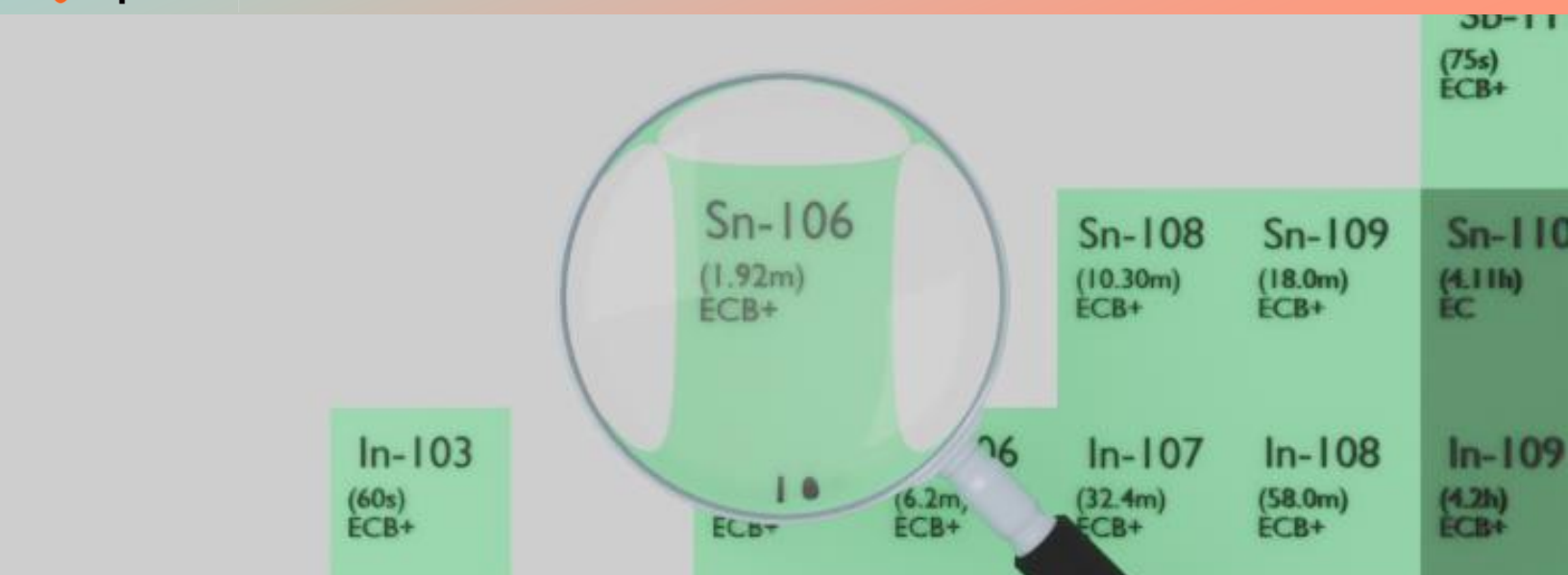




TIN-106

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Sn-106
Atomic number (Z): 50
Mass number (A): 106
Neutron number (N): 56

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 1.92 [m]
Decay constant: $6.0169\text{e-}03$ [1/s]
Daughters: In-106m (100.0%)
Radioactive daughters: In-106m

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.12787 [MeV]
Mean photon energy: 1.20914 [MeV]
Air kerma rate constant, Γ_{10} : $4.265\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : $5.013\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $2.049\text{e-}14$ [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [Gy $\cdot$ kg/Bq $\cdot$ s]

