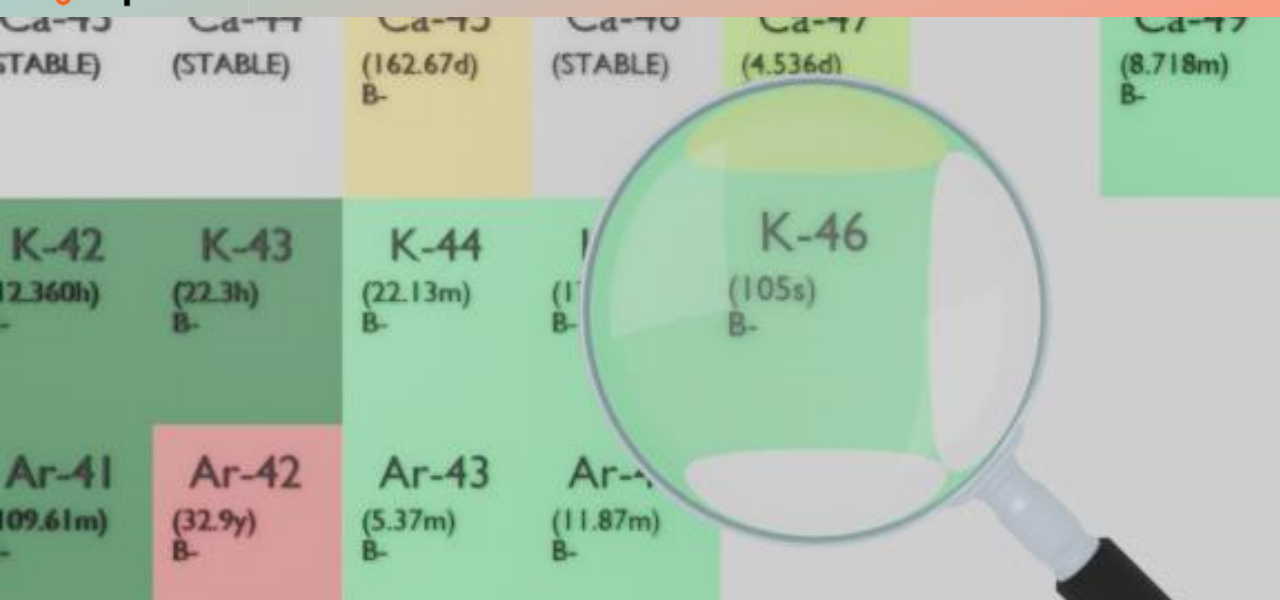




POTASSIUM-46

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: K-46
Atomic number (Z): 19
Mass number (A): 46
Neutron number (N): 27

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 105.0 [s]
Decay constant: $6.6014\text{e-}03$ [1/s]
Daughters: Ca-46 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 2.31611 [MeV]
Mean photon energy: 2.87096 [MeV]
Air kerma rate constant, Γ_{10} : $8.494\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : $8.494\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $3.711\text{e-}13$ [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [Gy $\cdot$ kg/Bq $\cdot$ s]

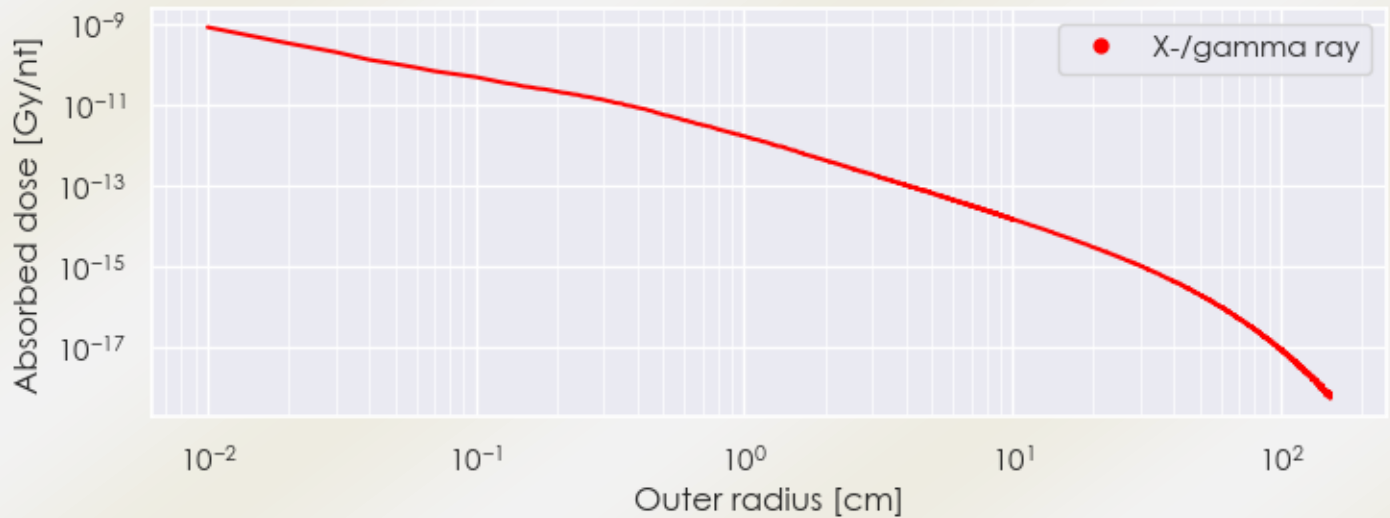
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta+, e^-}$: 3.711×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 4.600×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

