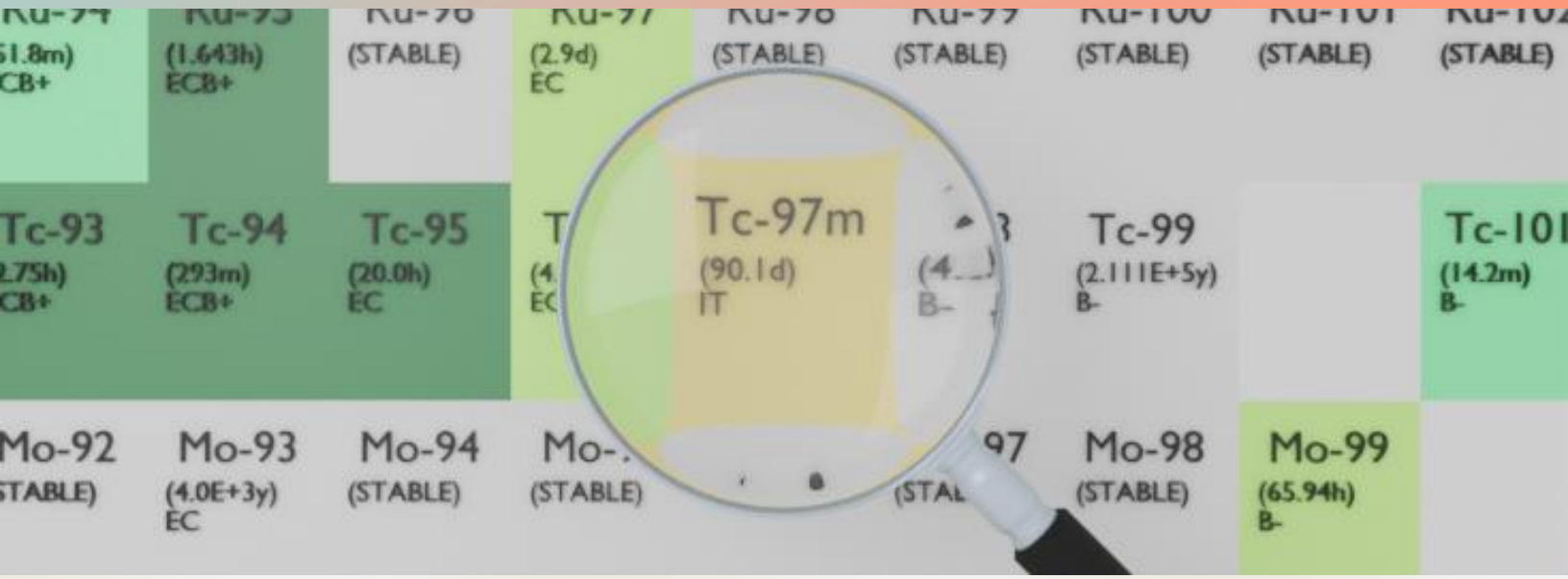


TECHNETIUM-97M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Tc-97m
Atomic number (Z): 43
Mass number (A): 97
Neutron number (N): 54

RADIOACTIVE DECAY

Decay modes: Internal transition
Half-life: 90.1 [d]
Decay constant: 8.9040e-08 [1/s]
Daughters: Tc-97 (100.0%)
Radioactive daughters: Tc-97

DOSIMETRIC CONSTANTS

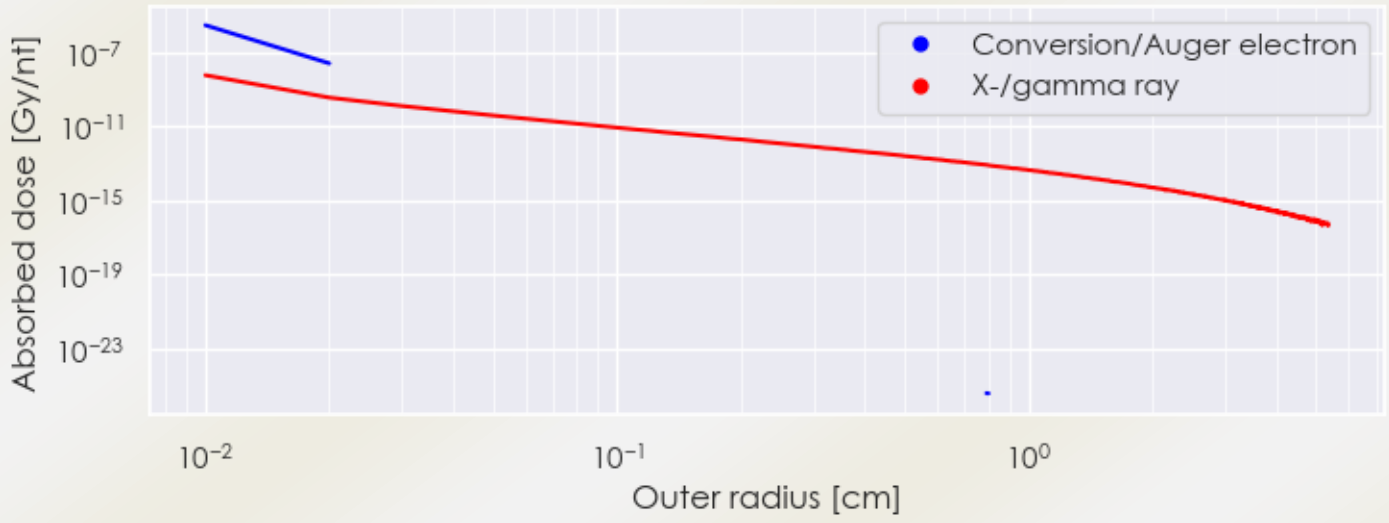
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.08686 [MeV]
Mean photon energy: 0.00955 [MeV]
Air kerma rate constant, Γ_{10}*:* 7.809e-18 [Gy·m^2/Bq·s]
Air kerma coefficient, K_{air}*:* 7.809e-18 [Gy·m^2/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (a and/or electrons), Δ_{wp}*:* 1.392e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{a}*:* 0.000e+00 [Gy·kg/Bq·s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta-,\beta+,e-}$: 1.392e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for photons, Δ_{p}: 1.530e-15 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

