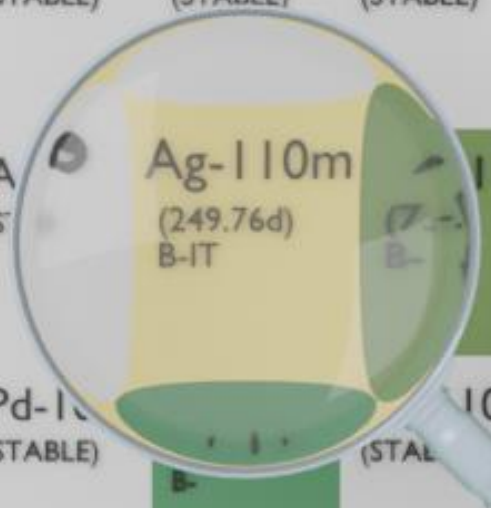




|                             |                    |                             |                         |                                       |                          |                            |                          |                          |
|-----------------------------|--------------------|-----------------------------|-------------------------|---------------------------------------|--------------------------|----------------------------|--------------------------|--------------------------|
| Cd-107<br>(5.50h)<br>CB+    | Cd-108<br>(STABLE) | Cd-109<br>(461.4d)<br>EC    | Cd-110<br>(STABLE)      | Cd-111<br>(STABLE)                    | Cd-112<br>(STABLE)       | Cd-113<br>(7.7E+15y)<br>B- | Cd-114<br>(STABLE)       | Cd-115<br>(53.46h)<br>B- |
| Ag-106<br>(23.96m)<br>CB+B- | Ag-107<br>(STABLE) | Ag-108<br>(2.37m)<br>B-ECB+ | Ag-109<br>(2.47m)<br>B- | <b>Ag-110m<br/>(249.76d)<br/>B-IT</b> | Ag-111<br>(7.46d)<br>B-  | Ag-112<br>(3.130h)<br>B-   | Ag-113<br>(5.37h)<br>B-  | Ag-114<br>(4.6s)<br>B-   |
| Pd-105<br>(STABLE)          | Pd-106<br>(STABLE) | Pd-107<br>(6.5E+6y)<br>B-   | Pd-108<br>(STABLE)      | Pd-109<br>(13.43h)<br>B-              | Pd-110<br>(3.617d)<br>B- | Pd-111<br>(23.4m)<br>B-    | Pd-112<br>(21.03h)<br>B- | Pd-113<br>(17.43d)<br>B- |

# SILVER-110M

## SUMMARY DATA

### GENERAL

#### CLASSIFICATION

Isotope: Ag-110m  
Atomic number (Z): 47  
Mass number (A): 110  
Neutron number (N): 63

#### RADIOACTIVE DECAY

Decay modes:  $\beta^-$ , Internal transition  
Half-life: 249.8 [d]  
Decay constant:  $3.2121\text{e-}08$  [1/s]  
Daughters: Ag-110 (1.36%), Cd-110 (98.6%)  
Radioactive daughters: Ag-110

#### DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]  
Mean electron energy: 0.07576 [MeV]  
Mean photon energy: 2.76056 [MeV]  
Air kerma rate constant,  $\Gamma_{10}$ :  $9.938\text{e-}17$  [ $\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$ ]  
Air kerma coefficient,  $K_{\text{air}}$ :  $9.938\text{e-}17$  [ $\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$ ]  
Equilibrium dose constant for weakly-penetrating radiations ( $\alpha$  and/or electrons),  $\Delta_{\text{wp}}$ :  $1.214\text{e-}14$  [ $\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$ ]  
Equilibrium dose constant for alphas,  $\Delta_{\alpha}$ :  $0.000\text{e+}00$  [ $\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$ ]

