



Am-237 (2.9h) CB+	Am-240 (27d) A SF	Am-241 (32.8d) ECA	Am-242 (162.8d) A SF	Am-243 (29.1y) A SF	Am-244 (18.10y) A SF	Am-245 (8.5E+3y) A SF	Am-246 (4.76E+3y) A SF	Am-247 (1.56E+7y) A
Am-238 (98m) CB+A	Am-239 (11.9h) ECA	Am-240 (50.8h) ECA	Am-241 (4.8h) A	Am-242m (141y) ITA	Am-243 (7.37y) A	Am-244 (10.1h) B-	Am-245 (2.05h) B-	Am-246 (39m) B-
Pu-237 (45.2d) CA	Pu-238 (87.7y) A SF	Pu-239 (2.411E+4y) A	Pu-240 (6564y) A SF	Pu-241 (13.2h) B-A	Pu-242 (3.75E+5y) A SF	Pu-243 (4.956h) B-	Pu-244 (8.00E+7y) A SF	Pu-245 (10.5h) B-

AMERICIUM-242M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Am-242m

Atomic number (Z): 95

Mass number (A): 242

Neutron number (N): 147

RADIOACTIVE DECAY

Decay modes: α , Internal transition

Half-life: 141.0 [y]

Decay constant: $1.5578\text{e-}10$ [1/s]

Daughters: Am-242 (99.6%), Np-238 (0.45%)

Radioactive daughters: Am-242, Np-238

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0238 [MeV]

Mean electron energy: 0.04389 [MeV]

Mean photon energy: 0.00562 [MeV]

Air kerma rate constant, Γ_{10} : $5.195\text{e-}18$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]

Air kerma coefficient, K_{air} : $5.195\text{e-}18$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]

Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $1.085\text{e-}14$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]

Equilibrium dose constant for alphas, Δ_{α} : $3.813\text{e-}15$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]

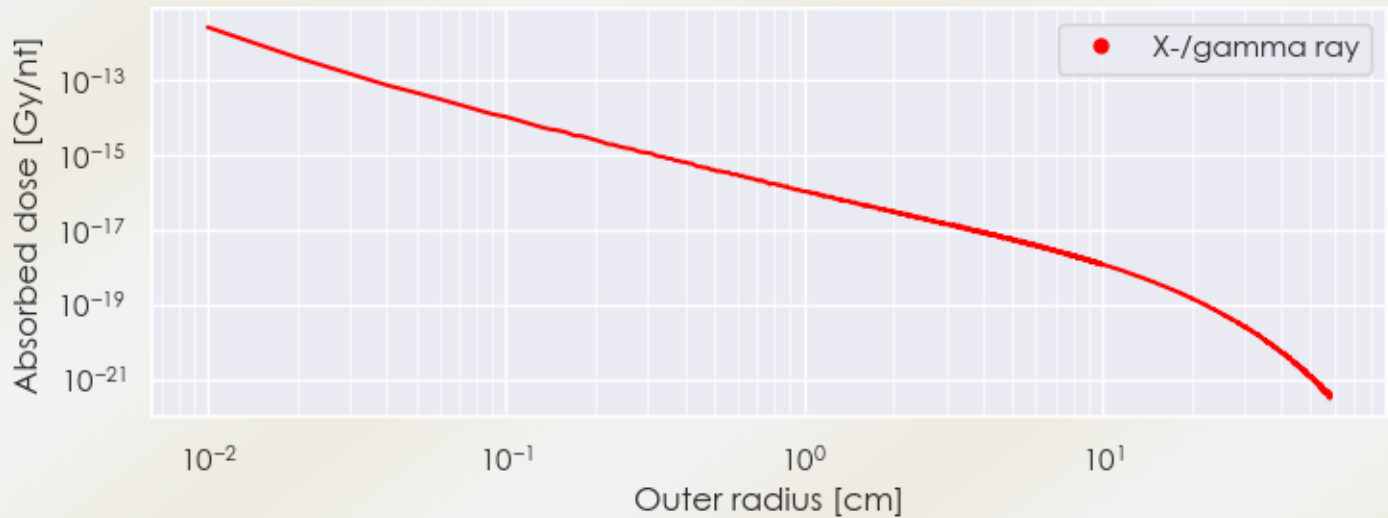
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: $7.032\text{e-}15$ [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : $9.004\text{e-}16$ [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