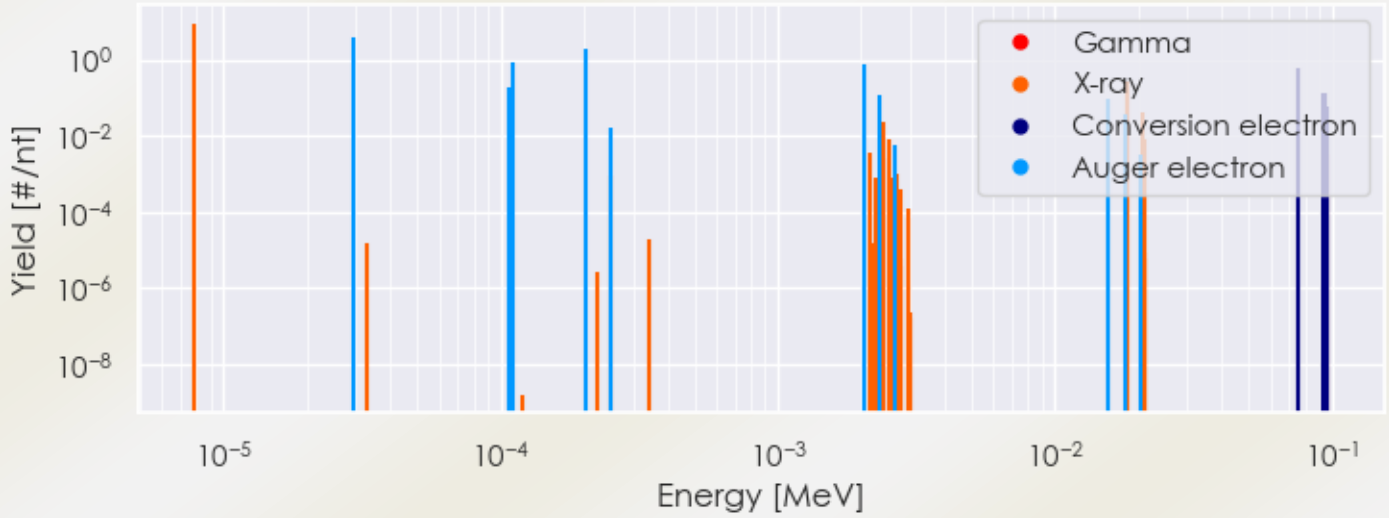
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Tc-97m 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/Tc-97m Summary 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/Tc-97m Summary Spectrum.csv

Energy [MeV]	Yield [#/nt] if > 0.01	Radiation type
7.87601e-06	8.970e+00	X-ray
2.41453e-03	2.180e-02	X-ray
1.82141e-02	1.408e-01	X-ray
1.83344e-02	2.677e-01	X-ray
2.05668e-02	2.214e-02	X-ray
2.05871e-02	4.309e-02	X-ray
2.93893e-05	3.923e+00	Auger electron
1.07699e-04	1.915e-01	Auger electron
1.09878e-04	8.201e-01	Auger electron
2.03975e-04	1.984e+00	Auger electron
2.47746e-04	1.665e-02	Auger electron
2.05140e-03	7.742e-01	Auger electron
2.33031e-03	1.205e-01	Auger electron
1.54229e-02	9.753e-02	Auger electron
1.78238e-02	3.684e-02	Auger electron
7.54880e-02	6.243e-01	Conversion electron
9.34776e-02	1.330e-01	Conversion electron
9.37021e-02	2.963e-02	Conversion electron
9.38224e-02	1.373e-01	Conversion electron
9.60751e-02	6.112e-02	Conversion electron
9.65000e-02	1.064e-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