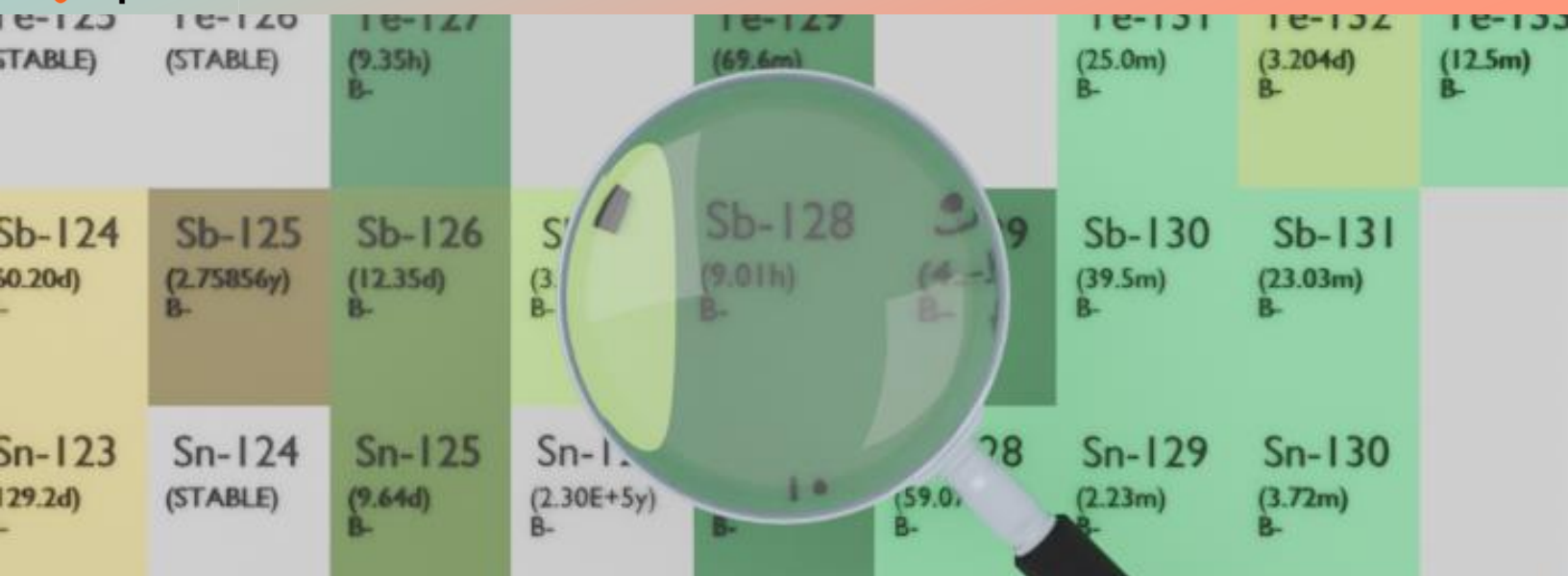




ANTIMONY-128

SUMMARY DATA

GENERAL

CLASSIFICATION

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

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 9.01 [h]
Decay constant: 2.1370×10^{-5} [1/s]
Daughters: Te-128 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.49992 [MeV]
Mean photon energy: 3.09344 [MeV]
Air kerma rate constant, Γ_{10} : 1.145×10^{-16} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 1.145×10^{-16} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 8.010×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

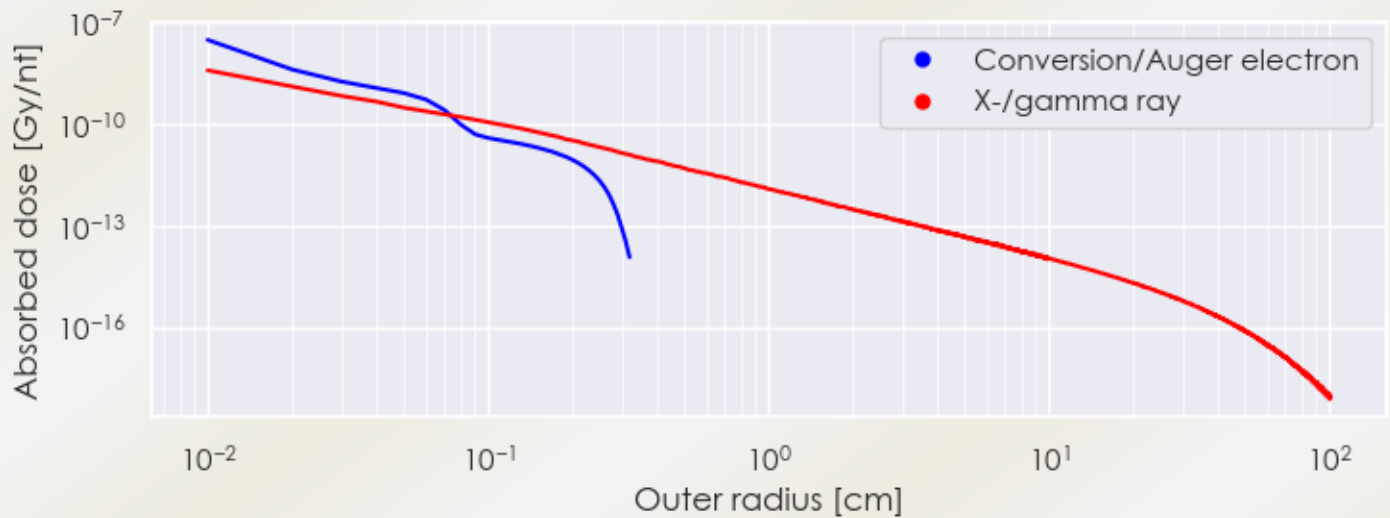
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 8.010×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 4.956×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

