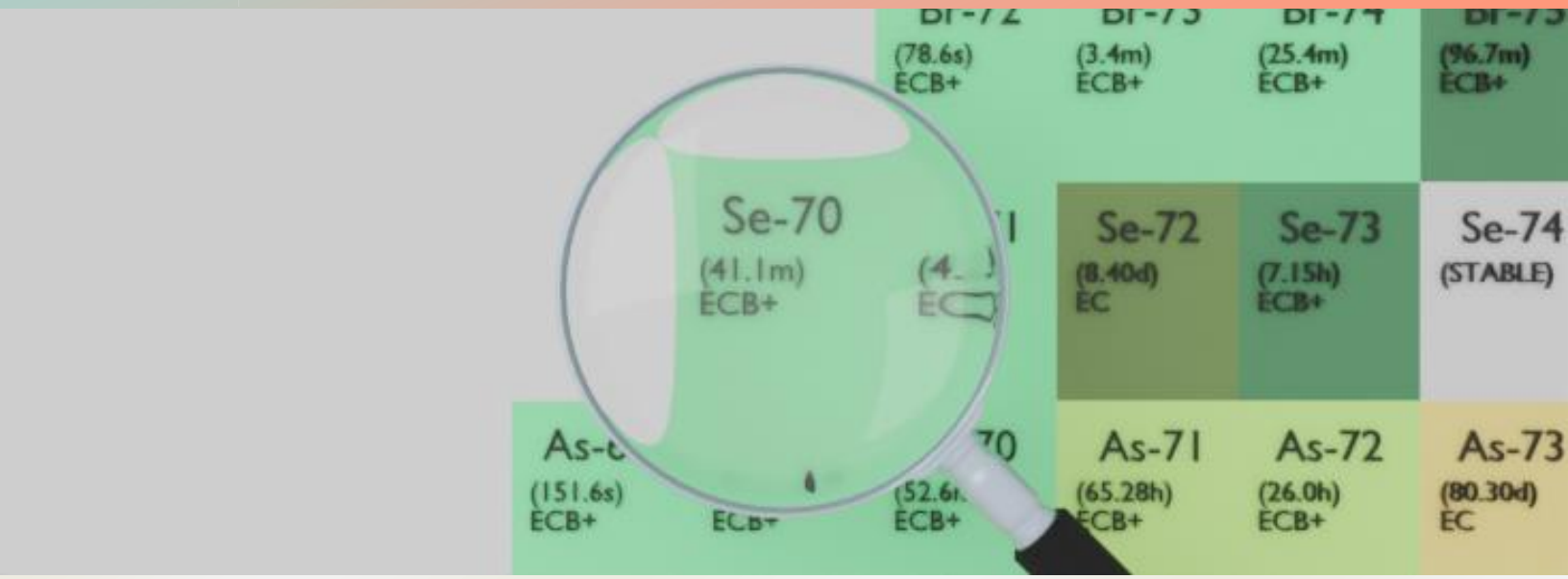


SELENIUM-70

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Se-70
Atomic number (Z): 34
Mass number (A): 70
Neutron number (N): 36

RADIOACTIVE DECAY

Decay modes: β+, Electron capture
Half-life: 41.1 [m]
Decay constant: 2.8108e-04 [1/s]
Daughters: As-70 (100.0%)
Radioactive daughters: As-70

