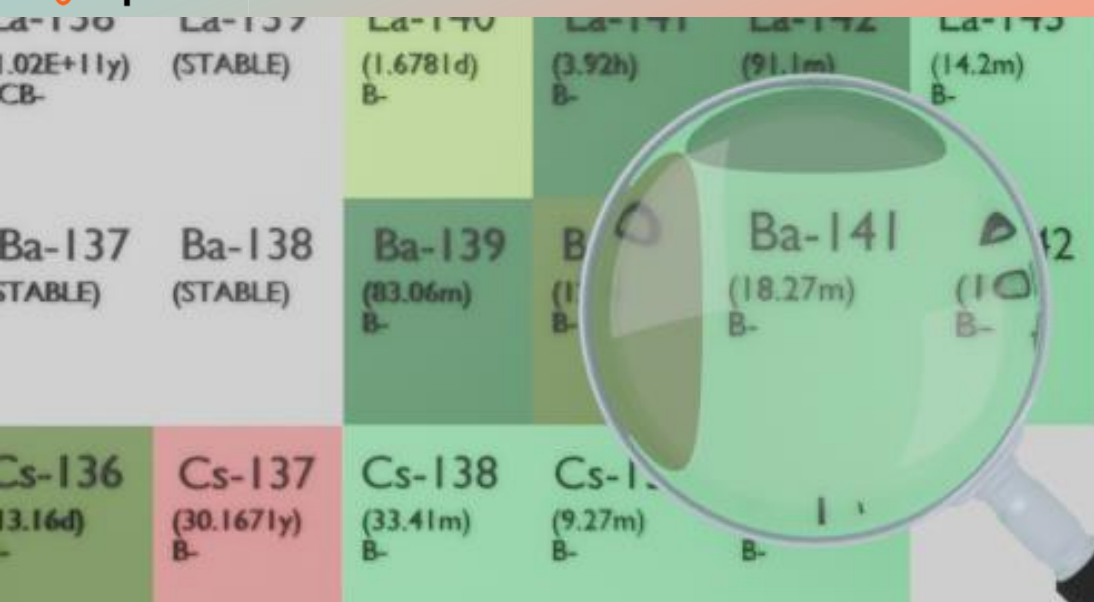




BARIUM-141

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ba-141
Atomic number (Z): 56
Mass number (A): 141
Neutron number (N): 85

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 18.27 [m]
Decay constant: $6.3232\text{e-}04$ [1/s]
Daughters: La-141 (100.0%)
Radioactive daughters: La-141

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.96241 [MeV]
Mean photon energy: 0.9271 [MeV]
Air kerma rate constant, Γ_{10} : $3.292\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Air kerma coefficient, K_{air} : $3.292\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $1.542\text{e-}13$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]

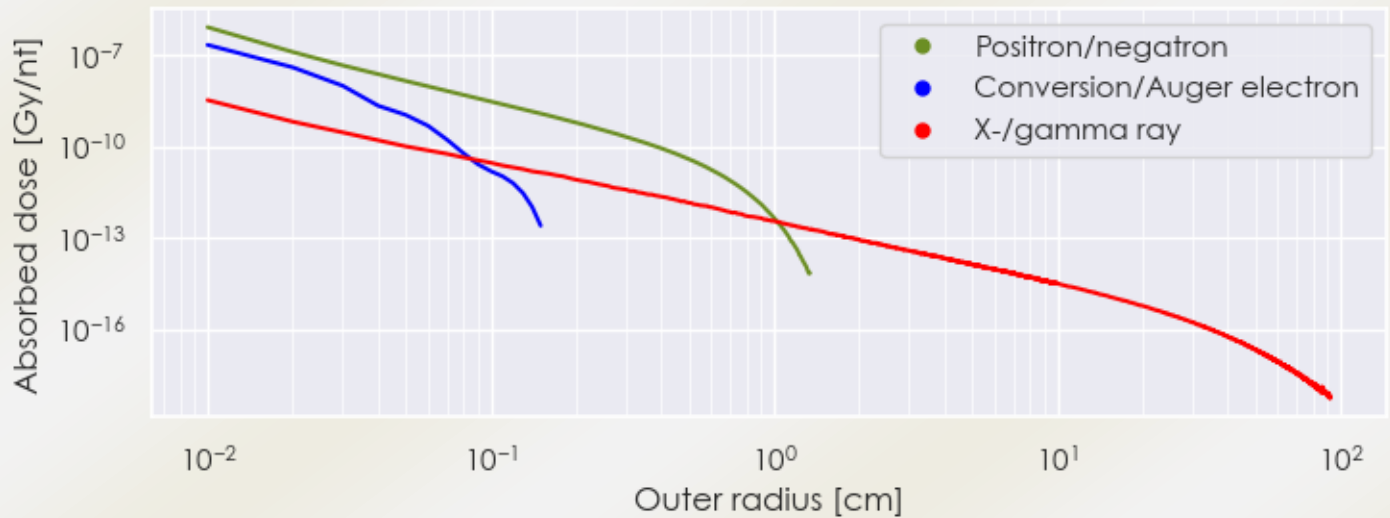
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 1.542×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.485×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

