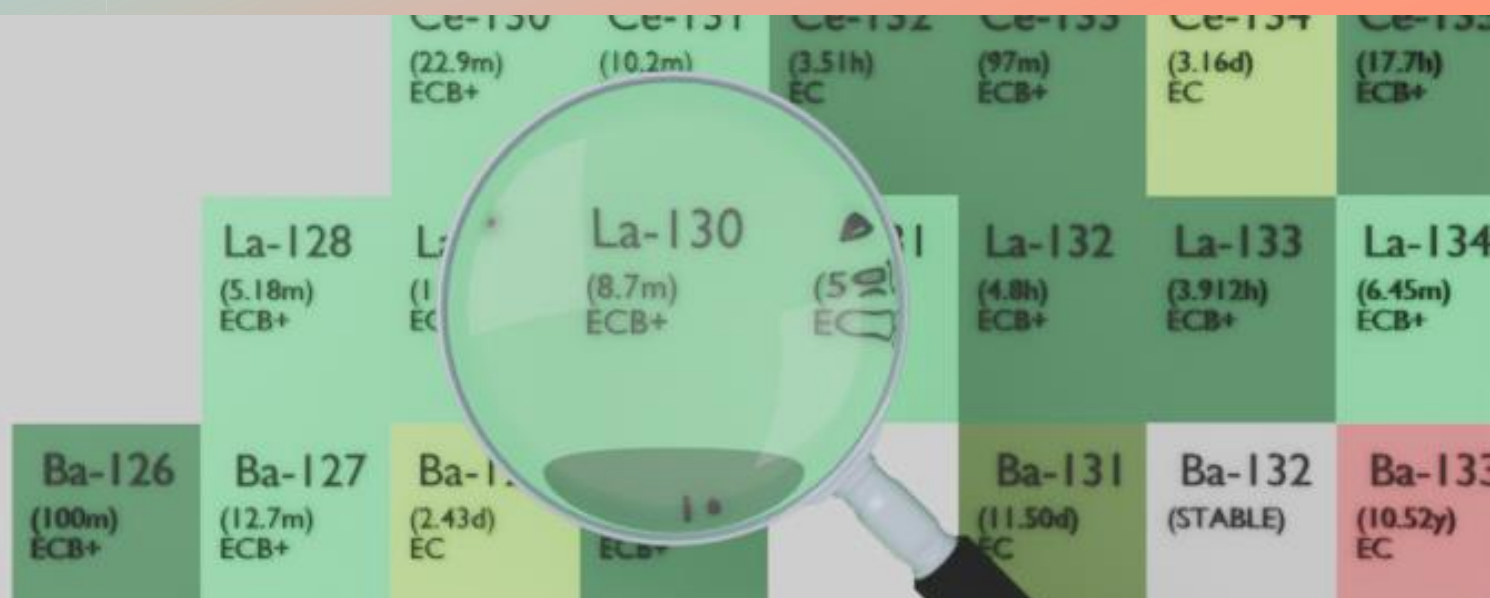




LANTHANUM-130

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: La-130
Atomic number (Z): 57
Mass number (A): 130
Neutron number (N): 73

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 8.7 [m]
Decay constant: 1.3279×10^{-3} [1/s]
Daughters: Ba-130 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 1.11133 [MeV]
Mean photon energy: 2.23242 [MeV]
Air kerma rate constant, Γ_{10} : 5.387×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 8.127×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.781×10^{-13} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

