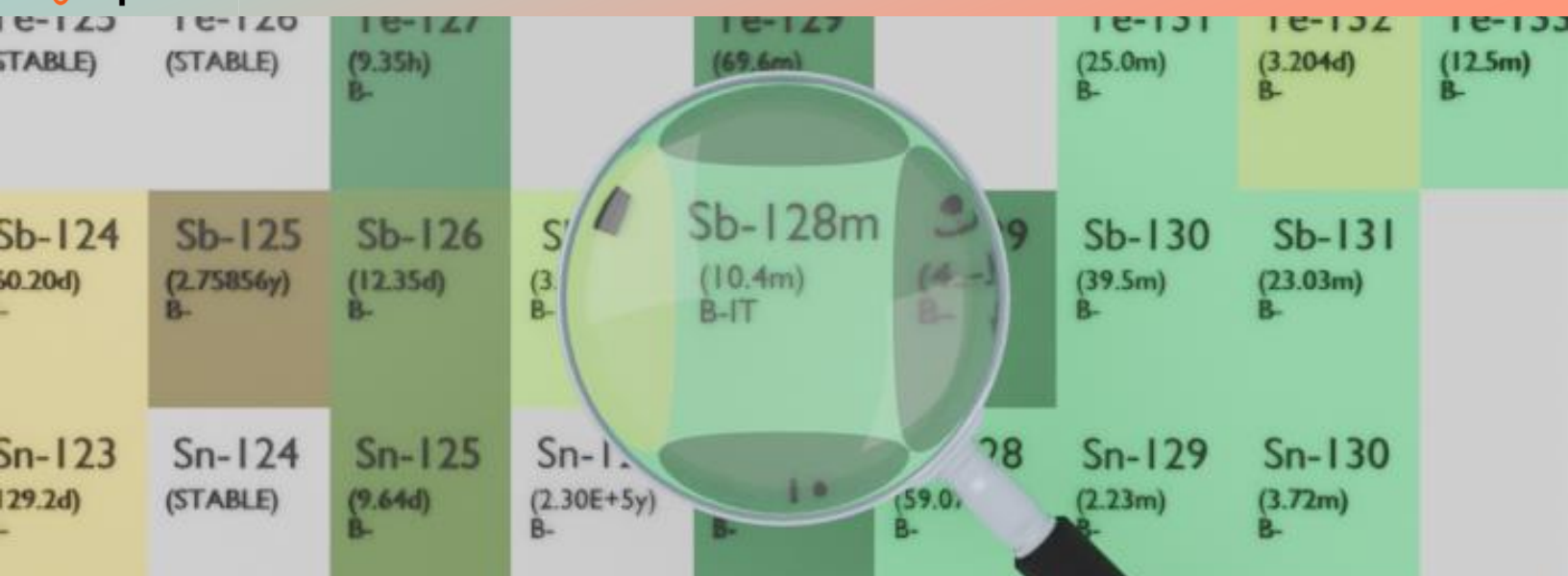




ANTIMONY-128M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Sb-128m
Atomic number (Z): 51
Mass number (A): 128
Neutron number (N): 77

RADIOACTIVE DECAY

Decay modes: β^- , Internal transition
Half-life: 10.4 [m]
Decay constant: 1.1108×10^{-3} [1/s]
Daughters: Sb-128 (3.6%), Te-128 (96.4%)
Radioactive daughters: Sb-128

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.95798 [MeV]
Mean photon energy: 1.90628 [MeV]
Air kerma rate constant, Γ_{10} : 7.058×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 7.058×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.535×10^{-13} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

