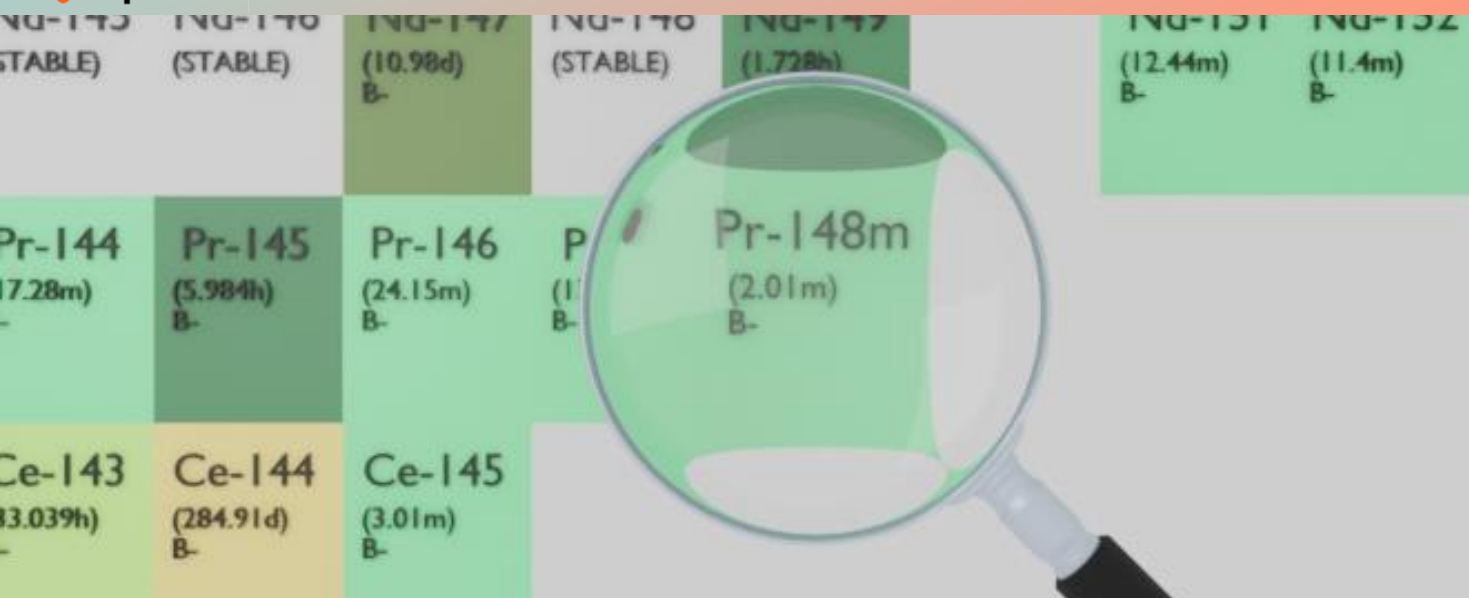




PRASEODYMIUM-148M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Pr-148m
Atomic number (Z): 59
Mass number (A): 148
Neutron number (N): 89

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 2.01 [m]
Decay constant: 5.7475×10^{-3} [1/s]
Daughters: Nd-148 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 1.6807 [MeV]
Mean photon energy: 0.93374 [MeV]
Air kerma rate constant, Γ_{10} : 3.437×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 3.437×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 2.693×10^{-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, $\Delta_{\beta-, \beta+, e-}$: 2.693×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.496×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

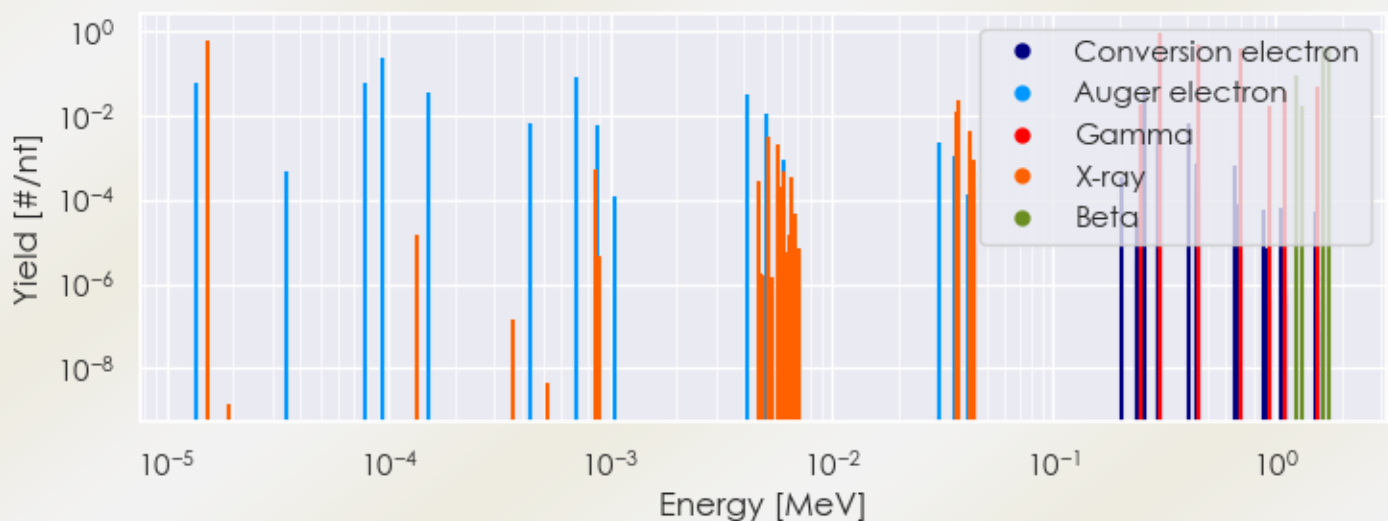
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Pr-148m DPK.csv

