



TD-157 (STABLE)	TD-160 (72.3d) B-	TD-161 (6.906d) B-	TD-162 (7.60m) B-	TD-163 (19.5m) B-	TD-164 (3.0m) B-	TD-165 (2.11m) B-
Gd-158 (STABLE)	Gd-159 (18.479h) B-	Gd-160 (STABLE)	Gd-162 (8.4m) B-			
Eu-157 (5.18h) B-	Eu-158 (45.9m) B-	Eu-159 (18.1m) B-				

GADOLINIUM-162

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Gd-162
Atomic number (Z): 64
Mass number (A): 162
Neutron number (N): 98

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 8.4 [m]
Decay constant: $1.3753\text{e-}03$ [1/s]
Daughters: Tb-162 (100.0%)
Radioactive daughters: Tb-162

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.33866 [MeV]
Mean photon energy: 0.41701 [MeV]
Air kerma rate constant, Γ_{10} : $1.583\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : $1.583\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $5.426\text{e-}14$ [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

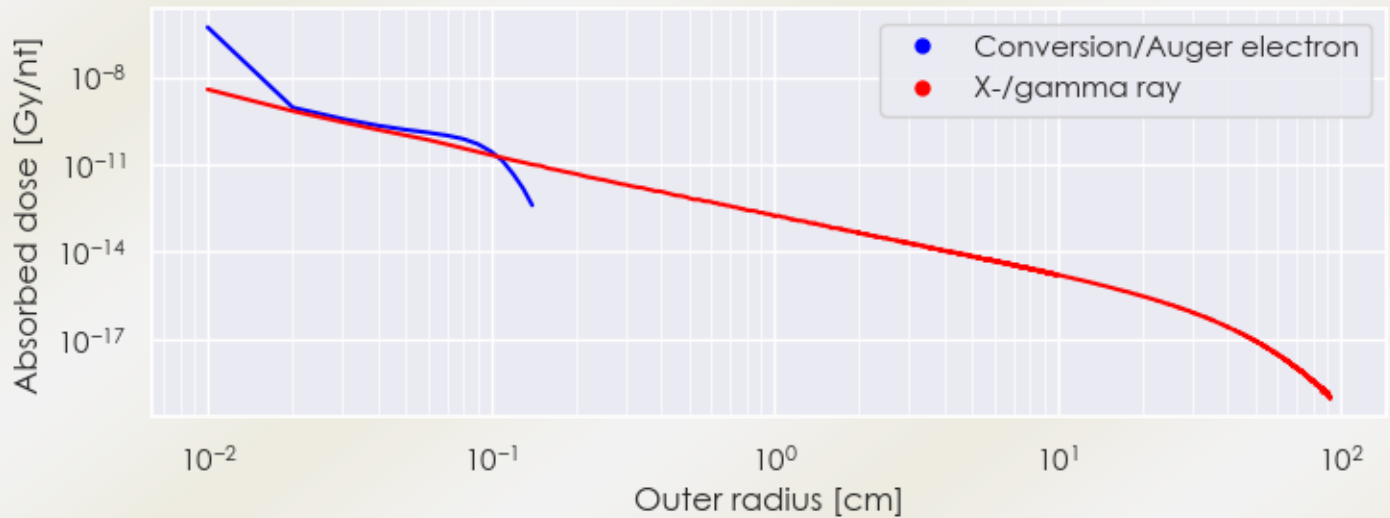
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 5.426×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 6.681×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

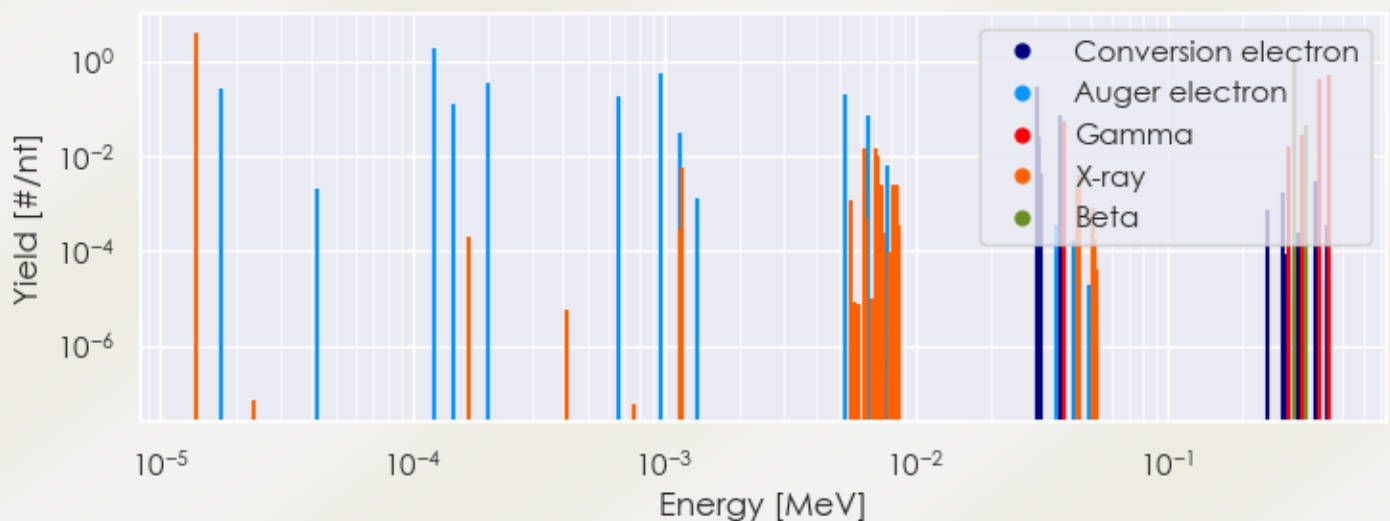
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Gd-162 DPK.csv

