



# BROMINE-75

## SUMMARY DATA

### GENERAL

#### CLASSIFICATION

Isotope: Br-75  
Atomic number (Z): 35  
Mass number (A): 75  
Neutron number (N): 40

#### RADIOACTIVE DECAY

Decay modes:  $\beta^+$ , Electron capture  
Half-life: 96.7 [m]  
Decay constant:  $1.1947 \times 10^{-4}$  [1/s]  
Daughters: Se-75 (100.0%)  
Radioactive daughters: Se-75

#### DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]  
Mean electron energy: 0.52825 [MeV]  
Mean photon energy: 1.19805 [MeV]  
Air kerma rate constant,  $\Gamma_{10}$ :  $2.315 \times 10^{-17}$  [Gy  $\cdot$  m<sup>2</sup>/Bq  $\cdot$  s]  
Air kerma coefficient,  $K_{\text{air}}$ :  $5.139 \times 10^{-17}$  [Gy  $\cdot$  m<sup>2</sup>/Bq  $\cdot$  s]  
Equilibrium dose constant for weakly-penetrating radiations ( $\alpha$  and/or electrons),  $\Delta_{\text{wp}}$ :  $8.464 \times 10^{-14}$  [Gy  $\cdot$  kg/Bq  $\cdot$  s]  
Equilibrium dose constant for alphas,  $\Delta_{\alpha}$ :  $0.000 \times 10^0$  [Gy  $\cdot$  kg/Bq  $\cdot$  s]

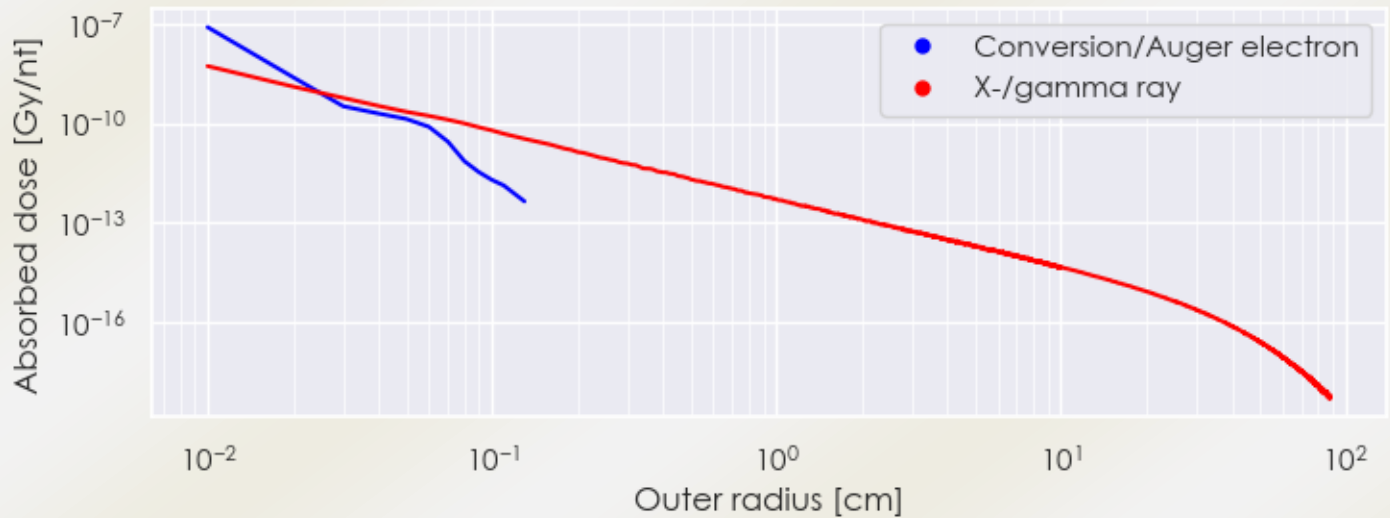
Equilibrium dose constant for betas/electrons,  $\Delta_{\beta, \beta^+, e^-}$ :  $8.464 \times 10^{-14}$  [Gy·kg/Bq·s]

