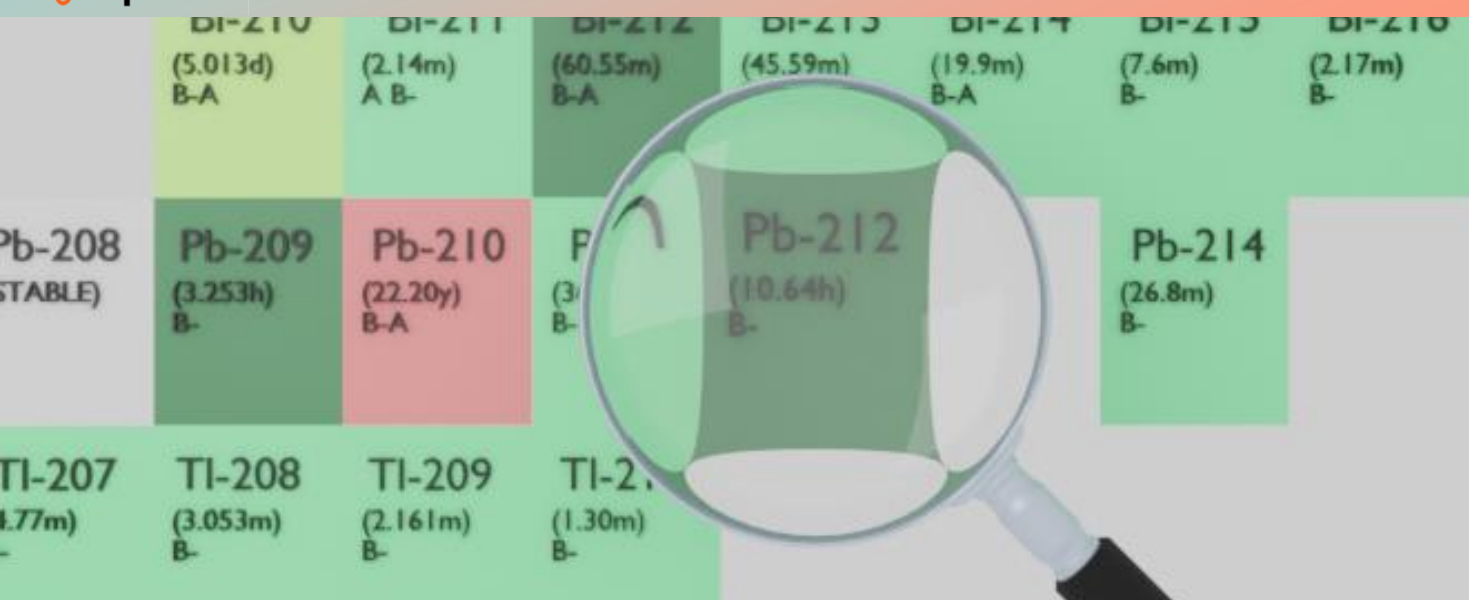




LEAD-212

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Pb-212
Atomic number (Z): 82
Mass number (A): 212
Neutron number (N): 130

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 10.64 [h]
Decay constant: 1.8096×10^{-5} [1/s]
Daughters: Bi-212 (100.0%)
Radioactive daughters: Bi-212

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.17663 [MeV]
Mean photon energy: 0.14503 [MeV]
Air kerma rate constant, Γ_{10} : 1.091×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 1.091×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 2.830×10^{-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, $\Delta_{\beta, \beta^+, e^-}$: 2.830×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.324×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

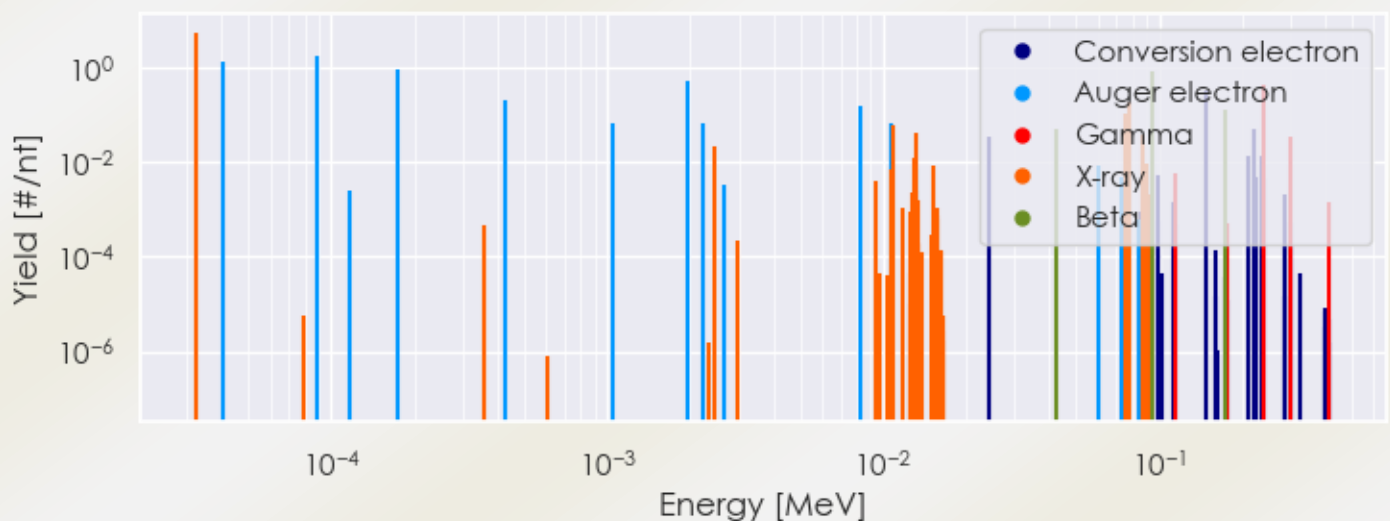
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Pb-212 DPK.csv

