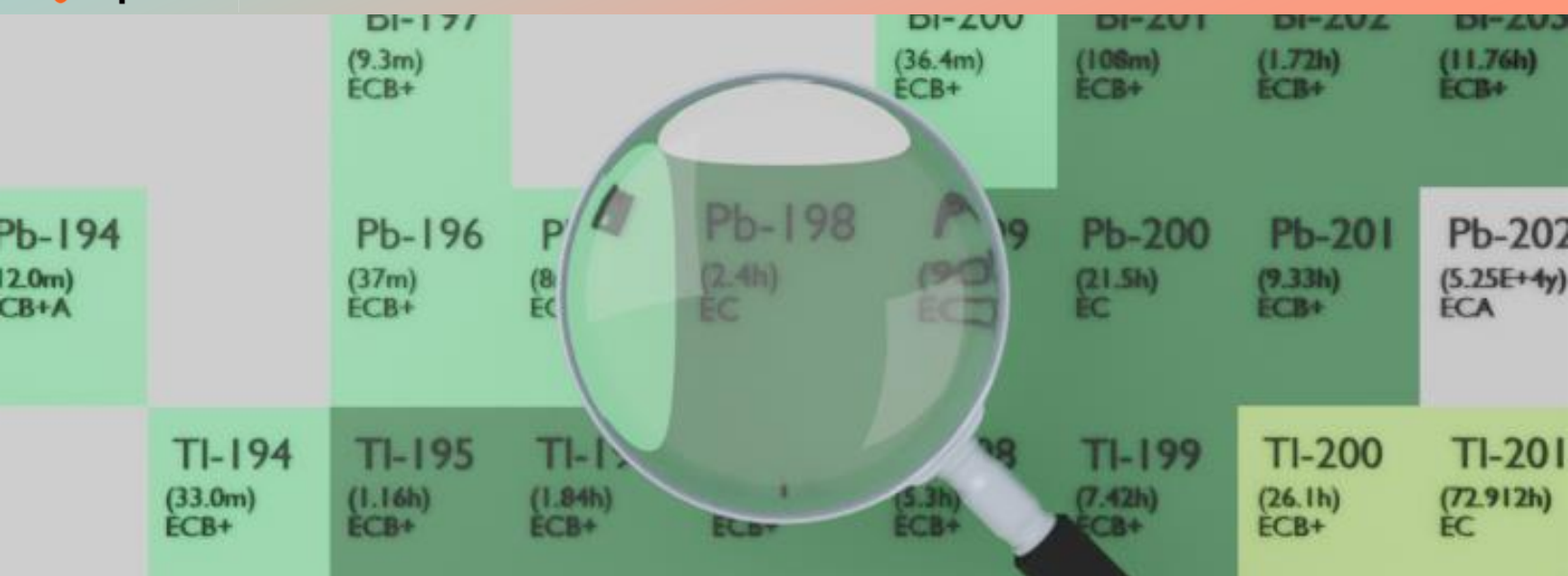




LEAD-198

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Pb-198
Atomic number (Z): 82
Mass number (A): 198
Neutron number (N): 116

RADIOACTIVE DECAY

Decay modes: Electron capture
Half-life: 2.4 [h]
Decay constant: 8.0225×10^{-5} [1/s]
Daughters: Tl-198 (100.0%)
Radioactive daughters: Tl-198

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.07813 [MeV]
Mean photon energy: 0.43848 [MeV]
Air kerma rate constant, Γ_{10} : 3.484×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 3.484×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.252×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

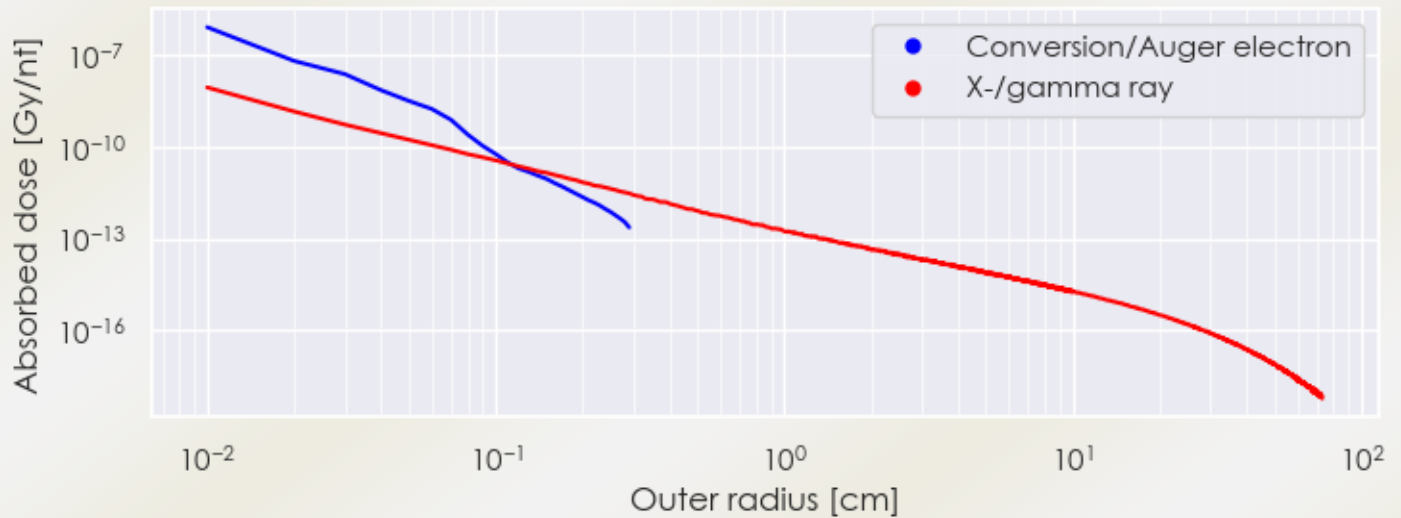
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta+, e-}$: 1.252×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 7.025×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

