

**Key Properties**

Atomic Mass	[257]
Category	actinide
State at 20°C	solid
Melting Point	1527°C
Boiling Point	null
Density	null
Electron Config	[Rn] 5f127s2
Electronegativity	1.3
Year Discovered	1952
Discovered By	Albert Ghiorso and colleagues

**Did You Know?**

- 1 Like Einsteinium, it was first discovered in the fallout from the 'Ivy Mike' hydrogen bomb test in 1952.
- 2 It is named in honor of Enrico Fermi, one of the pioneers of the atomic age and nuclear physics.
- 3 Fermium is the heaviest element that can be created by bombarding lighter elements with neutrons in a nuclear reactor; all heavier elements must be made in particle accelerators.
- 4 Its most stable isotope has a half-life of about 100 days.
- 5 So little fermium has ever been produced that its chemical properties are not well known.

**APPEARANCE**

Fermium is a synthetic, highly radioactive metal.

**SUPERHERO PERSONA**

*"The Navigator, a hero named after the physicist who achieved the first sustained nuclear chain reaction."*

**EVERYDAY CONNECTION**

Fermium has no everyday connection, discovered in H-bomb debris.

**POP CULTURE**

Fermium is the heaviest element that can be formed by neutron bombardment.

**Overview of Fermium**

Fermium is a synthetic, highly radioactive metal with atomic number 100. Only microgram quantities have ever been produced, and its isotopes have relatively short half-lives, making it unsuitable for practical applications. Fermium is named after Enrico Fermi, the physicist who built the world's first nuclear reactor and pioneered nuclear science.

**Natural Occurrence and Production of Fermium**

Fermium does not occur naturally on Earth. It is created in laboratories or nuclear reactors through neutron bombardment of heavy elements.

Nuclear reactors: Fermium can be produced by the intense neutron irradiation of plutonium or uranium, creating heavier isotopes through a series of beta decays.

Quantities: Only micrograms have ever been isolated, and the most stable isotope, fermium-257, has a half-life of about 100 days.

**History of Fermium**

The discovery of fermium is closely tied to the development of nuclear weapons:

1952 – Discovery in an H-bomb test: Fermium was first identified in the debris of the first thermonuclear hydrogen bomb explosion on Enewetak Atoll in the Pacific Ocean. The immense neutron flux caused uranium atoms to capture multiple neutrons, producing new heavy elements including fermium-255.

Secrecy: The discovery was classified for national security reasons and not revealed publicly until 1955.

Independent synthesis: At the same time, scientists at the Nobel Institute in Stockholm produced a few atoms of fermium by bombarding uranium-238 with oxygen nuclei, confirming its existence through peaceful research methods.

**Uses of Fermium**

Fermium has no known practical uses outside of scientific research. Its isotopes are studied to better understand the properties of the heaviest actinides and the processes of nuclear fission and decay.

**Biological Role of Fermium**

Fermium has no biological role. It is considered highly toxic due to its intense radioactivity and can cause severe damage to living tissues if mishandled.