



POTASSIUM-44

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: K-44
Atomic number (Z): 19
Mass number (A): 44
Neutron number (N): 25

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 22.13 [m]
Decay constant: $5.2203\text{e-}04$ [1/s]
Daughters: Ca-44 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 1.45667 [MeV]
Mean photon energy: 2.38464 [MeV]
Air kerma rate constant, Γ_{10} : $7.412\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Air kerma coefficient, K_{air} : $7.412\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $2.334\text{e-}13$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]

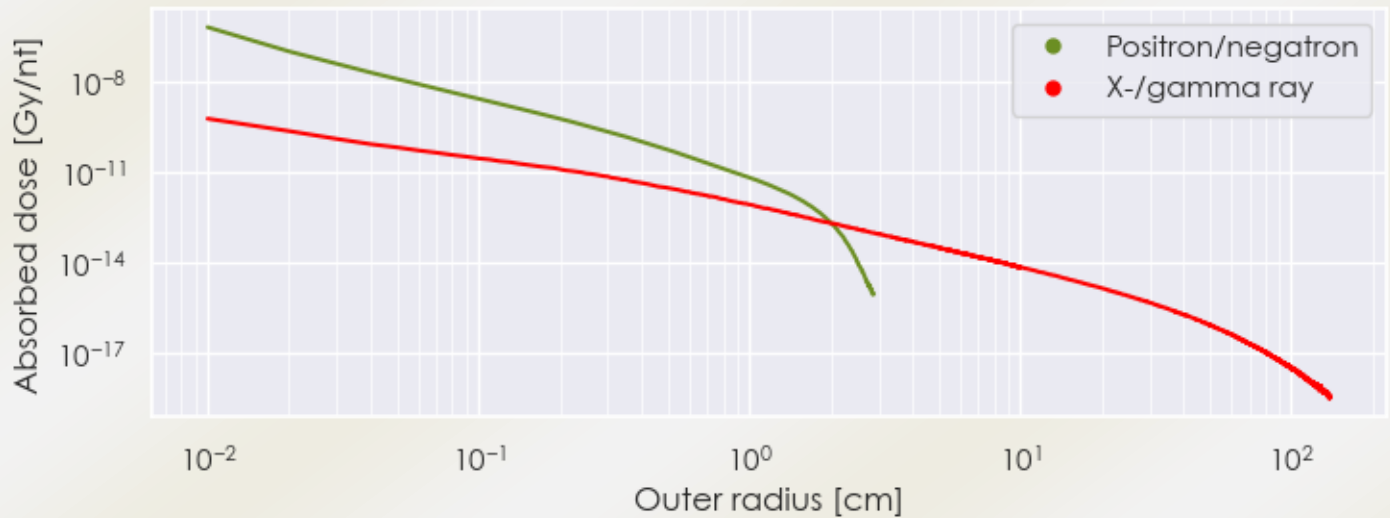
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 2.334×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 3.821×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

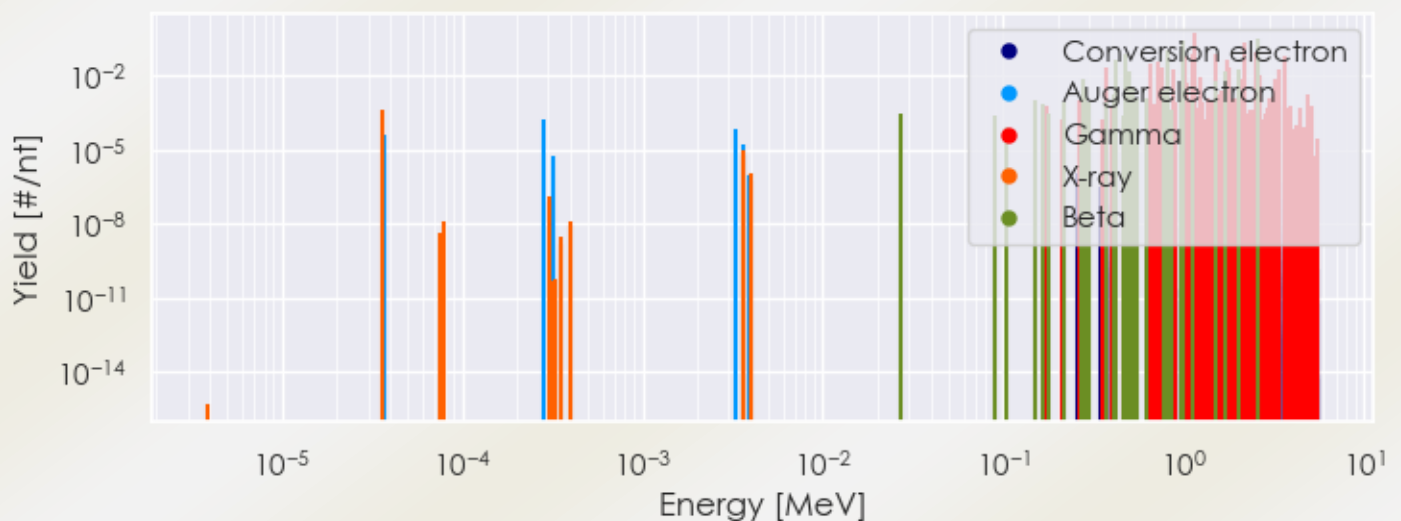
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/K-44 DPK.csv

