



Cd-101 (1.36m) EC ⁺	Cd-102 (5.5m) ECB ⁺	Cd-103 (7.3m) ECB ⁺	Cd-104 (57.7m) EC	Cd-105 (55.5m)	Cd-106 (STABLE)	Cd-107 (6.50h) ECB ⁺	Cd-108 (STABLE)	Cd-109 (461.4d) EC
	Ag-101 (11.1m) ECB ⁺	Ag-102 (12.9m) ECB ⁺	Ag-103 (6.6m) EC	Ag-104 (69.2m) ECB⁺	Ag-105 (4.6m) EC	Ag-106 (23.96m) ECB+B ⁻	Ag-107 (STABLE)	Ag-108 (2.37m) B-ECB ⁺
Pd-99 (1.4m) CB ⁺	Pd-100 (3.63d) EC	Pd-101 (8.47h) ECB ⁺	Pd-102 (STABLE)	Pd-103 (STABLE)	Pd-104 (STABLE)	Pd-105 (STABLE)	Pd-106 (STABLE)	Pd-107 (6.5E+6y) B ⁻

SILVER-104

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ag-104
Atomic number (Z): 47
Mass number (A): 104
Neutron number (N): 57

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 69.2 [m]
Decay constant: 1.6694e-04 [1/s]
Daughters: Pd-104 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.09166 [MeV]
Mean photon energy: 2.70658 [MeV]
Air kerma rate constant, Γ_{10} : 9.782e-17 [Gy·m²/Bq·s]
Air kerma coefficient, K_{air} : 1.039e-16 [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.469e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy·kg/Bq·s]

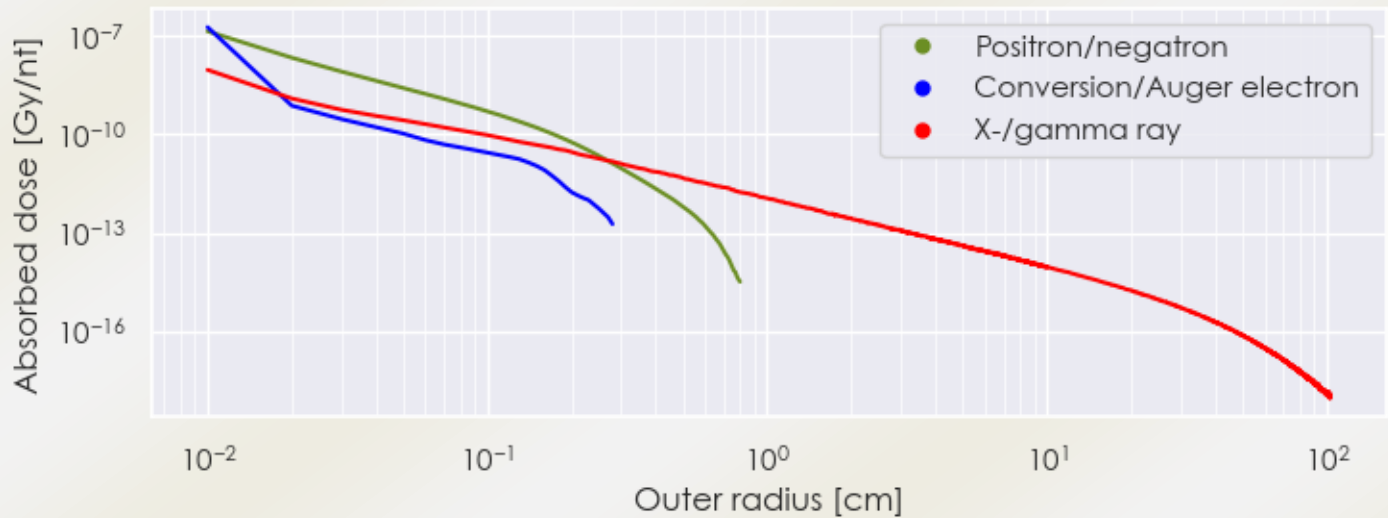
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 1.469×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 4.336×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

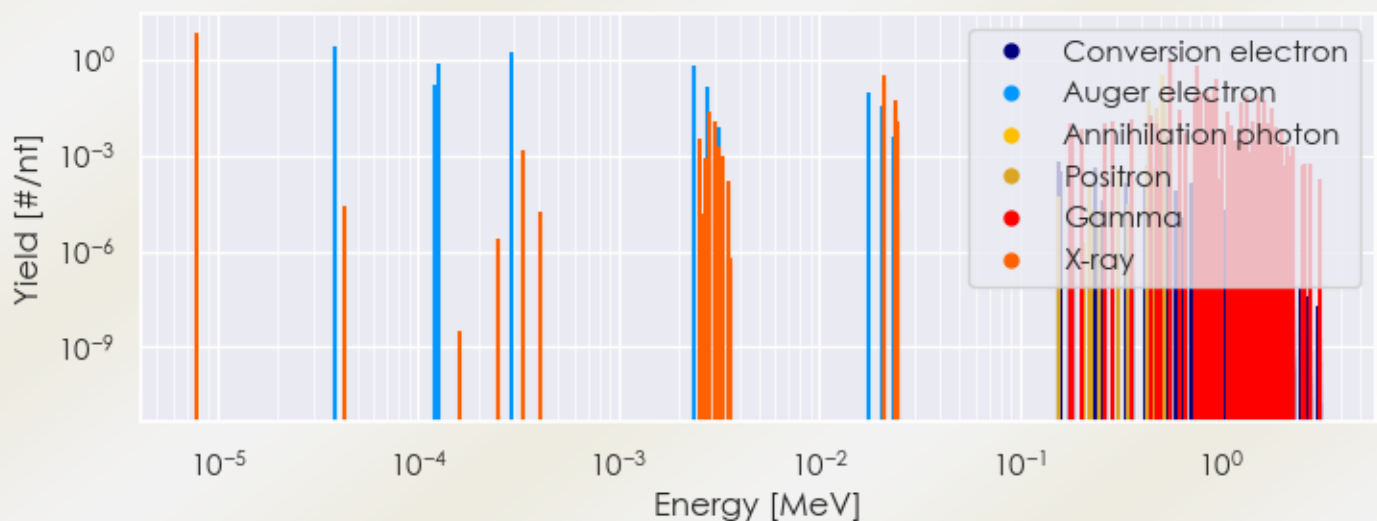
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Ag-104 DPK.csv

