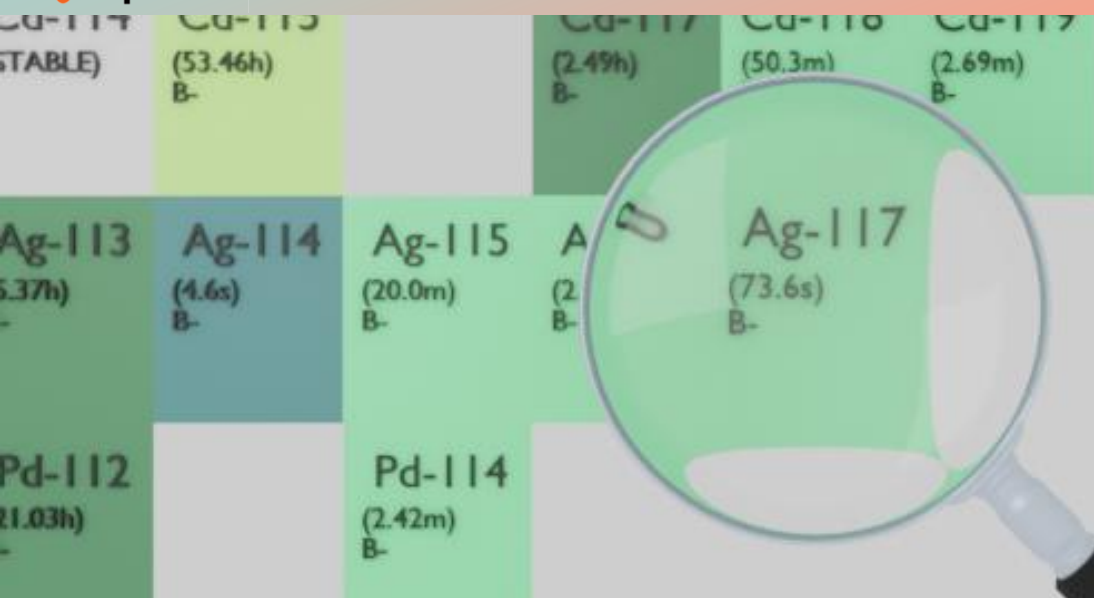




# SILVER-117

## SUMMARY DATA

### GENERAL

### CLASSIFICATION

Isotope: Ag-117  
Atomic number (Z): 47  
Mass number (A): 117  
Neutron number (N): 70

### RADIOACTIVE DECAY

Decay modes:  $\beta^-$   
Half-life: 73.6 [s]  
Decay constant:  $9.4178 \times 10^{-3}$  [1/s]  
Daughters: Cd-117 (84.7%), Cd-117m (15.3%)  
Radioactive daughters: Cd-117, Cd-117m

### DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]  
Mean electron energy: 1.28131 [MeV]  
Mean photon energy: 1.30275 [MeV]  
Air kerma rate constant,  $\Gamma_{10}$ :  $4.079 \times 10^{-17}$  [Gy  $\cdot$  m<sup>2</sup>/Bq  $\cdot$  s]  
Air kerma coefficient,  $K_{\text{air}}$ :  $4.079 \times 10^{-17}$  [Gy  $\cdot$  m<sup>2</sup>/Bq  $\cdot$  s]  
Equilibrium dose constant for weakly-penetrating radiations ( $\alpha$  and/or electrons),  $\Delta_{\text{wp}}$ :  $2.053 \times 10^{-13}$  [Gy  $\cdot$  kg/Bq  $\cdot$  s]  
Equilibrium dose constant for alphas,  $\Delta_{\alpha}$ : 0.000e+00 [Gy  $\cdot$  kg/Bq  $\cdot$  s]

