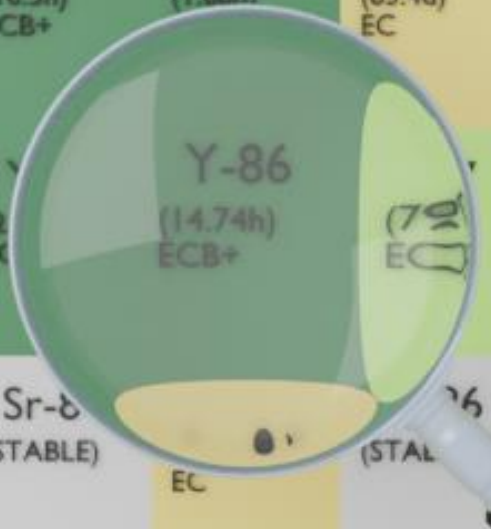




	Zr-85 (7.86m) ECB+	Zr-86 (16.5h) ECB+	Zr-87 (1.68h) EC	Zr-88 (83.4d) EC	Zr-89 (78.41h) ECB+	Zr-90 (STABLE)	Zr-91 (STABLE)
	Y-83 (7.08m) ECB+	Y-84 (2.67h) EC	Y-86 (14.74h) ECB+	Y-87 (79.4h) EC	Y-88 (106.65d) ECB+	Y-89 (STABLE)	Y-90 (64.10h) B-
Sr-81 (2.3m) CB+	Sr-82 (25.36d) EC	Sr-83 (32.41h) ECB+	Sr-84 (STABLE)	Sr-86 (STABLE)	Sr-87 (STABLE)	Sr-88 (STABLE)	Sr-89 (50.53d) B-

YTTRIUM-86

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Y-86
Atomic number (Z): 39
Mass number (A): 86
Neutron number (N): 47

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 14.74 [h]
Decay constant: 1.3062×10^{-5} [1/s]
Daughters: Sr-86 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.21787 [MeV]
Mean photon energy: 3.5777 [MeV]
Air kerma rate constant, Γ_{10} : 1.227×10^{-16} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 1.350×10^{-16} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 3.491×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

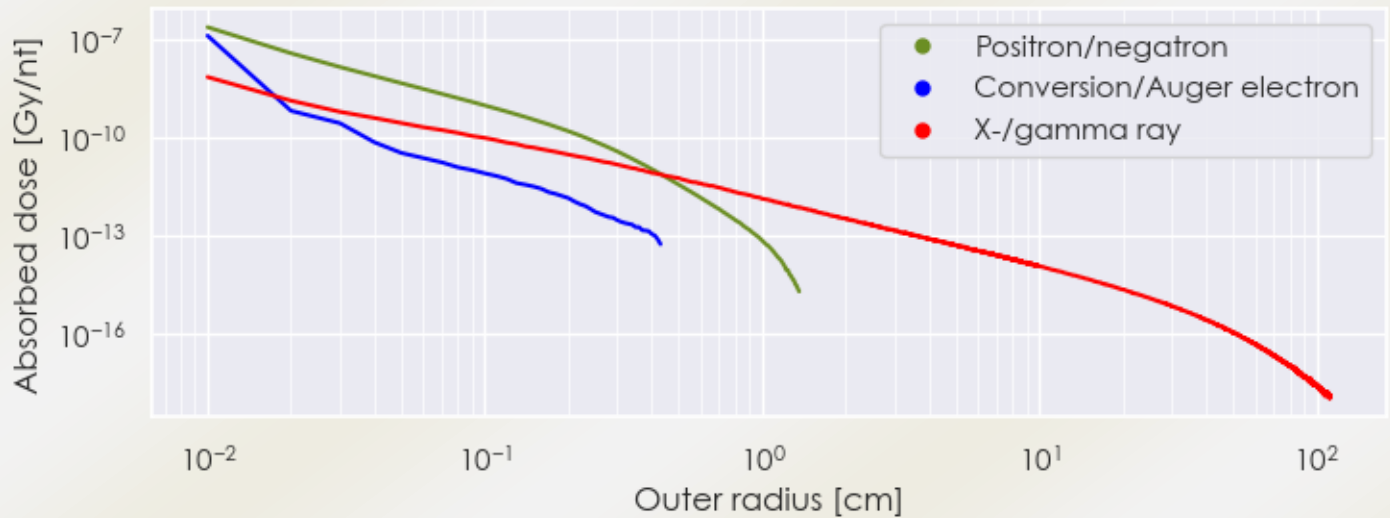
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 3.491×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 5.732×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

