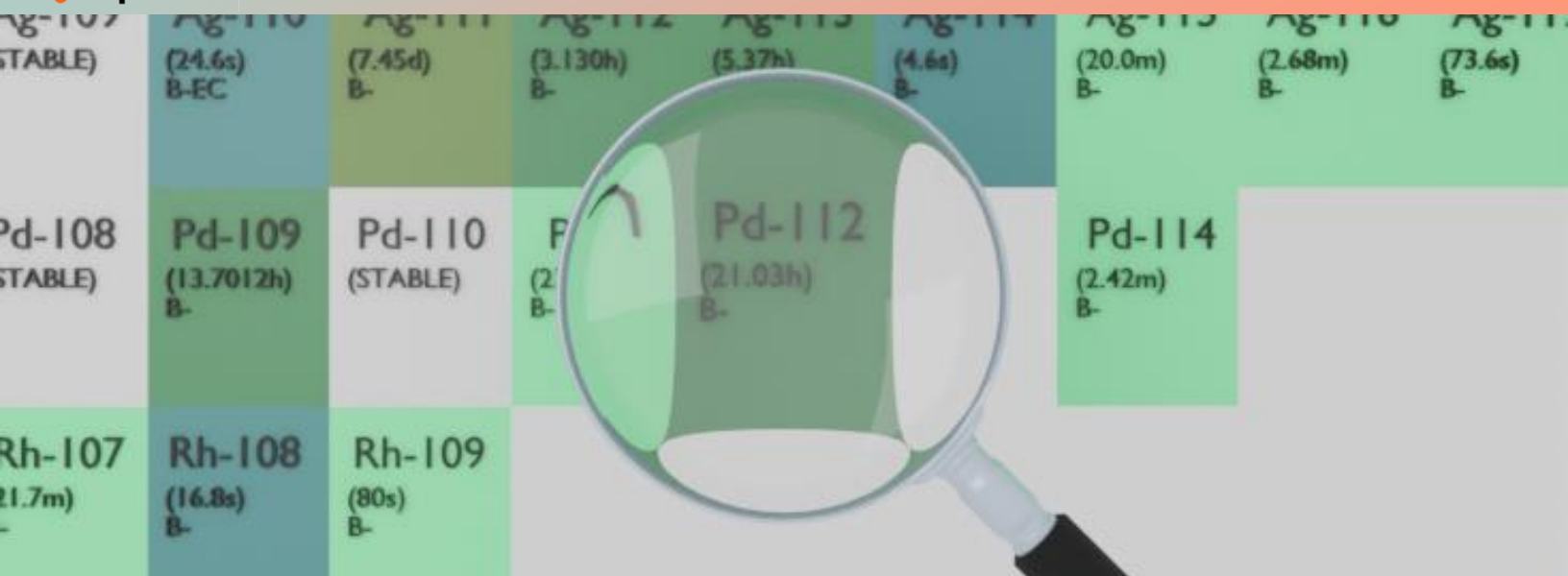




PALLADIUM-112

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Pd-112
Atomic number (Z): 46
Mass number (A): 112
Neutron number (N): 66

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 21.03 [h]
Decay constant: $9.1555\text{e-}06$ [1/s]
Daughters: Ag-112 (100.0%)
Radioactive daughters: Ag-112

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.08998 [MeV]
Mean photon energy: 0.00508 [MeV]
Air kerma rate constant, Γ_{10} : $4.312\text{e-}18$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Air kerma coefficient, K_{air} : $4.312\text{e-}18$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $1.442\text{e-}14$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]

