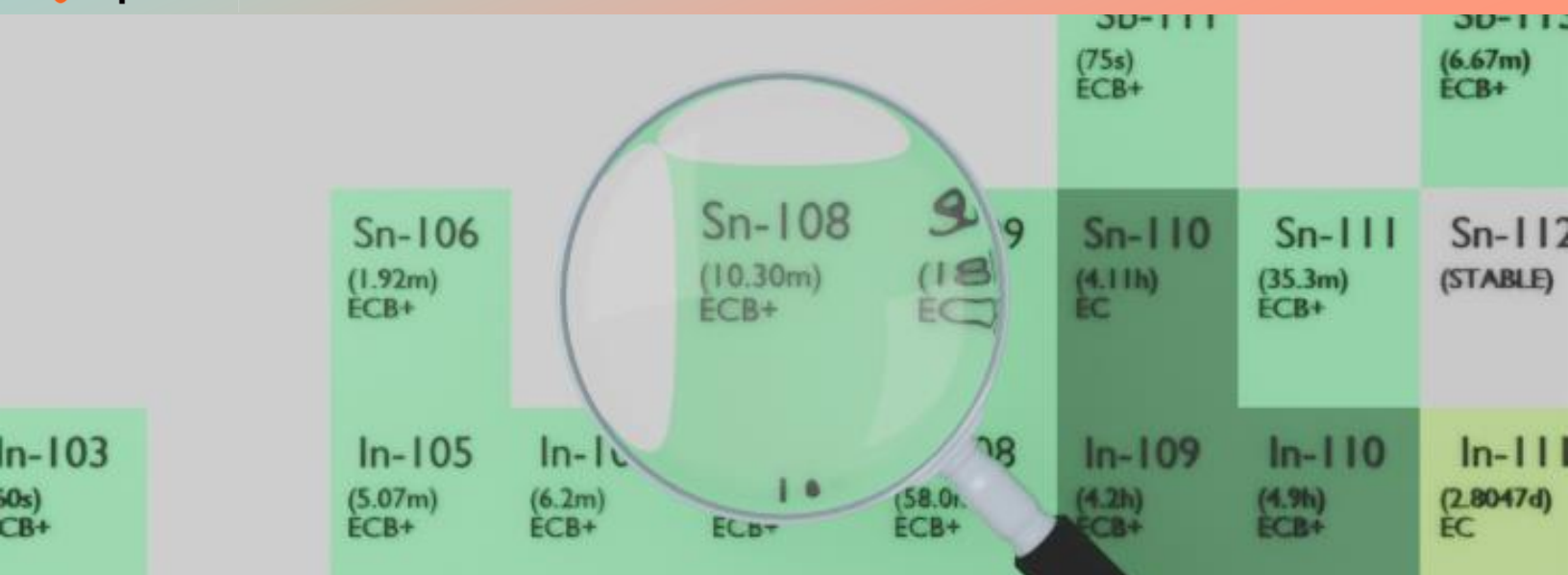




TIN-108

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Sn-108
Atomic number (Z): 50
Mass number (A): 108
Neutron number (N): 58

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 10.3 [m]
Decay constant: 1.1216×10^{-3} [1/s]
Daughters: In-108m (100.0%)
Radioactive daughters: In-108m

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.02693 [MeV]
Mean photon energy: 0.68472 [MeV]
Air kerma rate constant, Γ_{10} : 3.154×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 3.178×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 4.315×10^{-15} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