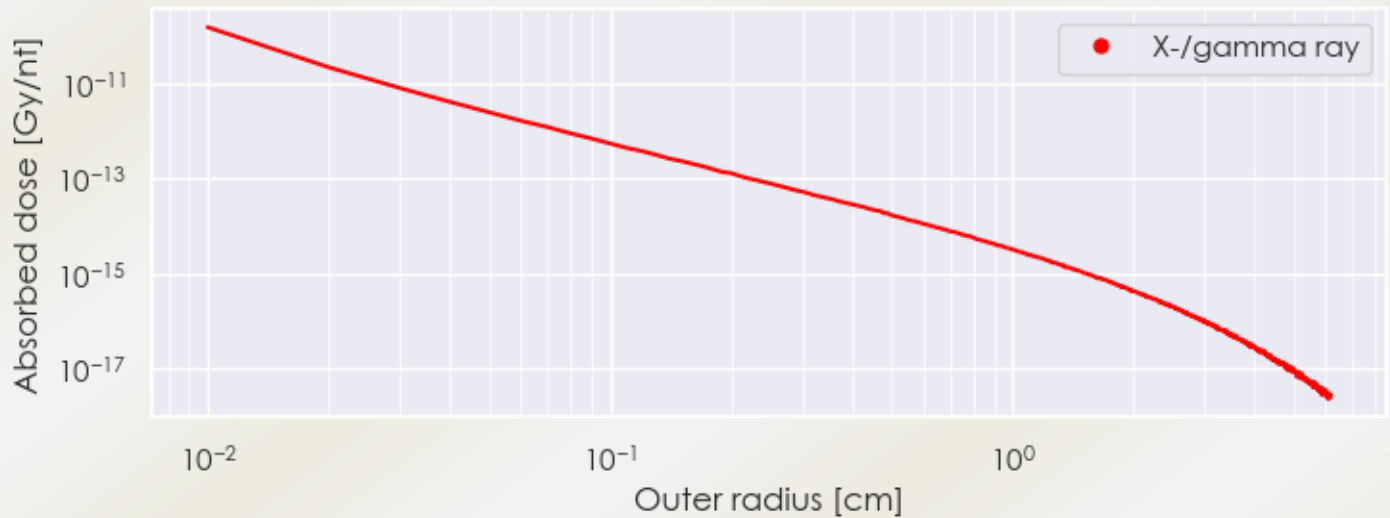
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: $1.535\text{e-}13$ [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : $3.054\text{e-}13$ [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

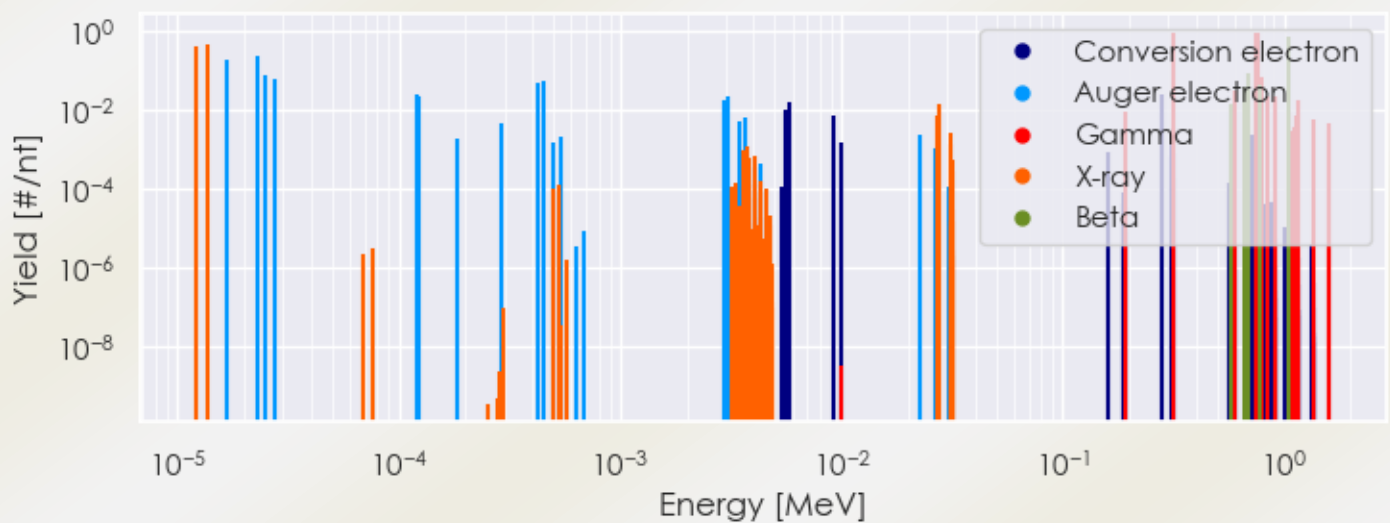
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Sb-128m DPK.csv