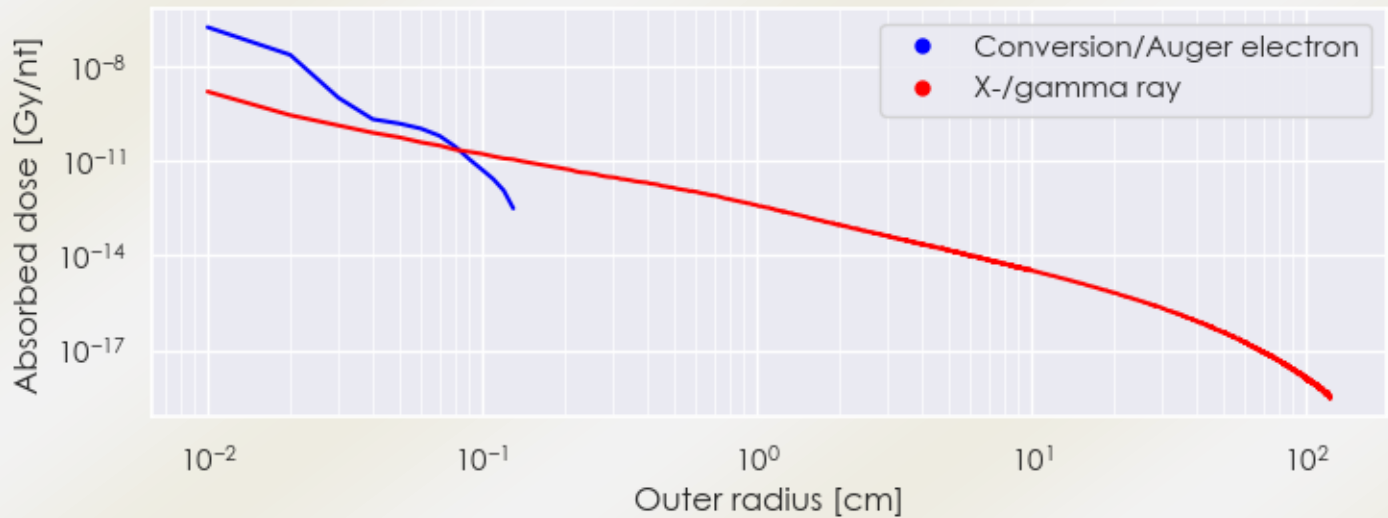
Equilibrium dose constant for betas/electrons,  $\Delta_{\beta, \beta+, e^-}$ :  $2.053 \times 10^{-13}$  [Gy·kg/Bq·s]

Equilibrium dose constant for photons,  $\Delta_p$ :  $2.087 \times 10^{-13}$  [Gy·kg/Bq·s]

## DOSE POINT KERNELS (PLOT)

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

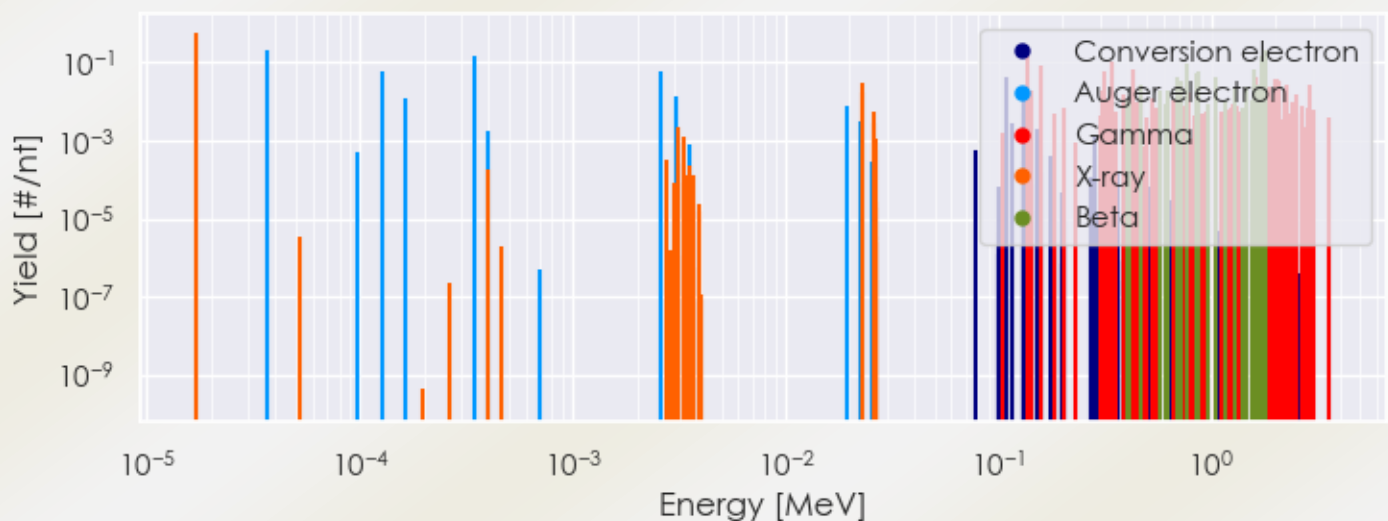
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: [www.mirdsoft.org/products/MIRDspecs/Ag-117 DPK.csv](http://www.mirdsoft.org/products/MIRDspecs/Ag-117 DPK.csv)