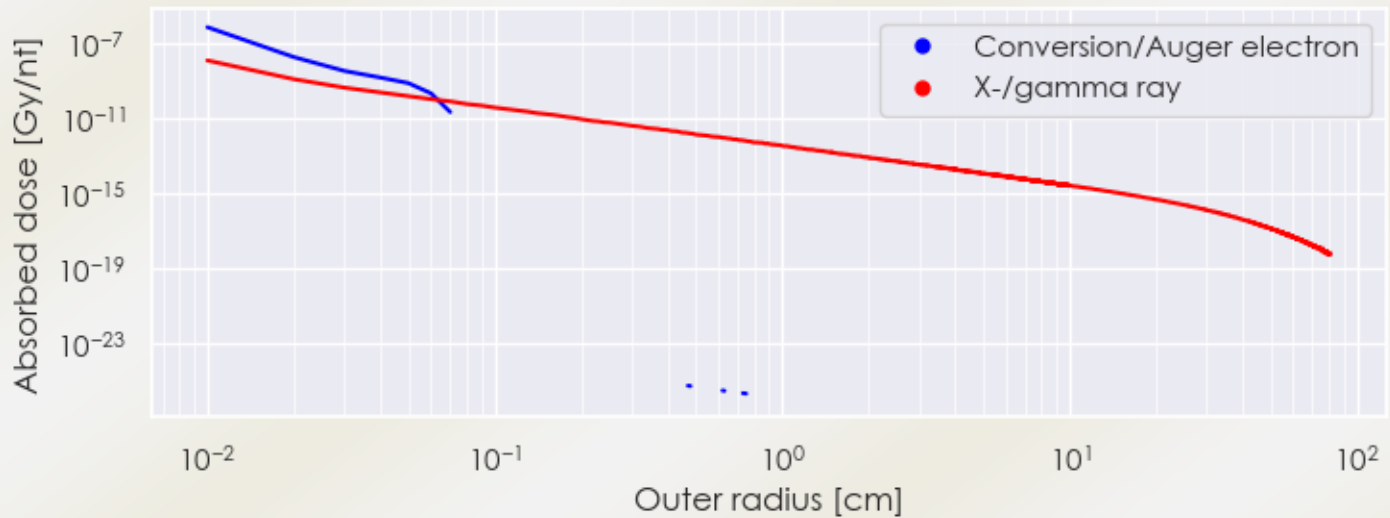
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 4.315e-15 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.097e-13 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

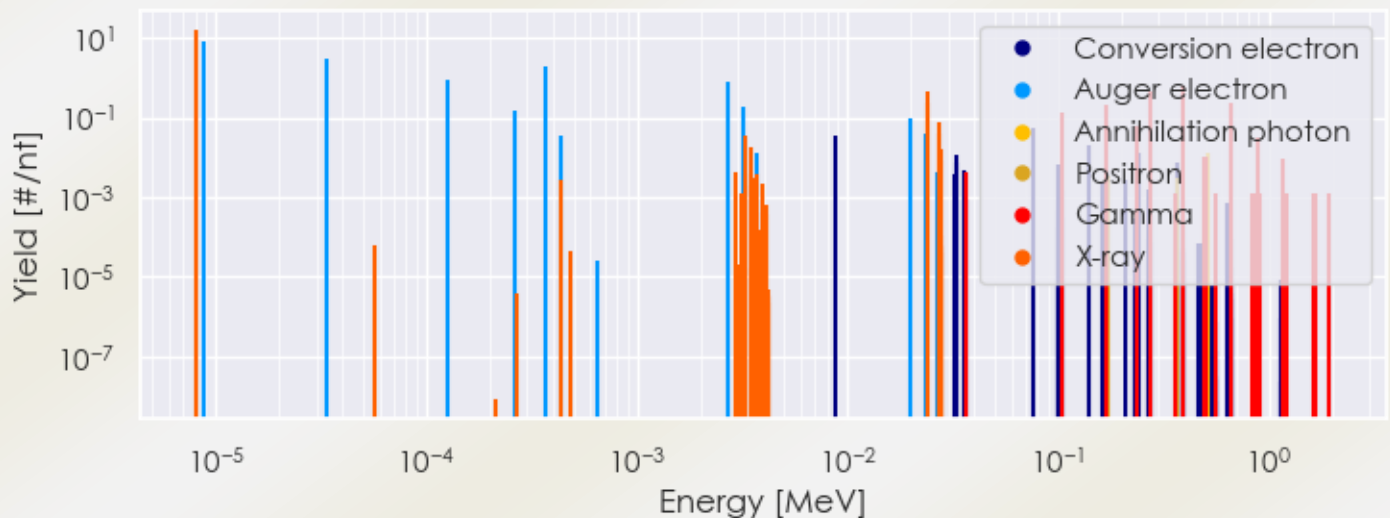
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Sn-108 DPK.csv

SUMMARY SPECTRA (PLOT)

