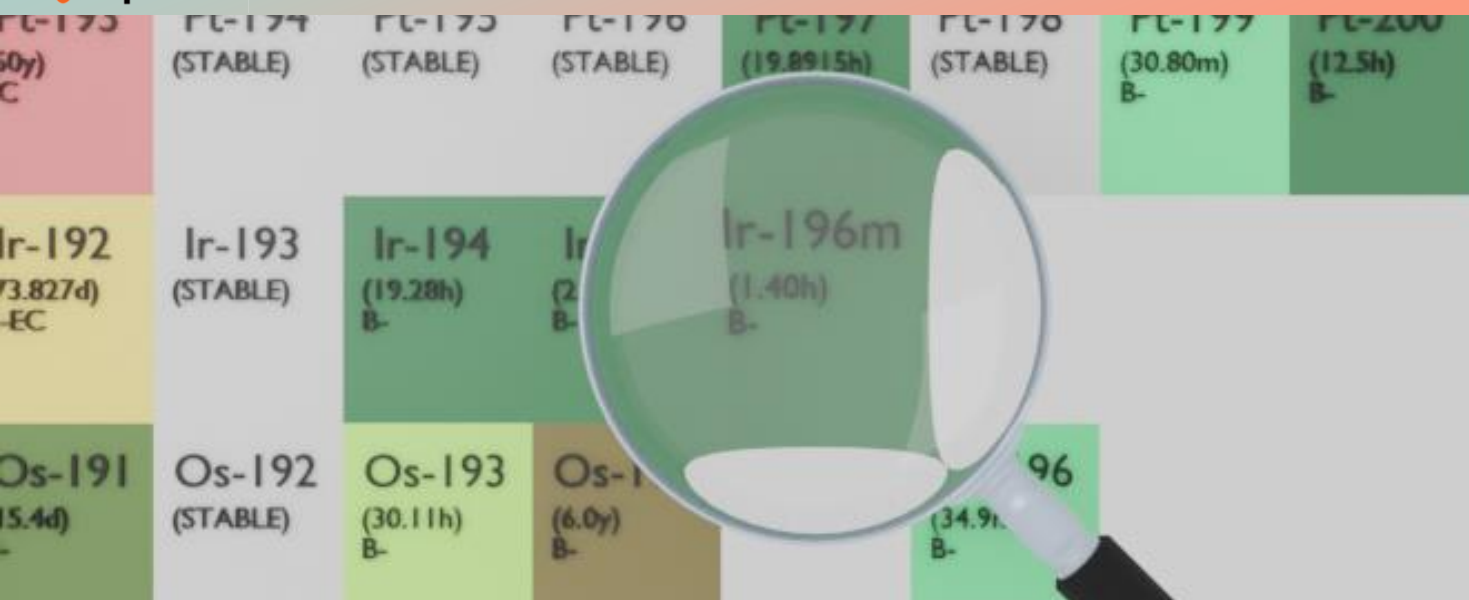




IRIDIUM-196M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ir-196m
Atomic number (Z): 77
Mass number (A): 196
Neutron number (N): 119

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 1.4 [h]
Decay constant: 1.3753×10^{-4} [1/s]
Daughters: Pt-196 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.38444 [MeV]
Mean photon energy: 2.4677 [MeV]
Air kerma rate constant, Γ_{10} : 9.847×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 9.847×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 6.159×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

