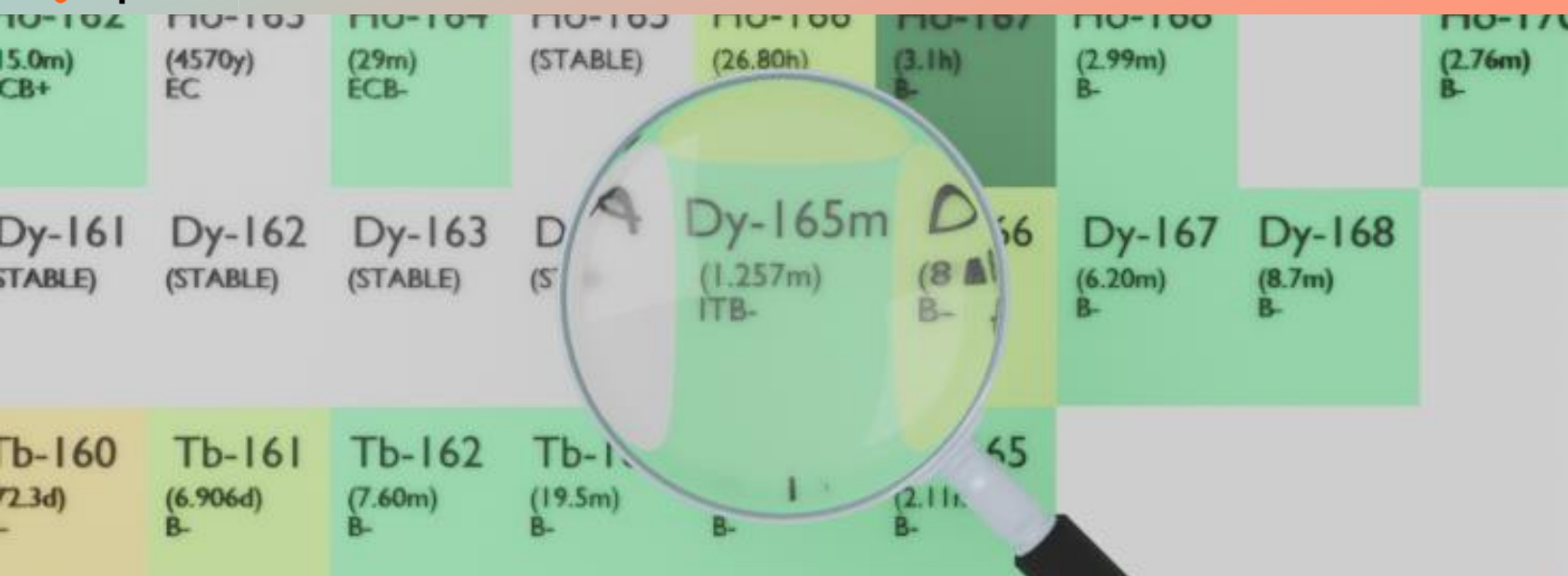




DYSPROSIUM-165M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Dy-165m
Atomic number (Z): 66
Mass number (A): 165
Neutron number (N): 99

RADIOACTIVE DECAY

Decay modes: β^- , Internal transition
Half-life: 1.257 [m]
Decay constant: 9.1905×10^{-3} [1/s]
Daughters: Dy-165 (97.8%), Ho-165 (2.24%)
Radioactive daughters: Dy-165

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.10485 [MeV]
Mean photon energy: 0.01917 [MeV]
Air kerma rate constant, Γ_{10} : 7.476×10^{-19} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 7.476×10^{-19} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.680×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta+, e-}$: 1.680×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 3.071×10^{-15} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

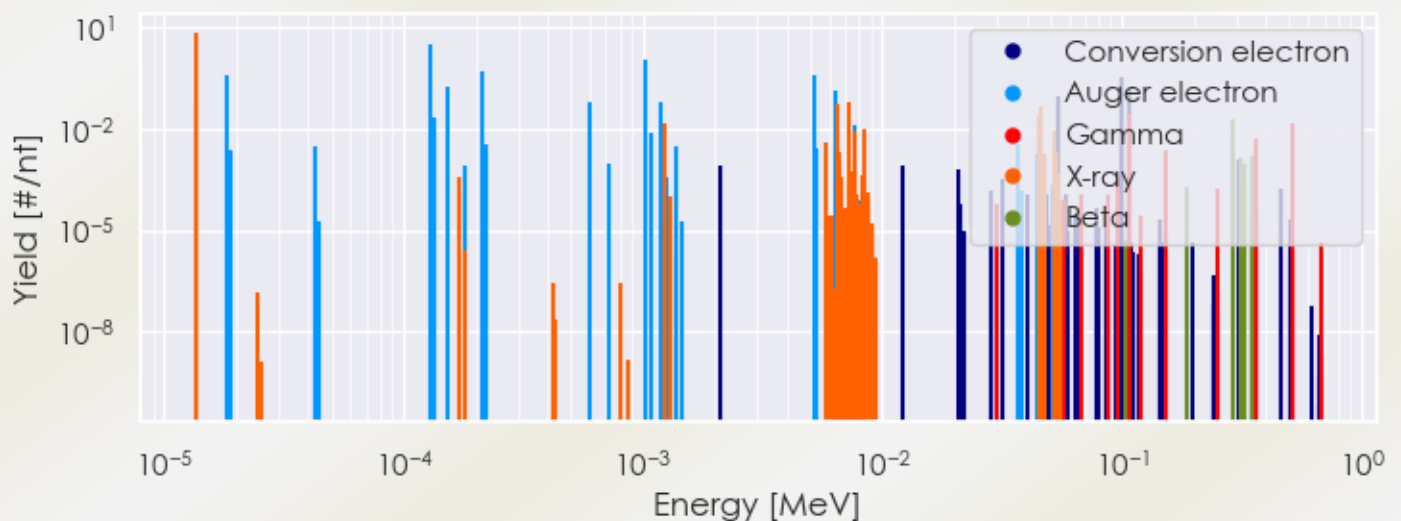
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Dy-165m DPK.csv

