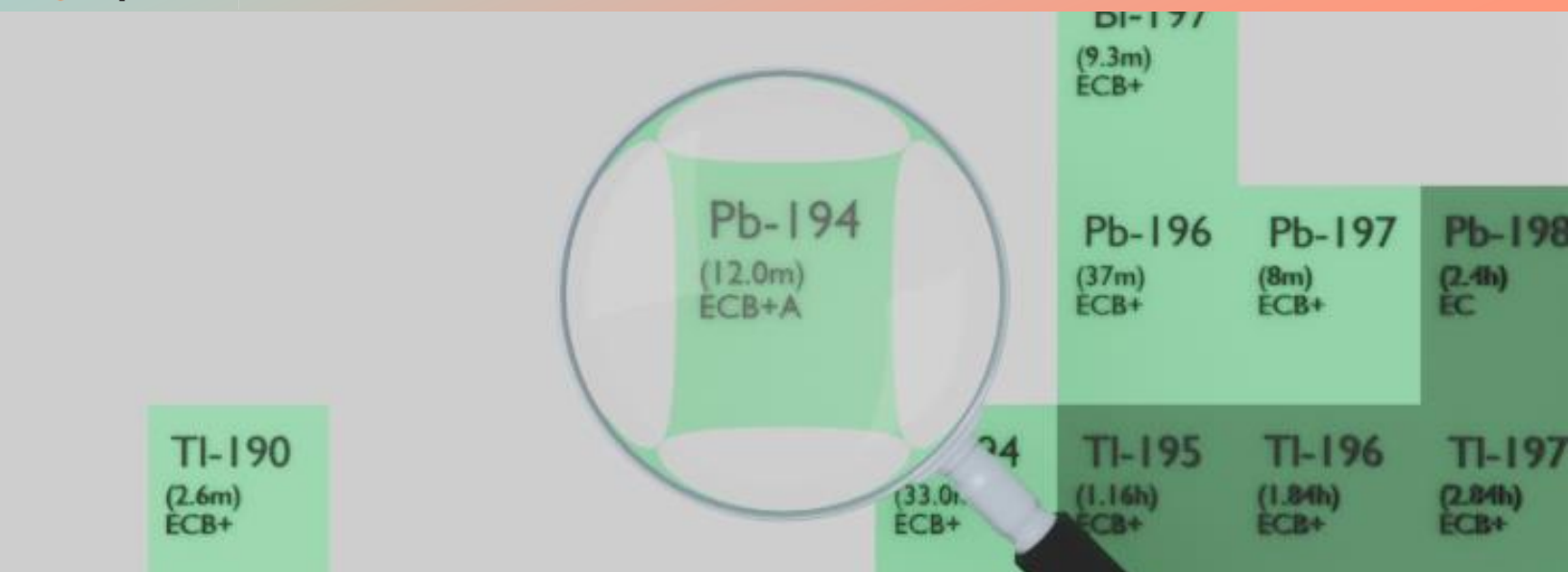




LEAD-194

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Pb-194
Atomic number (Z): 82
Mass number (A): 194
Neutron number (N): 112

RADIOACTIVE DECAY

Decay modes: α , β^+ , Electron capture
Half-life: 12.0 [m]
Decay constant: 9.6270×10^{-4} [1/s]
Daughters: Tl-194 (100.0%), Hg-190 (7.3e-06%)
Radioactive daughters: Tl-194, Hg-190

