

44-Ru-100

- Atomic Mass: 99.9042197 +- 0.0000021 amu
- Excess Mass: -89218.795 +- 2.003 keV
- Binding Energy: 861927.526 +- 2.007 keV
- Beta Decay Energy: B- -3630.000 +- 20.000 keV

"The 1995 update to the atomic mass evaluation" by G.Audi and A.H.Wapsta, Nuclear Physics A595 vol. 4 p.409-480, December 25, 1995.

- Atomic Percent Abundance: 12.6%
- Spin: 0+
- Stable Isotope
- Possible parent nuclides:
 - Beta from Tc-100
 - Electron capture from Rh-100

R.R.Kinsey, et al., *The NUDAT/PCNUDAT Program for Nuclear Data*, paper submitted to the 9 th International Symposium of Capture-Gamma_raySpectroscopy and Related Topics, Budapest, Hungary, October 1996. Data extracted from NUDAT database (Dec.18, 1997).

Fission Yields

Fissile with Neutron Energy	Yields (sum = 2)	
	Direct	Accumulated
U-235 with 0.0253 eV	3.30926E-11	3.02965E-07
U-235 with 1.0 MeV	7.10681E-12	1.17954E-07
U-238 with 1.0 MeV	1.00117E-13	3.29396E-09
Pu-239 with 0.0253 eV	3.89125E-10	2.07106E-06
Pu-239 with 1.0 MeV	1.83055E-10	1.33058E-06

CSWEG, ENDF/B-VI Summary Documentation, Report BNL-NCS-17541 (ENDF-201) (1991)

Cross section graphs:

Ru100(N,G) * JEF-2.2

Most of cross section data are adopted from NGATLAS - Atlas of Neutron Capture Cross Sections (Courtesy of IAEA NDS)

Total Cross Section

- at 0.0253 eV = 11.50 b
- Maxwell avg. at 0.0253 eV = 10.92 b
- at 14 MeV = 4.537 b
- Fission spectrum avg. = 5.611 b
- g-factor = 1.0719

44 Ruthenium

Elastic Scattering Cross Section

- at 0.0253 eV = 6.465 b
- Maxwell avg. at 0.0253 eV = 6.465 b
- at 14 MeV = 2.567 b
- Fission spectrum avg. = 4.386 b
- g-factor = 1.1283

Total Inelastic Cross Section

- at 14 MeV = 471.0 mb
- Fission spectrum avg. = 1.166 b

(n,2n) Cross Section

- at 14 MeV = 1.472 b
- Fission spectrum avg. = 871.4 micro barn

(n,3n) Cross Section

- Fission spectrum avg. = 0.2665 micro barn

(n,na) Cross Section

- at 14 MeV = 2.303 mb
- Fission spectrum avg. = 0.5943 micro barn

(n,np) Cross Section

- Atomic Mass: 98.9042197 ± 0.0000051 amu
- Excess Mass: -68218.795 ± 2.003 keV
- Binding Energy: 881927.828 ± 2.007 keV
- Beta Decay Energy: B-3830.000 ± 20.000 keV

*The 1993 update to the atomic mass evaluation by G.Audi and A.H. Wapstra, Nuclear Physics A592 vol. 4 p.409-480, December 25, 1993.

- Atomic Percent Abundance: 12.6%
- Spin: 0+
- Stable Isotope

• Possible parent nuclides:

Beta from Tc-100

Electron capture from Rh-100

FLJ, Kossy, et al., The NUBASE93 Program for Nuclear Data, paper submitted to the 8th International Symposium on Capture-Gamma Spectroscopy and Related Topics, Budapest, Hungary, October 1993. Data extracted from NUBASE93 database (Dec. 18, 1993).

Fission Yields

Fission with Neutron Energy	Yields (sum = 2)	
	Direct	Accumulated
U-235 with 0.0253 eV	3.30828E-11	3.02963E-07
U-235 with 1.0 MeV	7.10881E-12	1.17954E-07
U-235 with 1.0 MeV	1.00117E-13	8.28908E-08
Pu-239 with 0.0253 eV	3.98123E-10	2.07108E-08
Pu-239 with 1.0 MeV	1.83058E-10	1.30058E-08

CSEWG, ENDF-6 Summary Documentation, Report BNL-NCS-17841 (ENDF-301) (1991)

Cross section graphs:

Ru100(N,G) * JEF-2.2

Most of cross section data are adopted from IAEA-25 - Atlas of Neutron Capture Cross Sections (Courtesy of IAEA NDS)

