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Po
Polonium
[209]

Key Properties

Atomic Mass	[209]
Category	Post-Transition Metals
State at 20°C	solid
Melting Point	254°C
Boiling Point	962°C
Density	9.2
Electron Config	[Xe] 4f145d106s26p4
Electronegativity	2.0
Year Discovered	1898
Discovered By	Marie & Pierre Curie

Did You Know?

- 1 It was discovered by Marie Curie and was named after her native country, Poland, which at the time was not an independent nation.
- 2 Polonium is an extremely rare and intensely radioactive element. On a weight-for-weight basis, polonium-210 is about 250 billion times more toxic than hydrogen cyanide.
- 3 It was used as the trigger in early atomic bombs.
- 4 Tiny amounts of polonium were used in anti-static brushes to eliminate static cling on photographic film and records by ionizing the air.
- 5 The assassination of former Russian spy Alexander Litvinenko in London in 2006 was carried out using polonium-210.

APPEARANCE

Polonium is a rare, highly radioactive, silvery-gray metalloid.

SUPERHERO PERSONA

"The Radioactive Assassin, an intensely radioactive and toxic villain, used in a real-life assassination."

EVERYDAY CONNECTION

Polonium is found in an anti-static brush for cleaning camera lenses or records.

POP CULTURE

Polonium was used to assassinate former spy Alexander Litvinenko in 2006.

Polonium: The Radioactive Alpha-Emitter

Polonium is a silvery-gray, semi-metal that is extremely rare and intensely radioactive. It emits powerful alpha particles, and just a tiny amount can generate enormous heat. The element was named by Marie Curie in 1898 after her homeland, Poland (Polonia), making it one of the first elements named for a country.

Why Is Polonium Useful?

Because of its incredible radioactivity, polonium has only a few very specialized uses:

Spacecraft Heaters: One gram of polonium can reach 500 °C just from radioactive decay. This heat was used to keep instruments warm on lunar rovers and spacecraft.

Neutron Source: When combined with beryllium, polonium becomes a useful neutron source for scientific research.

Antistatic Devices: Polonium has been used in antistatic brushes and devices, where alpha particles ionize the air and help neutralize electrical charges.

Biological Role & Natural Abundance

Polonium has no biological role. It is highly toxic—if inhaled or ingested, even microscopic amounts can be deadly due to its intense radioactivity.

Polonium occurs naturally in tiny traces within uranium ores, but extracting it this way is impractical. Instead, it is produced artificially by bombarding bismuth-209 with neutrons in a nuclear reactor. The bismuth turns into bismuth-210, which then decays into polonium.

History of Discovery

Predicted: Dmitri Mendeleev suspected an element should exist near bismuth on the periodic table.

Discovered (1898): Marie and Pierre Curie painstakingly processed tons of uranium ore (pitchblende) and managed to isolate a minute amount of a brand-new, intensely radioactive element—polonium.