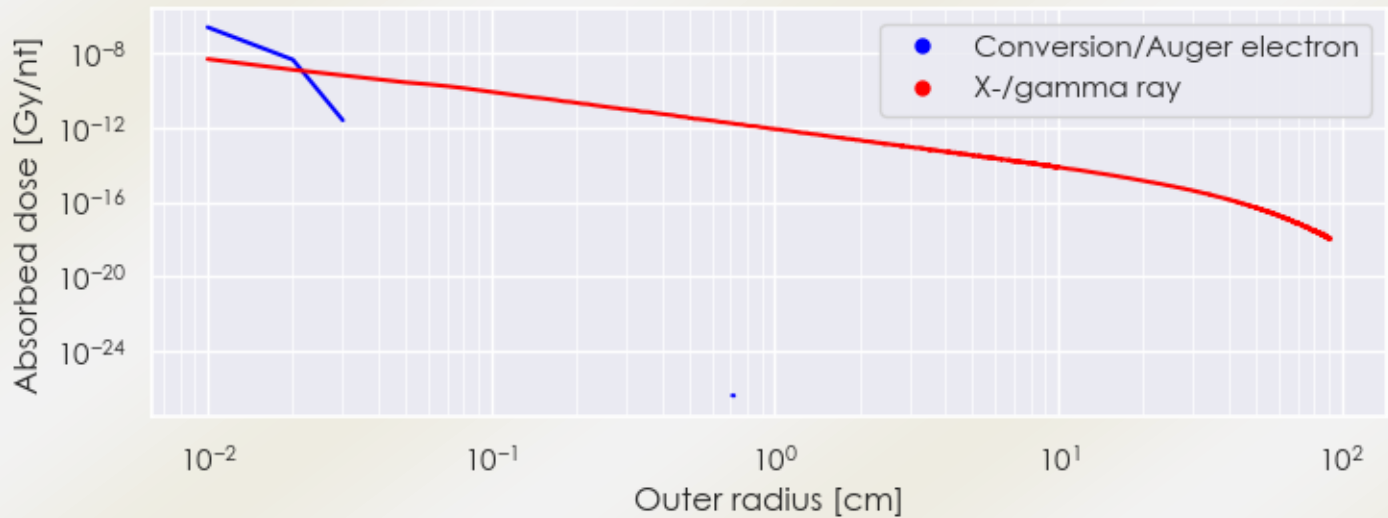
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 2.049×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.937×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

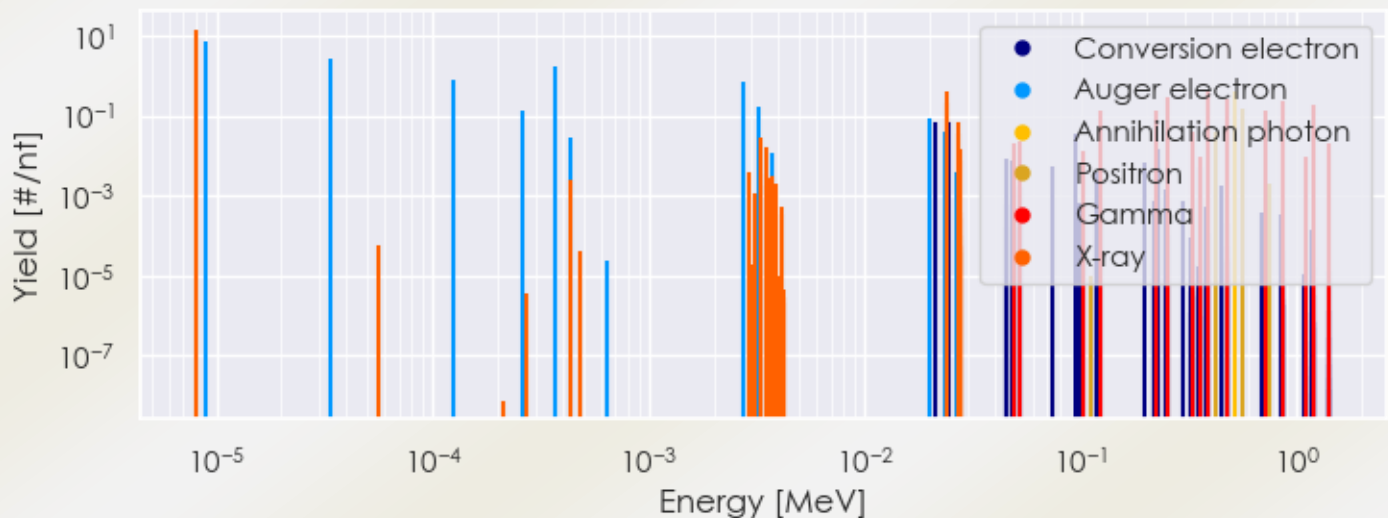
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Sn-106 DPK.csv

SUMMARY SPECTRA (PLOT)

