

SD-111 (75s) ECB+	SD-112 (6.67m) ECB+	SD-113 (3.49m) ECB+	SD-114 (32.1m) ECB+	SD-115 (15.8m) ECB+	SD-116 (2.80h) ECB+	SD-117 (3.6m) ECB+
Sn-109 (8.0m) CB+	Sn-110 (4.11h) EC	Sn-111 (35.3m) ECB+	Sn-112 (115.09d) EC	Sn-113 (STABLE)	Sn-114 (STABLE)	Sn-115 (STABLE)
In-108 (8.0m) CB+	In-109 (4.2h) ECB+	In-110 (4.9h) ECB+	In-111 (2.8047d) EC	In-112 (STABLE)	In-113 (71.9s) B-ECB+	In-114 (4.41E+14y) B-

TIN-113

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Sn-113
Atomic number (Z): 50
Mass number (A): 113
Neutron number (N): 63

RADIOACTIVE DECAY

Decay modes: Electron capture
Half-life: 115.1 [d]
Decay constant: 6.9707×10^{-8} [1/s]
Daughters: In-113m (100.0%), In-113 (0.00224%)
Radioactive daughters: In-113m

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.00626 [MeV]
Mean photon energy: 0.02369 [MeV]
Air kerma rate constant, Γ_{10} : 6.634×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 6.634×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.003×10^{-15} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

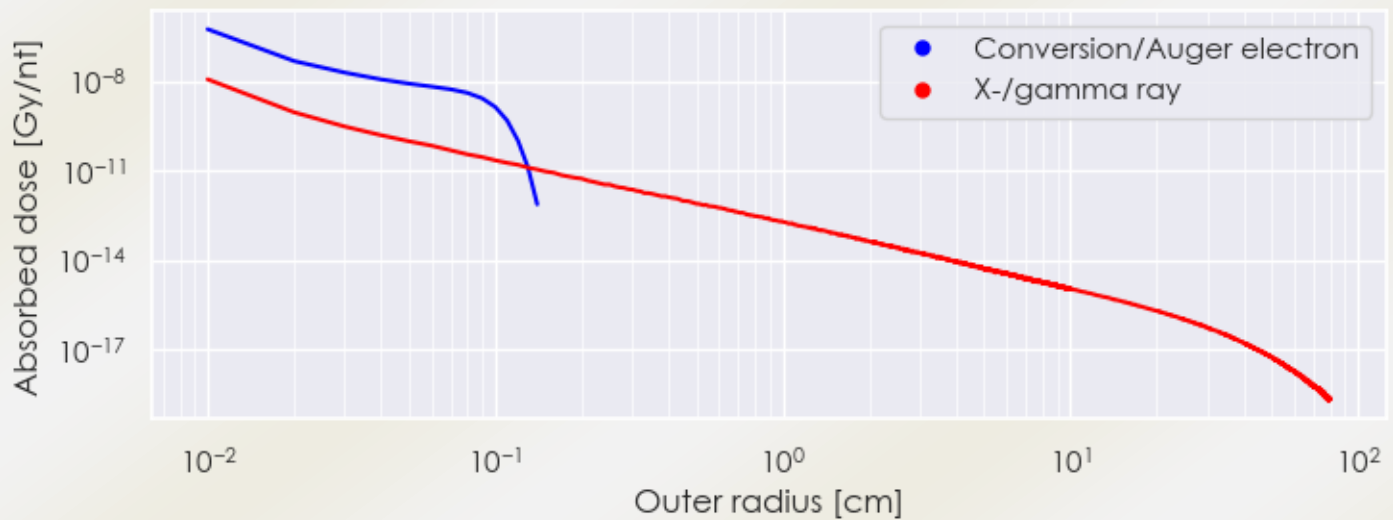
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 1.003e-15 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 3.796e-15 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

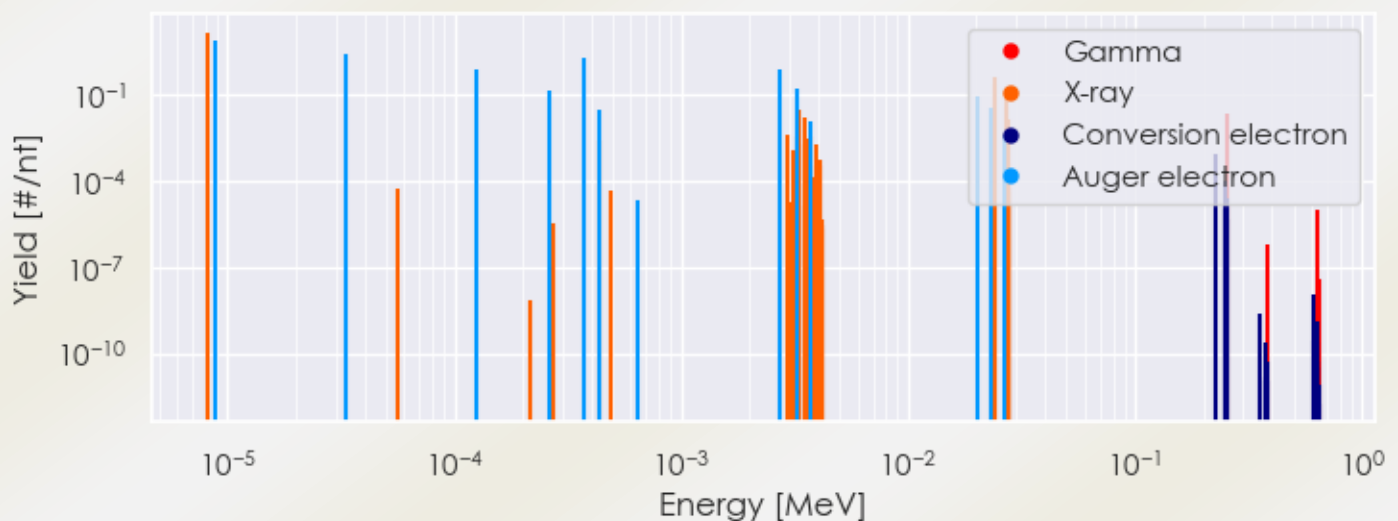
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Sn-113 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-113 Summary 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-113 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Sn-113%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [#/(nt)] if > 0.01	Radiation type
8.12534e-06	1.412e+01	X-ray
3.27540e-03	2.845e-02	X-ray
3.48147e-03	1.612e-02	X-ray
2.39785e-02	2.098e-01	X-ray
2.41926e-02	3.935e-01	X-ray
2.72214e-02	3.511e-02	X-ray
2.72603e-02	6.817e-02	X-ray
2.78371e-02	1.395e-02	X-ray
2.55134e-01	2.110e-02	Gamma
8.85926e-06	7.001e+00	Auger electron
3.35224e-05	2.462e+00	Auger electron
1.25650e-04	7.675e-01	Auger electron
2.63867e-04	1.365e-01	Auger electron
3.70898e-04	1.730e+00	Auger electron
4.37167e-04	2.847e-02	Auger electron
2.73494e-03	6.855e-01	Auger electron
3.21536e-03	1.676e-01	Auger electron
3.71453e-03	1.068e-02	Auger electron
2.00957e-02	8.571e-02	Auger electron
2.34091e-02	3.588e-02	Auger 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