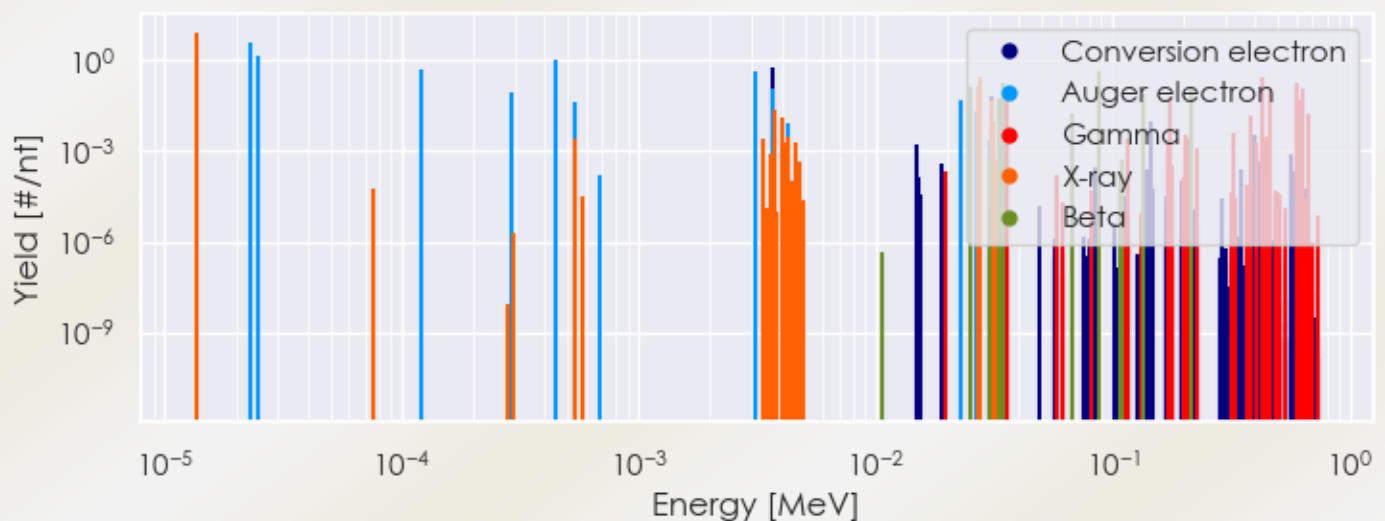
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Sb-125 DPK.csv

SUMMARY SPECTRA (PLOT)

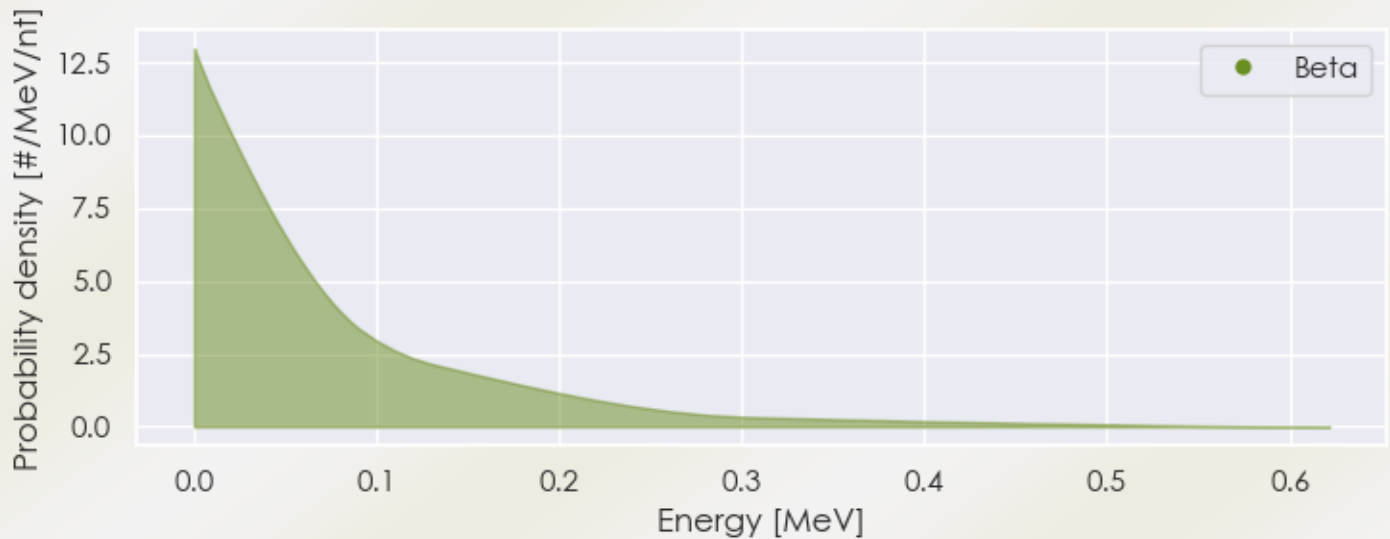
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Sb-125 Summary Spectrum.csv