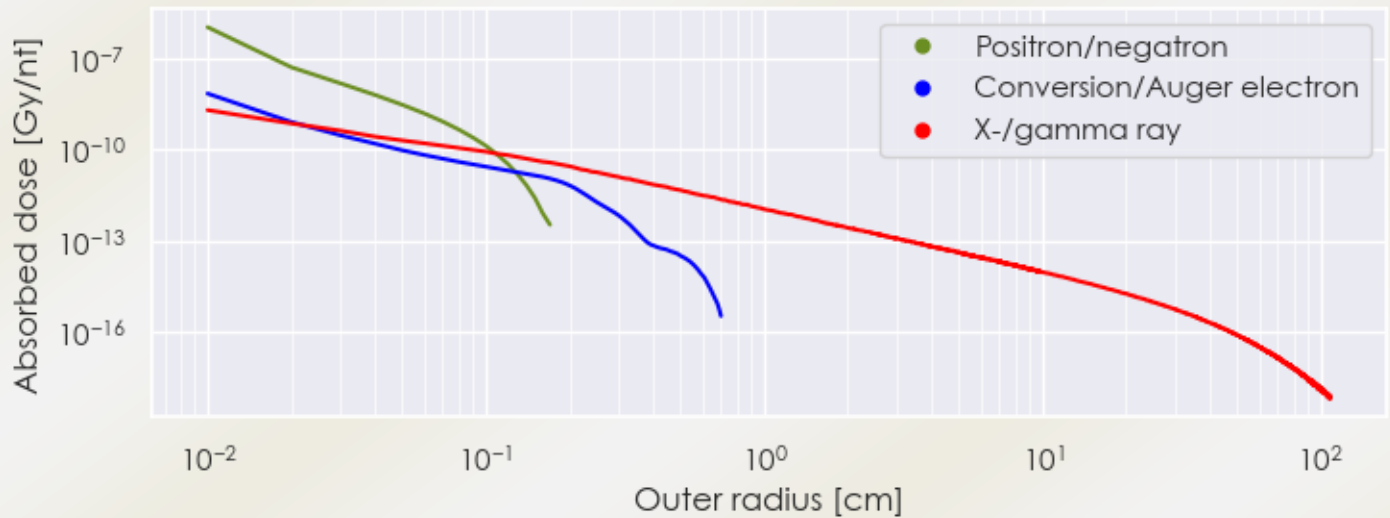
Equilibrium dose constant for betas/electrons,  $\Delta_{\beta-\beta+,e-}$ :  $1.214\text{e-}14$  [Gy·kg/Bq·s]

Equilibrium dose constant for photons,  $\Delta_p$ :  $4.423\text{e-}13$  [Gy·kg/Bq·s]

### DOSE POINT KERNELS (PLOT)

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

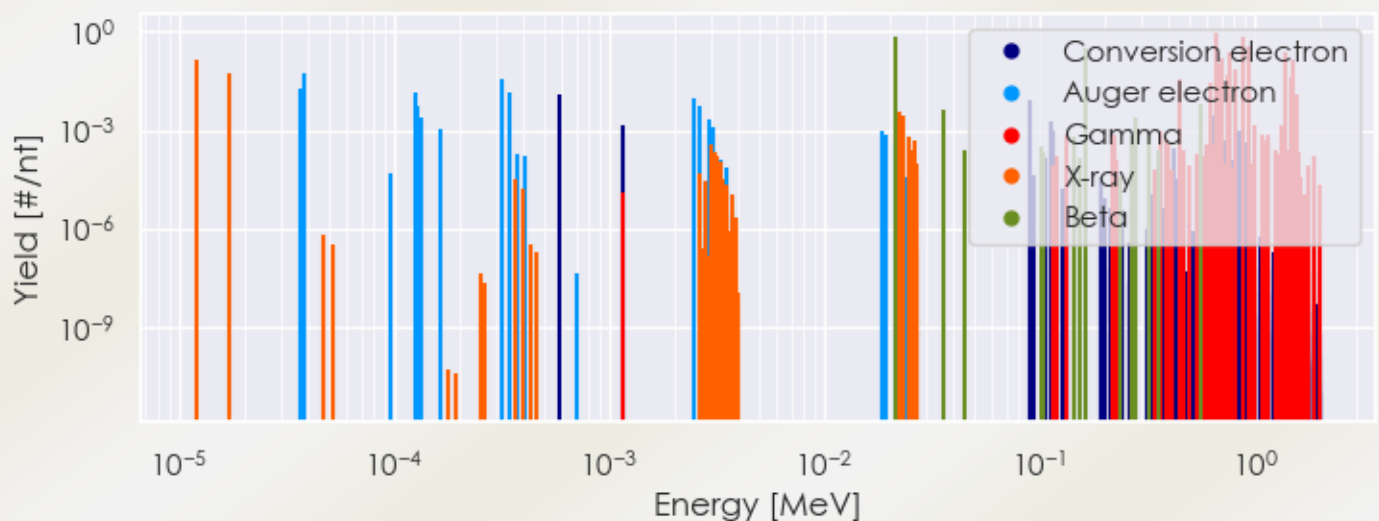
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: [www.mirdsoft.org/products/MIRDspecs/Ag-110m DPK.csv](http://www.mirdsoft.org/products/MIRDspecs/Ag-110m DPK.csv)