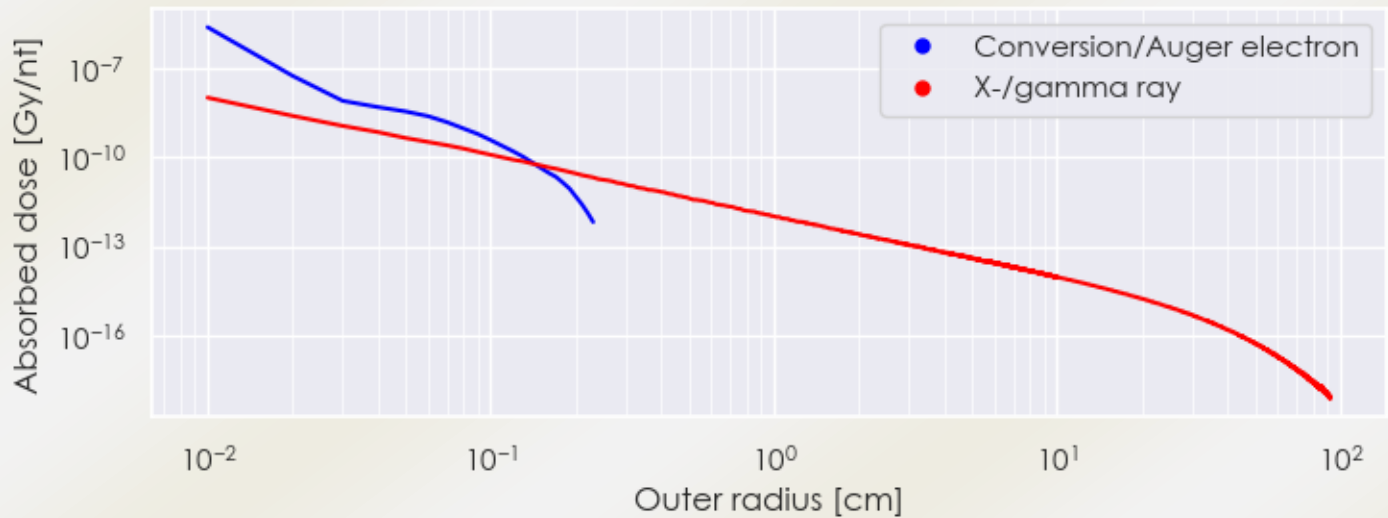
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 6.159×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 3.954×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

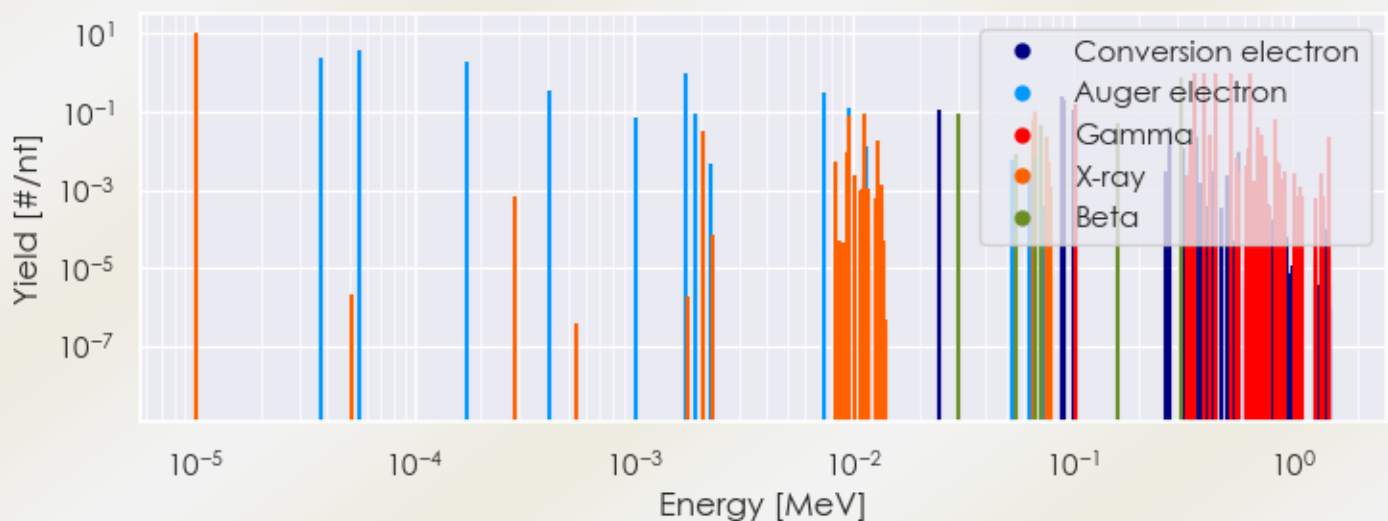
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Ir-196m DPK.csv

SUMMARY SPECTRA (PLOT)

