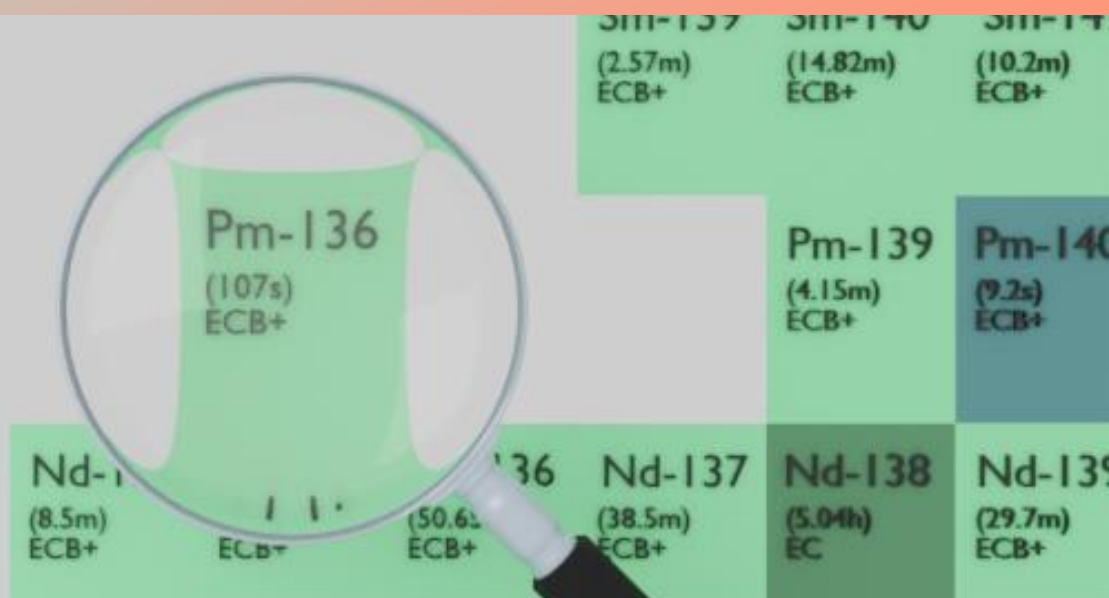




PROMETHIUM-136

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Pm-136
Atomic number (Z): 61
Mass number (A): 136
Neutron number (N): 75

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 107.0 [s]
Decay constant: $6.4780\text{e-}03$ [1/s]
Daughters: Nd-136 (100.0%)
Radioactive daughters: Nd-136

DOSIMETRIC CONSTANTS

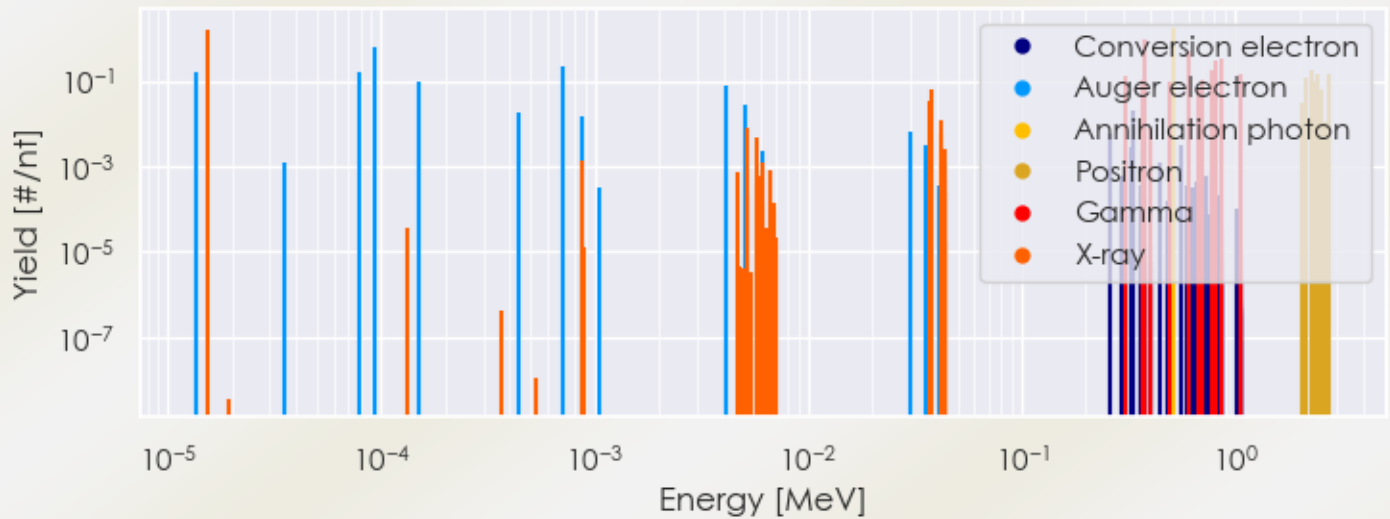
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 2.14362 [MeV]
Mean photon energy: 2.71776 [MeV]
Air kerma rate constant, Γ_{10} : $6.686\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : $1.016\text{e-}16$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $3.434\text{e-}13$ [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, $\Delta_{\beta, \beta^+, e^-}$: 3.434×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 4.354×10^{-13} [Gy·kg/Bq·s]

