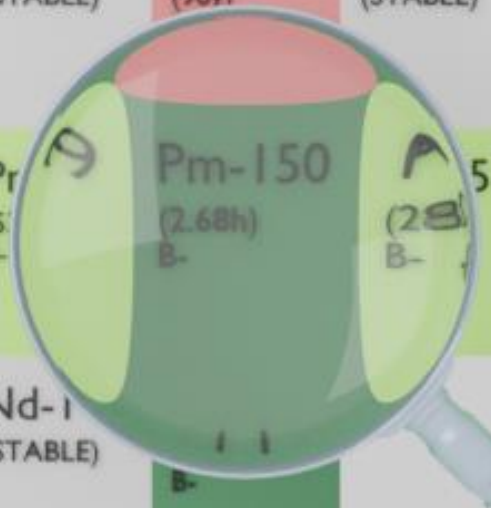




Sm-147 (1.060E11y) A	Sm-148 (7E+15y) A	Sm-149 (STABLE)	Sm-150 (STABLE)	Sm-151 (90y)	Sm-152 (STABLE)	Sm-153 (46.50h) B-	Sm-154 (STABLE)	Sm-155 (22.3m) B-
Pm-146 (5.53y) B-	Pm-147 (2.6234y) B-	Pm-148 (5.368d) B-	Pm-150 (2.68h) B-	Pm-151 (28.1d) B-	Pm-152 (4.12m) B-	Pm-153 (5.25m) B-	Pm-154 (1.73m) B-	Pm-155 (1.73m) B-
Nd-145 (STABLE)	Nd-146 (STABLE)	Nd-147 (10.98d) B-	Nd-148 (STABLE)	Nd-150 (STABLE)	Nd-151 (12.44m) B-	Nd-152 (11.4m) B-	Nd-153 (1.15m) B-	Nd-154 (6.17m) B-

PROMETHIUM-150

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Pm-150
Atomic number (Z): 61
Mass number (A): 150
Neutron number (N): 89

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 2.68 [h]
Decay constant: 7.1844e-05 [1/s]
Daughters: Sm-150 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.8101 [MeV]
Mean photon energy: 1.47046 [MeV]
Air kerma rate constant, Γ_{10} : 5.079e-17 [Gy·m²/Bq·s]
Air kerma coefficient, K_{air} : 5.079e-17 [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.298e-13 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy·kg/Bq·s]

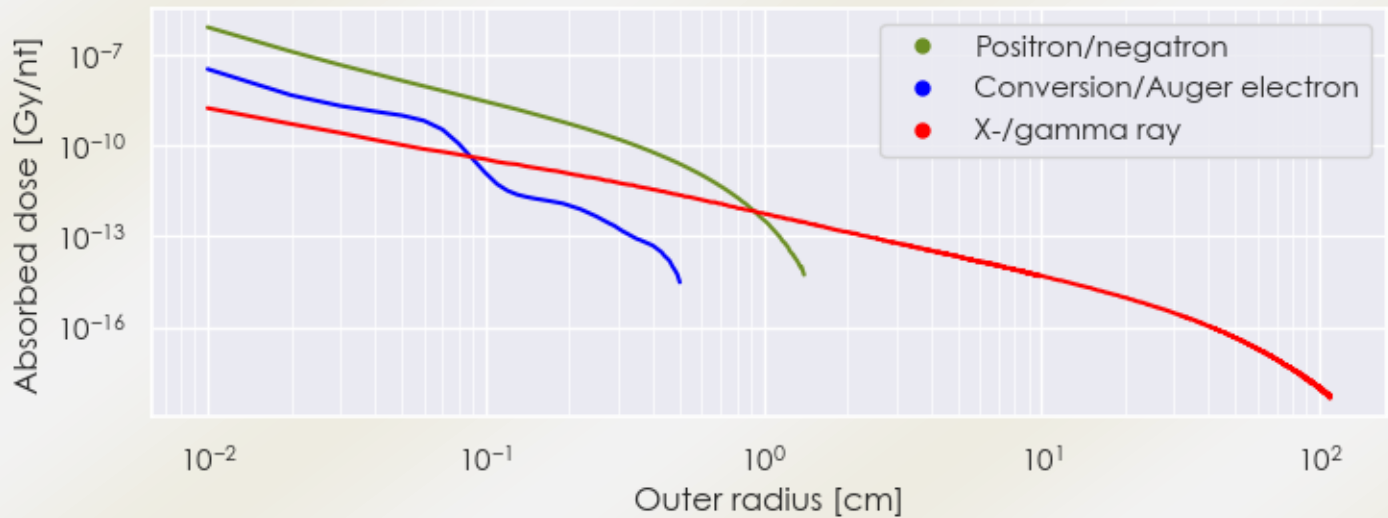
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta+, e-}$: 1.298×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.356×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