SUMMARY SPECTRA (PLOT)

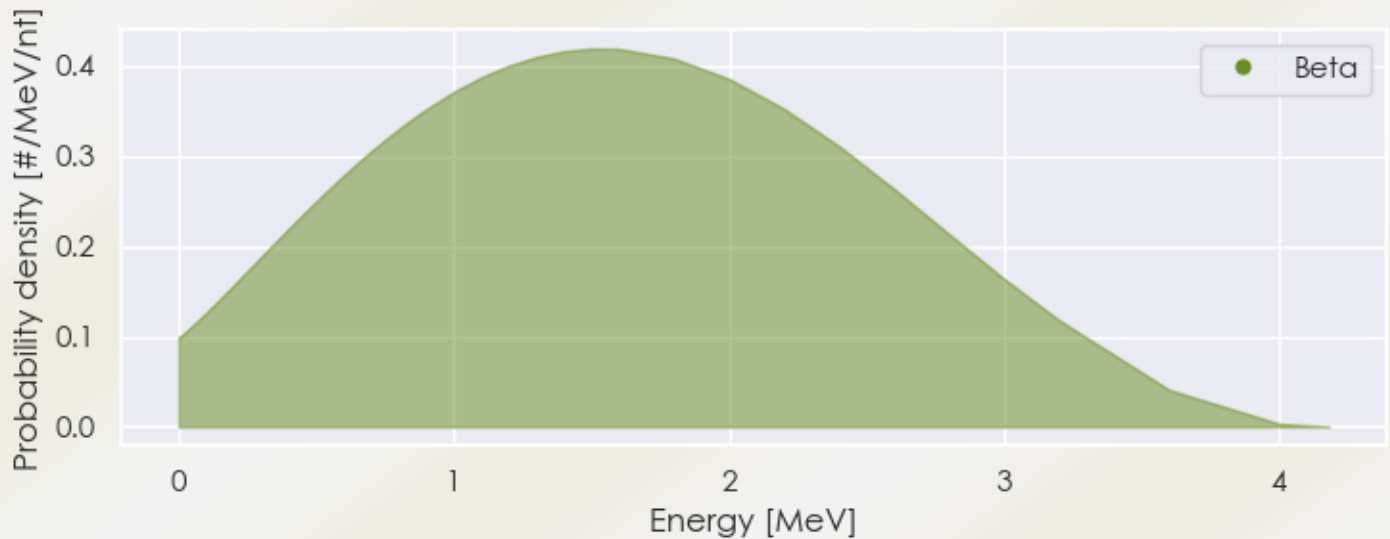
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Pr-148m 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/Pr-148m Beta Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Pr-148m%20Beta%20Spectrum.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/Pr-148m Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Pr-148m%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.52018e-05	6.118e-01	X-ray
3.68696e-02	1.225e-02	X-ray
3.73962e-02	2.231e-02	X-ray
2.47000e-01	1.800e-02	Gamma
3.01702e-01	9.500e-01	Gamma
4.50800e-01	5.000e-01	Gamma
6.97520e-01	4.000e-01	Gamma
9.35000e-01	1.600e-02	Gamma
1.10620e+00	4.100e-02	Gamma

1.55670e+00	4.900e-02	Gamma
1.25714e+00	9.414e-02	Beta
1.33591e+00	1.674e-02	Beta
1.65432e+00	4.393e-01	Beta
1.76891e+00	4.498e-01	Beta
1.36628e-05	6.117e-02	Auger electron
7.80112e-05	6.246e-02	Auger electron
9.40071e-05	2.317e-01	Auger electron
1.51742e-04	3.539e-02	Auger electron
7.10532e-04	8.257e-02	Auger electron
4.14452e-03	3.132e-02	Auger electron
5.09473e-03	1.053e-02	Auger electron
2.58105e-01	3.877e-02	Conversion 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/SNMMI-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6