BETA SPECTRA (PLOT)

Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated beta spectra file here: www.mirdsoft.org/products/MIRDspecs/Sb-125 Beta Spectrum.csv

TABULATED DATA

SUMMARY SPECTRA (TABLE)

Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**

Note: Radiations with yield < 0.01 are excluded from the table, but are available in the linked *.csv data.

Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Sb-125 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.36106e-05	8.494e+00	X-ray
3.75695e-03	2.251e-02	X-ray
4.02446e-03	1.311e-02	X-ray
2.71868e-02	1.427e-01	X-ray
2.74652e-02	2.656e-01	X-ray
3.09378e-02	2.446e-02	X-ray
3.09901e-02	4.744e-02	X-ray
3.54890e-02	4.530e-02	Gamma
1.76314e-01	6.887e-02	Gamma
3.80452e-01	1.527e-02	Gamma

4.27874e-01	2.980e-01	Gamma
4.63365e-01	1.056e-01	Gamma
6.00597e-01	1.777e-01	Gamma
6.06713e-01	5.015e-02	Gamma
6.35950e-01	1.129e-01	Gamma
6.71441e-01	1.803e-02	Gamma
2.49115e-02	1.345e-01	Beta
3.30208e-02	5.763e-02	Beta
3.47441e-02	1.792e-01	Beta
6.74757e-02	1.611e-02	Beta
8.69245e-02	4.041e-01	Beta
1.34460e-01	7.196e-02	Beta
2.15426e-01	1.354e-01	Beta
2.29222e-05	4.151e+00	Auger electron
2.49325e-05	1.384e+00	Auger electron
1.21155e-04	4.762e-01	Auger electron
2.93121e-04	8.683e-02	Auger electron
4.49385e-04	1.071e+00	Auger electron
5.40849e-04	4.123e-02	Auger electron
3.08384e-03	4.208e-01	Auger electron
3.67776e-03	1.192e-01	Auger electron
3.68400e-03	5.480e-01	Conversion electron
2.26653e-02	4.612e-02	Auger electron
2.65056e-02	2.031e-02	Auger electron
3.05748e-02	6.569e-02	Conversion electron
3.46741e-02	1.495e-02	Conversion electron

USEFUL LINKS

Isotope decay characteristics are periodically updated as better measurements can be made - changes that may not be reflected on this page. Please see useful links:

National Nuclear Data Center (NNDC): <https://www.nndc.bnl.gov/nudat3/mird/>

International Atomic Energy Agency (IAEA) Livechart: <https://www-nds.iaea.org/relnsd/vcharthtml/VChartHTML.html>

REFERENCE LINKS

ICRP Report 107: <https://www.icrp.org/publication.asp?id=ICRP%20Publication%20107>

Graves et al. Dose Point Kernels: <https://doi.org/10.1002/mp.13789>

MIRD Decay Schemes 2nd Edition: https://sites.snmmi.org/SNMML-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6