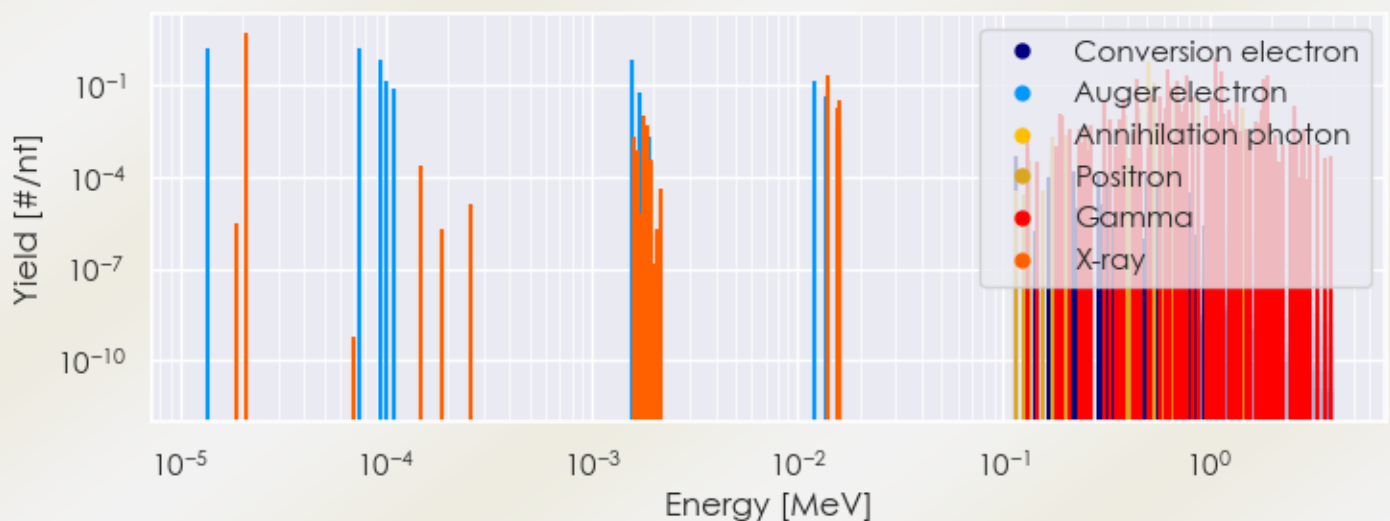
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Y-86 DPK.csv

SUMMARY SPECTRA (PLOT)