## SUMMARY SPECTRA (PLOT)

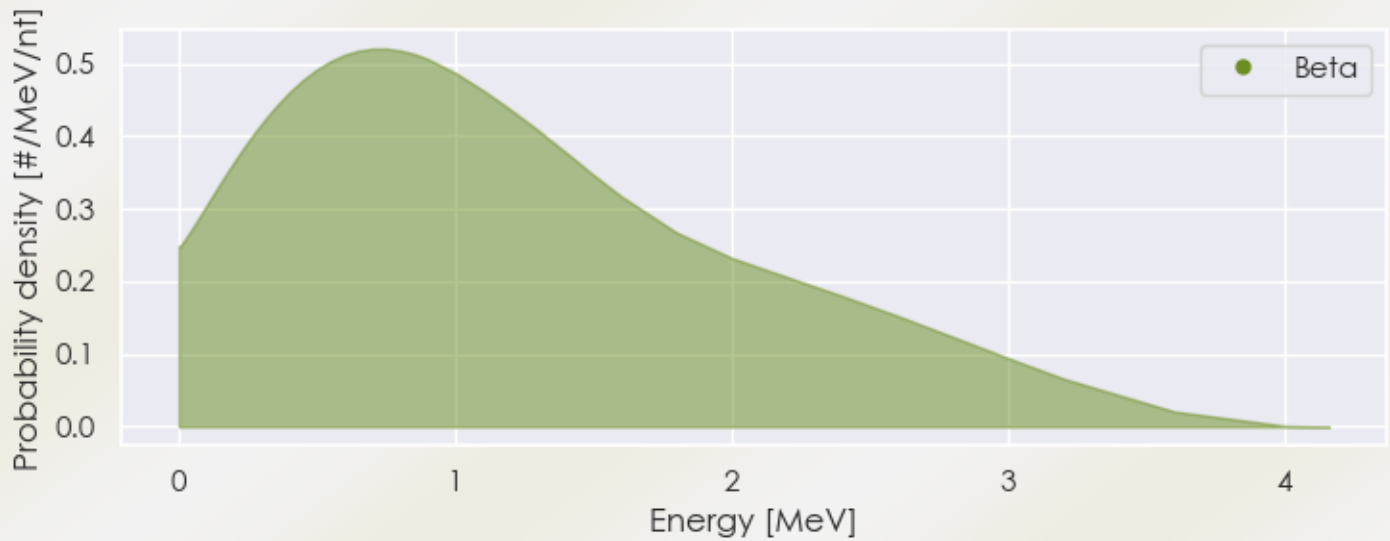
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: [www.mirdsoft.org/products/MIRDspecs/Ag-117 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Ag-117 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/Ag-117 Beta Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Ag-117 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/Ag-117 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Ag-117 Summary Spectrum.csv)

