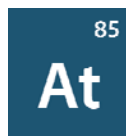


Isotopes of Astatine

Isotope	Atomic Mass	Half-life	Mode of Decay	Nuclear Spin
At-207	206.98578	1.81 hours	EC to Po-207; α to Bi-203	9/2
At-208	207.98657	1.63 hours	EC to Po-208; α to Bi-204	6
At-209	208.98616	5.40 hours	EC to Po-209; α to Bi-205	6
At-210	209.987126	8.10 hours	EC to Po-210; α to Bi-206	5
At-211	210.98748	7.21 hours	EC to Po-211; α to Bi-207	9/2



Astatine was discovered in 1940 by Dale R. Corson, Kenneth Ross MacKenzie and Emilio Segrè. Its name originates with the Greek word *astatos*, meaning "unstable."

Physical properties of this element have not been well investigated, due to the short half-lives of its isotopes. Astatine is volatile and may be distilled in a vacuum at room temperature in a glass apparatus; it may be condensed in a dry ice trap. It is soluble in chloroform, ether, hexane and many other organic solvents. Solubility in water should be of low order. Reactions of astatine should be similar to that of iodine; however, there is no evidence of existence of the diatomic molecule At_2 . Several compounds or polyanions are known. No practical uses of this element are known thus far.

Exposure to radiation may cause cancer. Studies on experimental animals show that such exposure induces tumors.

Properties of Astatine

Name	Astatine
Symbol	At
Atomic number	85
Atomic weight	210
Standard state	Solid at 298 °K
CAS Registry ID	7440-68-8
Group in periodic table	17
Group name	Halogen

Properties of Astatine (continued)

Period in periodic table	6
Block in periodic table	p-block
Color	Metallic
Classification	Semi-metallic
Melting point	302 °C
Boiling point	230 °C
Thermal conductivity	1.7 (estimate) W/(m·K)
Electronegativity	2.2
Heat of vaporization	About 40 kJ·mol ⁻¹
Heat of fusion	About 6 (per mole astatine atoms) kJ·mol ⁻¹
Density of solid	6.40 (estimated) g/cm ³
Electronic configuration	[Xe]4f ¹⁴ 5d ¹⁰ 6s ² 6p ⁵
Oxidation states in aqueous solution	-1, 0, +5, +7
Most stable isotope	At-210