



La-126 (5.18m) ECB+	La-127 (11.6m) ECB+	La-129 (8.7m) ECB+	La-131 (59m) ECB+	La-132 (4.8h) ECB+	La-133 (3.912h) ECB+	La-134 (6.45m) ECB+
Ba-126 (100m) ECB+	Ba-127 (12.7m) ECB+	Ba-129 (2.23h) ECB+	Ba-131 (11.50d) EC	Ba-132 (STABLE)	Ba-133 (10.52y) EC	Ba-134 (6.45m) ECB+
Cs-124 (10.8s) ECB+	Cs-125 (45m) ECB+	Cs-126 (1.64m) ECB+	Cs-129 (6.25h) ECB+	Cs-130 (29.21m) ECB+B-	Cs-131 (9.689d) EC	Cs-132 (6.479d) ECB+B-

BARIUM-129

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ba-129
 Atomic number (Z): 56
 Mass number (A): 129
 Neutron number (N): 73

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
 Half-life: 2.23 [h]
 Decay constant: 8.6341×10^{-5} [1/s]
 Daughters: Cs-129 (100.0%)
 Radioactive daughters: Cs-129

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
 Mean electron energy: 0.127 [MeV]
 Mean photon energy: 0.33313 [MeV]
 Air kerma rate constant, Γ_{10} : 7.611×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
 Air kerma coefficient, K_{air} : 1.478×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
 Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 2.035×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
 Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

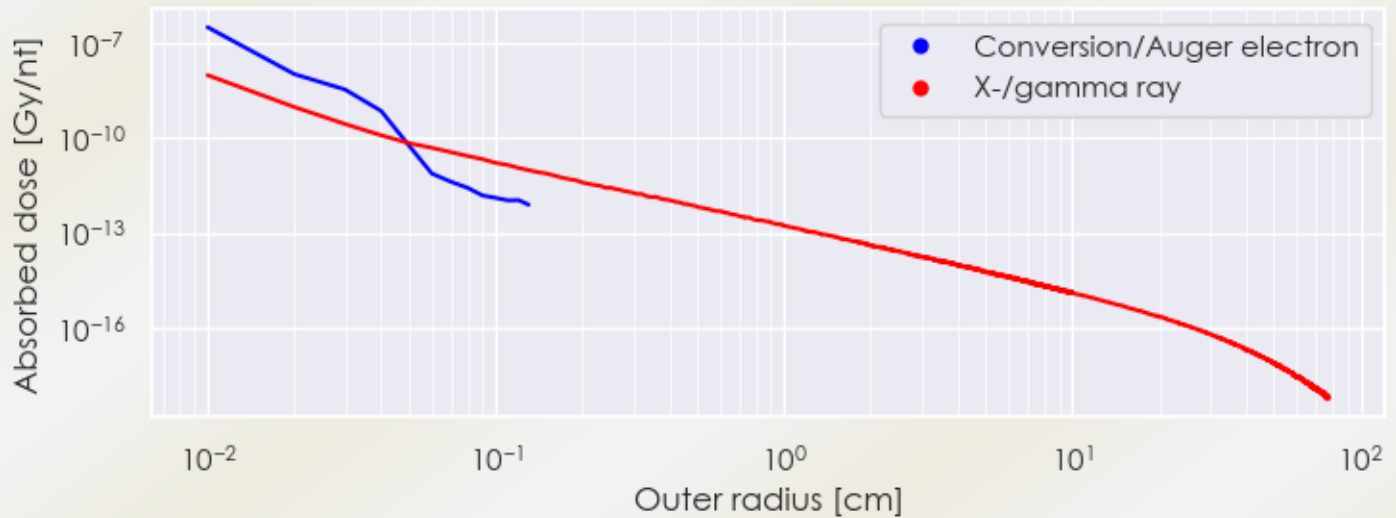
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 2.035×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 5.337×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

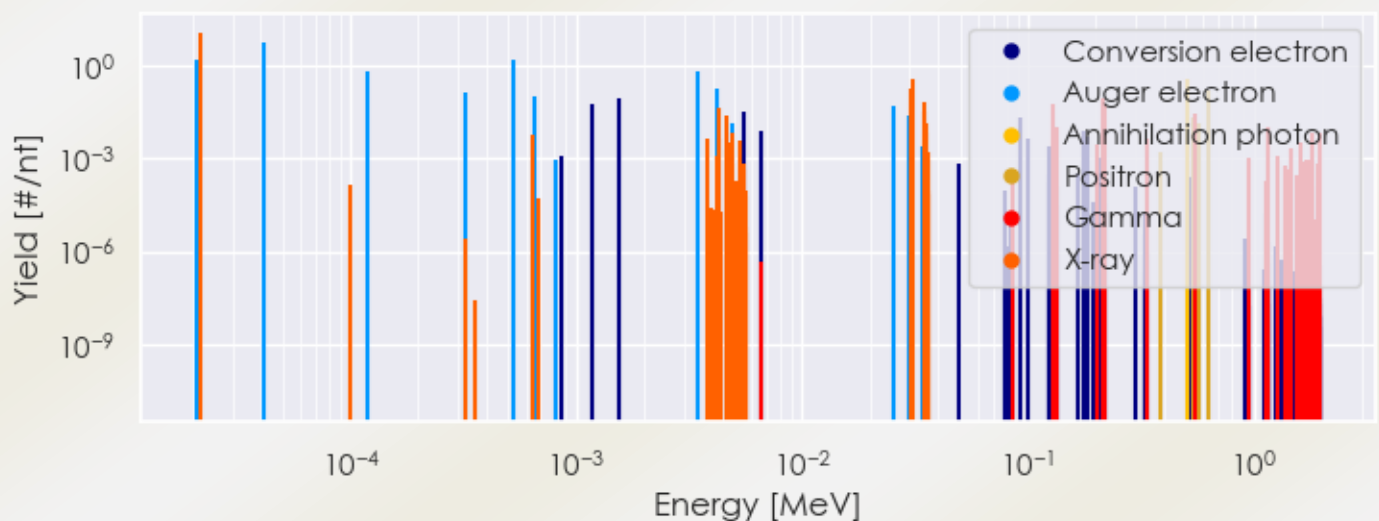
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Ba-129 DPK.csv