SUMMARY SPECTRA (PLOT)

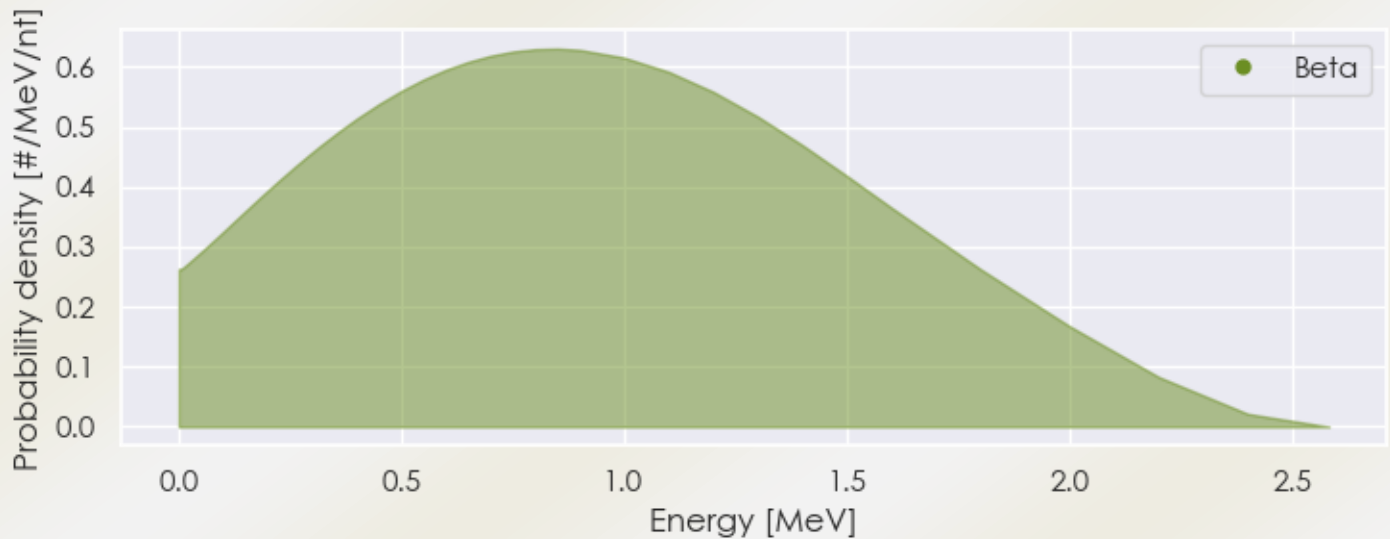
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Sb-128m 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-128m 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-128m Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.22317e-05	4.001e-01	X-ray
1.36106e-05	4.678e-01	X-ray
2.74652e-02	1.443e-02	X-ray
3.14000e-01	8.869e-01	Gamma
5.94100e-01	3.278e-02	Gamma
7.43240e-01	9.640e-01	Gamma
7.53900e-01	9.640e-01	Gamma
7.87600e-01	7.134e-02	Gamma
8.44000e-01	2.217e-02	Gamma

9.08300e-01	2.314e-02	Gamma
1.15800e+00	1.735e-02	Gamma
5.76797e-01	1.539e-02	Beta
6.63755e-01	3.945e-02	Beta
6.88921e-01	8.562e-02	Beta
7.75834e-01	4.522e-02	Beta
1.04743e+00	7.783e-01	Beta
1.68798e-05	1.971e-01	Auger electron
2.29201e-05	2.286e-01	Auger electron
2.49400e-05	7.608e-02	Auger electron
2.75070e-05	6.534e-02	Auger electron
1.21329e-04	2.615e-02	Auger electron
1.24532e-04	2.195e-02	Auger electron
4.21422e-04	5.149e-02	Auger electron
4.49255e-04	5.917e-02	Auger electron
2.94276e-03	1.927e-02	Auger electron
3.08181e-03	2.325e-02	Auger electron
5.61400e-03	1.027e-02	Conversion electron
5.86950e-03	1.658e-02	Conversion electron
2.82195e-01	2.466e-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/SNMMI-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6