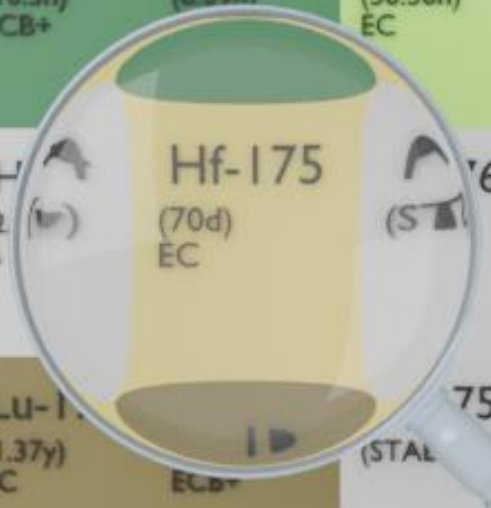




Ta-172 (36.8m) EC+	Ta-173 (3.14h) ECB+	Ta-174 (1.14h) ECB+	Ta-175 (10.5h) ECB+	Ta-176 (8.09h) EC	Ta-177 (56.56h) EC	Ta-178 (9.31m) ECB+	Ta-179 (1.82y) EC	Ta-180 (8.152h) ECB-
Hf-172 (1.87y) EC	Hf-173 (23.6h) ECB+	Hf-174 (2.13y) EC	Hf-175 (70d) EC	Hf-176 (5.0e10y) B-	Hf-177 (STABLE)	Hf-178 (STABLE)	Hf-179 (STABLE)	Hf-180 (STABLE)
Lu-170 (2.012d) CB+	Lu-171 (8.24d) ECB+	Lu-172 (6.70d) ECB+	Lu-173 (1.37y) EC	Lu-174 (6.33d) ECB+	Lu-175 (STABLE)	Lu-176 (3.85E+10y) B-	Lu-177 (6.647d) B-	Lu-178 (28.4m) B-

HAFNIUM-175

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Hf-175
Atomic number (Z): 72
Mass number (A): 175
Neutron number (N): 103

RADIOACTIVE DECAY

Decay modes: Electron capture
Half-life: 70.0 [d]
Decay constant: 1.1461×10^{-7} [1/s]
Daughters: Lu-175 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.04502 [MeV]
Mean photon energy: 0.35337 [MeV]
Air kerma rate constant, Γ_{10} : 1.429×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 1.429×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 7.213×10^{-15} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : $0.000 \times 10^{+00}$ [Gy $\cdot$ kg/Bq $\cdot$ s]

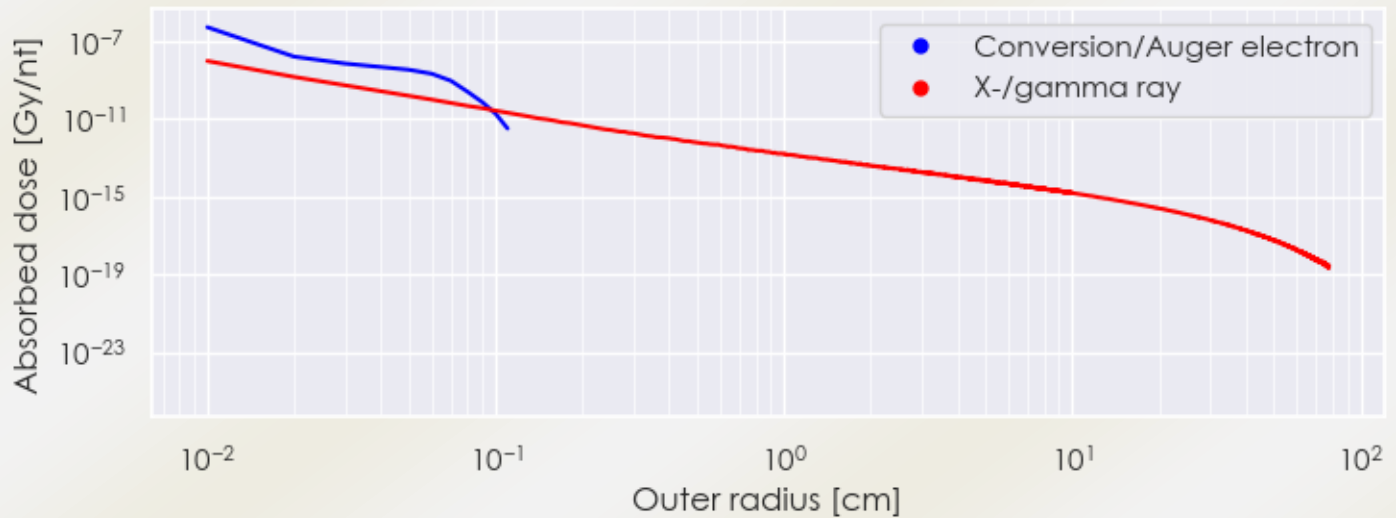
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 7.213×10^{-15} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 5.662×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