Equilibrium dose constant for photons,  $\Delta_p$ :  $1.919 \times 10^{-13}$  [Gy·kg/Bq·s]

### DOSE POINT KERNELS (PLOT)

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

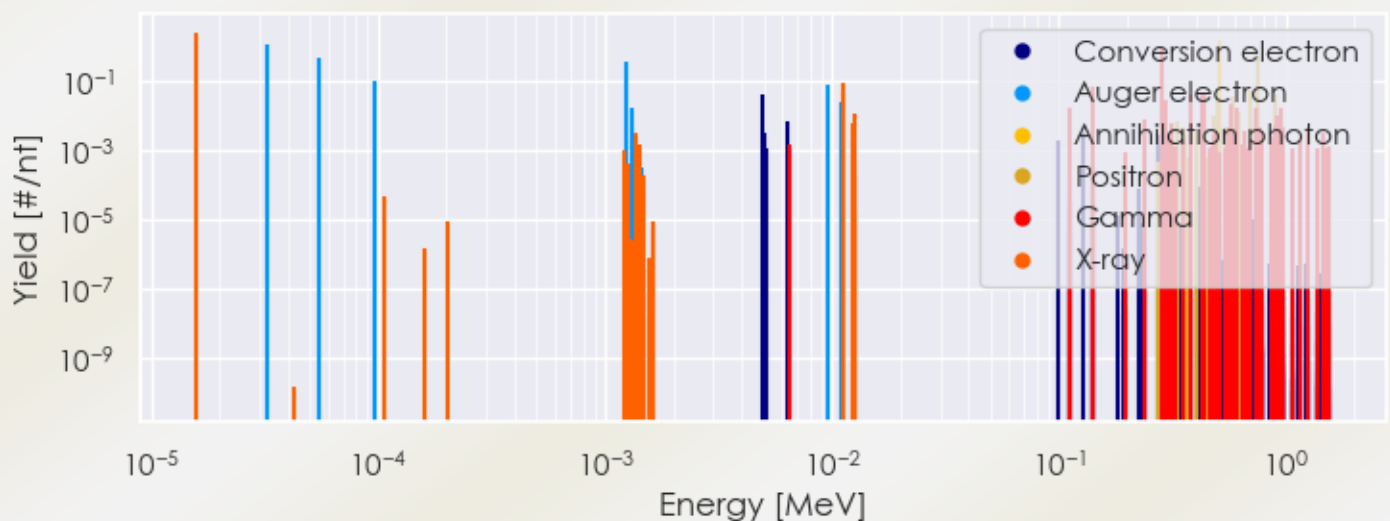
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: [www.mirdsoft.org/products/MIRDspecs/Br-75 DPK.csv](http://www.mirdsoft.org/products/MIRDspecs/Br-75 DPK.csv)

