Mendelevium (Md)

Element 101 — Complete Summary

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101
Md
Mendelevium
[258]

Key Properties

Atomic Mass	[258]
Category	actinide
State at 20°C	solid
Melting Point	827°C
Boiling Point	null
Density	null
Electron Config	[Rn] 5f137s2
Electronegativity	1.3
Year Discovered	1955
Discovered By	Albert Ghiorso and colleagues

✨ Did You Know?

1. It is named in honor of Dmitri Mendeleev, the Russian chemist who created the periodic table.
2. It was the first element to be synthesized one atom at a time. The initial experiment in 1955 produced only 17 atoms.
3. The experiment to create it was so sensitive that the scientists set up their equipment so that any new atoms would be collected on a piece of gold foil that they would then rush to a lab to analyze before they decayed.
4. Its chemical properties were studied using these single atoms, which was a groundbreaking achievement.
5. Its most stable isotope has a half-life of about 51 days.

APPEARANCE
Mendelevium is a synthetic, highly radioactive metal.

SUPERHERO PERSONA
"The Table-Setter, a hero named after the visionary who organized all the elements, created one atom at a time."

EVERYDAY CONNECTION
Mendelevium has no everyday connection, used only in research.

POP CULTURE
Mendelevium was the first element synthesized and identified one atom at a time.

Overview of Mendelevium

Mendelevium (Md) is a synthetic, highly radioactive metal with the atomic number 101. It was named in honor of Dmitri Mendeleev, the Russian chemist who created the periodic table. Like other actinides, it exists only in trace, man-made amounts and has no applications outside of scientific study.

How Is Mendelevium Made? 💉

Mendelevium does not occur naturally and must be produced in a nuclear laboratory.

First Synthesis (1955): A team led by Albert Ghiorso at the University of California, Berkeley, created the element by bombarding einsteinium-253 with alpha particles (helium nuclei) in a particle accelerator. Only 17 atoms were made in the experiment.

Modern Production: Today, improved techniques allow scientists to produce millions of atoms, but still only in microgram quantities.

The most stable isotope, mendelevium-258, has a half-life of about 51 days, though most isotopes decay much faster.

Biological Role and Uses

No biological role – Mendelevium is not found in living systems.

No practical applications – Its scarcity and radioactivity prevent any industrial or medical use.

Scientific research – It is primarily used for exploring the chemistry of heavy actinides and studying the behavior of superheavy elements.

History of Discovery 📜

1955 – Discovery: Mendelevium was discovered by a team at Berkeley, including Albert Ghiorso, Bernard Harvey, Gregory Choppin, Glenn Seaborg, and Stanley Thompson.

Naming: The group chose to honor Dmitri Mendeleev, whose periodic table had predicted the existence and properties of yet-to-be-discovered elements.

Significance: It was the first element to be synthesized one atom at a time, highlighting the extreme difficulty of creating elements beyond fermium in the periodic table.