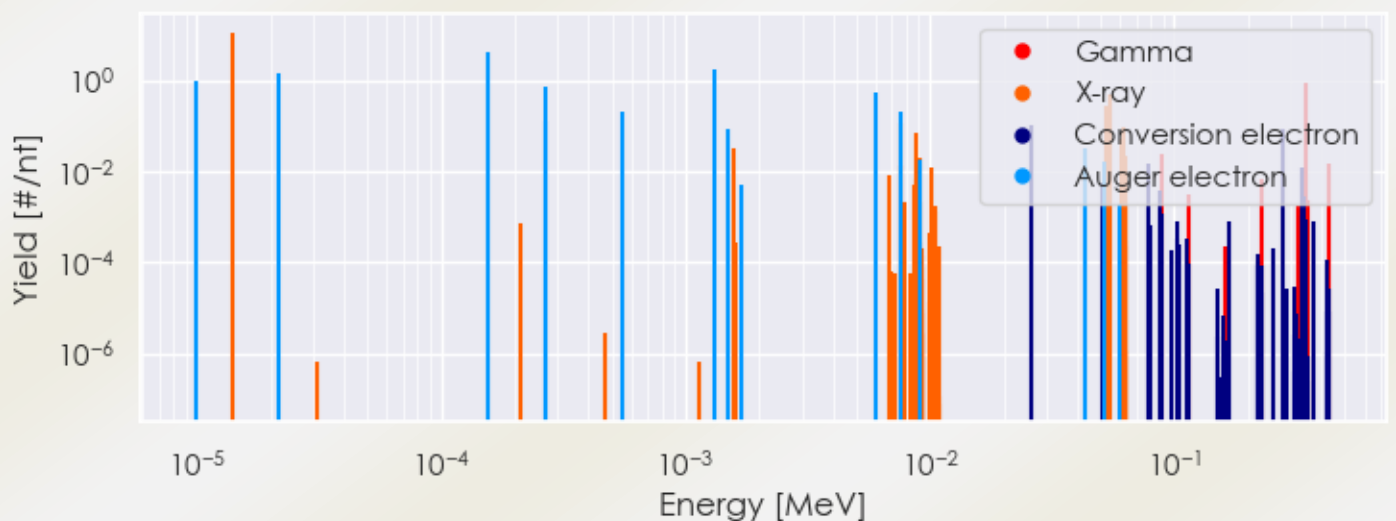
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Hf-175 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/Hf-175 Summary 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/Hf-175 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Hf-175%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [#/(nt)] if > 0.01	Radiation type
1.40084e-05	1.122e+01	X-ray
1.56965e-03	3.079e-02	X-ray
7.59237e-03	1.268e-02	X-ray
7.64540e-03	1.120e-01	X-ray
8.72221e-03	6.798e-02	X-ray
9.04391e-03	1.928e-02	X-ray
1.01636e-02	1.223e-02	X-ray
5.30692e-02	2.656e-01	X-ray
5.41988e-02	4.664e-01	X-ray
6.11839e-02	4.942e-02	X-ray
6.14258e-02	9.550e-02	X-ray
6.30318e-02	1.105e-02	X-ray
6.30870e-02	2.137e-02	X-ray
8.93600e-02	2.402e-02	Gamma
3.43400e-01	8.400e-01	Gamma
4.33000e-01	1.436e-02	Gamma
9.98291e-06	9.787e-01	Auger electron
2.16360e-05	1.386e+00	Auger electron
1.56496e-04	4.005e+00	Auger electron
2.65777e-04	1.218e-01	Auger electron
2.67184e-04	7.205e-01	Auger electron
5.49522e-04	2.024e-01	Auger electron
1.30976e-03	1.679e+00	Auger electron
1.48495e-03	8.074e-02	Auger electron
5.97784e-03	5.425e-01	Auger electron
7.53339e-03	1.982e-01	Auger electron
9.11963e-03	1.836e-02	Auger electron

2.59180e-02	1.048e-01	Conversion electron
4.32341e-02	3.071e-02	Auger electron
5.15128e-02	1.580e-02	Auger electron
7.85150e-02	1.474e-02	Conversion electron
2.79958e-01	8.324e-02	Conversion electron
3.32555e-01	1.154e-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