

Curium (Cm) - Student Datasheet

Atomic number 96 - Actinide - Group Actinide - Period 7 - f-block

Curium is element 96, a synthetic radioactive actinide named for Marie and Pierre Curie. Its half-filled 5f7 shell, isotope science and high-temperature allotropy are known far better than its boiling point-which remains explicitly unknown here.

Quick reference

Atomic number	96
Relative atomic mass	[247]
Electron configuration	[Rn] 5f7 6d1 7s2
State at 20 C	Radioactive silvery metal at 20 deg C
Density	13.51 g/cm3
Melting point	1618 K
Boiling point	Unknown
Common oxidation state	+3 (dominant), +4 also known
Electronegativity	Unknown

Structure & orbitals

Alpha-curium is commonly described with a double-hexagonal close-packed structure; a higher-temperature FCC form is reported. The transition temperature is not secure enough here for a precise slider marker.

The 5f probability model visualizes atomic occupancy. It does not represent radioactive decay, self-heating or the many-body electronic structure of curium metal.

Temperature / phase context

The ordinary teaching track shows solid curium up to the measured melting reference near 1618 K and liquid above it within the displayed range. A high-temperature solid allotrope is known, but no precise transition marker is asserted here. The boiling point is unknown, so no invented liquid -> gas boundary is shown.

Five things to remember

- Atomic number 96 means 96 protons.
- Curium has no stable isotopes.
- The standard ground-state reference includes a half-filled 5f7 subshell.
- Curium melts near 1618 K, but its boiling point is not presented as known.
- Curium is an actinide and must not be confused with cerium, a lanthanide.

Curium: Real World & Signature Science

Curium is not cerium. Curium (Cm, 96) is a radioactive actinide; cerium (Ce, 58) is a lanthanide. Similar names do not imply similar position, isotope behavior or everyday uses.

Why this element matters

Scientific research Curium isotopes are studied in actinide chemistry, nuclear structure and materials science.	Space-instrument history Curium sources have been used in selected scientific instrument/power contexts; use is tightly controlled.
Alpha-particle sources Some curium isotopes are strong alpha emitters used in specialized research/instrument contexts under regulation.	Discovery science Curium was created and identified during the expansion of transuranium-element research in the 1940s.
Evidence boundary Many macroscopic properties are difficult to measure because only small radioactive quantities are available; unknown values remain unknown.	

Curium research context: deliberately non-operational

1. Curium is synthetic and exists only in radioactive forms; natural-resource maps are therefore inappropriate.
2. Licensed research facilities study minute quantities using specialized radiological containment and instrumentation.
3. Production, irradiation, separation and source-fabrication procedures are intentionally excluded.
4. Public educational discussion focuses on identity, electronic structure, isotope half-lives, measured properties and discovery history.

Where on Earth?

Discovery + research

Berkeley anchors 1944 discovery history; synthetic radioactive material inventory/location mapping is intentionally excluded.

History

1944 - Glenn Seaborg, Ralph James and Albert Ghiorso produced curium at Berkeley during transuranium-element research.

1940s - The element was named for Marie and Pierre Curie, pioneers of radioactivity research.

Later decades - Different curium isotopes enabled nuclear-structure, chemistry and space-instrument research.

Today - Curium remains a controlled research material with no ordinary consumer role.

Uses

Actinide research Curium is used to investigate heavy-element chemistry and nuclear structure.	Specialized sources Selected curium isotopes have been used in tightly controlled source/instrument contexts.
Space science history Curium has appeared in selected space-science instrument/power applications.	No ordinary consumer use Radioactivity and scarcity restrict curium to specialized regulated settings.

Curium: Isotopes, Questions & Evidence

Isotopes

243Cm - Radioactive - t_{1/2} about 29.1 years

One of several important curium isotopes used in research.

244Cm - Radioactive - t_{1/2} about 18.1 years

A relatively strong alpha emitter used in specialized controlled contexts.

248Cm - Radioactive - t_{1/2} about 348,000 years

Reference teaching nucleus: 96 protons and 152 neutrons; comparatively long-lived among curium isotopes.

247Cm - Radioactive - t_{1/2} about 15.6 million years

The longest-lived known curium isotope, useful for nuclear-science context.

Common questions

What is curium's atomic number?

96.

Is curium the same as cerium?

No. Curium is Cm, element 96, an actinide; cerium is Ce, element 58, a lanthanide.

What is curium's electron configuration?

[Rn] 5f⁷ 6d¹ 7s² is the standard reference.

Does curium have stable isotopes?

No.

What is curium's boiling point?

It is not treated as reliably known here, so Element Lookup leaves it unknown rather than inventing a value.

What is curium used for?

Primarily specialized scientific research and tightly controlled source/instrument contexts.

Quick self-check

1. **Atomic number?** Answer: 96
2. **Curium vs cerium?** Answer: Different elements: Cm 96 vs Ce 58
3. **Stable isotopes?** Answer: None
4. **Boiling point shown?** Answer: Unknown
5. **Electronic feature?** Answer: Half-filled 5f⁷ subshell

Safety boundary

Curium is highly radioactive and radiotoxic. This page gives no production, irradiation, separation, source-fabrication, handling, material-access or criticality instructions.

Evidence & provenance

Identity, isotope half-lives, density and melting point are evaluated/measured. The dhcp structure is a reviewed teaching reference. The boiling point remains unknown and the phase model intentionally contains no fabricated boiling marker.

Core sources

Royal Society of Chemistry - Curium	https://periodic-table.rsc.org/element/96/curium
NIST - Atomic Data for Curium	https://physics.nist.gov/PhysRefData/Handbook/Tables/curiumtable1.htm
IUPAC / evaluated actinide context	https://www.ciaaw.org/curium.htm