SUMMARY SPECTRA (PLOT)

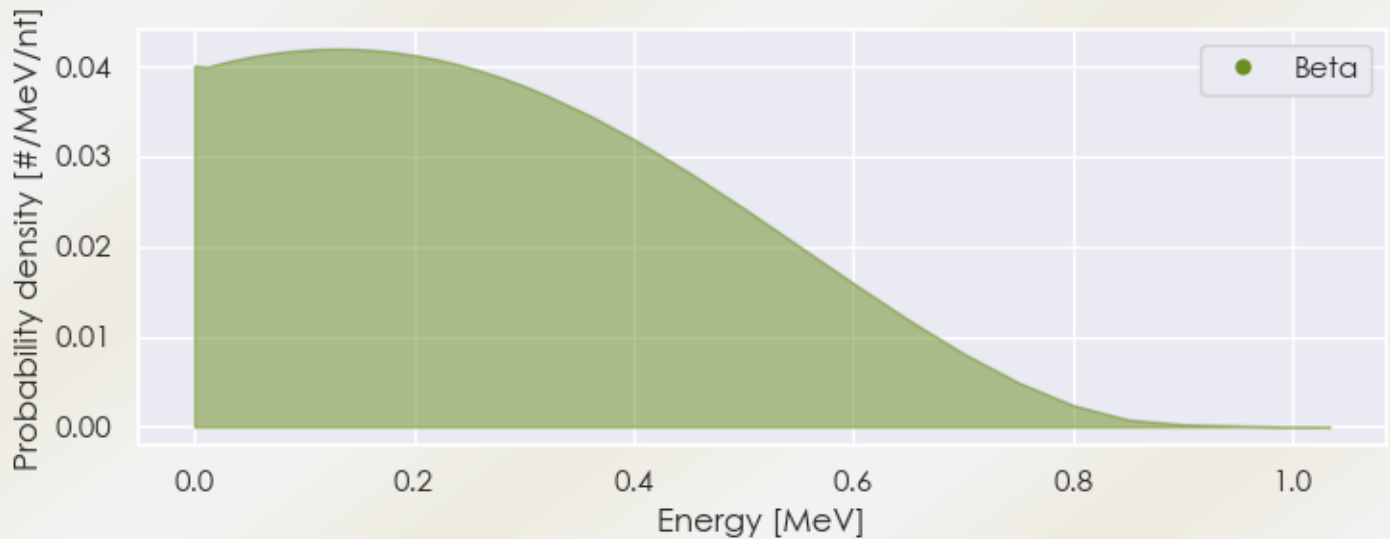
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Dy-165m 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/Dy-165m 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/Dy-165m Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.36408e-05	4.698e-02	X-ray
1.36934e-05	7.485e+00	X-ray
1.22887e-03	1.461e-02	X-ray
6.48150e-03	5.335e-02	X-ray
7.25410e-03	6.013e-02	X-ray
8.42365e-03	1.055e-02	X-ray
4.52703e-02	2.612e-02	X-ray
4.60801e-02	4.668e-02	X-ray
1.08160e-01	3.008e-02	Gamma

5.15467e-01	1.528e-02	Gamma
2.90094e-01	1.826e-02	Beta
1.81686e-05	4.072e-01	Auger electron
1.28544e-04	3.417e+00	Auger electron
1.34740e-04	2.139e-02	Auger electron
1.52054e-04	1.702e-01	Auger electron
2.13917e-04	5.480e-01	Auger electron
5.95386e-04	6.703e-02	Auger electron
1.01782e-03	1.211e+00	Auger electron
1.19285e-03	6.575e-02	Auger electron
5.15524e-03	4.199e-01	Auger electron
6.41577e-03	1.479e-01	Auger electron
7.70957e-03	1.312e-02	Auger electron
5.42990e-02	9.673e-02	Conversion electron
9.91475e-02	1.138e-02	Conversion electron
9.95693e-02	3.422e-01	Conversion electron
1.00379e-01	2.941e-01	Conversion electron
1.06498e-01	1.638e-01	Conversion electron
1.08160e-01	4.321e-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