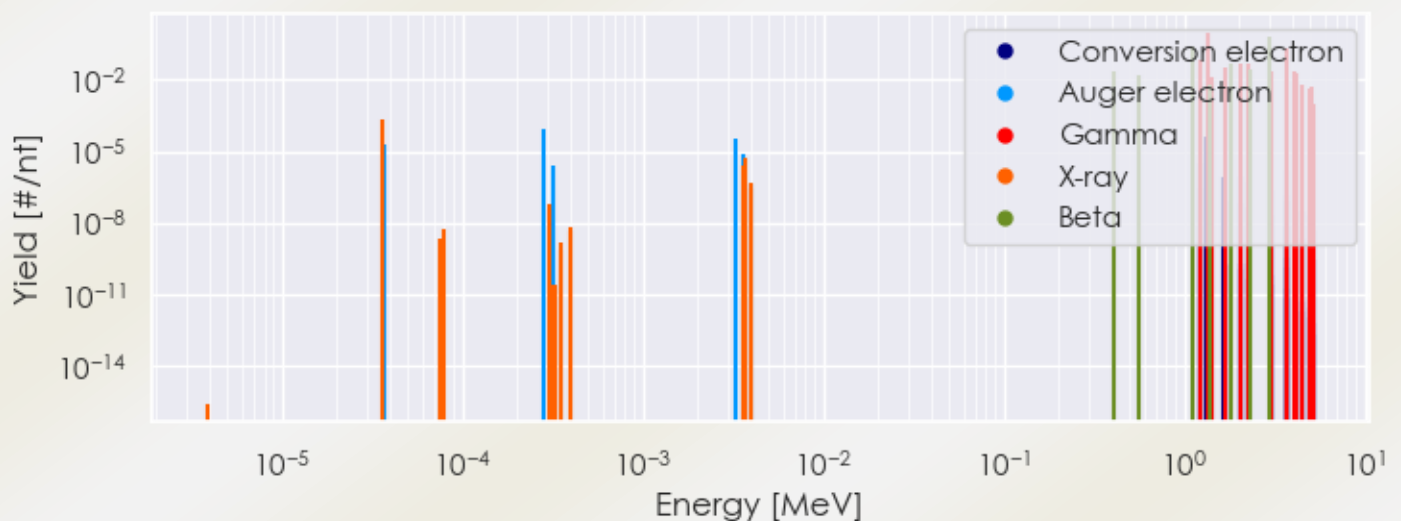
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/K-46 DPK.csv

SUMMARY SPECTRA (PLOT)

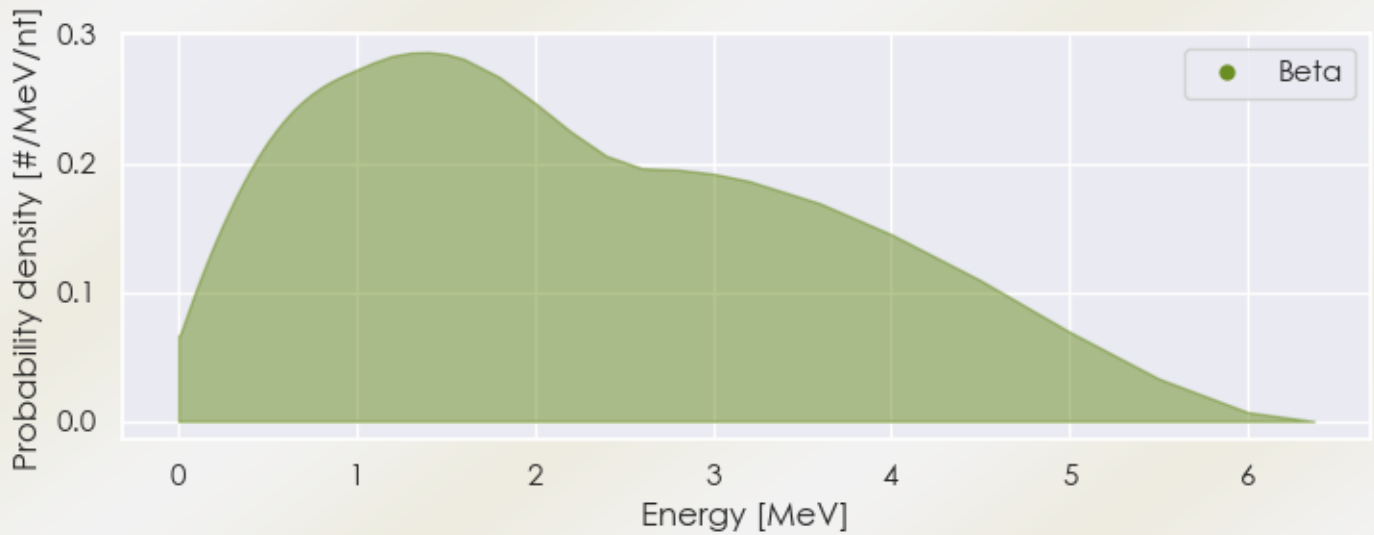
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/K-46 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-46 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-46 Summary Spectrum.csv

Energy [MeV]	Yield [# /nt] if > 0.01	Radiation type
1.23500e+00	6.400e-02	Gamma
1.34500e+00	1.000e+00	Gamma
1.43500e+00	1.200e-02	Gamma
1.67500e+00	3.500e-02	Gamma
2.06000e+00	4.500e-02	Gamma
2.28500e+00	5.100e-02	Gamma
3.02000e+00	2.200e-02	Gamma
3.71000e+00	1.100e-02	Gamma
3.73500e+00	2.140e-01	Gamma
4.07500e+00	2.100e-02	Gamma

4.23000e+00	1.900e-02	Gamma
4.10996e-01	2.096e-02	Beta
5.57382e-01	1.497e-02	Beta
1.12407e+00	2.495e-01	Beta
1.82347e+00	4.990e-02	Beta
2.34547e+00	2.994e-02	Beta
2.94090e+00	6.287e-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/SNMML-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6