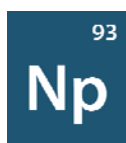


## Isotopes of Neptunium

Isotope	Atomic Mass	Half-life	Mode of Decay	Nuclear Spin	Nuclear Magnetic Moment
Np-234	234.04289	4.40 days	EC to U-234	0	No data available
Np-235	235.04406	1.058 years	EC to U-235; $\alpha$ to Pa-231	5/2	No data available
Np-236	236.04657	155,000 years	EC to U-236; $\alpha$ to Pa-232; $\beta^-$ to Pu-236	6	No data available
Np-237	237.0481678	$2.14 \times 10^6$ years	$\alpha$ to Pa-233; SF	5/2	3.14
Np-238	238.05094	2.117 days	$\beta^-$ to Pu-238	2	No data available
Np-239	239.05293	2.355 days	$\beta^-$ to Pu-239	5/2	No data available



Neptunium, named for the planet Neptune, is a radioactive rare earth metal. It was the first synthetic transuranium element (elements after uranium) of the actinide series. It was discovered in 1940 by Edwin M. McMillan and Philip Hauge Abelson at Berkeley, California, USA, who bombarded uranium with neutrons produced from a cyclotron.

Silvery in appearance, neptunium metal is fairly reactive chemically and is found in at least three allotropes:  *$\alpha$ -neptunium*, orthorhombic, density 20.45 g/cm<sup>3</sup>;  *$\beta$ -neptunium* (above 280 °C), tetragonal, density 19.36 g/cm<sup>3</sup> at 313 °C; and  *$\gamma$ -neptunium* (above 577 °C), cubic, density 18 g/cm<sup>3</sup> at 600 °C. Neptunium has the largest liquid range of any element: 3363 °K between its melting and boiling points. It is the densest of all the actinides and the fifth-densest of all naturally occurring elements. Neptunium has no biological role. It is not absorbed by the digestive tract. When injected into the body, it accumulates in bones, from which it is slowly released.

Though neptunium has no commercial uses at present, it is widely used as a precursor for the formation of Plutonium-238, used in radioisotope thermal generators, which are used to power some spacecraft. Neptunium itself can be used in detectors of high-energy neutrons.

## Properties of Neptunium

<b>Name</b>	Neptunium
<b>Symbol</b>	Np
<b>Atomic number</b>	93
<b>Atomic weight</b>	[237]

## Properties of Neptunium (continued)

<b>Standard state</b>	Solid at 298 °K
<b>CAS Registry ID</b>	7439-99-8
<b>Group in periodic table</b>	N/A
<b>Group name</b>	Actinoid
<b>Period in periodic table</b>	7 (Actinoid)
<b>Block in periodic table</b>	f-block
<b>Color</b>	Silvery metallic
<b>Classification</b>	Metallic
<b>Melting point</b>	910 °K [or 637 °C or 1179 °F]
<b>Boiling point</b>	4300 °K [or ca. 4000 °C or 7232 °F]
<b>Density of solid</b>	20.45 g/cm <sup>3</sup>
<b>Electron configuration</b>	[Rn]5f <sup>4</sup> 6d <sup>1</sup> 7s <sup>2</sup>