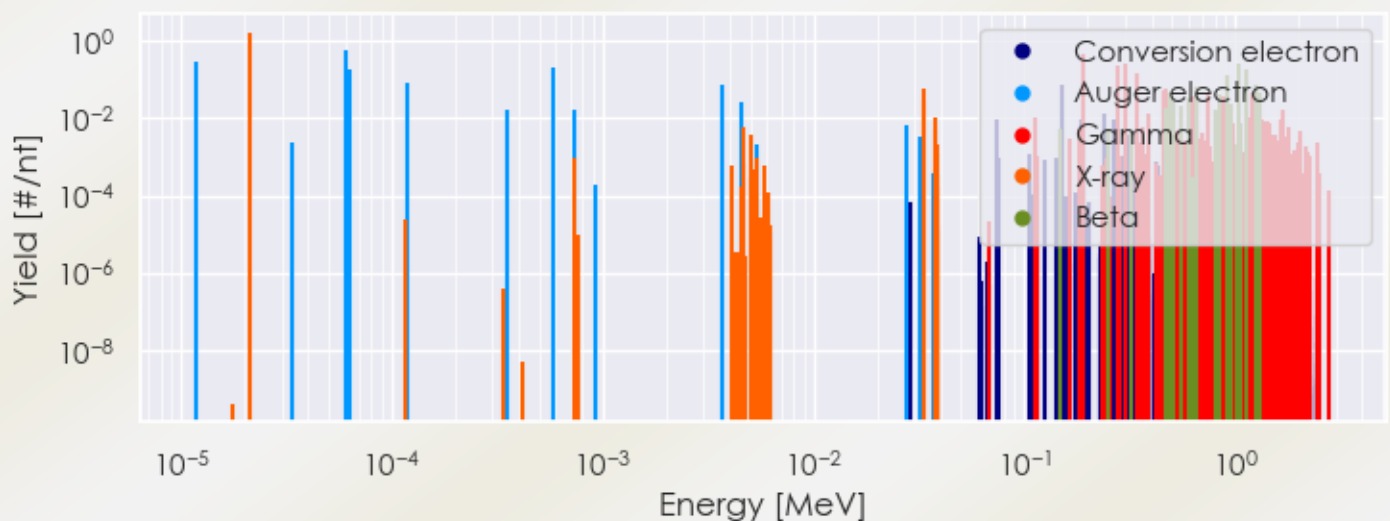
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Ba-141 DPK.csv

SUMMARY SPECTRA (PLOT)