SUMMARY SPECTRA (PLOT)

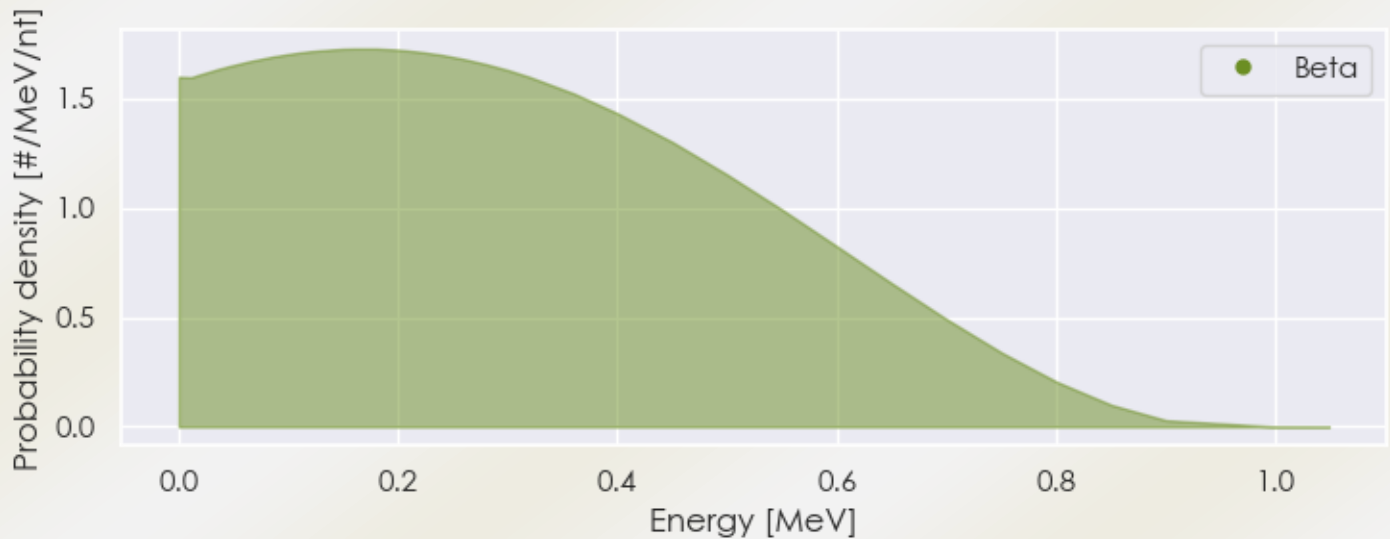
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Gd-162 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/Gd-162 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/Gd-162 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.39350e-05	4.031e+00	X-ray
6.26070e-03	1.506e-02	X-ray
6.98190e-03	1.387e-02	X-ray
7.07629e-03	1.030e-02	X-ray
3.90000e-02	5.100e-02	Gamma
3.02300e-01	1.581e-02	Gamma
3.41420e-01	2.703e-02	Gamma
4.03000e-01	4.335e-01	Gamma
4.42120e-01	5.100e-01	Gamma

3.17875e-01	9.550e-01	Beta
3.57938e-01	4.500e-02	Beta
1.73725e-05	2.553e-01	Auger electron
1.21343e-04	1.854e+00	Auger electron
1.45525e-04	1.183e-01	Auger electron
2.01008e-04	3.419e-01	Auger electron
6.55438e-04	1.757e-01	Auger electron
9.70219e-04	5.354e-01	Auger electron
1.16033e-03	3.136e-02	Auger electron
5.19961e-03	1.921e-01	Auger electron
6.43385e-03	6.806e-02	Auger electron
3.03269e-02	2.888e-01	Conversion electron
3.07391e-02	2.548e-02	Conversion electron
3.74032e-02	6.971e-02	Conversion electron
3.90000e-02	1.957e-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