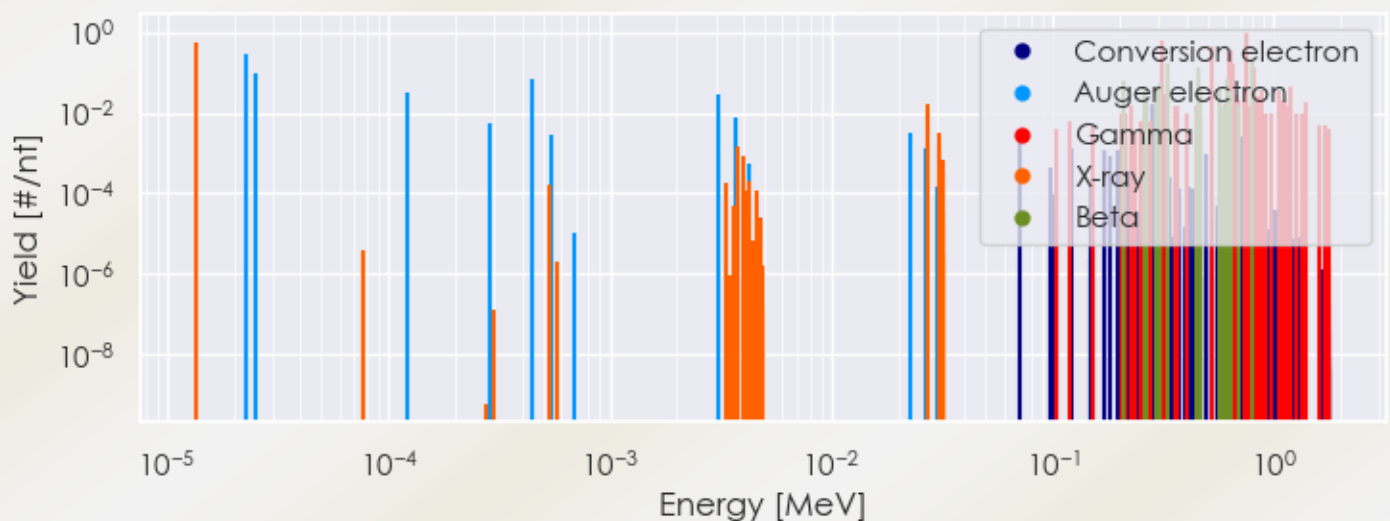
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



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

SUMMARY SPECTRA (PLOT)