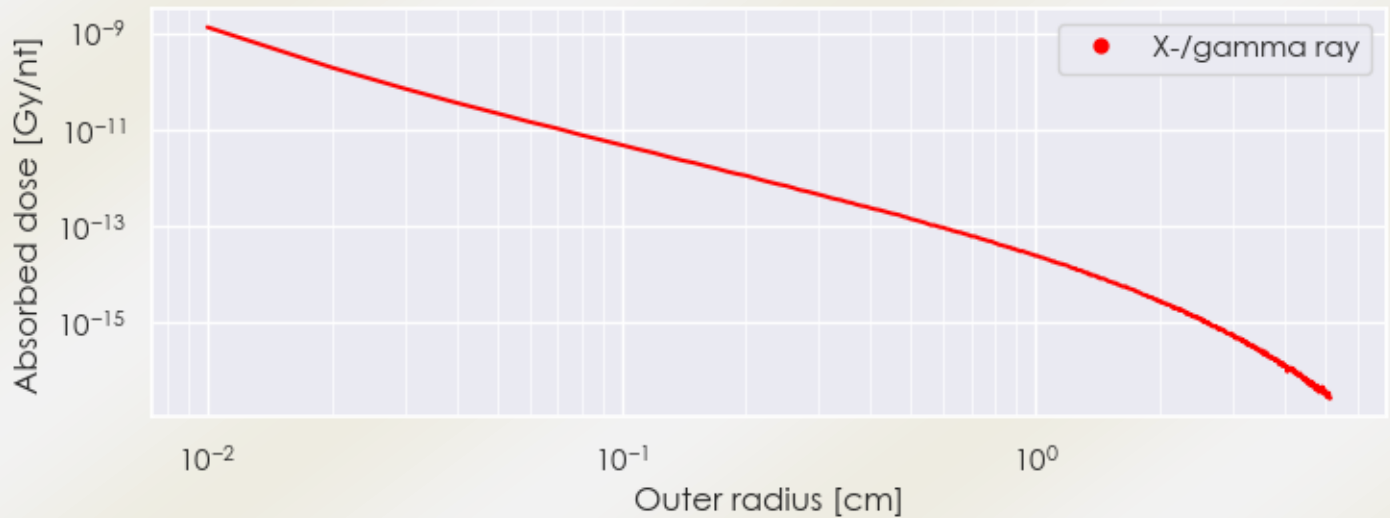
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta+, e-}$: 1.442×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 8.139×10^{-16} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

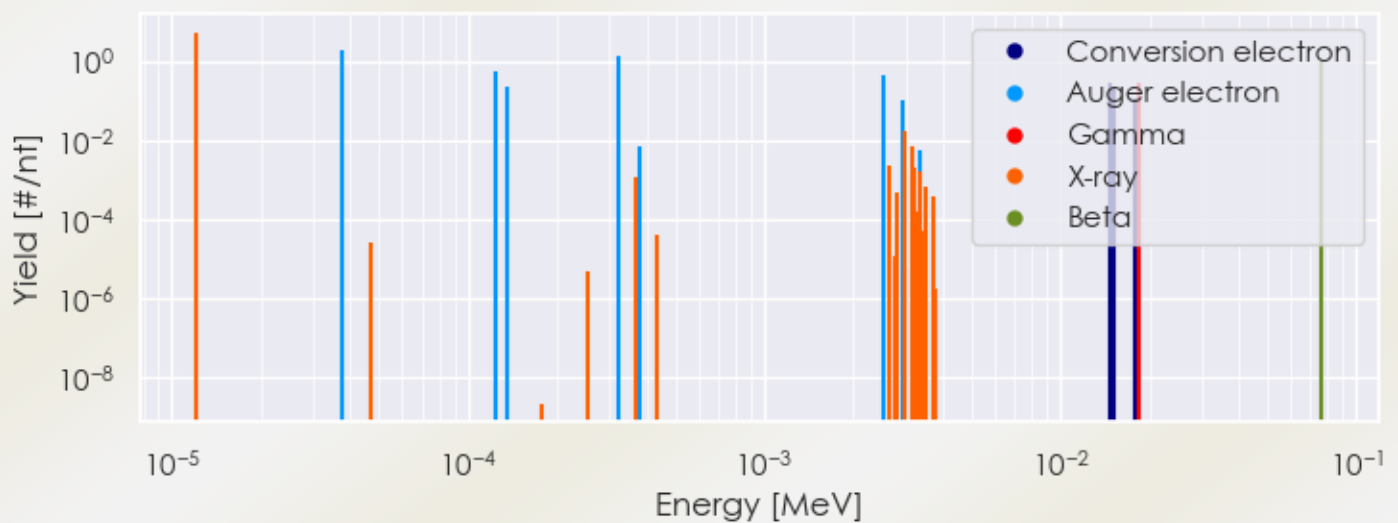
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Pd-112 DPK.csv

