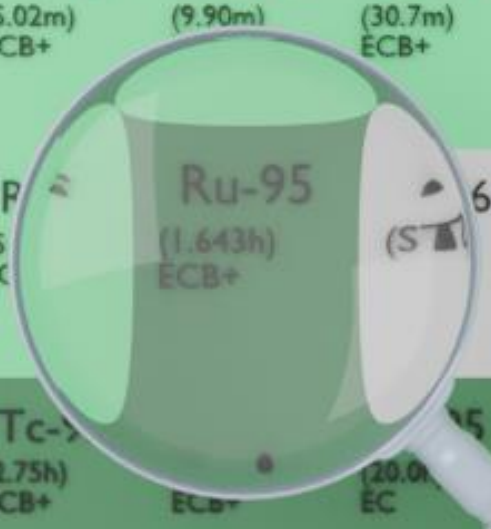




Ru-92 (3.65m) ECB+	P-92 (5.0m) EC	Ru-95 (1.643h) ECB+	Ru-96 (5.9d) EC	Ru-97 (2.9d) EC	Ru-98 (STABLE)	Ru-99 (STABLE)
Tc-91 (3.14m) ECB+	Tc-92 (4.25m) ECB+	Tc-93 (2.75h) ECB+	Tc-94 (20.0d) EC	Tc-95 (4.28d) EC	Tc-96 (2.6E+6y) EC	Tc-97 (4.2E+6y) B-

RUTHENIUM-95

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ru-95
Atomic number (Z): 44
Mass number (A): 95
Neutron number (N): 51

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 1.643 [h]
Decay constant: $1.1719\text{e-}04$ [1/s]
Daughters: Tc-95 (97.4%), Tc-95m (2.61%)
Radioactive daughters: Tc-95, Tc-95m

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.08308 [MeV]
Mean photon energy: 1.24186 [MeV]
Air kerma rate constant, Γ_{10} : $4.782\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : $5.325\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $1.331\text{e-}14$ [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [Gy $\cdot$ kg/Bq $\cdot$ s]

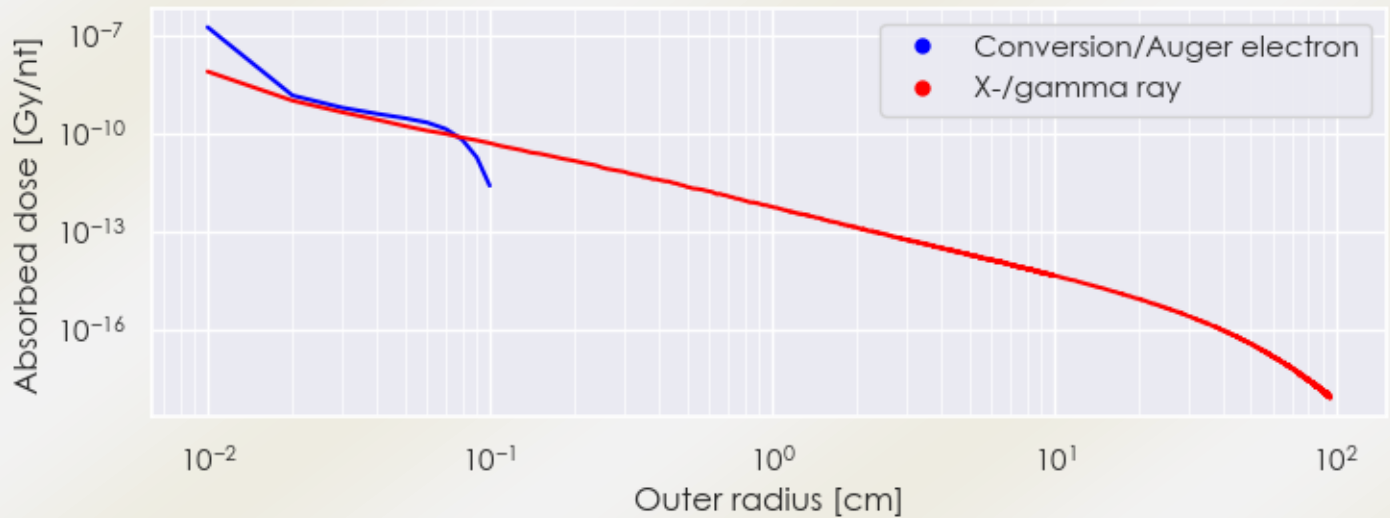
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 1.331×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.990×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