DOSIMETRIC CONSTANTS

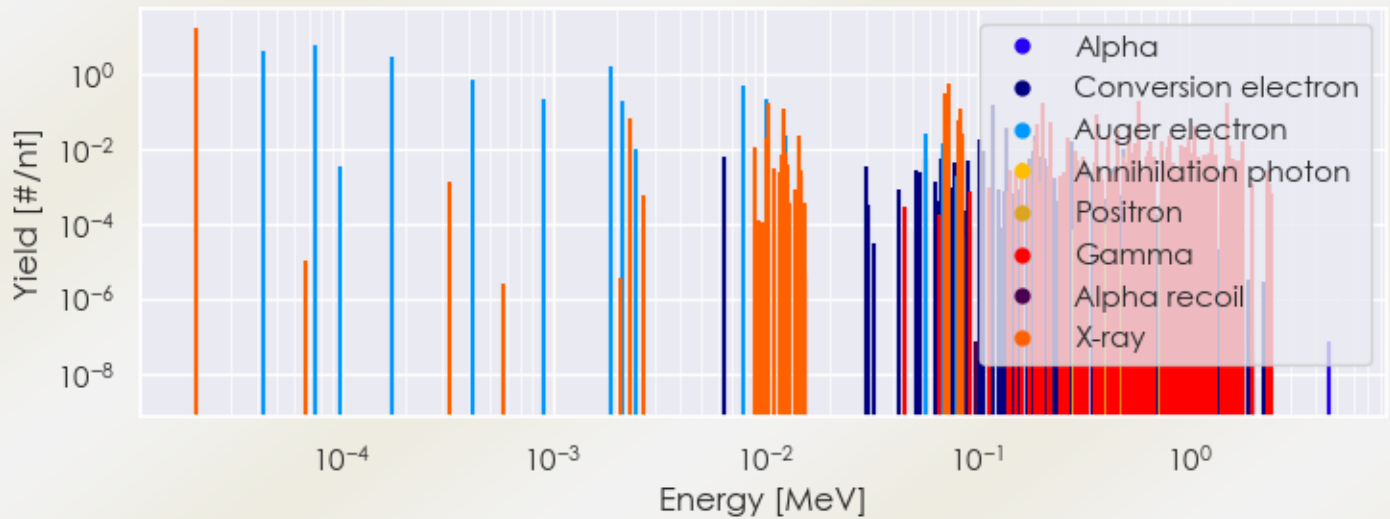
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.08444 [MeV]
Mean photon energy: 1.08324 [MeV]
Air kerma rate constant, Γ_{10} : 5.620×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 5.642×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.353×10^{-14} [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, $\Delta_{\beta, \beta+, e-}$: 1.353×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.736×10^{-13} [Gy·kg/Bq·s]

SUMMARY SPECTRA (PLOT)