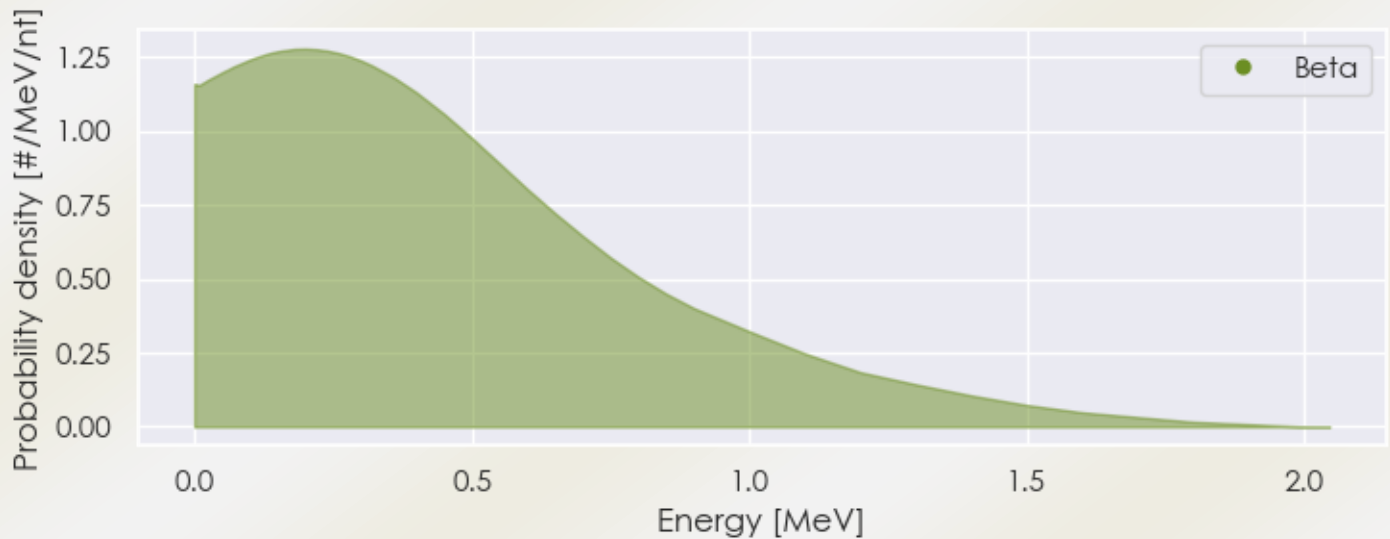
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



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

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.36106e-05	5.591e-01	X-ray
2.74652e-02	1.736e-02	X-ray
2.04400e-01	1.000e-02	Gamma
2.14800e-01	1.000e-02	Gamma
2.27300e-01	1.500e-02	Gamma
3.14100e-01	6.100e-01	Gamma
3.17700e-01	3.000e-02	Gamma
3.22300e-01	3.000e-02	Gamma
3.57000e-01	1.500e-02	Gamma
3.66100e-01	1.500e-02	Gamma

4.04300e-01	1.000e-02	Gamma
4.45700e-01	1.500e-02	Gamma
4.54500e-01	1.500e-02	Gamma
4.59500e-01	1.500e-02	Gamma
5.26500e-01	4.500e-01	Gamma
5.82900e-01	1.000e-02	Gamma
5.94300e-01	1.000e-02	Gamma
6.03000e-01	1.700e-02	Gamma
6.28700e-01	3.100e-01	Gamma
6.36200e-01	3.600e-01	Gamma
6.54200e-01	1.700e-01	Gamma
6.67100e-01	2.500e-02	Gamma
6.83900e-01	3.000e-02	Gamma
6.92900e-01	2.000e-02	Gamma
7.27600e-01	4.000e-02	Gamma
7.43300e-01	1.000e+00	Gamma
7.54000e-01	1.000e+00	Gamma
7.73700e-01	1.500e-02	Gamma
8.02700e-01	1.200e-02	Gamma
8.13600e-01	1.300e-01	Gamma
8.35800e-01	1.000e-02	Gamma
8.45800e-01	2.500e-02	Gamma
8.78000e-01	3.500e-02	Gamma
9.08800e-01	1.000e-02	Gamma
9.72300e-01	1.000e-02	Gamma
1.04750e+00	3.500e-02	Gamma
1.07860e+00	2.000e-02	Gamma
1.11270e+00	2.000e-02	Gamma
1.15820e+00	1.500e-02	Gamma
1.18160e+00	4.500e-02	Gamma
1.25050e+00	1.000e-02	Gamma
1.25950e+00	1.000e-02	Gamma
1.33980e+00	1.000e-02	Gamma
1.37800e+00	1.800e-02	Gamma
2.08297e-01	6.263e-02	Beta
2.60776e-01	4.415e-02	Beta
2.64437e-01	2.053e-02	Beta
2.91517e-01	4.620e-02	Beta

3.03267e-01	5.647e-02	Beta
3.27741e-01	4.107e-02	Beta
3.32929e-01	1.571e-01	Beta
4.47839e-01	1.232e-02	Beta
4.53673e-01	1.335e-01	Beta
4.61621e-01	4.312e-02	Beta
5.69394e-01	3.593e-02	Beta
5.87594e-01	1.540e-02	Beta
6.11873e-01	7.187e-02	Beta
6.23252e-01	1.335e-02	Beta
6.44114e-01	3.593e-02	Beta
6.89260e-01	1.540e-02	Beta
8.01816e-01	1.951e-01	Beta
2.29204e-05	2.732e-01	Auger electron
2.49376e-05	9.095e-02	Auger electron
1.21279e-04	3.127e-02	Auger electron
4.49281e-04	7.065e-02	Auger electron
3.08210e-03	2.777e-02	Auger electron
2.82295e-01	1.695e-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