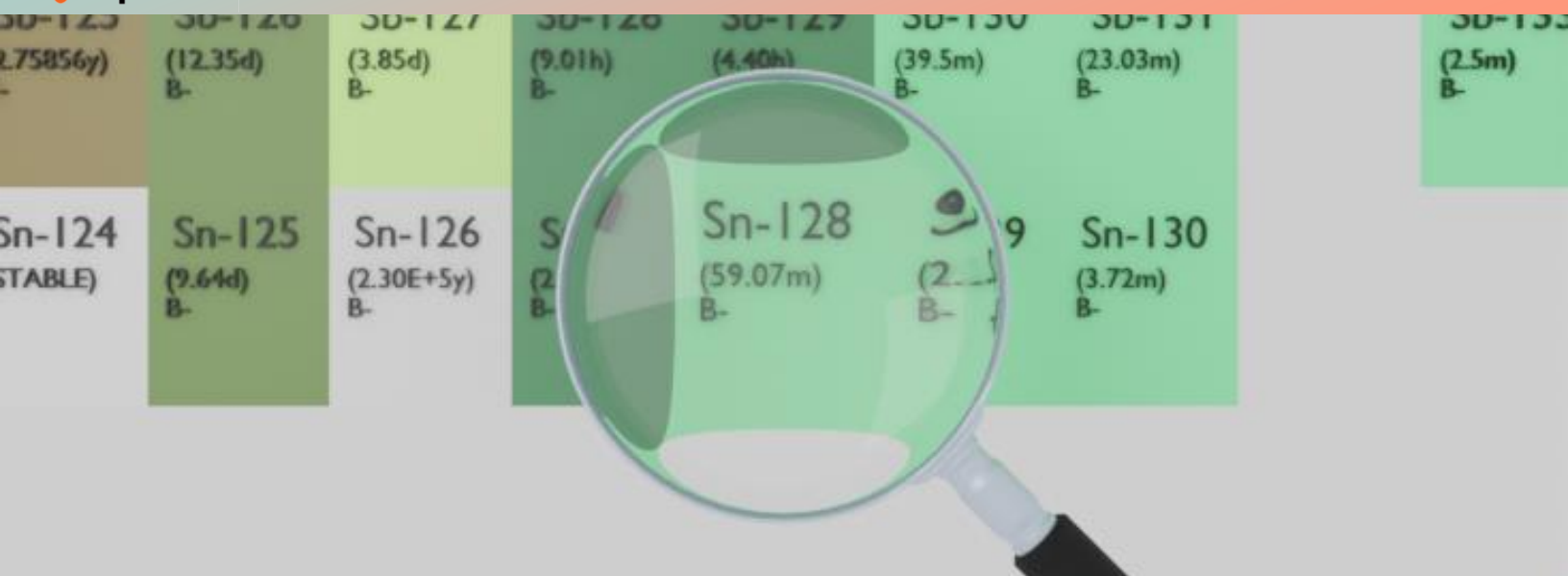




TIN-128

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Sn-128
Atomic number (Z): 50
Mass number (A): 128
Neutron number (N): 78

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 59.07 [m]
Decay constant: 1.9557×10^{-4} [1/s]
Daughters: Sb-128m (100.0%)
Radioactive daughters: Sb-128m

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.24571 [MeV]
Mean photon energy: 0.60406 [MeV]
Air kerma rate constant, Γ_{10} : 3.192×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 3.192×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 3.937×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

