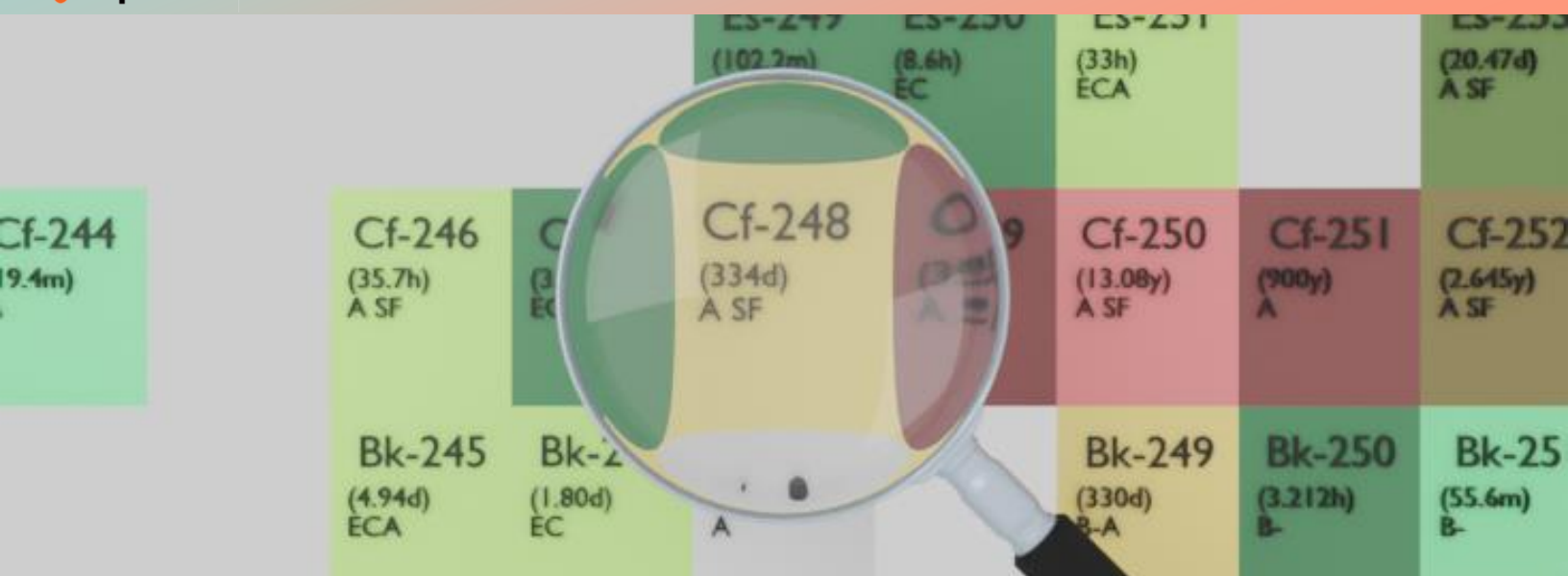




CALIFORNIUM-248

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Cf-248
Atomic number (Z): 98
Mass number (A): 248
Neutron number (N): 150

RADIOACTIVE DECAY

Decay modes: α , Spontaneous fission
Half-life: 334.0 [d]
Decay constant: $2.4020\text{e-}08$ [1/s]
Daughters: Cm-244 (100.0%), SF (0.0029%)
Radioactive daughters: Cm-244

DOSIMETRIC CONSTANTS

Mean alpha energy: 6.3518 [MeV]
Mean electron energy: 0.00745 [MeV]
Mean photon energy: 0.00202 [MeV]
Air kerma rate constant, Γ_{10} : $1.566\text{e-}18$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : $1.627\text{e-}18$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $1.019\text{e-}12$ [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : $1.018\text{e-}12$ [Gy $\cdot$ kg/Bq $\cdot$ s]