SUMMARY SPECTRA (PLOT)

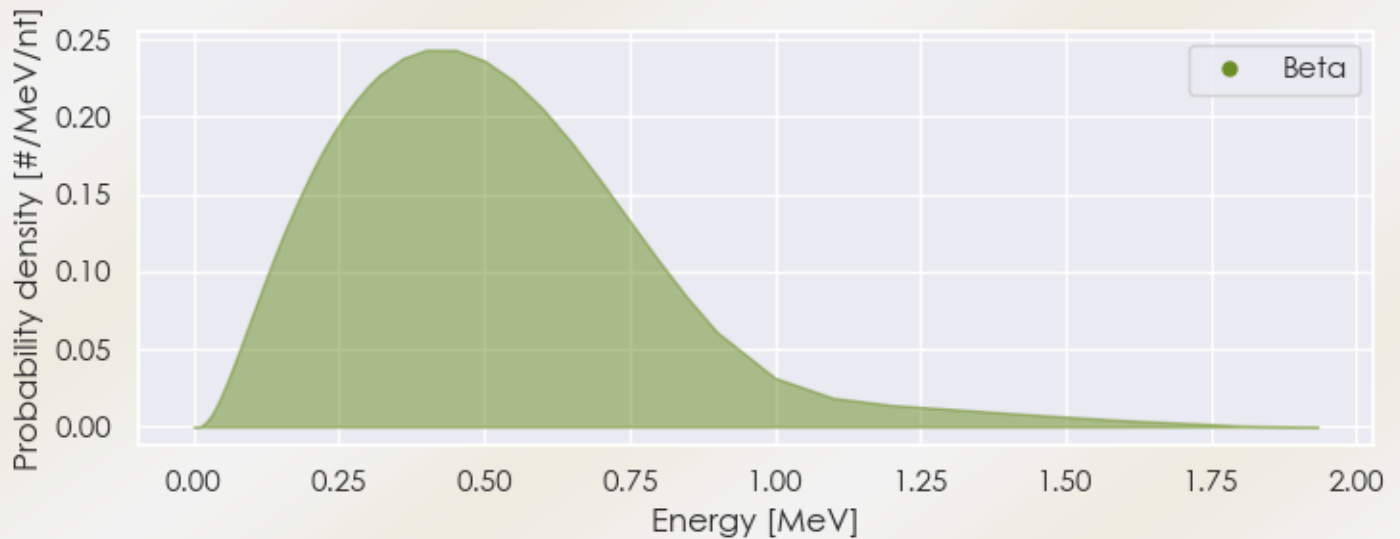
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Ag-104 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/Ag-104 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/Ag-104 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
7.85943e-06	6.838e+00	X-ray
2.82809e-03	2.259e-02	X-ray
2.98437e-03	1.071e-02	X-ray
2.09884e-02	1.742e-01	X-ray
2.11504e-02	3.291e-01	X-ray
2.37657e-02	2.835e-02	X-ray
2.37942e-02	5.510e-02	X-ray
2.42659e-02	1.110e-02	X-ray
2.63200e-01	1.019e-02	Gamma
2.89700e-01	1.204e-02	Gamma

3.62300e-01	1.296e-02	Gamma
4.44500e-01	1.667e-02	Gamma
4.79200e-01	1.019e-02	Gamma
5.11000e-01	3.130e-01	Annihilation photon
5.55800e-01	9.260e-01	Gamma
6.23200e-01	2.500e-02	Gamma
7.40500e-01	7.223e-02	Gamma
7.58700e-01	6.389e-02	Gamma
7.67600e-01	6.575e-01	Gamma
7.85700e-01	9.538e-02	Gamma
8.39700e-01	1.389e-02	Gamma
8.57900e-01	1.037e-01	Gamma
8.63000e-01	6.852e-02	Gamma
9.08000e-01	4.445e-02	Gamma
9.23300e-01	6.945e-02	Gamma
9.25900e-01	1.250e-01	Gamma
9.41600e-01	2.500e-01	Gamma
1.07530e+00	2.130e-02	Gamma
1.26520e+00	4.260e-02	Gamma
1.34180e+00	7.315e-02	Gamma
1.45120e+00	1.111e-02	Gamma
1.52660e+00	7.130e-02	Gamma
1.60020e+00	1.019e-02	Gamma
1.62580e+00	5.093e-02	Gamma
1.78180e+00	3.148e-02	Gamma
4.40896e-01	5.417e-02	Positron
4.77824e-01	2.999e-02	Positron
5.21715e-01	4.160e-02	Positron
8.63562e-01	1.935e-02	Positron
3.81977e-05	2.577e+00	Auger electron
1.21679e-04	1.565e-01	Auger electron
1.25991e-04	6.771e-01	Auger electron
2.92901e-04	1.671e+00	Auger electron
2.38228e-03	6.363e-01	Auger electron
2.75695e-03	1.291e-01	Auger electron
1.76856e-02	9.190e-02	Auger electron
2.05196e-02	3.648e-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/SNMML-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6