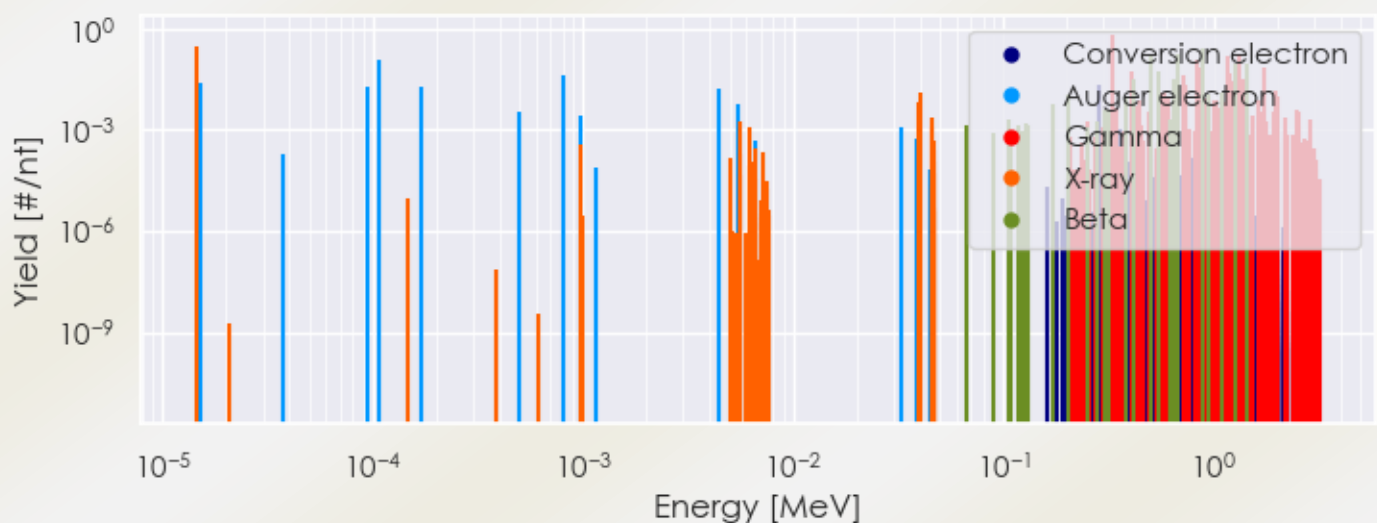
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Pm-150 DPK.csv

SUMMARY SPECTRA (PLOT)