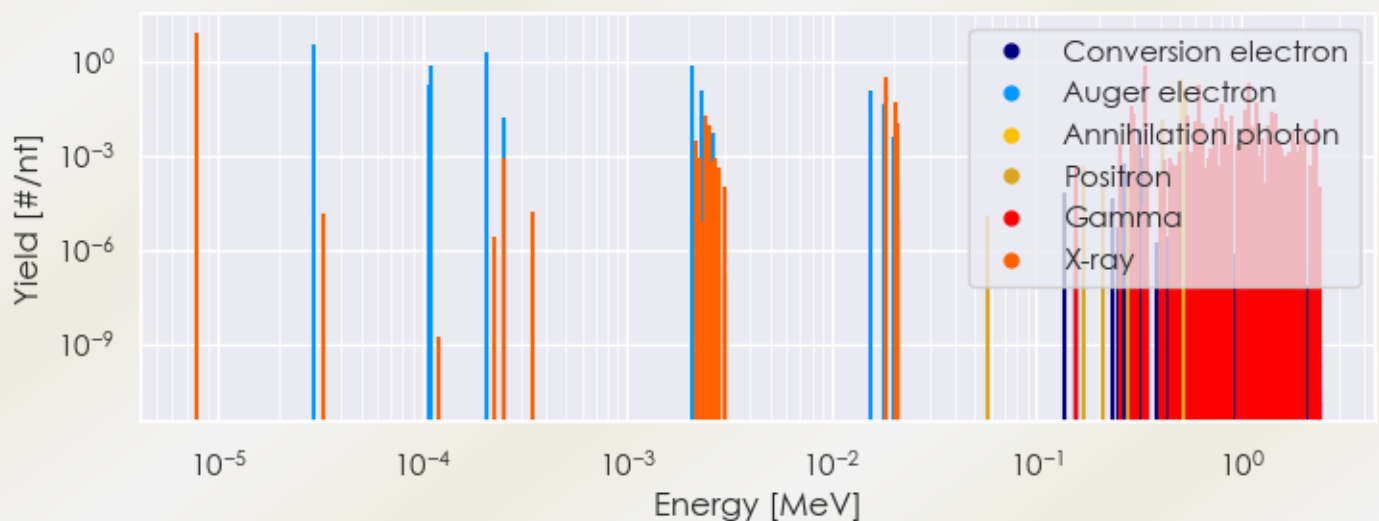
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Ru-95 DPK.csv

SUMMARY SPECTRA (PLOT)

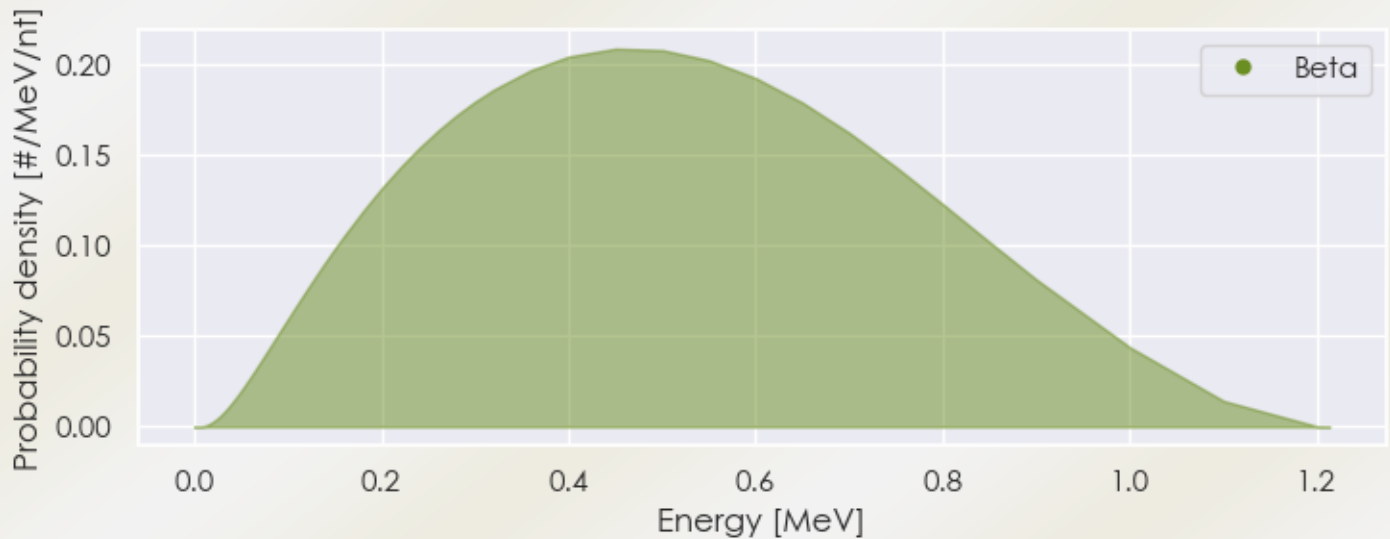
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Ru-95 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/Ru-95 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/Ru-95 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
7.87644e-06	8.215e+00	X-ray
2.41453e-03	1.940e-02	X-ray
1.82141e-02	1.703e-01	X-ray
1.83344e-02	3.237e-01	X-ray
2.05668e-02	2.677e-02	X-ray
2.05871e-02	5.210e-02	X-ray
2.90380e-01	3.698e-02	Gamma
3.01010e-01	2.112e-02	Gamma
3.36400e-01	7.019e-01	Gamma
5.11000e-01	2.807e-01	Annihilation photon

5.51620e-01	1.705e-02	Gamma
5.91420e-01	1.190e-02	Gamma
6.26830e-01	1.785e-01	Gamma
6.52810e-01	1.021e-02	Gamma
7.48500e-01	1.616e-02	Gamma
8.06280e-01	4.055e-02	Gamma
8.42160e-01	1.269e-02	Gamma
8.89000e-01	1.913e-02	Gamma
1.05068e+00	2.607e-02	Gamma
1.09680e+00	2.102e-01	Gamma
1.17870e+00	5.155e-02	Gamma
1.41063e+00	2.488e-02	Gamma
1.45932e+00	2.102e-02	Gamma
2.32450e+00	1.408e-02	Gamma
4.08328e-01	1.296e-02	Positron
5.36538e-01	1.266e-01	Positron
2.93992e-05	3.591e+00	Auger electron
1.06665e-04	1.708e-01	Auger electron
1.10210e-04	7.494e-01	Auger electron
2.03926e-04	1.818e+00	Auger electron
2.47566e-04	1.525e-02	Auger electron
2.05400e-03	7.159e-01	Auger electron
2.33288e-03	1.115e-01	Auger electron
1.54229e-02	1.179e-01	Auger electron
1.78238e-02	4.455e-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