SUMMARY SPECTRA (PLOT)

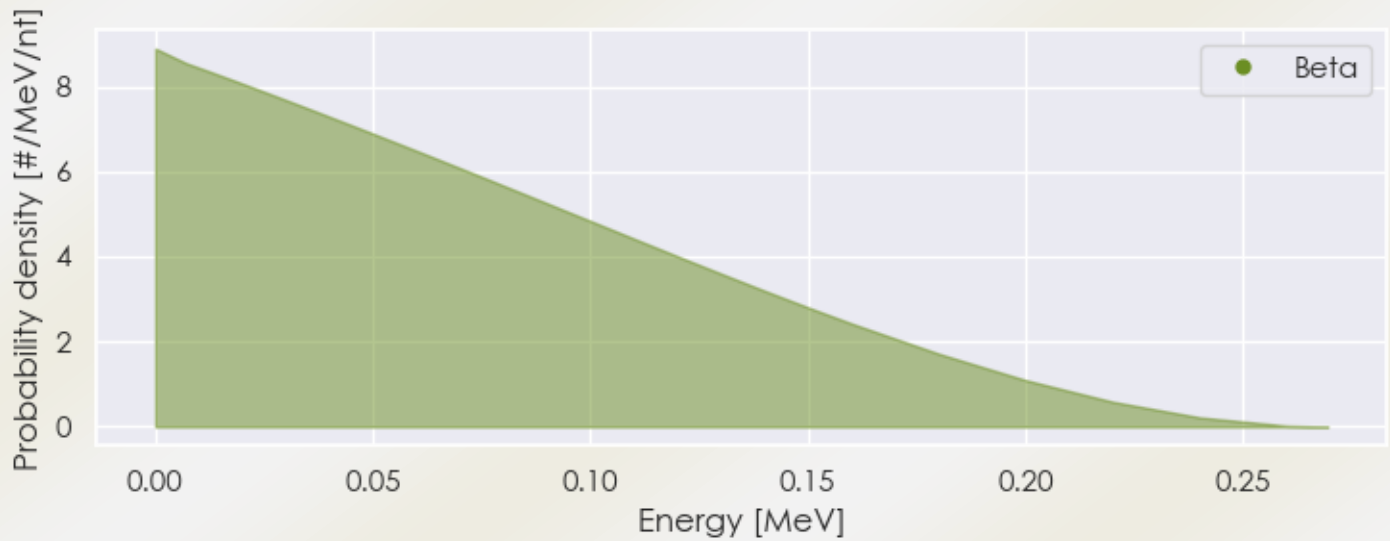
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Pd-112 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/Pd-112 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/Pd-112 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.20753e-05	5.342e+00	X-ray
2.97344e-03	1.711e-02	X-ray
1.85000e-02	2.656e-01	Gamma
7.65630e-02	1.000e+00	Beta
3.76912e-05	1.966e+00	Auger electron
1.24241e-04	5.382e-01	Auger electron
1.35188e-04	2.345e-01	Auger electron
3.19797e-04	1.299e+00	Auger electron
2.50777e-03	4.589e-01	Auger electron
2.91912e-03	9.989e-02	Auger electron

1.47166e-02	2.790e-01	Conversion electron
1.49719e-02	1.206e-01	Conversion electron
1.51500e-02	2.004e-01	Conversion electron
1.79315e-02	1.139e-01	Conversion electron
1.85000e-02	2.056e-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/SNMML-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6