SUMMARY SPECTRA (PLOT)

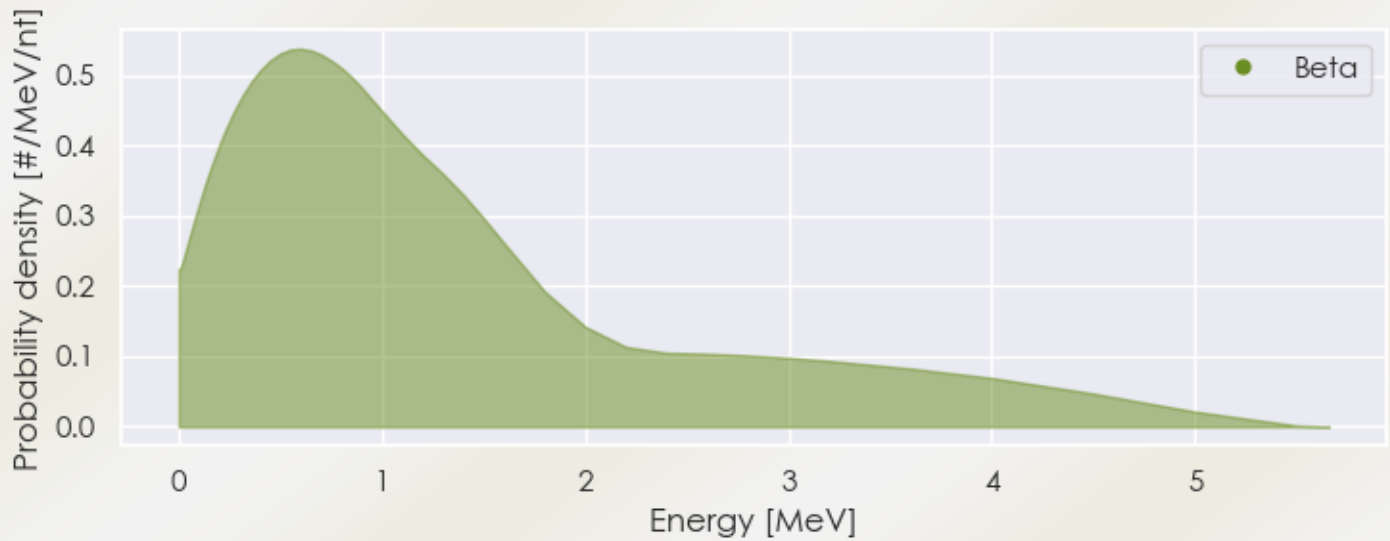
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/K-44 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/K-44 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/K-44 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
3.68207e-01	2.250e-02	Gamma
6.51355e-01	3.016e-02	Gamma
7.26490e-01	3.770e-02	Gamma
7.47630e-01	2.088e-02	Gamma
8.76530e-01	1.728e-02	Gamma
1.02474e+00	6.670e-02	Gamma
1.12608e+00	7.598e-02	Gamma
1.15700e+00	5.800e-01	Gamma
1.49945e+00	7.830e-02	Gamma
1.75263e+00	4.060e-02	Gamma

1.77797e+00	2.117e-02	Gamma
2.15079e+00	2.268e-01	Gamma
2.51899e+00	9.686e-02	Gamma
3.39551e+00	1.665e-02	Gamma
3.66136e+00	6.090e-02	Gamma
4.17709e-01	4.319e-02	Beta
4.80749e-01	7.231e-02	Beta
5.03339e-01	1.507e-02	Beta
8.15721e-01	1.105e-01	Beta
8.22516e-01	6.227e-02	Beta
9.88810e-01	2.862e-01	Beta
1.68598e+00	1.507e-02	Beta
2.02614e+00	1.707e-02	Beta
2.60063e+00	3.415e-01	Beta

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