| Energy [MeV] | Yield [# / nt] if > 0.01 | Radiation type |
|--------------|--------------------------|----------------|
| 1.71484e-05  | 5.970e-01                | X-ray          |
| 2.29571e-02  | 1.670e-02                | X-ray          |
| 2.31527e-02  | 3.139e-02                | X-ray          |
| 1.35400e-01  | 2.300e-01                | Gamma          |
| 1.42100e-01  | 1.886e-02                | Gamma          |
| 1.57100e-01  | 7.889e-02                | Gamma          |
| 3.07200e-01  | 1.863e-02                | Gamma          |
| 3.12300e-01  | 5.934e-02                | Gamma          |
| 3.27200e-01  | 1.127e-02                | Gamma          |
| 3.37700e-01  | 1.028e-01                | Gamma          |

|             |           |       |
|-------------|-----------|-------|
| 3.86800e-01 | 1.541e-02 | Gamma |
| 4.26200e-01 | 6.946e-02 | Gamma |
| 4.67700e-01 | 2.461e-02 | Gamma |
| 5.29900e-01 | 1.265e-02 | Gamma |
| 6.65100e-01 | 1.127e-02 | Gamma |
| 7.79500e-01 | 1.794e-02 | Gamma |
| 1.60900e+00 | 4.278e-02 | Gamma |
| 1.65760e+00 | 2.231e-02 | Gamma |
| 1.69620e+00 | 1.518e-02 | Gamma |
| 1.74880e+00 | 1.127e-02 | Gamma |
| 1.74880e+00 | 1.127e-02 | Gamma |
| 1.85440e+00 | 2.484e-02 | Gamma |
| 1.87760e+00 | 1.288e-02 | Gamma |
| 1.96380e+00 | 1.058e-02 | Gamma |
| 1.99550e+00 | 3.979e-02 | Gamma |
| 2.01330e+00 | 3.749e-02 | Gamma |
| 2.03540e+00 | 1.265e-02 | Gamma |
| 2.05670e+00 | 3.289e-02 | Gamma |
| 2.19210e+00 | 1.863e-02 | Gamma |
| 2.24590e+00 | 2.806e-02 | Gamma |
| 2.51410e+00 | 1.449e-02 | Gamma |
| 2.88830e+00 | 2.553e-02 | Gamma |
| 4.01889e-01 | 1.079e-02 | Beta  |
| 4.63184e-01 | 2.552e-02 | Beta  |
| 5.70723e-01 | 1.865e-02 | Beta  |
| 6.27004e-01 | 1.963e-02 | Beta  |
| 6.85797e-01 | 4.416e-02 | Beta  |
| 6.98382e-01 | 1.079e-02 | Beta  |
| 7.22248e-01 | 3.337e-02 | Beta  |
| 7.71844e-01 | 9.421e-02 | Beta  |
| 8.53389e-01 | 5.299e-02 | Beta  |
| 8.61526e-01 | 6.084e-02 | Beta  |
| 1.03974e+00 | 4.220e-02 | Beta  |
| 1.15173e+00 | 1.079e-02 | Beta  |
| 1.28986e+00 | 2.257e-02 | Beta  |
| 1.47095e+00 | 2.355e-02 | Beta  |
| 1.53761e+00 | 1.079e-02 | Beta  |
| 1.59474e+00 | 6.771e-02 | Beta  |

|             |           |                     |
|-------------|-----------|---------------------|
| 1.63659e+00 | 2.748e-02 | Beta                |
| 1.65309e+00 | 1.865e-02 | Beta                |
| 1.66460e+00 | 1.079e-02 | Beta                |
| 1.73239e+00 | 1.472e-01 | Beta                |
| 1.79657e+00 | 1.963e-01 | Beta                |
| 3.67904e-05 | 2.106e-01 | Auger electron      |
| 1.28317e-04 | 6.138e-02 | Auger electron      |
| 1.65196e-04 | 1.231e-02 | Auger electron      |
| 3.45248e-04 | 1.475e-01 | Auger electron      |
| 2.60967e-03 | 5.709e-02 | Auger electron      |
| 3.05245e-03 | 1.314e-02 | Auger electron      |
| 1.08712e-01 | 4.023e-02 | Conversion electron |
| 1.30412e-01 | 1.920e-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](https://sites.snmmi.org/SNMMI-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6)