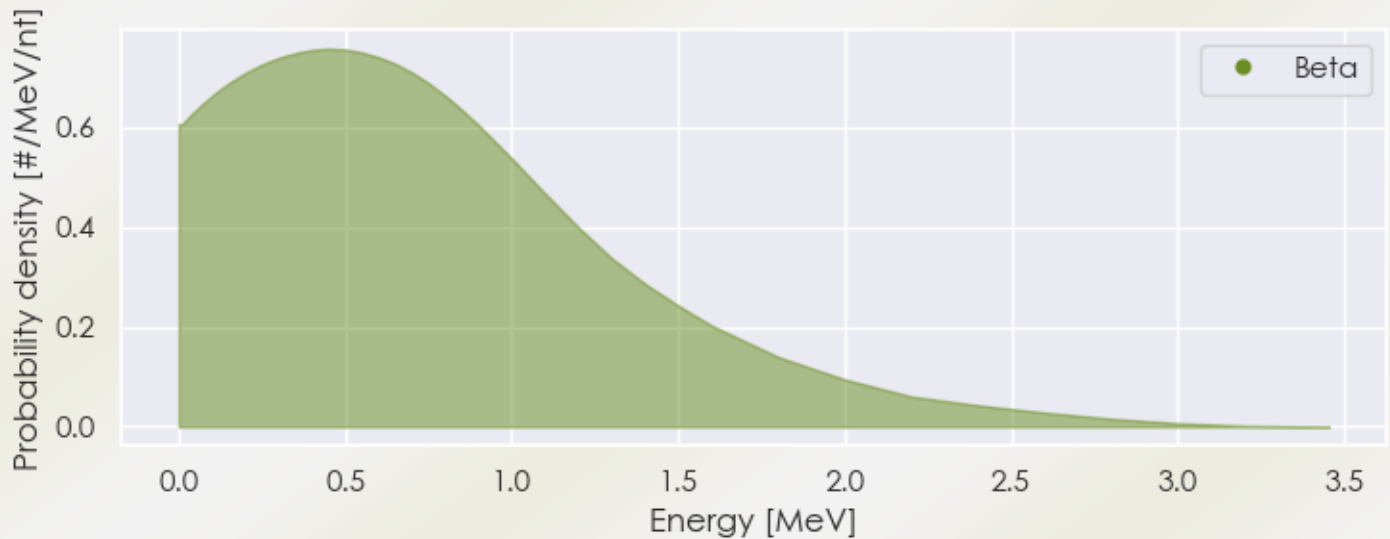
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Pm-150 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/Pm-150 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/Pm-150 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.45276e-05	3.046e-01	X-ray
4.01680e-02	1.205e-02	X-ray
3.33920e-01	6.800e-01	Gamma
4.06510e-01	5.576e-02	Gamma
5.65700e-01	1.312e-02	Gamma
5.87020e-01	1.340e-02	Gamma
7.12220e-01	4.352e-02	Gamma
7.37500e-01	2.251e-02	Gamma
8.31850e-01	1.190e-01	Gamma
8.59950e-01	3.400e-02	Gamma

8.76410e-01	7.276e-02	Gamma
1.16577e+00	1.584e-01	Gamma
1.17090e+00	1.061e-02	Gamma
1.19387e+00	4.828e-02	Gamma
1.21372e+00	1.034e-02	Gamma
1.22328e+00	2.829e-02	Gamma
1.32451e+00	1.748e-01	Gamma
1.37932e+00	3.148e-02	Gamma
1.73640e+00	6.936e-02	Gamma
1.96371e+00	1.469e-02	Gamma
2.02069e-01	1.141e-02	Beta
4.19335e-01	3.138e-02	Beta
4.98739e-01	1.693e-01	Beta
5.44075e-01	5.421e-02	Beta
6.52394e-01	3.329e-02	Beta
6.76394e-01	1.874e-01	Beta
8.95213e-01	2.511e-01	Beta
9.49041e-01	1.141e-02	Beta
1.08752e+00	1.331e-02	Beta
1.27314e+00	9.320e-02	Beta
1.42654e+00	9.510e-02	Beta
1.51033e-05	2.379e-02	Auger electron
9.39945e-05	1.955e-02	Auger electron
1.06748e-04	1.272e-01	Auger electron
1.69377e-04	2.016e-02	Auger electron
8.03528e-04	4.395e-02	Auger electron
4.45563e-03	1.636e-02	Auger electron
2.87044e-01	2.182e-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