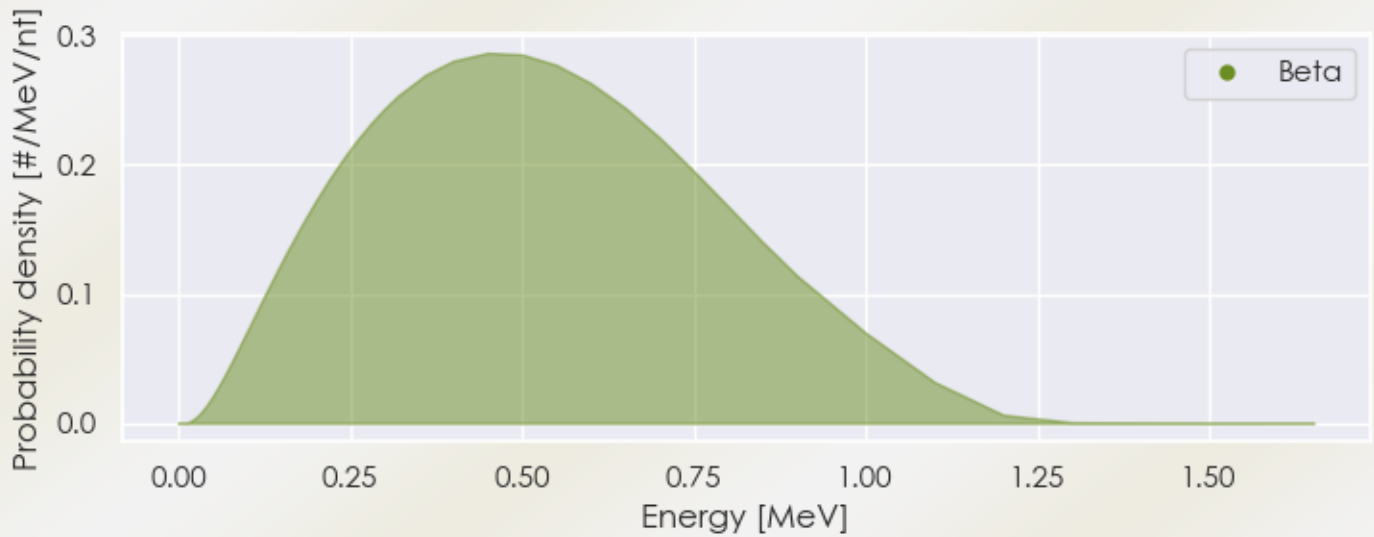
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Sn-106 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-106 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-106 Summary Spectrum.csv

Energy [MeV]	Yield [# /nt] if > 0.01	Radiation type
8.12531e-06	1.469e+01	X-ray
3.27540e-03	2.978e-02	X-ray
3.48147e-03	1.690e-02	X-ray
2.39785e-02	2.203e-01	X-ray
2.41926e-02	4.132e-01	X-ray
2.72214e-02	3.687e-02	X-ray
2.72603e-02	7.159e-02	X-ray
2.78371e-02	1.465e-02	X-ray
4.93000e-02	1.972e-02	Gamma
5.25000e-02	2.291e-02	Gamma

1.01900e-01	1.334e-02	Gamma
1.22300e-01	1.334e-01	Gamma
2.24100e-01	1.305e-01	Gamma
2.53200e-01	2.900e-01	Gamma
3.26200e-01	4.060e-02	Gamma
3.86500e-01	3.886e-01	Gamma
4.77200e-01	2.697e-01	Gamma
5.11000e-01	3.863e-01	Annihilation photon
7.12300e-01	1.392e-01	Gamma
8.63800e-01	2.407e-01	Gamma
1.18960e+00	1.914e-01	Gamma
1.41940e+00	2.030e-02	Gamma
4.20459e-01	4.019e-02	Positron
5.64520e-01	1.507e-01	Positron
8.85880e-06	7.284e+00	Auger electron
3.35290e-05	2.559e+00	Auger electron
1.25755e-04	7.968e-01	Auger electron
2.61888e-04	1.388e-01	Auger electron
3.70817e-04	1.804e+00	Auger electron
4.36814e-04	2.965e-02	Auger electron
2.73388e-03	7.151e-01	Auger electron
3.21410e-03	1.748e-01	Auger electron
3.71299e-03	1.114e-02	Auger electron
2.00957e-02	9.001e-02	Auger electron
2.13790e-02	6.792e-02	Conversion electron
2.34091e-02	3.769e-02	Auger electron
2.45790e-02	6.570e-02	Conversion electron
9.43790e-02	3.399e-02	Conversion electron
2.25279e-01	1.453e-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