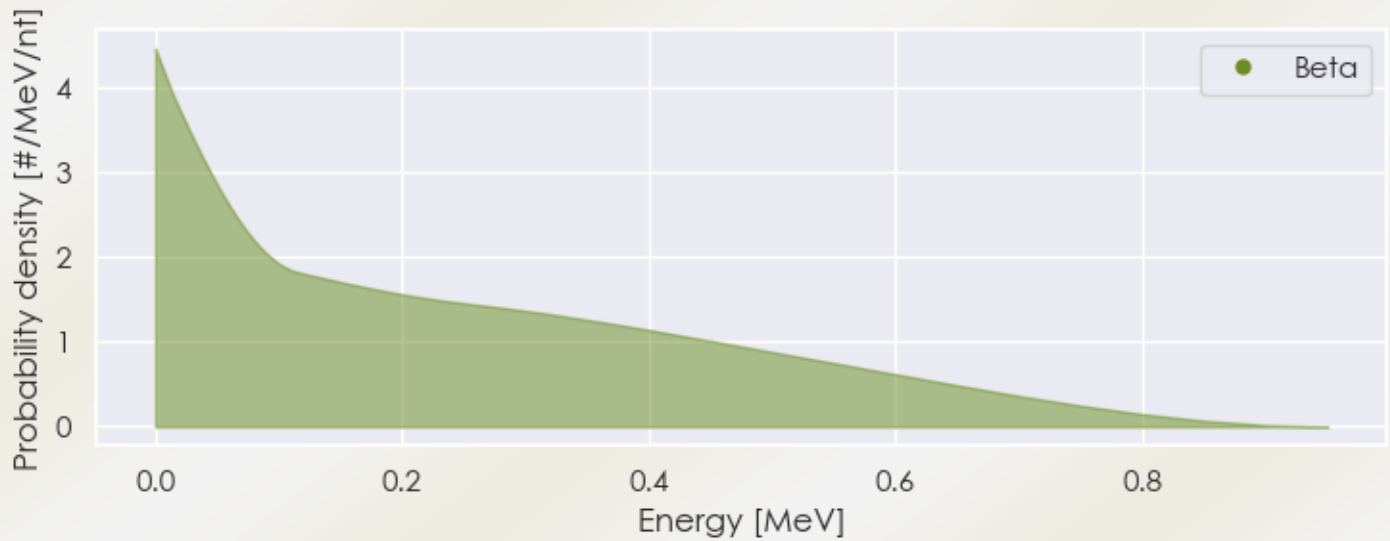
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Ir-196m 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/Ir-196m 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/Ir-196m Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.01477e-05	1.085e+01	X-ray
2.07269e-03	3.047e-02	X-ray
9.43801e-03	8.208e-02	X-ray
1.11006e-02	8.808e-02	X-ray
1.12510e-02	1.518e-02	X-ray
1.29799e-02	1.719e-02	X-ray
6.53020e-02	6.094e-02	X-ray
6.70480e-02	1.041e-01	X-ray
7.55931e-02	1.141e-02	X-ray
7.59780e-02	2.206e-02	X-ray

1.03300e-01	1.632e-01	Gamma
3.40700e-01	1.536e-02	Gamma
3.55900e-01	9.408e-01	Gamma
3.93500e-01	9.696e-01	Gamma
4.20900e-01	2.496e-02	Gamma
4.47100e-01	9.408e-01	Gamma
5.21400e-01	9.600e-01	Gamma
6.33500e-01	1.104e-02	Gamma
6.47300e-01	9.120e-01	Gamma
6.93900e-01	4.224e-02	Gamma
7.27300e-01	2.592e-02	Gamma
8.35600e-01	6.336e-02	Gamma
1.48250e+00	2.304e-02	Gamma
3.01450e-02	9.389e-02	Beta
7.09661e-02	4.645e-02	Beta
1.58952e-01	5.337e-02	Beta
3.11838e-01	7.907e-01	Beta
3.74572e-05	2.308e+00	Auger electron
5.60676e-05	3.733e+00	Auger electron
1.71717e-04	1.978e+00	Auger electron
4.12783e-04	3.607e-01	Auger electron
1.01654e-03	6.844e-02	Auger electron
1.70264e-03	9.595e-01	Auger electron
1.91690e-03	9.190e-02	Auger electron
7.38364e-03	2.967e-01	Auger electron
9.43858e-03	1.227e-01	Auger electron
1.15228e-02	1.236e-02	Auger electron
2.46850e-02	1.109e-01	Conversion electron
8.94380e-02	1.520e-02	Conversion electron
8.99870e-02	2.362e-01	Conversion electron
9.17330e-02	1.988e-01	Conversion electron
1.00663e-01	1.168e-01	Conversion electron
1.03300e-01	3.404e-02	Conversion electron
2.77285e-01	3.804e-02	Conversion electron
3.14885e-01	1.133e-02	Conversion electron
3.68485e-01	2.228e-02	Conversion electron
4.42785e-01	1.613e-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