Total Cross Section

- at 0.0253 eV = 11.50 b
- Maxwell avg. at 0.0253 eV = 10.92 b
- at 14 MeV = 4.237 b
- Fission spectrum avg. = 5.811 b
- g-factor = 1.0719

Elastic Scattering Cross Section

- at 0.0253 eV = 8.485 b
- Maxwell avg. at 0.0253 eV = 8.485 b
- at 14 MeV = 2.587 b
- Fission spectrum avg. = 4.388 b
- g-factor = 1.1283

Total Inelastic Cross Section

- at 14 MeV = 471.0 mb
- Fission spectrum avg. = 1.185 b

(n,2n) Cross Section

1.30 2.8

at 14 MeV = 1.425 b

Fission spectrum avg. = 87.14 micro barn

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- at 14 MeV = 1.159 mb
- Fission spectrum avg. = 0.2855 micro barn

(n,nd) Cross Section

- Fission spectrum avg. = 1.065160e-12 b

Radiative Capture Cross Section

- at 0.0253 eV = 5.022 b
- Maxwell avg. at 0.0253 eV = 4.452 b
- Resonance integral = 11.19 b
- at 14 MeV = 1.053 mb
- Fission spectrum avg. = 55.92 mb
- g-factor = 1.0002

(n,p) Cross Section

- at 14 MeV = 13.88 mb
- Fission spectrum avg. = 18.43 micro barn

(n,d) Cross Section

- at 14 MeV = 120.0 micro barn
- Fission spectrum avg. = 0.04843 micro barn

(n,t) Cross Section

- at 14 MeV = 0.9419 micro barn
- Fission spectrum avg. = 0.004826 micro barn

(n,alpha) Cross Section

- at 14 MeV = 8.501 mb
- Fission spectrum avg. = 69.80 micro barn

XS averaged from JENDL3.2, Courtesy of T.Nakagawa at JAERI



Element Ru



Back to the Table of the Nuclides main chart.

- Maxwell avg. at 0.0253 eV = 10.82 b
- at 14 MeV = 4.537 b
- Fission spectrum avg. = 5.911 b
- g-factor = 1.0719

Elastic Scattering Cross Section

- at 0.0253 eV = 6.465 b
- Maxwell avg. at 0.0253 eV = 6.465 b
- at 14 MeV = 2.567 b
- Fission spectrum avg. = 4.360 b
- g-factor = 1.1309

Total Inelastic Cross Section

- at 14 MeV = 471.0 mb
- Fission spectrum avg. = 1.166 b

(n,2n) Cross Section

- at 14 MeV = 1.472 b
- Fission spectrum avg. = 871.4 micro barn

(n,3n) Cross Section

- Fission spectrum avg. = 0.2605 micro barn

(n,np) Cross Section

- at 14 MeV = 2.303 mb
- Fission spectrum avg. = 0.5943 micro barn

(n,pp) Cross Section

44 Ruthenium

RONALD L. GALINS

MARCH 30, 1988

U.S. DEPARTMENT OF ENERGY
OFFICE OF ENVIRONMENTAL HEALTH AND SAFETY

ENVIRONMENTAL HEALTH AND SAFETY

STATE OF MICHIGAN



U.S. DEPARTMENT OF ENERGY
OFFICE OF ENVIRONMENTAL HEALTH AND SAFETY
WASHINGTON, D.C. 20545



STATE OF WASHINGTON

ENVIRONMENTAL HEARINGS OFFICE

4224 - 6th Avenue SE, Bldg. 2, Rowe Six
P.O. Box 40903, Lacey, WA 98504-0903

March 30, 1999

Stephan C. Volker

Ronald L. Lavigne

X2 averaged from JENDL3.2, Courtesy of T.Nakagawa at JAERI

• at 14 MeV = 0.501 mb
• Fission spectrum avg = 0.50 mb
(n, alpha) Cross Section

• at 14 MeV = 0.0419 micro barn
• Fission spectrum avg = 0.00456 micro barn
(n, p) Cross Section

• at 14 MeV = 150.0 micro barn
• Fission spectrum avg = 0.04543 micro barn
(n, d) Cross Section

• at 14 MeV = 13.89 mb
• Fission spectrum avg = 18.43 micro barn
(n, t) Cross Section

• g-factor = 1.0005
• Fission spectrum avg = 55.95 mb
• at 14 MeV = 1.089 mb
• Resonance integral = 11.19 b
• Maxwell avg. at 0.0523 eV = 4.452 b
• at 0.0523 eV = 2.022 b
Radiative Capture Cross Section

• Fission spectrum avg = 1.085780e-15 b
(n, nd) Cross Section

• Fission spectrum avg = 0.2882 micro barn
• at 14 MeV = 1.129 mb