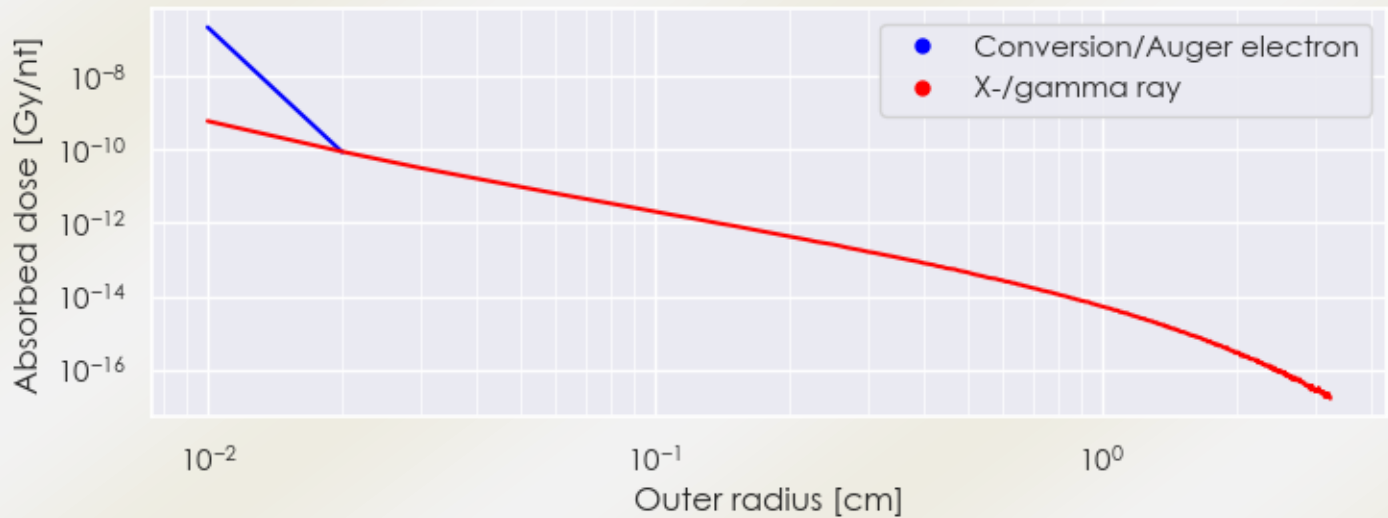
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 1.194×10^{-15} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 3.236×10^{-16} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

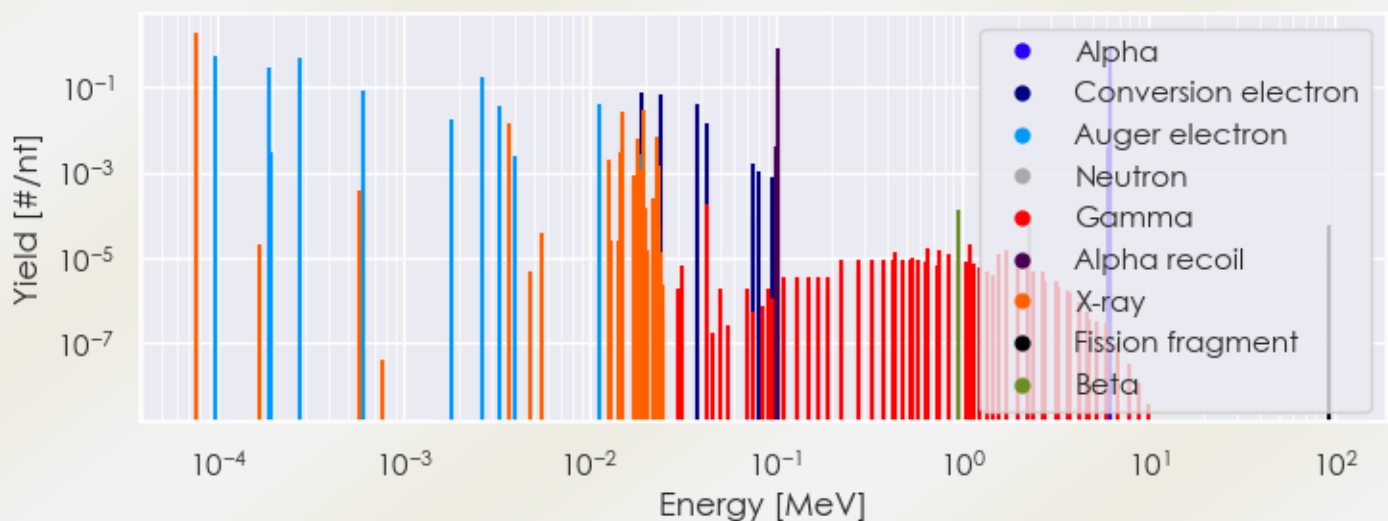
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Cf-248 DPK.csv