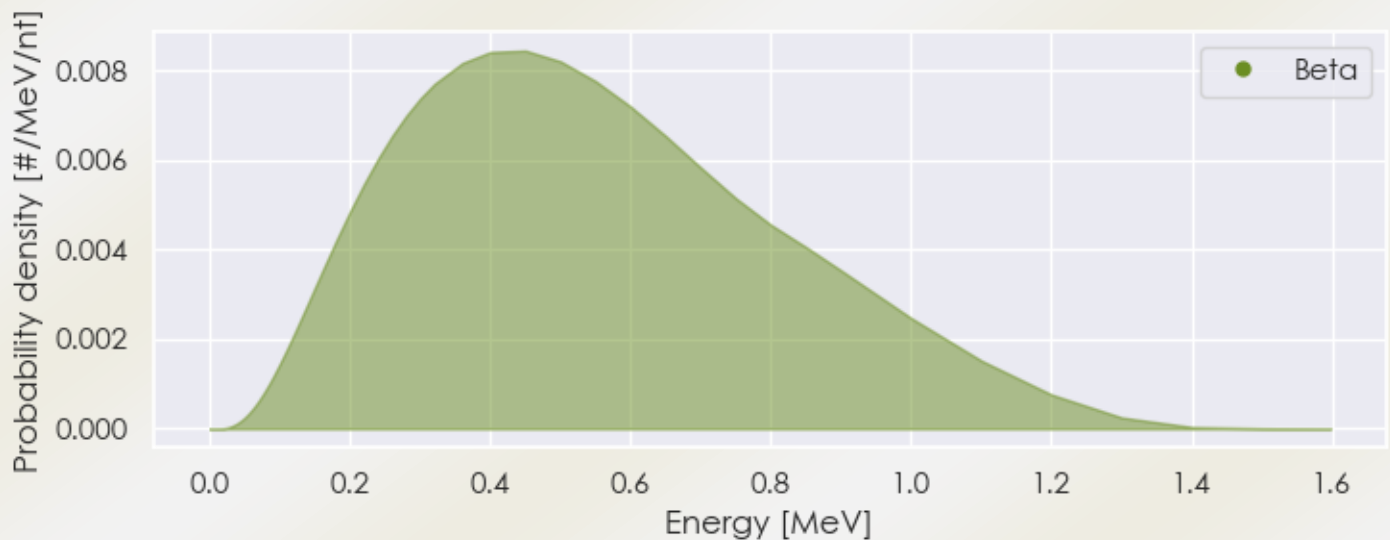
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: [www.mirdsoft.org/products/MIRDspecs/Pb-194 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Pb-194%20Summary%20Spectrum.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/Pb-194 Beta Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Pb-194%20Beta%20Spectrum.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/Pb-194 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Pb-194%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [#/(nt)] if > 0.01	Radiation type
2.07374e-05	1.759e+01	X-ray
2.30030e-03	6.189e-02	X-ray
8.98130e-03	1.151e-02	X-ray
1.01663e-02	2.012e-02	X-ray
1.02661e-02	1.772e-01	X-ray
1.22523e-02	1.135e-01	X-ray
1.22749e-02	3.376e-02	X-ray
1.43396e-02	2.293e-02	X-ray
7.10519e-02	3.076e-01	X-ray
7.31380e-02	5.190e-01	X-ray
8.23884e-02	5.758e-02	X-ray
8.28534e-02	1.115e-01	X-ray
8.50837e-02	1.365e-02	X-ray
8.51979e-02	2.678e-02	X-ray
1.89440e-01	1.516e-02	Gamma
1.92020e-01	4.515e-02	Gamma
2.03800e-01	1.630e-01	Gamma
2.25000e-01	5.053e-02	Gamma
2.70520e-01	2.086e-02	Gamma
3.67800e-01	8.150e-02	Gamma
4.17920e-01	2.282e-02	Gamma
4.60050e-01	3.048e-02	Gamma
5.11000e-01	1.129e-02	Annihilation photon
5.21550e-01	4.108e-02	Gamma
5.60690e-01	1.359e-02	Gamma
5.81820e-01	1.891e-01	Gamma
6.66050e-01	1.661e-02	Gamma
7.52800e-01	1.500e-02	Gamma

7.94850e-01	1.108e-02	Gamma
8.19500e-01	2.249e-02	Gamma
9.26970e-01	1.242e-02	Gamma
9.62640e-01	1.092e-02	Gamma
9.98470e-01	2.038e-02	Gamma
1.01054e+00	1.060e-02	Gamma
1.05938e+00	3.879e-02	Gamma
1.29440e+00	1.907e-02	Gamma
1.51945e+00	1.646e-01	Gamma
1.54940e+00	1.320e-02	Gamma
1.81040e+00	1.566e-02	Gamma
4.30136e-05	3.863e+00	Auger electron
7.57461e-05	5.765e+00	Auger electron
1.74495e-04	3.022e+00	Auger electron
4.17581e-04	6.584e-01	Auger electron
8.98579e-04	2.074e-01	Auger electron
1.85886e-03	1.592e+00	Auger electron
2.10431e-03	1.873e-01	Auger electron
7.84440e-03	4.738e-01	Auger electron
1.01354e-02	2.061e-01	Auger electron
1.24540e-02	2.155e-02	Auger electron
5.72241e-02	2.666e-02	Auger electron
6.88063e-02	1.451e-02	Auger electron
1.03642e-01	1.811e-02	Conversion electron
1.18002e-01	1.492e-01	Conversion electron
1.39202e-01	3.522e-02	Conversion electron
1.88470e-01	2.290e-02	Conversion electron
2.82002e-01	1.584e-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/SNMMI-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6