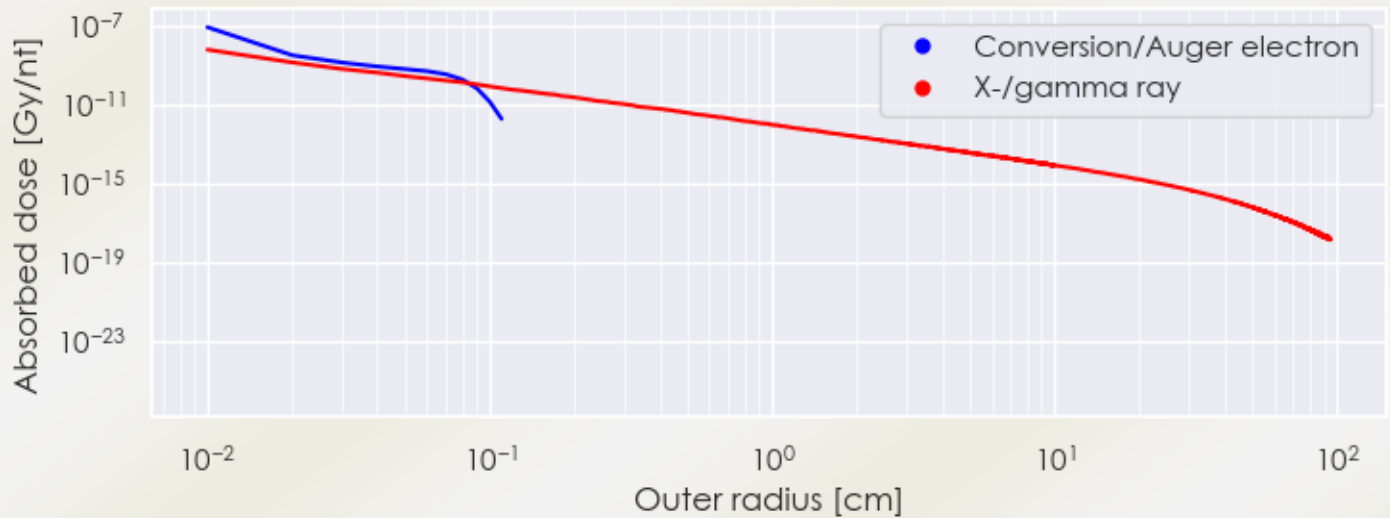
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 1.781×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 3.577×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

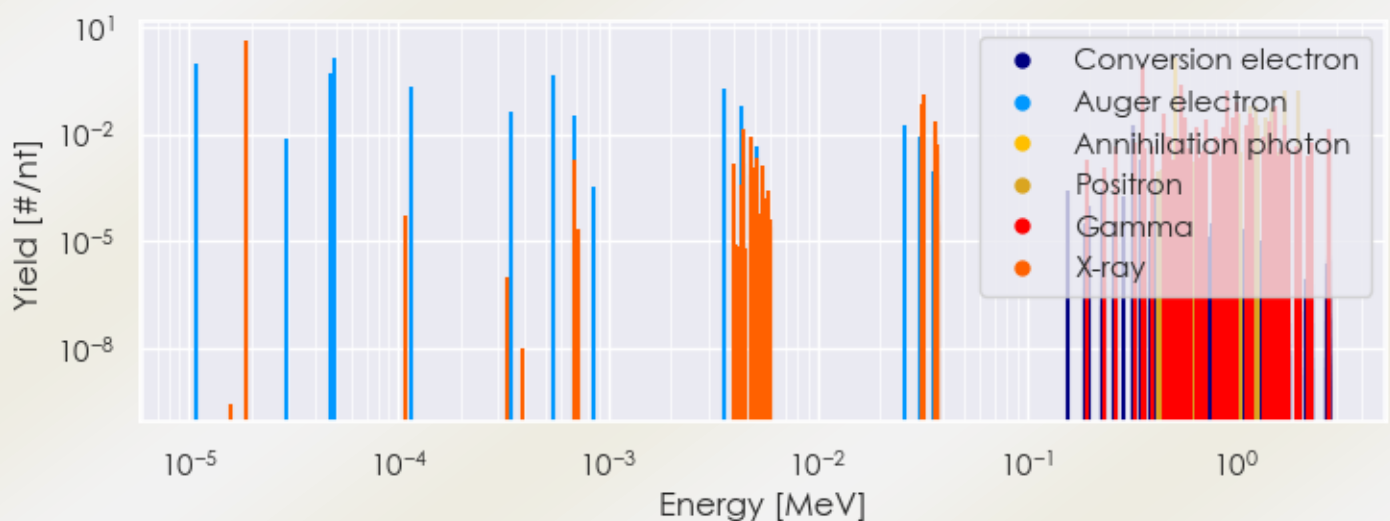
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/La-130 DPK.csv

SUMMARY SPECTRA (PLOT)

