



Cu-101 (1.36m) CB+	Cu-102 (5.5m) ECB+	Cu-103 (7.3m) ECB+	Cu-104 (57.7m) EC	Cu-105 (55.5m)	Cu-106 (STABLE)	Cu-107 (6.50h) ECB+	Cu-108 (STABLE)	Cu-109 (461.4d) EC
	Ag-101 (11.1m) ECB+	Ag-102 (12.9m) ECB+	Ag-103 (6.6m) EC	Ag-104m (33.5m) ECB+IT	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 (EC)	Pd-104 (STABLE)	Pd-105 (STABLE)	Pd-106 (STABLE)	Pd-107 (6.5E+6y) B-

SILVER-104M

SUMMARY DATA

GENERAL

CLASSIFICATION

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

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture, Internal transition
Half-life: 33.5 [m]
Decay constant: 3.4485×10^{-4} [1/s]
Daughters: Ag-104 (0.07%), Pd-104 (99.9%)
Radioactive daughters: Ag-104

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.73307 [MeV]
Mean photon energy: 1.80467 [MeV]
Air kerma rate constant, Γ_{10} : 4.194×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 6.597×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.175×10^{-13} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

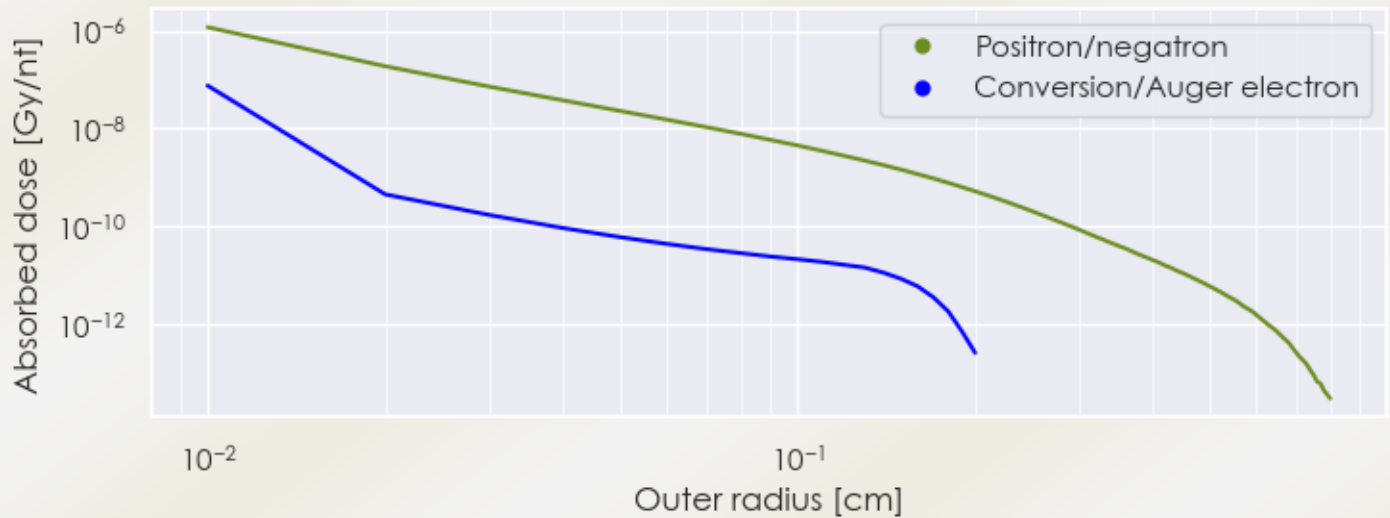
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-\beta+,e-}$: 1.175×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.891×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

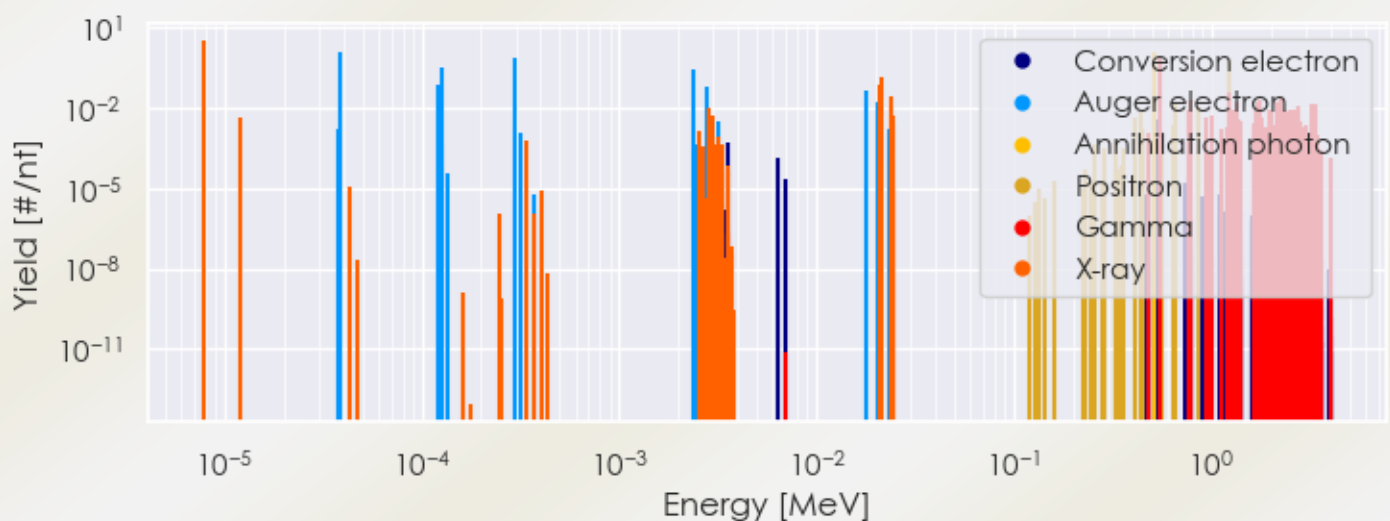
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