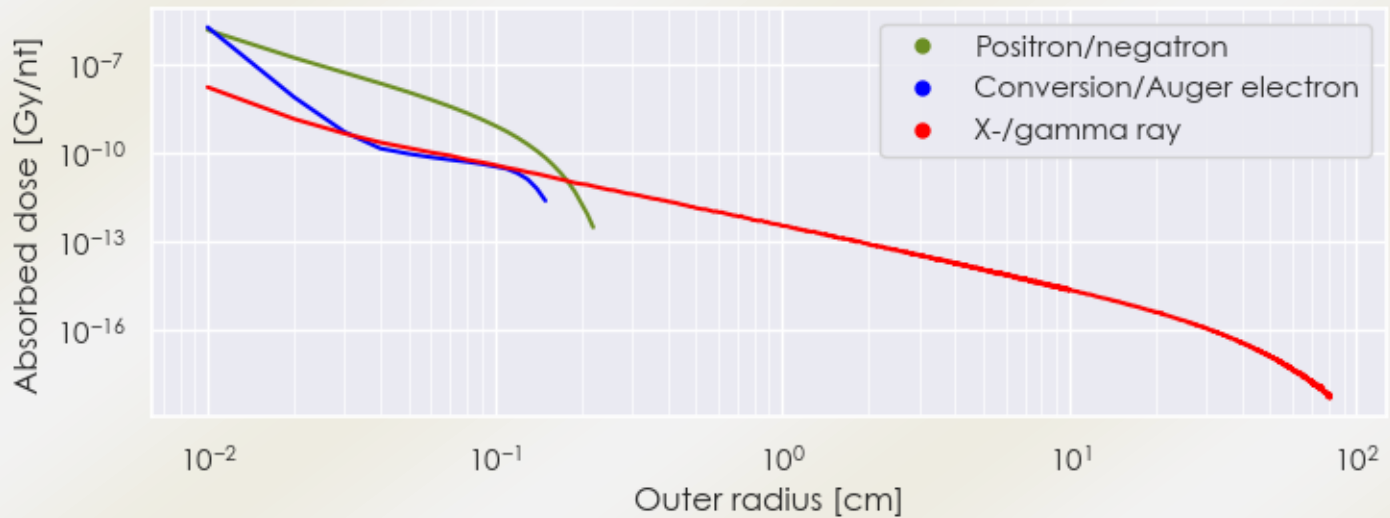
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta+,e-}$: $3.937\text{e-}14$ [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : $9.678\text{e-}14$ [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

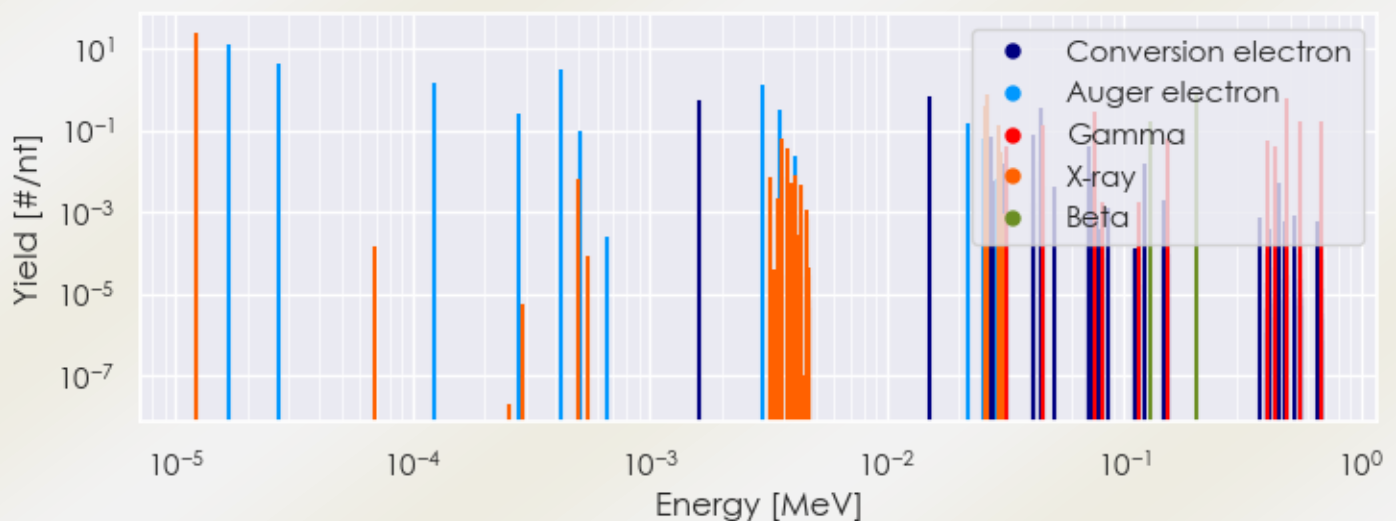
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



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

SUMMARY SPECTRA (PLOT)