### SUMMARY SPECTRA (PLOT)

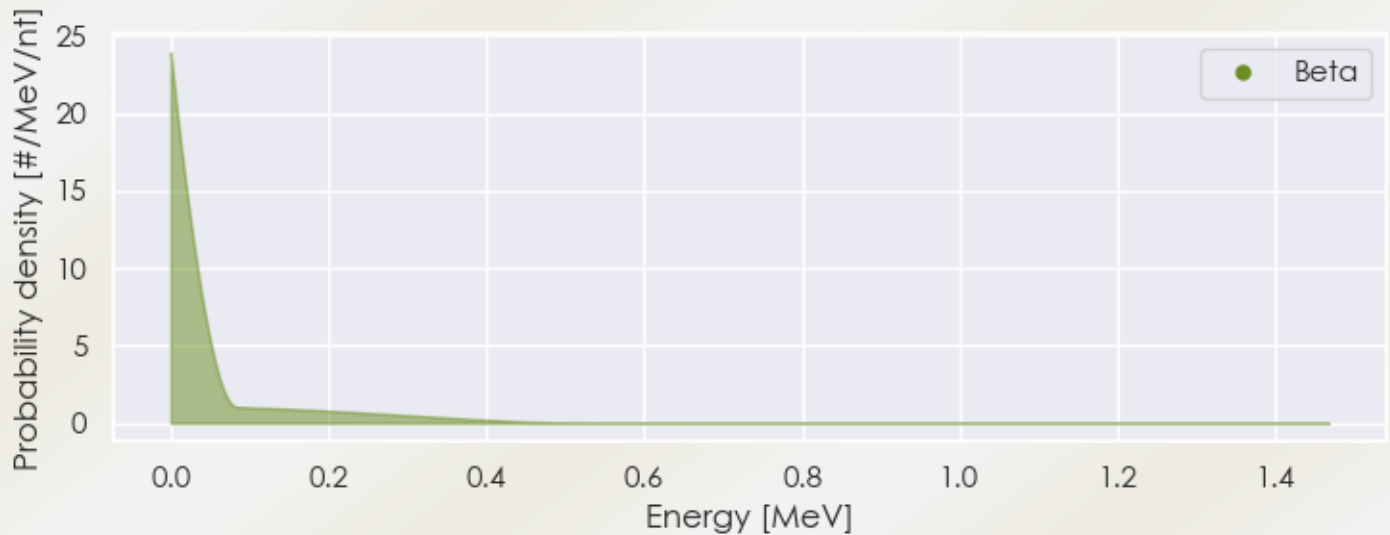
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: [www.mirdsoft.org/products/MIRDspecs/Ag-110m Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Ag-110m 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-110m Beta Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Ag-110m 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-110m Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Ag-110m Summary Spectrum.csv)

| Energy [MeV] | Yield [# / nt] if > 0.01 | Radiation type |
|--------------|--------------------------|----------------|
| 1.20772e-05  | 1.449e-01                | X-ray          |
| 1.71481e-05  | 5.431e-02                | X-ray          |
| 4.46812e-01  | 3.621e-02                | Gamma          |
| 6.20355e-01  | 2.669e-02                | Gamma          |
| 6.57760e-01  | 9.430e-01                | Gamma          |
| 6.77622e-01  | 1.056e-01                | Gamma          |
| 6.87009e-01  | 6.441e-02                | Gamma          |
| 7.06676e-01  | 1.632e-01                | Gamma          |
| 7.44276e-01  | 4.772e-02                | Gamma          |

|                    |           |                     |
|--------------------|-----------|---------------------|
| <b>7.63942e-01</b> | 2.261e-01 | Gamma               |
| <b>8.18024e-01</b> | 7.337e-02 | Gamma               |
| <b>8.84678e-01</b> | 7.271e-01 | Gamma               |
| <b>9.37485e-01</b> | 3.423e-01 | Gamma               |
| <b>1.38429e+00</b> | 2.490e-01 | Gamma               |
| <b>1.47578e+00</b> | 4.168e-02 | Gamma               |
| <b>1.50503e+00</b> | 1.360e-01 | Gamma               |
| <b>1.56229e+00</b> | 1.244e-02 | Gamma               |
| <b>2.16092e-02</b> | 6.693e-01 | Beta                |
| <b>1.65225e-01</b> | 3.013e-01 | Beta                |
| <b>3.67868e-05</b> | 1.916e-02 | Auger electron      |
| <b>3.77881e-05</b> | 5.242e-02 | Auger electron      |
| <b>1.26789e-04</b> | 1.384e-02 | Auger electron      |
| <b>3.18321e-04</b> | 3.684e-02 | Auger electron      |
| <b>3.45256e-04</b> | 1.341e-02 | Auger electron      |
| <b>5.91470e-04</b> | 1.214e-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)