



RHODIUM-96

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Rh-96
Atomic number (Z): 45
Mass number (A): 96
Neutron number (N): 51

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 9.9 [m]
Decay constant: 1.1669×10^{-3} [1/s]
Daughters: Ru-96 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.74193 [MeV]
Mean photon energy: 3.92656 [MeV]
Air kerma rate constant, Γ_{10} : 1.177×10^{-16} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 1.446×10^{-16} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.189×10^{-13} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

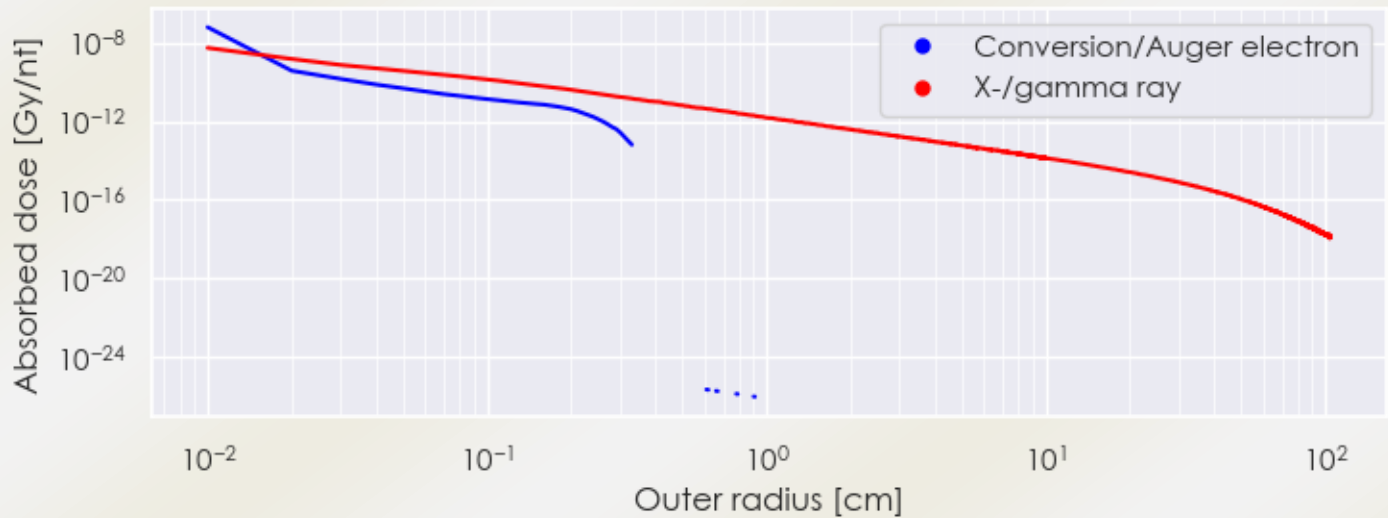
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 1.189×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 6.291×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

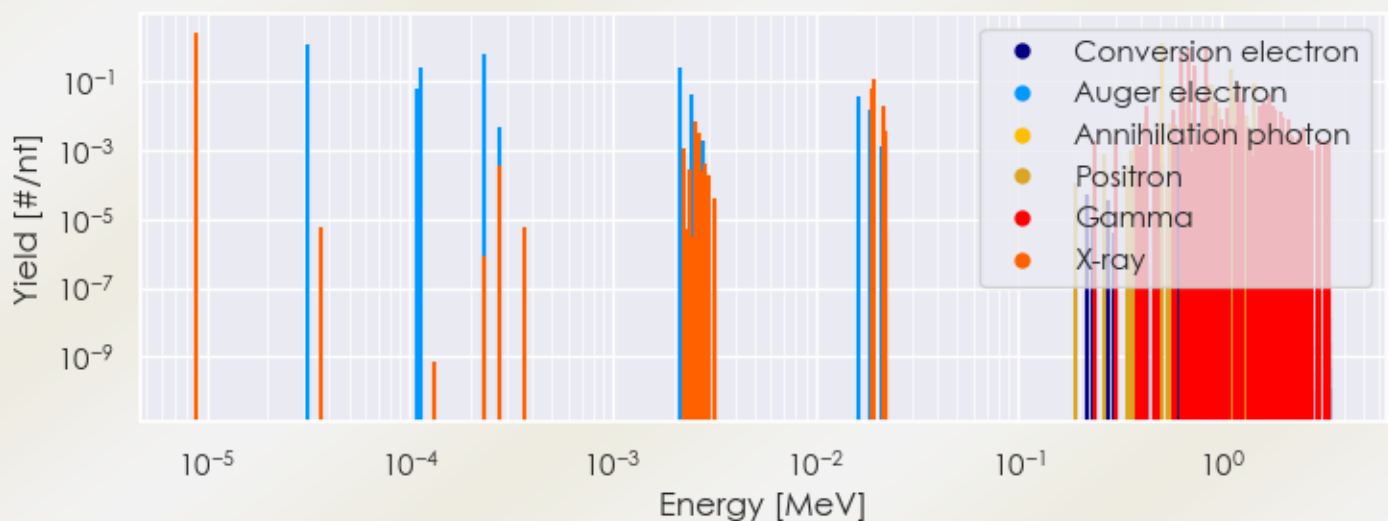
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Rh-96 DPK.csv