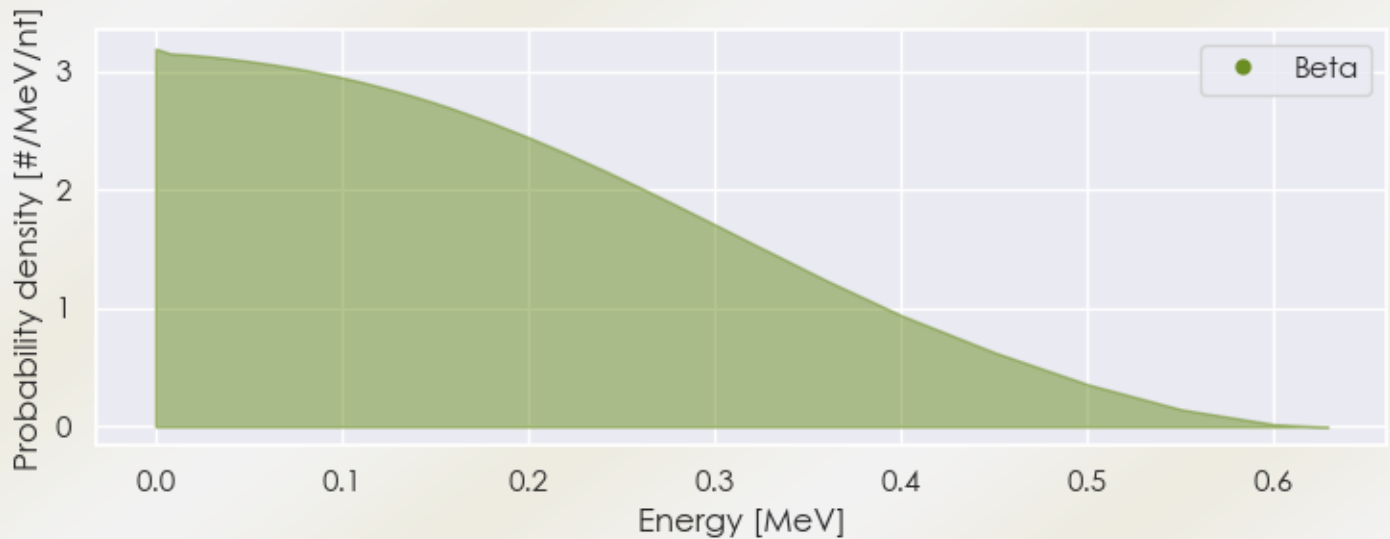
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



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

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.22326e-05	2.505e+01	X-ray
3.59266e-03	6.079e-02	X-ray
3.83820e-03	3.517e-02	X-ray
2.60930e-02	4.066e-01	X-ray
2.63486e-02	7.588e-01	X-ray
2.96698e-02	6.918e-02	X-ray
2.97173e-02	1.342e-01	X-ray
3.03620e-02	1.425e-02	X-ray
3.03709e-02	2.791e-02	X-ray
3.21000e-02	4.012e-02	Gamma

4.57000e-02	1.298e-01	Gamma
7.51000e-02	2.773e-01	Gamma
1.52700e-01	6.490e-02	Gamma
4.04400e-01	5.900e-02	Gamma
4.36700e-01	4.130e-02	Gamma
4.82300e-01	5.900e-01	Gamma
5.57300e-01	1.652e-01	Gamma
6.80500e-01	1.593e-01	Gamma
1.29581e-01	1.608e-01	Beta
2.00781e-01	8.392e-01	Beta
1.68952e-05	1.233e+01	Auger electron
2.73677e-05	4.155e+00	Auger electron
1.22162e-04	1.390e+00	Auger electron
2.81134e-04	2.480e-01	Auger electron
4.22450e-04	3.129e+00	Auger electron
5.04607e-04	9.467e-02	Auger electron
1.62100e-03	5.747e-01	Conversion electron
2.96451e-03	1.233e+00	Auger electron
3.51916e-03	3.336e-01	Auger electron
4.09436e-03	2.292e-02	Auger electron
1.52210e-02	6.788e-01	Conversion electron
2.17904e-02	1.418e-01	Auger electron
2.54497e-02	6.141e-02	Auger electron
2.74263e-02	7.075e-02	Conversion electron
3.13383e-02	1.546e-02	Conversion electron
4.10263e-02	8.084e-02	Conversion electron
4.46210e-02	3.417e-01	Conversion electron
4.49383e-02	1.767e-02	Conversion electron
7.04263e-02	4.079e-02	Conversion electron
1.22221e-01	1.567e-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