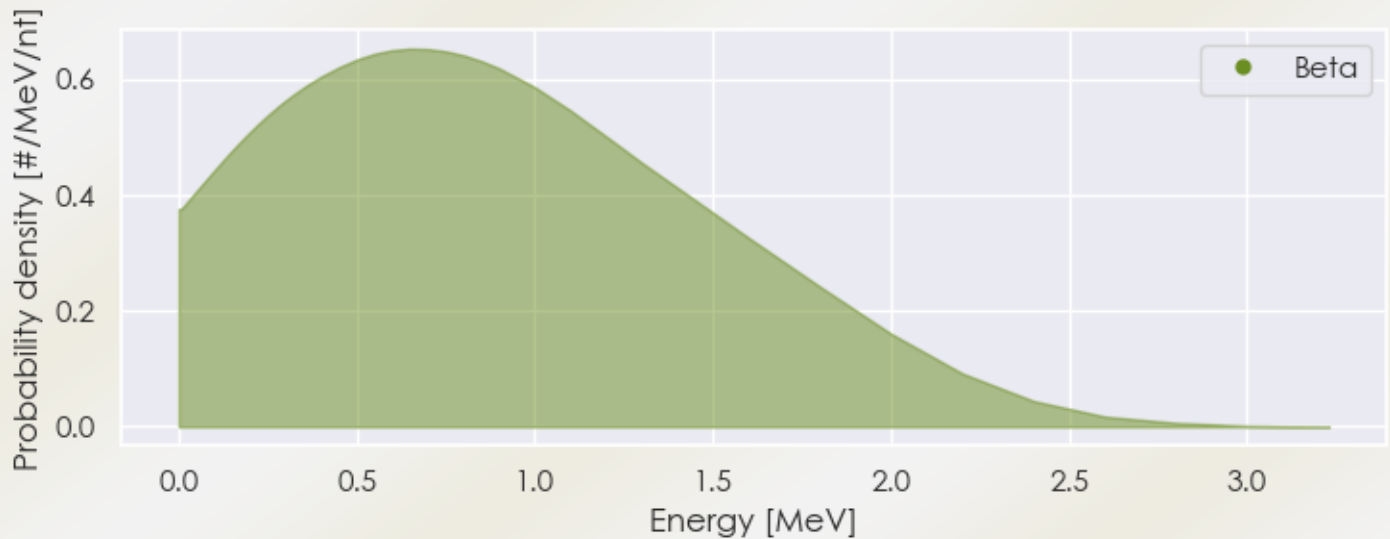
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Ba-141 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-141 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-141 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
2.10723e-05	1.670e+00	X-ray
3.30405e-02	3.004e-02	X-ray
3.34591e-02	5.517e-02	X-ray
3.78202e-02	1.030e-02	X-ray
1.12800e-01	1.012e-02	Gamma
1.90328e-01	4.600e-01	Gamma
2.76950e-01	2.341e-01	Gamma
3.04190e-01	2.544e-01	Gamma
3.43670e-01	1.444e-01	Gamma
3.90000e-01	1.334e-02	Gamma

4.57800e-01	5.014e-02	Gamma
4.62300e-01	4.876e-02	Gamma
4.67500e-01	5.704e-02	Gamma
6.25400e-01	3.588e-02	Gamma
6.48100e-01	6.302e-02	Gamma
7.39200e-01	4.830e-02	Gamma
8.31700e-01	1.615e-02	Gamma
8.76300e-01	3.680e-02	Gamma
1.16080e+00	1.104e-02	Gamma
1.19730e+00	4.784e-02	Gamma
1.68230e+00	1.702e-02	Gamma
4.69249e-01	1.919e-02	Beta
4.91997e-01	4.545e-02	Beta
5.04171e-01	2.929e-02	Beta
5.48687e-01	2.121e-02	Beta
5.97608e-01	3.232e-02	Beta
6.53103e-01	6.868e-02	Beta
7.99752e-01	1.616e-02	Beta
8.47342e-01	3.939e-02	Beta
9.09427e-01	1.313e-01	Beta
9.53784e-01	2.222e-02	Beta
1.03775e+00	2.525e-01	Beta
1.12059e+00	1.767e-01	Beta
1.24827e+00	7.373e-02	Beta
1.32031e+00	4.444e-02	Beta
1.18532e-05	2.919e-01	Auger electron
6.07121e-05	5.817e-01	Auger electron
6.29320e-05	1.840e-01	Auger electron
1.17828e-04	8.201e-02	Auger electron
3.53776e-04	1.743e-02	Auger electron
5.79482e-04	1.955e-01	Auger electron
7.29881e-04	1.686e-02	Auger electron
3.69567e-03	7.689e-02	Auger electron
4.50915e-03	2.543e-02	Auger electron
1.51385e-01	7.208e-02	Conversion electron
2.38007e-01	1.342e-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