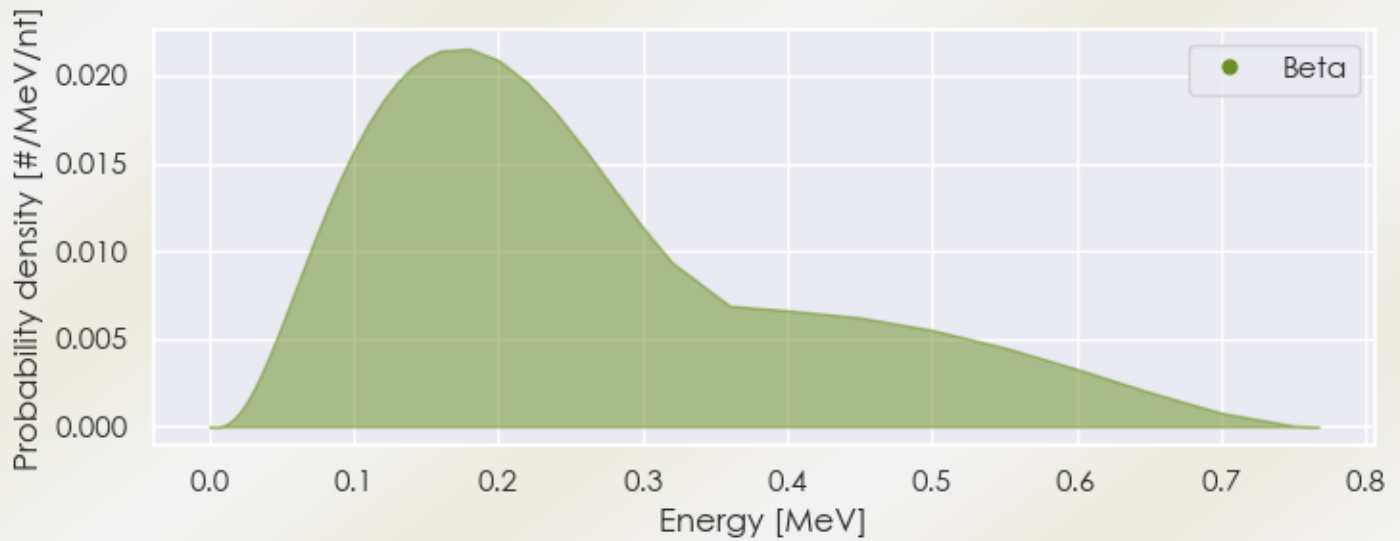
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Sn-108 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-108 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-108 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
8.12536e-06	1.647e+01	X-ray
3.27540e-03	3.338e-02	X-ray
3.48147e-03	1.899e-02	X-ray
2.39785e-02	2.425e-01	X-ray
2.41926e-02	4.549e-01	X-ray
2.72214e-02	4.059e-02	X-ray
2.72603e-02	7.881e-02	X-ray
2.78371e-02	1.613e-02	X-ray
1.04310e-01	1.382e-01	Gamma
1.68240e-01	1.993e-01	Gamma

2.36190e-01	6.237e-02	Gamma
2.72690e-01	4.552e-01	Gamma
3.96340e-01	6.430e-01	Gamma
4.92650e-01	1.029e-02	Gamma
5.00400e-01	1.093e-02	Gamma
5.11000e-01	1.279e-02	Annihilation photon
6.69160e-01	2.257e-01	Gamma
8.89160e-01	3.279e-02	Gamma
8.85871e-06	8.167e+00	Auger electron
3.35297e-05	2.870e+00	Auger electron
1.25768e-04	8.937e-01	Auger electron
2.61568e-04	1.552e-01	Auger electron
3.70818e-04	2.023e+00	Auger electron
4.36801e-04	3.325e-02	Auger electron
2.73383e-03	8.015e-01	Auger electron
3.21402e-03	1.959e-01	Auger electron
3.71288e-03	1.248e-02	Auger electron
8.77900e-03	3.324e-02	Conversion electron
2.00957e-02	9.909e-02	Auger electron
2.34091e-02	4.148e-02	Auger electron
3.29716e-02	1.105e-02	Conversion electron
7.63890e-02	5.538e-02	Conversion electron
1.40319e-01	2.114e-02	Conversion electron
2.44769e-01	1.349e-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