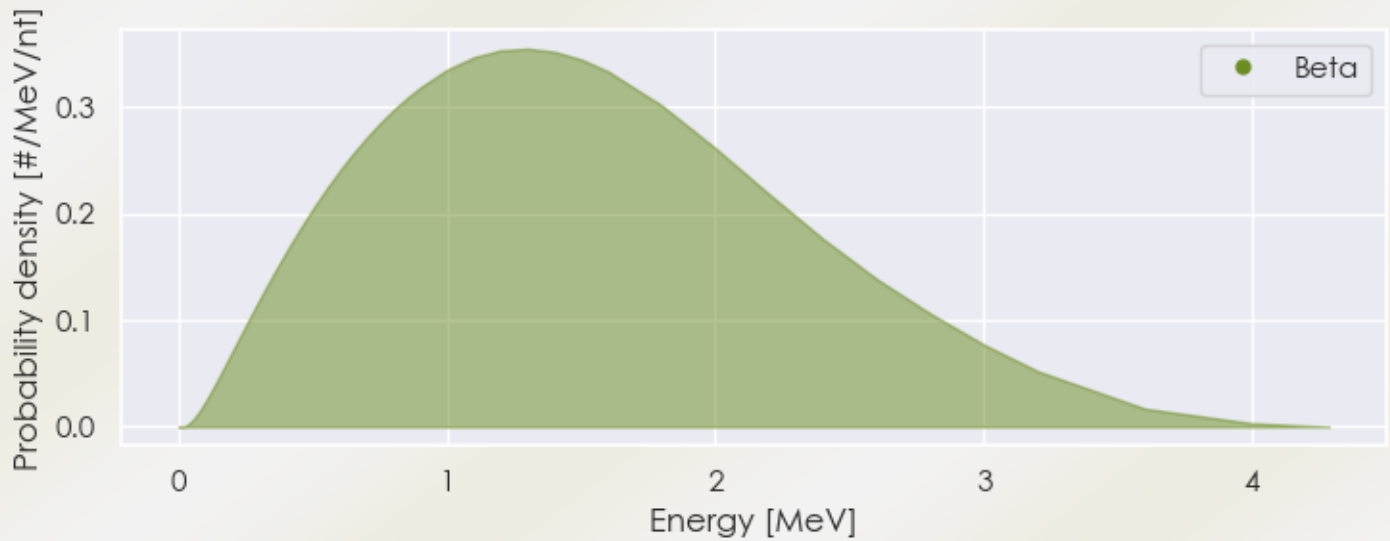
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/La-130 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/La-130 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/La-130 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.86003e-05	4.305e+00	X-ray
4.45292e-03	1.358e-02	X-ray
3.18187e-02	7.094e-02	X-ray
3.22056e-02	1.306e-01	X-ray
3.63167e-02	1.248e-02	X-ray
3.63920e-02	2.419e-02	X-ray
3.57400e-01	8.100e-01	Gamma
4.53200e-01	3.807e-02	Gamma
5.11000e-01	1.416e+00	Annihilation photon
5.44500e-01	1.620e-01	Gamma

5.50700e-01	2.592e-01	Gamma
5.69400e-01	2.835e-02	Gamma
5.75700e-01	2.025e-02	Gamma
6.49600e-01	1.539e-02	Gamma
7.18200e-01	2.754e-02	Gamma
8.69300e-01	1.620e-02	Gamma
9.08000e-01	1.701e-01	Gamma
9.74900e-01	3.078e-02	Gamma
1.00360e+00	7.857e-02	Gamma
1.12020e+00	1.863e-02	Gamma
1.17110e+00	3.726e-02	Gamma
1.17740e+00	2.187e-02	Gamma
1.20010e+00	2.916e-02	Gamma
1.43880e+00	2.268e-02	Gamma
1.52570e+00	6.480e-02	Gamma
1.72170e+00	1.863e-02	Gamma
2.79670e+00	1.296e-02	Gamma
2.81010e+00	1.377e-02	Gamma
8.98711e-01	1.589e-02	Positron
1.03491e+00	3.675e-02	Positron
1.15780e+00	6.437e-02	Positron
1.24836e+00	6.457e-02	Positron
1.26609e+00	1.788e-02	Positron
1.39932e+00	3.079e-02	Positron
1.43656e+00	2.384e-02	Positron
1.49090e+00	5.364e-02	Positron
1.70319e+00	1.788e-01	Positron
1.70610e+00	4.371e-02	Positron
1.96306e+00	1.589e-01	Positron
1.08630e-05	9.186e-01	Auger electron
4.69812e-05	5.330e-01	Auger electron
4.88184e-05	1.457e+00	Auger electron
1.14478e-04	2.106e-01	Auger electron
3.41871e-04	4.255e-02	Auger electron
5.52269e-04	4.759e-01	Auger electron
6.90605e-04	3.504e-02	Auger electron
3.56903e-03	1.867e-01	Auger electron
4.33552e-03	5.966e-02	Auger electron

2.63448e-02	1.739e-02	Auger electron
3.19951e-01	1.756e-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/SNMML-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6