SUMMARY SPECTRA (PLOT)

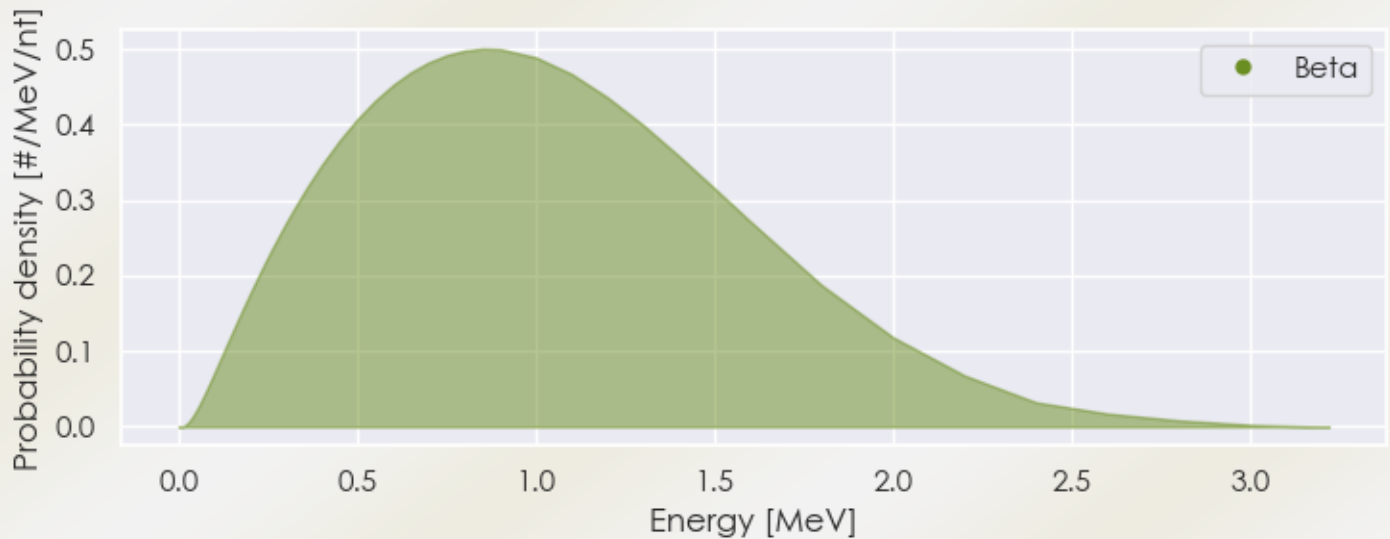
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Rh-96 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/Rh-96 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/Rh-96 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
8.90920e-06	2.775e+00	X-ray
1.91152e-02	6.220e-02	X-ray
1.92483e-02	1.180e-01	X-ray
2.16277e-02	1.926e-02	X-ray
4.30180e-01	2.070e-02	Gamma
5.11000e-01	1.389e+00	Annihilation photon
5.86620e-01	1.530e-02	Gamma
6.31730e-01	7.450e-01	Gamma
6.44160e-01	4.570e-02	Gamma
6.85470e-01	9.570e-01	Gamma

7.41870e-01	2.940e-01	Gamma
8.00700e-01	3.320e-02	Gamma
8.32520e-01	1.000e+00	Gamma
9.15200e-01	1.030e-02	Gamma
9.44070e-01	2.430e-02	Gamma
1.07035e+00	1.830e-02	Gamma
1.22785e+00	7.800e-02	Gamma
1.23066e+00	7.200e-02	Gamma
1.24214e+00	1.290e-02	Gamma
1.27576e+00	3.070e-02	Gamma
1.55672e+00	1.920e-02	Gamma
1.60540e+00	2.650e-02	Gamma
1.64866e+00	2.060e-02	Gamma
1.69230e+00	2.160e-02	Gamma
1.73745e+00	4.470e-02	Gamma
1.78860e+00	1.960e-02	Gamma
1.85970e+00	1.610e-02	Gamma
1.96319e+00	1.270e-02	Gamma
6.58219e-01	2.457e-02	Positron
7.17799e-01	1.508e-02	Positron
7.39857e-01	1.476e-02	Positron
8.88392e-01	8.121e-02	Positron
8.89739e-01	7.920e-02	Positron
9.22225e-01	1.034e-02	Positron
9.86672e-01	1.687e-02	Positron
1.11399e+00	2.320e-01	Positron
1.15947e+00	4.851e-02	Positron
1.25537e+00	1.687e-02	Positron
1.32692e+00	1.044e-02	Positron
1.46143e+00	9.386e-02	Positron
3.14528e-05	1.151e+00	Auger electron
1.07951e-04	5.966e-02	Auger electron
1.14215e-04	2.603e-01	Auger electron
2.31914e-04	6.372e-01	Auger electron
2.15880e-03	2.486e-01	Auger electron
2.46831e-03	4.237e-02	Auger electron
1.61570e-02	3.923e-02	Auger electron
1.86981e-02	1.509e-02	Auger 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