SUMMARY SPECTRA (PLOT)

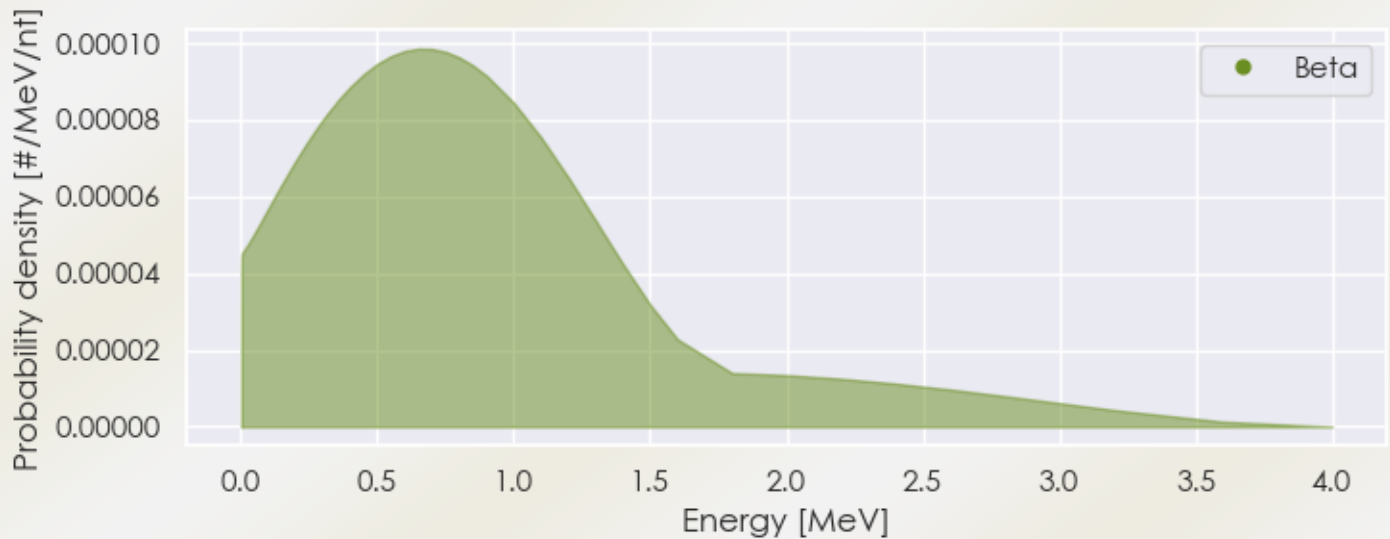
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Cf-248 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/Cf-248 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/Cf-248 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
7.76503e-05	1.967e+00	X-ray
3.66085e-03	1.389e-02	X-ray
1.49784e-02	2.750e-02	X-ray
1.95388e-02	3.049e-02	X-ray
9.71088e-05	5.565e-01	Auger electron
1.90619e-04	2.979e-01	Auger electron
2.79661e-04	5.161e-01	Auger electron
6.01070e-04	8.531e-02	Auger electron
1.79581e-03	1.787e-02	Auger electron
2.67809e-03	1.669e-01	Auger electron

3.27247e-03	3.697e-02	Auger electron
1.12875e-02	4.071e-02	Auger electron
1.50609e-02	2.154e-02	Auger electron
1.91890e-02	7.654e-02	Conversion electron
2.39710e-02	6.510e-02	Conversion electron
3.81360e-02	4.025e-02	Conversion electron
4.29650e-02	1.501e-02	Conversion electron
6.21607e+00	1.960e-01	Alpha
6.25834e+00	8.000e-01	Alpha
1.01969e-01	1.960e-01	Alpha recoil
1.02662e-01	8.000e-01	Alpha recoil

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