DOSIMETRIC CONSTANTS

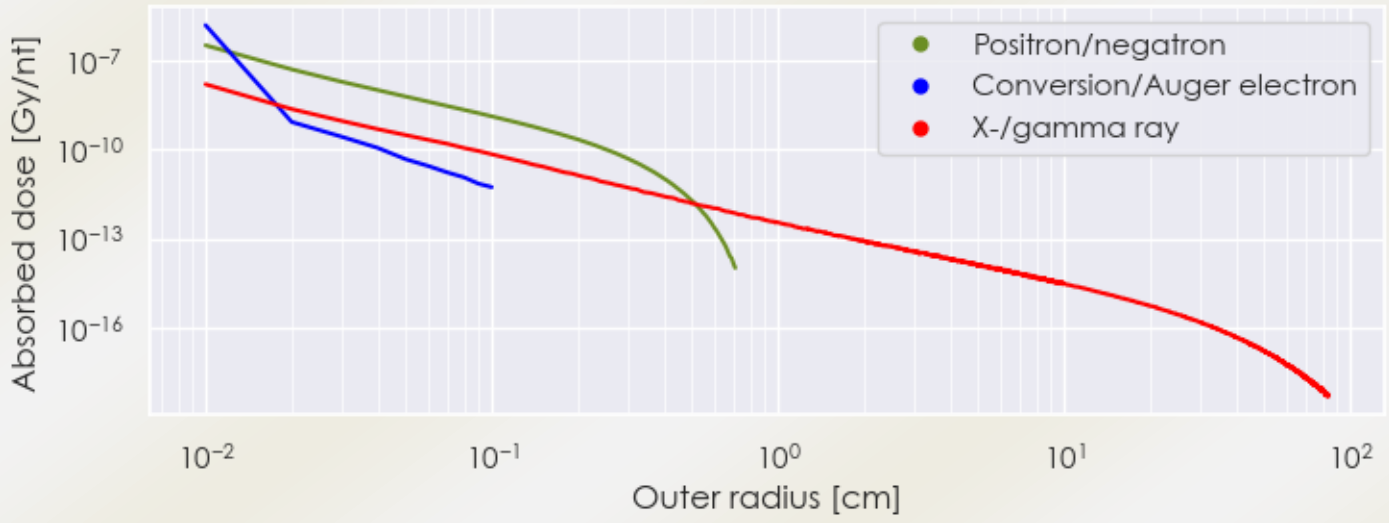
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.23745 [MeV]
Mean photon energy: 0.72112 [MeV]
Air kerma rate constant, Γ_{10}*:* 5.245e-17 [Gy·m²/Bq·s]
Air kerma coefficient, K_{air}*:* 6.913e-17 [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (a and/or electrons), Δ_{wp}*:* 3.804e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{a}*:* 0.000e+00 [Gy·kg/Bq·s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta-,\beta+,e-}$: 3.804e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for photons, Δ_{p}: 1.155e-13 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

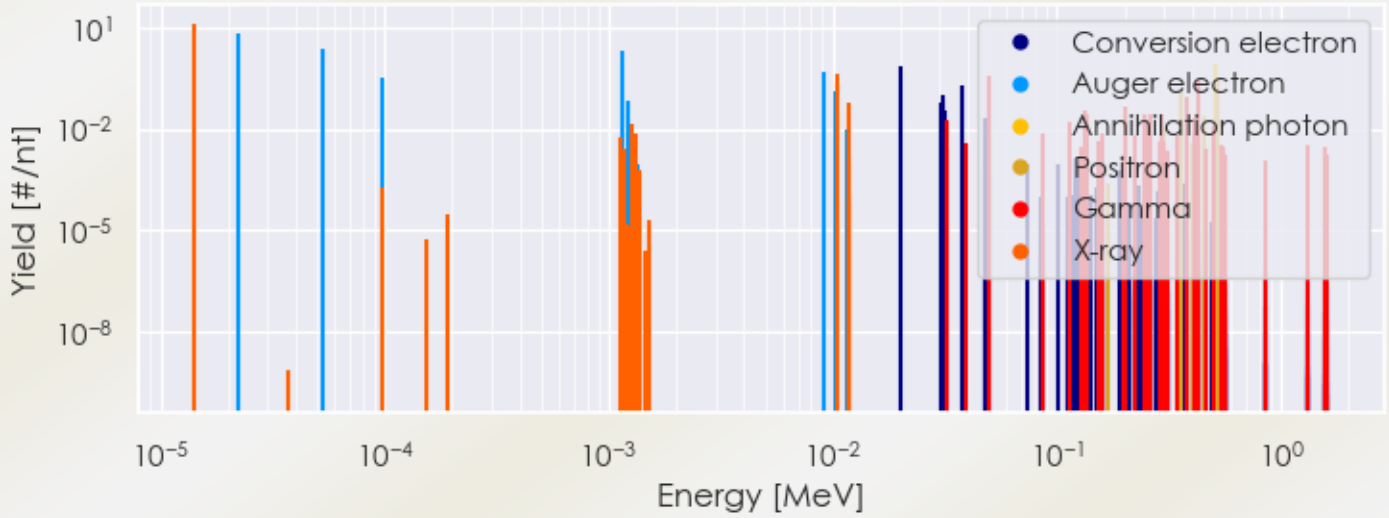
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Se-70 DPK.csv

SUMMARY SPECTRA (PLOT)