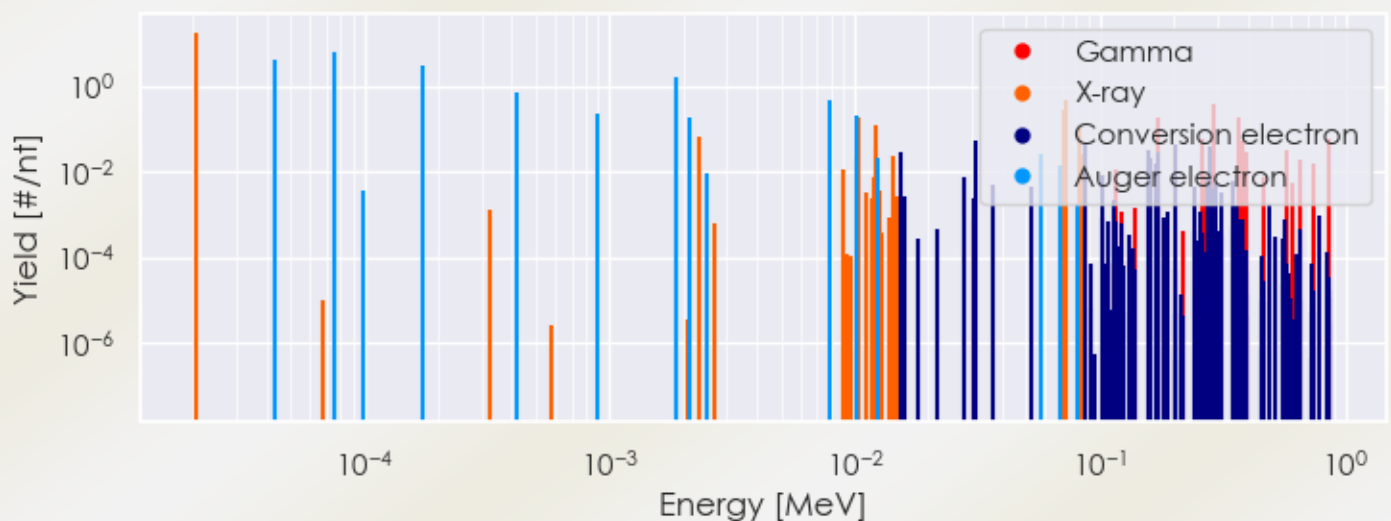
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Pb-198 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-198 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/Pb-198 Summary Spectrum.csv

Energy [MeV]	Yield [# / n _t] if > 0.01	Radiation type
2.07376e-05	1.792e+01	X-ray
2.30075e-03	6.294e-02	X-ray
8.98130e-03	1.147e-02	X-ray
1.01663e-02	2.005e-02	X-ray
1.02661e-02	1.766e-01	X-ray
1.22523e-02	1.168e-01	X-ray
1.22749e-02	3.364e-02	X-ray
1.43396e-02	2.359e-02	X-ray
7.10519e-02	2.874e-01	X-ray
7.31380e-02	4.849e-01	X-ray
8.23884e-02	5.380e-02	X-ray
8.28534e-02	1.041e-01	X-ray
8.50837e-02	1.275e-02	X-ray
8.51979e-02	2.502e-02	X-ray
1.16900e-01	1.170e-02	Gamma
1.73400e-01	1.800e-01	Gamma
2.59500e-01	5.760e-02	Gamma
2.90300e-01	3.600e-01	Gamma
3.65400e-01	1.926e-01	Gamma
3.82000e-01	5.580e-02	Gamma
3.97700e-01	2.880e-02	Gamma
5.75000e-01	3.060e-02	Gamma
6.49000e-01	1.800e-02	Gamma
7.43000e-01	1.458e-02	Gamma
8.65300e-01	5.940e-02	Gamma
4.30175e-05	3.937e+00	Auger electron
7.58078e-05	5.872e+00	Auger electron

1.74567e-04	3.079e+00	Auger electron
4.18928e-04	6.745e-01	Auger electron
8.89617e-04	2.235e-01	Auger electron
1.85937e-03	1.618e+00	Auger electron
2.10511e-03	1.905e-01	Auger electron
7.86069e-03	4.780e-01	Auger electron
1.01531e-02	2.080e-01	Auger electron
1.24739e-02	2.176e-02	Auger electron
1.54700e-02	2.752e-02	Conversion electron
3.11020e-02	5.546e-02	Conversion electron
5.72241e-02	2.491e-02	Auger electron
6.88063e-02	1.355e-02	Auger electron
8.76020e-02	4.231e-02	Conversion electron
1.58654e-01	3.330e-02	Conversion electron
1.60740e-01	2.165e-02	Conversion electron
1.70455e-01	1.588e-02	Conversion electron
1.73702e-01	2.913e-02	Conversion electron
2.04502e-01	4.365e-02	Conversion electron
2.79602e-01	3.840e-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