SUMMARY SPECTRA (PLOT)

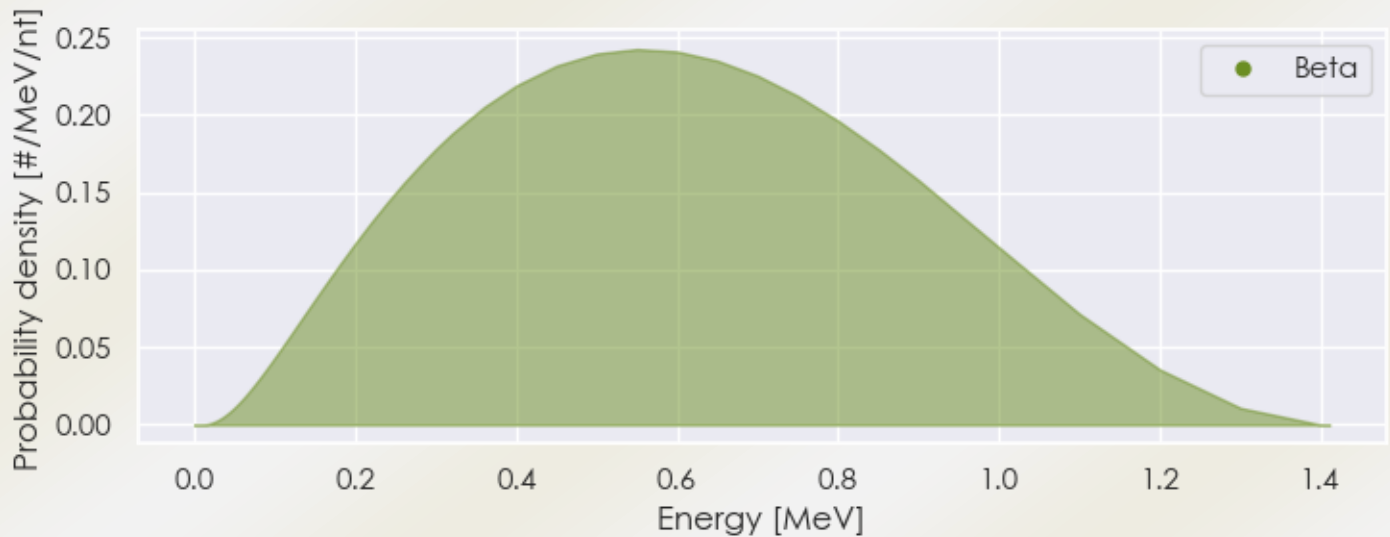
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Ba-129 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/Ba-129 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/Ba-129 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
2.18868e-05	1.185e+01	X-ray
4.27312e-03	4.132e-02	X-ray
4.61551e-03	2.454e-02	X-ray
3.06218e-02	1.892e-01	X-ray
3.09789e-02	3.493e-01	X-ray
3.49256e-02	3.310e-02	X-ray
3.49944e-02	6.415e-02	X-ray
3.58172e-02	1.357e-02	X-ray
1.29140e-01	5.510e-02	Gamma
1.35610e-01	1.000e-02	Gamma

2.14300e-01	8.500e-02	Gamma
2.20830e-01	5.400e-02	Gamma
5.11000e-01	3.703e-01	Annihilation photon
5.54100e-01	2.940e-02	Gamma
1.16460e+00	1.100e-02	Gamma
5.35487e-01	1.996e-02	Positron
5.73261e-01	1.397e-02	Positron
6.33617e-01	1.497e-01	Positron
2.08693e-05	1.575e+00	Auger electron
4.14316e-05	5.625e+00	Auger electron
1.19594e-04	6.894e-01	Auger electron
3.24208e-04	1.256e-01	Auger electron
5.28162e-04	1.552e+00	Auger electron
6.52472e-04	1.017e-01	Auger electron
1.18680e-03	5.517e-02	Conversion electron
1.54390e-03	8.771e-02	Conversion electron
3.44239e-03	6.087e-01	Auger electron
4.16297e-03	1.877e-01	Auger electron
4.91187e-03	1.444e-02	Auger electron
5.55932e-03	3.060e-02	Conversion electron
2.53980e-02	4.961e-02	Auger electron
2.98089e-02	2.255e-02	Auger electron
9.31550e-02	2.140e-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