SUMMARY SPECTRA (PLOT)

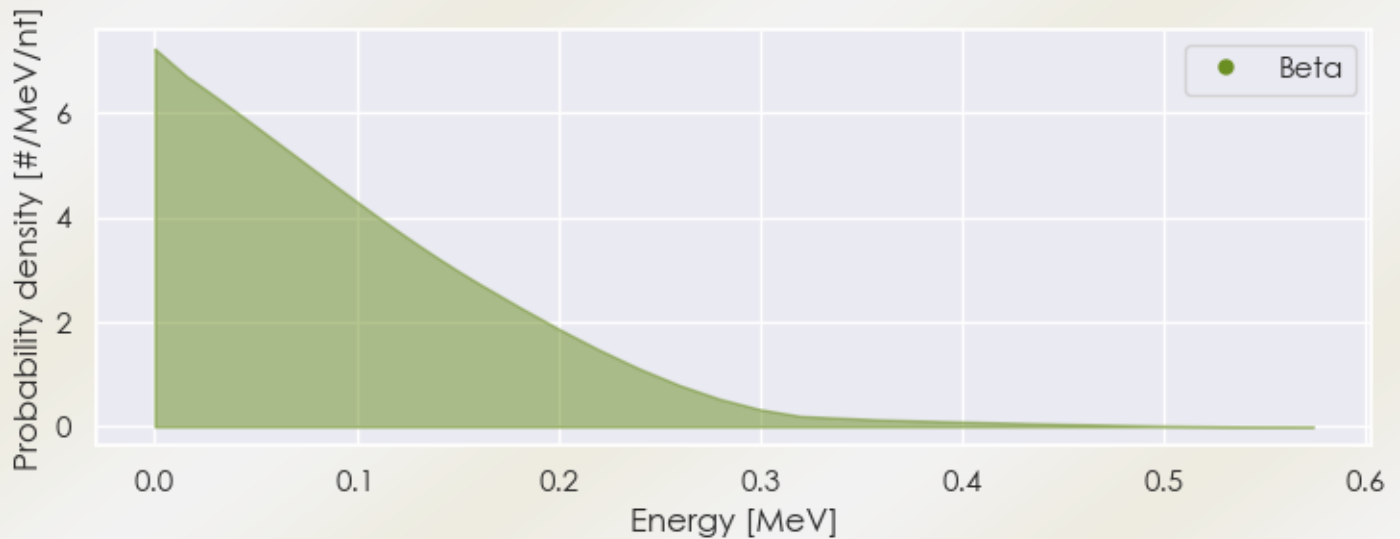
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Pb-212 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/Pb-212 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/Pb-212 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
3.24801e-05	5.562e+00	X-ray
2.45996e-03	2.232e-02	X-ray
1.08390e-02	6.207e-02	X-ray
1.29844e-02	1.205e-02	X-ray
1.30700e-02	3.996e-02	X-ray
7.50642e-02	1.060e-01	X-ray
7.74071e-02	1.772e-01	X-ray
8.71393e-02	1.982e-02	X-ray
8.76651e-02	3.841e-02	X-ray
2.38632e-01	4.330e-01	Gamma

3.00087e-01	3.278e-02	Gamma
4.22568e-02	5.172e-02	Beta
9.48035e-02	8.252e-01	Beta
1.73045e-01	1.230e-01	Beta
4.07273e-05	1.295e+00	Auger electron
8.93950e-05	1.770e+00	Auger electron
1.73624e-04	9.423e-01	Auger electron
4.25241e-04	2.125e-01	Auger electron
1.03762e-03	6.526e-02	Auger electron
1.96159e-03	5.075e-01	Auger electron
2.23782e-03	6.665e-02	Auger electron
8.23907e-03	1.491e-01	Auger electron
1.07002e-02	6.704e-02	Auger electron
2.43510e-02	3.477e-02	Conversion electron
1.47800e-01	3.259e-01	Conversion electron
2.09255e-01	1.315e-02	Conversion electron
2.22256e-01	5.106e-02	Conversion electron
2.35465e-01	1.326e-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