



BISMUTH-216

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Bi-216
Atomic number (Z): 83
Mass number (A): 216
Neutron number (N): 133

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 2.17 [m]
Decay constant: $5.3237\text{e-}03$ [1/s]
Daughters: Po-216 (100.0%)
Radioactive daughters: Po-216

DOSIMETRIC CONSTANTS

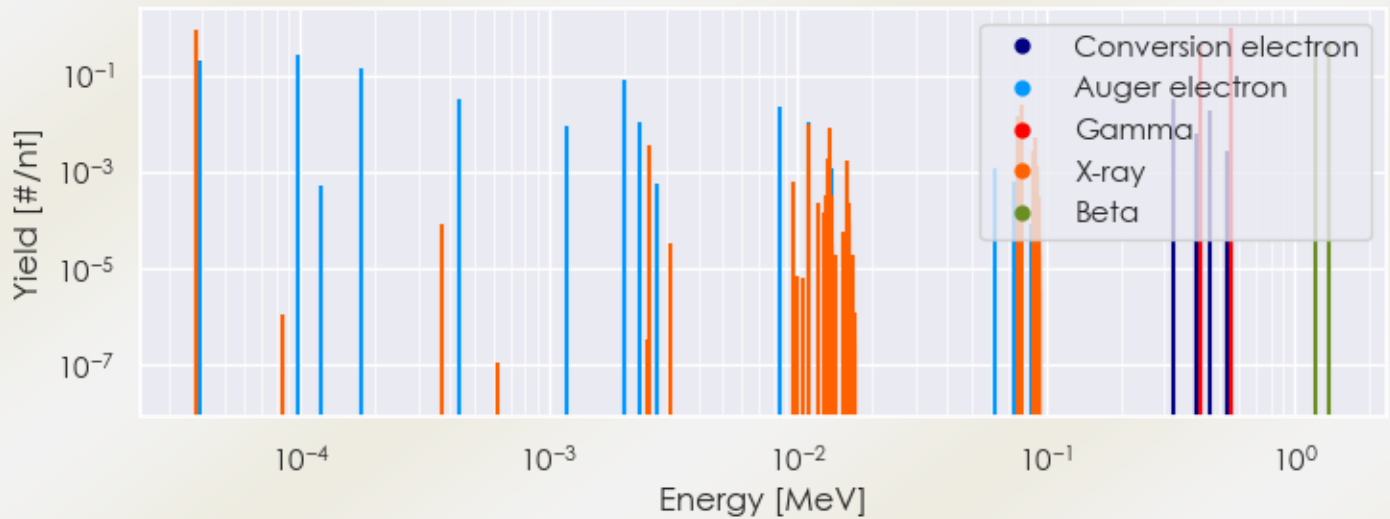
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 1.3295 [MeV]
Mean photon energy: 0.73847 [MeV]
Air kerma rate constant, Γ_{10} : $2.880\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Air kerma coefficient, K_{air} : $2.880\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $2.130\text{e-}13$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 2.130×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.183×10^{-13} [Gy·kg/Bq·s]

SUMMARY SPECTRA (PLOT)

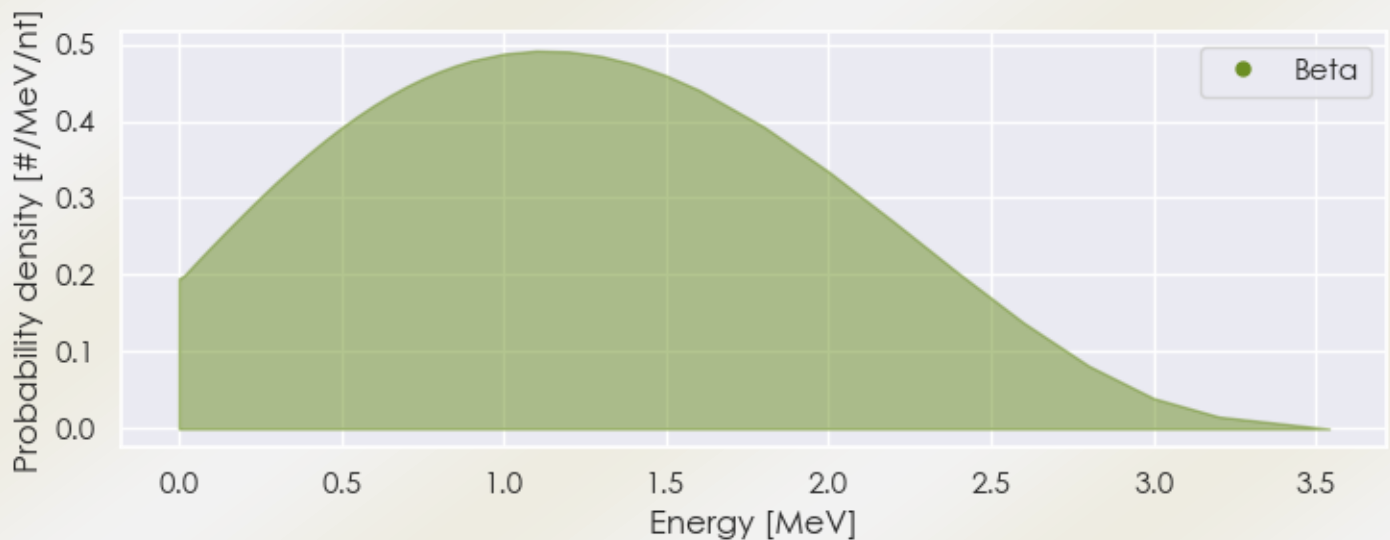
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: [www.mirdsoft.org/products/MIRDspecs/Bi-216 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Bi-216%20Summary%20Spectrum.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/Bi-216 Beta Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Bi-216%20Beta%20Spectrum.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/Bi-216 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Bi-216%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [# / n _t] if > 0.01	Radiation type
3.84169e-05	8.680e-01	X-ray
7.71271e-02	1.404e-02	X-ray
7.96070e-02	2.337e-02	X-ray
4.19210e-01	4.400e-01	Gamma
5.49800e-01	1.000e+00	Gamma
1.20444e+00	4.757e-01	Beta
1.38504e+00	5.243e-01	Beta
3.94967e-05	2.073e-01	Auger electron
9.72033e-05	2.704e-01	Auger electron
1.74875e-04	1.458e-01	Auger electron
4.37838e-04	3.369e-02	Auger electron
2.01796e-03	7.866e-02	Auger electron
2.31253e-03	1.084e-02	Auger electron
8.53836e-03	2.285e-02	Auger electron
1.10935e-02	1.045e-02	Auger electron
3.25786e-01	3.109e-02	Conversion electron
4.56376e-01	1.844e-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