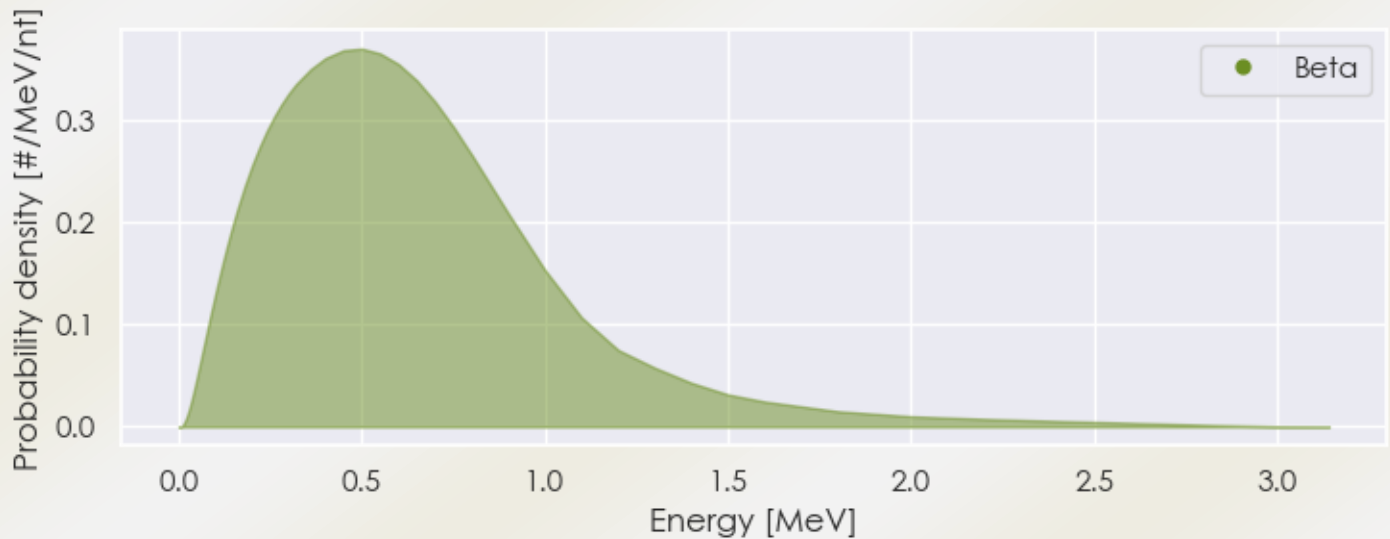
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Y-86 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/Y-86 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/Y-86 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
2.09354e-05	5.717e+00	X-ray
1.79939e-03	1.023e-02	X-ray
1.40549e-02	1.206e-01	X-ray
1.41246e-02	2.315e-01	X-ray
1.57867e-02	1.760e-02	X-ray
1.57975e-02	3.430e-02	X-ray
1.87870e-01	1.262e-02	Gamma
1.90800e-01	1.015e-02	Gamma
3.07000e-01	3.465e-02	Gamma
3.82860e-01	3.630e-02	Gamma

4.43130e-01	1.691e-01	Gamma
5.11000e-01	6.378e-01	Annihilation photon
5.15180e-01	4.892e-02	Gamma
5.80570e-01	4.785e-02	Gamma
6.08290e-01	2.013e-02	Gamma
6.27720e-01	3.259e-01	Gamma
6.44820e-01	2.186e-02	Gamma
6.45870e-01	9.158e-02	Gamma
7.03330e-01	1.543e-01	Gamma
7.09900e-01	2.624e-02	Gamma
7.40810e-01	1.361e-02	Gamma
7.67630e-01	2.392e-02	Gamma
7.77370e-01	2.244e-01	Gamma
8.26020e-01	3.300e-02	Gamma
8.33720e-01	1.485e-02	Gamma
8.35670e-01	4.372e-02	Gamma
9.55350e-01	1.039e-02	Gamma
1.02404e+00	3.795e-02	Gamma
1.07663e+00	8.250e-01	Gamma
1.15305e+00	3.053e-01	Gamma
1.16303e+00	1.180e-02	Gamma
1.25311e+00	1.534e-02	Gamma
1.34915e+00	2.945e-02	Gamma
1.80170e+00	1.650e-02	Gamma
1.85438e+00	1.716e-01	Gamma
1.92072e+00	2.079e-01	Gamma
2.56797e+00	2.252e-02	Gamma
2.61011e+00	1.238e-02	Gamma
3.94048e-01	1.098e-02	Positron
4.52145e-01	1.897e-02	Positron
5.09380e-01	1.328e-02	Positron
5.35352e-01	1.188e-01	Positron
6.80993e-01	5.590e-02	Positron
7.67706e-01	1.697e-02	Positron
8.83180e-01	3.594e-02	Positron
1.43643e+00	1.997e-02	Positron
1.36397e-05	1.593e+00	Auger electron
7.49570e-05	1.589e+00	Auger electron

9.39253e-05	6.748e-01	Auger electron
1.00537e-04	1.451e-01	Auger electron
1.09927e-04	7.701e-02	Auger electron
1.57336e-03	6.644e-01	Auger electron
1.71376e-03	5.908e-02	Auger electron
1.20238e-02	1.378e-01	Auger electron
1.37890e-02	4.670e-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