### SUMMARY SPECTRA (PLOT)

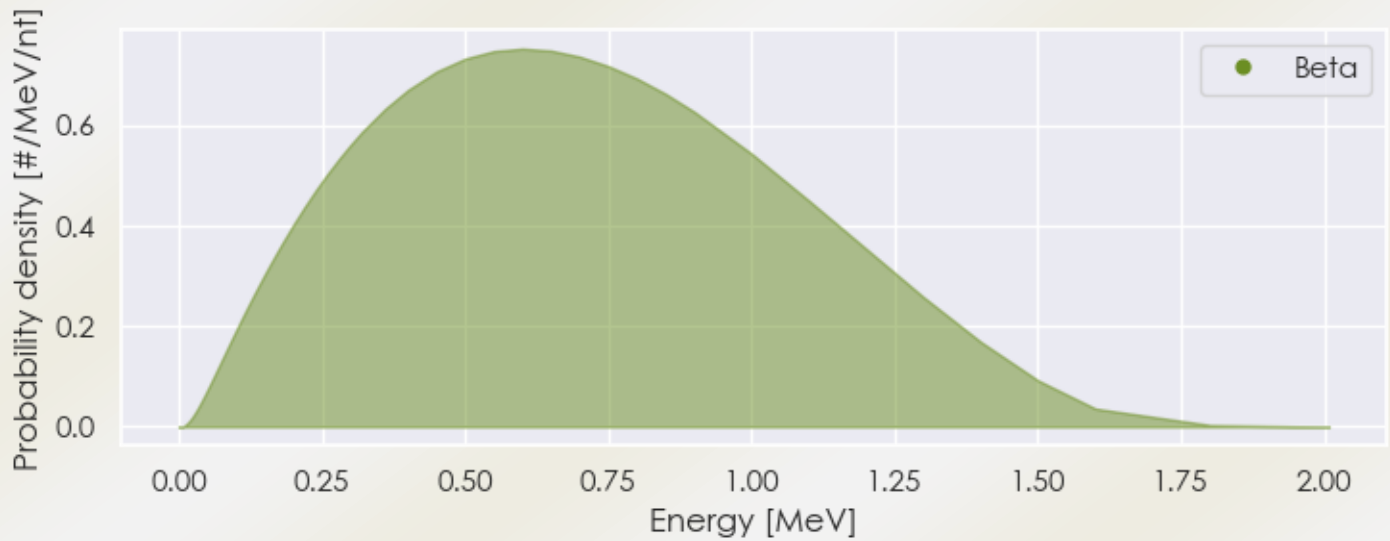
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: [www.mirdsoft.org/products/MIRDspecs/Br-75 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Br-75 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/Br-75 Beta Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Br-75 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/Br-75 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Br-75 Summary Spectrum.csv)

| Energy [MeV] | Yield [# / nt] if > 0.01 | Radiation type |
|--------------|--------------------------|----------------|
| 1.58664e-05  | 2.458e+00                | X-ray          |
| 1.11378e-02  | 4.301e-02                | X-ray          |
| 1.11804e-02  | 8.319e-02                | X-ray          |
| 1.24553e-02  | 1.134e-02                | X-ray          |
| 1.12100e-01  | 1.672e-02                | Gamma          |
| 1.41190e-01  | 6.600e-02                | Gamma          |
| 2.86500e-01  | 8.800e-01                | Gamma          |
| 2.92850e-01  | 2.666e-02                | Gamma          |
| 3.77390e-01  | 3.934e-02                | Gamma          |
| 4.27790e-01  | 4.400e-02                | Gamma          |

|             |           |                     |
|-------------|-----------|---------------------|
| 4.31750e-01 | 3.872e-02 | Gamma               |
| 5.11000e-01 | 1.459e+00 | Annihilation photon |
| 5.72930e-01 | 1.989e-02 | Gamma               |
| 6.08900e-01 | 1.681e-02 | Gamma               |
| 7.33940e-01 | 1.540e-02 | Gamma               |
| 9.12050e-01 | 1.012e-02 | Gamma               |
| 9.52100e-01 | 1.663e-02 | Gamma               |
| 4.99786e-01 | 3.395e-02 | Positron            |
| 5.87046e-01 | 3.295e-02 | Positron            |
| 6.21968e-01 | 1.208e-02 | Positron            |
| 6.93478e-01 | 4.892e-02 | Positron            |
| 7.57767e-01 | 5.192e-01 | Positron            |
| 8.89308e-01 | 3.994e-02 | Positron            |
| 3.25250e-05 | 1.133e+00 | Auger electron      |
| 5.48128e-05 | 4.216e-01 | Auger electron      |
| 9.70424e-05 | 9.543e-02 | Auger electron      |
| 1.23914e-03 | 3.516e-01 | Auger electron      |
| 1.31964e-03 | 1.672e-02 | Auger electron      |
| 4.88850e-03 | 3.869e-02 | Conversion electron |
| 9.62662e-03 | 7.744e-02 | Auger electron      |
| 1.09573e-02 | 2.283e-02 | Auger 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)