SUMMARY SPECTRA (PLOT)

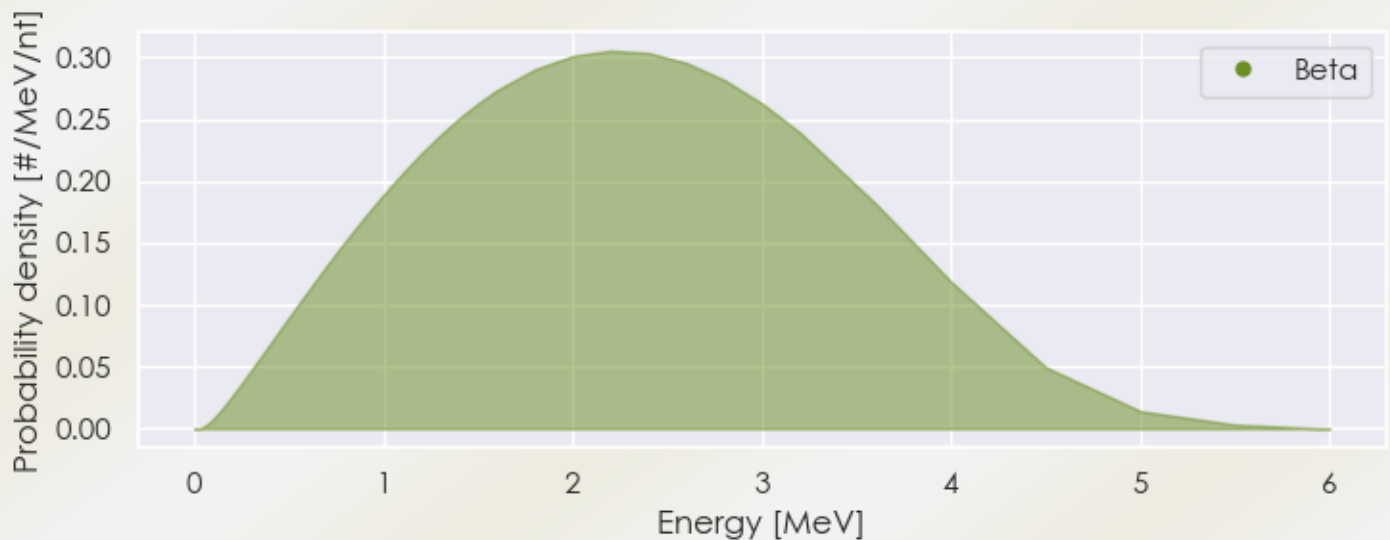
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: [www.mirdsoft.org/products/MIRDspecs/Pm-136 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Pm-136%20Summary%20Spectrum.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-136 Beta Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Pm-136%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/Pm-136 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Pm-136%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [#/(nt)] if > 0.01	Radiation type
1.51985e-05	1.566e+00	X-ray
3.68696e-02	3.280e-02	X-ray
3.73962e-02	5.973e-02	X-ray
4.23100e-02	1.142e-02	X-ray
3.02800e-01	1.365e-01	Gamma
3.70000e-01	1.010e-01	Gamma
3.73500e-01	8.976e-01	Gamma
4.88000e-01	9.163e-02	Gamma
5.11000e-01	1.793e+00	Annihilation photon
6.02700e-01	4.974e-01	Gamma
6.78000e-01	6.919e-02	Gamma
6.93000e-01	2.618e-02	Gamma
6.96000e-01	1.010e-01	Gamma
7.70400e-01	1.795e-01	Gamma
8.15000e-01	3.085e-01	Gamma
8.58000e-01	3.142e-01	Gamma
8.62100e-01	7.760e-02	Gamma
1.05970e+00	1.374e-01	Gamma
1.07000e+00	2.618e-02	Gamma
2.05608e+00	3.049e-02	Positron
2.12174e+00	1.210e-01	Positron
2.26530e+00	1.789e-01	Positron
2.27034e+00	1.169e-01	Positron
2.32185e+00	9.148e-02	Positron
2.40779e+00	1.403e-01	Positron
2.50642e+00	6.404e-02	Positron
2.61653e+00	1.118e-02	Positron
2.77605e+00	1.423e-01	Positron

1.36628e-05	1.567e-01	Auger electron
7.81295e-05	1.595e-01	Auger electron
9.39812e-05	5.938e-01	Auger electron
1.51340e-04	9.116e-02	Auger electron
4.42601e-04	1.875e-02	Auger electron
7.10714e-04	2.104e-01	Auger electron
8.73481e-04	1.445e-02	Auger electron
4.14614e-03	7.987e-02	Auger electron
5.09690e-03	2.685e-02	Auger electron
3.29903e-01	1.956e-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