Tennessine (Ts)

Element 117 — Complete Summary

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117

Ts

Tennessine

[294]

Key Properties

Atomic Mass	[294]
Category	Halogens
State at 20°C	solid
Melting Point	null
Boiling Point	null
Density	7.2*
Electron Config	[Rn] 5f146d107s27p5
Electronegativity	null
Year Discovered	2010
Discovered By	JINR & Oak Ridge National Laboratory (ORNL)

✨ Did You Know?

1. It is named in honor of the state of Tennessee, which is home to several major research facilities, including the Oak Ridge National Laboratory, which contributed to its discovery.
2. It is the second-heaviest element to have been created so far.
3. It is placed in Group 17, making it a member of the halogen family, though its chemical properties are expected to differ significantly from the lighter halogens.
4. The berkelium target material needed to synthesize tennessine was produced at Oak Ridge and was painstakingly prepared over 250 days.
5. Its most stable isotope has a half-life of about 78 milliseconds.

APPEARANCE

Tennessine is a synthetic, highly radioactive element.

SUPERHERO PERSONA

"The Volunteer, a hero named for the state that was home to the vital research needed for its creation."

EVERYDAY CONNECTION

Tennessine has no everyday connection, used only in research.

POP CULTURE

Tennessine is the second-heaviest element created and is classified as a halogen.

Tennessine: The Superheavy Metal from Tennessee

Tennessine is a synthetic, highly radioactive element that exists only for a fraction of a second. With an atomic number of 117, it is one of the heaviest elements on the periodic table. Its name honors the state of Tennessee, home to major research labs that helped make its discovery possible.

A Man-Made Element

Tennessine doesn’t occur in nature—it can only be created in a lab.

Scientists made it by bombarding the element berkelium-249 with calcium-48 ions in a particle accelerator.

The nuclei fused together to form atoms of this new, superheavy element.

Its longest-lived isotope lasts just 80 milliseconds before decaying!

Biological Role & Uses

Because it’s so rare and short-lived, tennessine has no practical uses outside of research. It has no biological role and is considered toxic due to its intense radioactivity.

Its value lies in helping scientists study superheavy elements and test the limits of the periodic table.

History of Discovery

2010 – First Synthesis: A team of scientists from Russia (Dubna) and the United States (Oak Ridge & Lawrence Livermore labs) successfully created tennessine. Producing the berkelium target at Oak Ridge was a huge challenge and a key part of the achievement.

2015 – Confirmation: The discovery was officially confirmed by the International Union of Pure and Applied Chemistry (IUPAC).

2016 – Naming: The element was named tennessine (Ts) to honor the contributions of Tennessee-based research institutions.