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

SUMMARY SPECTRA (PLOT)

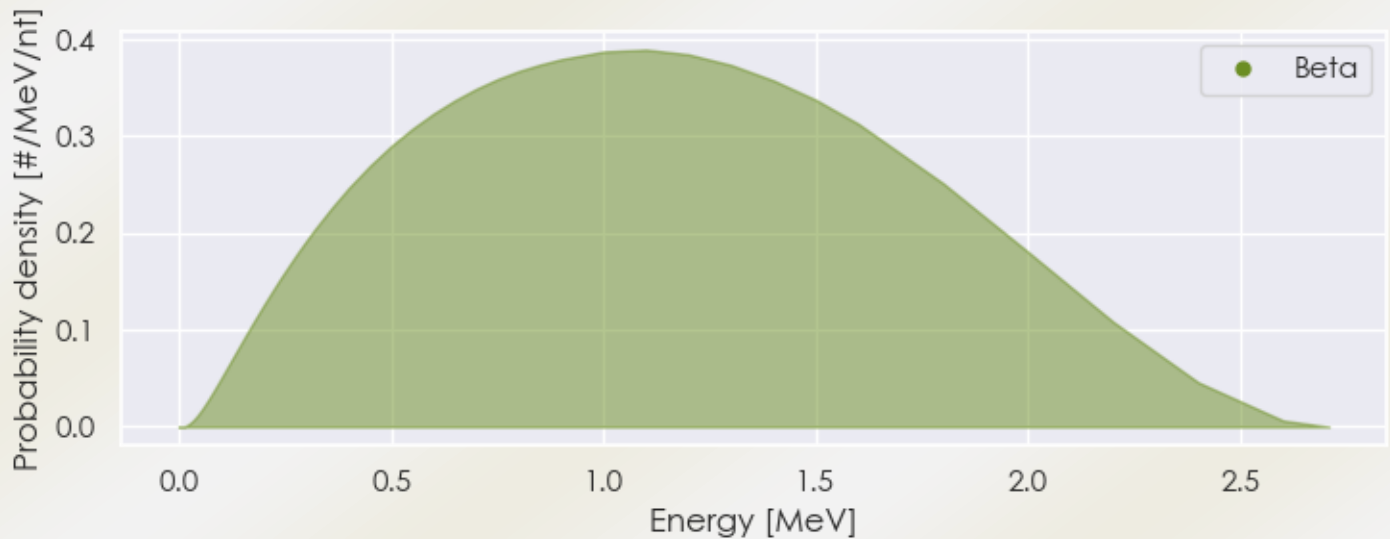
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



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

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
7.85942e-06	3.072e+00	X-ray
2.82809e-03	1.015e-02	X-ray
2.09884e-02	7.826e-02	X-ray
2.11504e-02	1.478e-01	X-ray
2.37657e-02	1.273e-02	X-ray
2.37942e-02	2.475e-02	X-ray
5.11000e-01	1.241e+00	Annihilation photon
5.55800e-01	8.994e-01	Gamma
7.85700e-01	1.889e-02	Gamma

1.23880e+00	3.867e-02	Gamma
1.34180e+00	1.619e-02	Gamma
1.72080e+00	1.709e-02	Gamma
1.78180e+00	2.069e-02	Gamma
2.13920e+00	1.574e-02	Gamma
2.27670e+00	2.428e-02	Gamma
2.72950e+00	1.169e-02	Gamma
3.21360e+00	1.439e-02	Gamma
3.40780e+00	1.439e-02	Gamma
6.53400e-01	1.775e-02	Positron
8.58451e-01	1.085e-02	Positron
1.22131e+00	5.721e-01	Positron
3.81977e-05	1.157e+00	Auger electron
1.21679e-04	7.030e-02	Auger electron
1.25991e-04	3.042e-01	Auger electron
2.92901e-04	7.507e-01	Auger electron
2.38228e-03	2.858e-01	Auger electron
2.75695e-03	5.797e-02	Auger electron
1.76856e-02	4.128e-02	Auger electron
2.05196e-02	1.638e-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