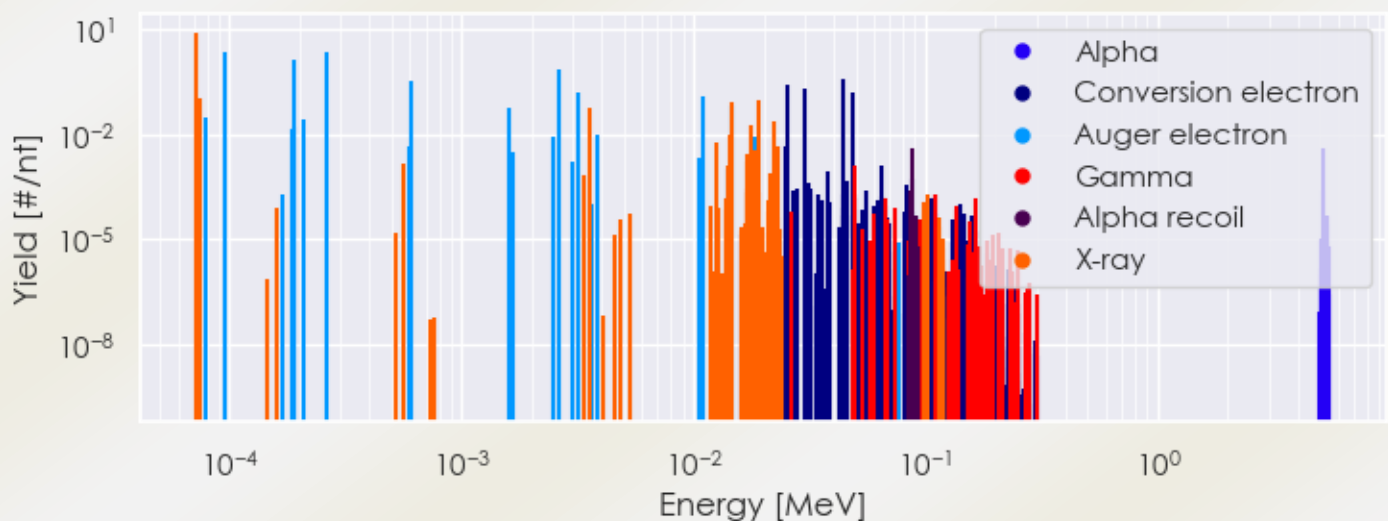
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Am-242m 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/Am-242m 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/Am-242m Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Am-242m%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [# /n ^t] if > 0.01	Radiation type
7.22611e-05	8.565e+00	X-ray
7.44116e-05	1.060e-01	X-ray
3.56046e-03	5.805e-02	X-ray
1.46345e-02	8.415e-02	X-ray
1.77003e-02	1.803e-02	X-ray
1.89584e-02	9.715e-02	X-ray
2.21841e-02	2.262e-02	X-ray
7.89523e-05	3.110e-02	Auger electron
9.53701e-05	2.397e+00	Auger electron
1.84239e-04	1.427e-02	Auger electron
1.89894e-04	1.356e+00	Auger electron
1.91160e-04	1.605e-02	Auger electron
2.09923e-04	2.784e-02	Auger electron
2.61562e-04	2.246e+00	Auger electron
6.07434e-04	3.526e-01	Auger electron
1.61180e-03	5.623e-02	Auger electron
2.62692e-03	7.234e-01	Auger electron
3.19175e-03	1.547e-01	Auger electron
1.10684e-02	1.304e-01	Auger electron
1.47297e-02	6.836e-02	Auger electron
2.55680e-02	2.539e-01	Conversion electron
3.01030e-02	2.042e-01	Conversion electron
4.39445e-02	3.791e-01	Conversion electron
4.86300e-02	1.537e-01	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