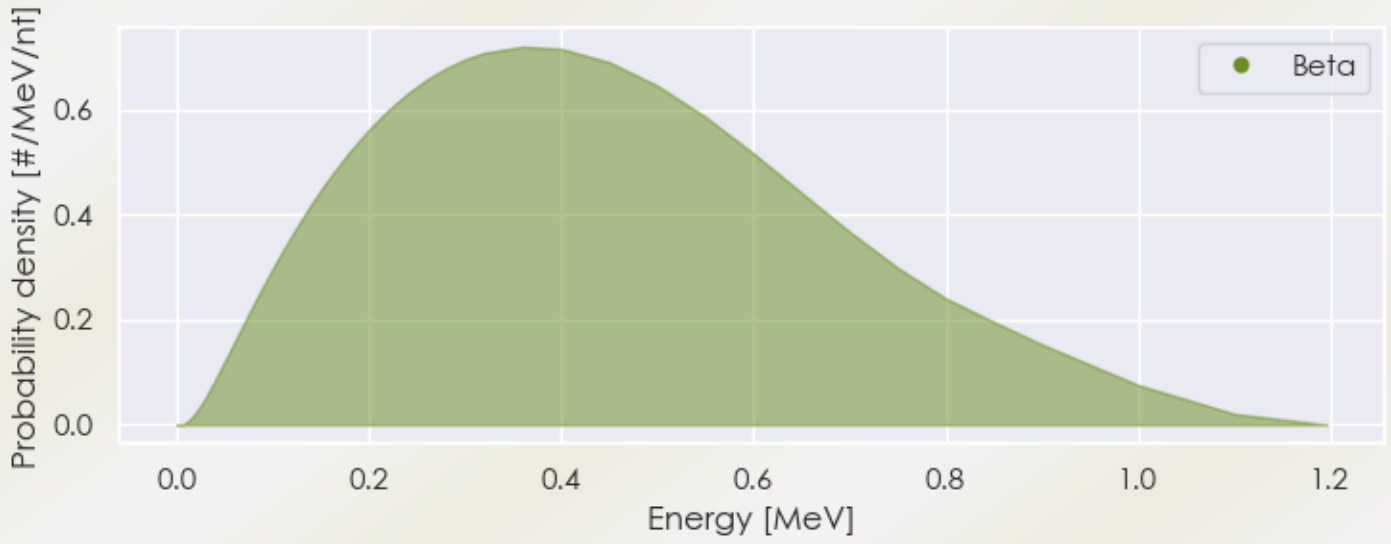
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Se-70 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/Se-70 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/Se-70 Summary Spectrum.csv

Energy [MeV]	Yield [#/nt] if > 0.01	Radiation type
1.42075e-05	1.360e+01	X-ray
1.27775e-03	1.409e-02	X-ray
1.04633e-02	2.362e-01	X-ray
1.05007e-02	4.574e-01	X-ray
1.16800e-02	3.122e-02	X-ray
1.16852e-02	6.098e-02	X-ray
3.20500e-02	1.921e-02	Gamma
4.95100e-02	3.579e-01	Gamma
1.13530e-01	1.571e-02	Gamma
1.32540e-01	3.521e-02	Gamma

1.35630e-01	2.619e-02	Gamma
2.02730e-01	4.889e-02	Gamma
2.44140e-01	2.852e-02	Gamma
2.55860e-01	1.833e-02	Gamma
2.63200e-01	2.764e-02	Gamma
2.93590e-01	2.823e-02	Gamma
3.76650e-01	9.428e-02	Gamma
4.13910e-01	2.095e-02	Gamma
4.26150e-01	2.910e-01	Gamma
4.99690e-01	1.280e-02	Gamma
5.11000e-01	8.616e-01	Annihilation photon
3.01226e-01	1.113e-02	Positron
3.54502e-01	1.396e-01	Positron
4.52260e-01	2.346e-02	Positron
5.20126e-01	2.488e-01	Positron
2.23273e-05	6.417e+00	Auger electron
5.24657e-05	2.360e+00	Auger electron
9.74444e-05	3.527e-01	Auger electron
1.15603e-03	1.998e+00	Auger electron
1.22196e-03	7.046e-02	Auger electron
9.06608e-03	4.800e-01	Auger electron
1.02994e-02	1.363e-01	Auger electron
1.15362e-02	1.008e-02	Auger electron
2.02210e-02	7.014e-01	Conversion electron
3.05308e-02	5.696e-02	Conversion electron
3.06843e-02	6.589e-02	Conversion electron
3.07217e-02	1.082e-01	Conversion electron
3.19062e-02	3.584e-02	Conversion electron
3.76810e-02	2.061e-01	Conversion electron
4.79908e-02	2.127e-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