

Roentgenium (Rg)

Element 111 | Transition metal - superheavy | Period 7 | d-block

Atomic number	111
Atomic mass	[280]
Electron configuration	[Rn] 5f ¹⁴ 6d ¹⁰ 7s ¹
Reference isotope	280Rg
Density	Unknown
Melting point	Unknown
Boiling point	Unknown
Structure	Bulk crystal structure unknown

Big idea

Roentgenium sits below gold in Group 11, but relativistic effects make simple trend extrapolation unsafe. Measured nuclear identity is separated from predicted chemistry and unknown bulk material properties.

Five things to remember

- Atomic number 111 means every roentgenium nucleus has 111 protons.
- The ground-state/reference electron configuration is [Rn] 5f¹⁴ 6d¹⁰ 7s¹.
- The representative teaching isotope is 280Rg.
- Roentgenium sits below gold in Group 11, but relativistic effects make simple trend extrapolation unsafe. Measured nuclear identity is separated from predicted chemistry and unknown bulk material properties.
- Material structure status: Bulk crystal structure unknown.

Structure, evidence and real-world context

No defensible macroscopic crystal lattice is displayed for Roentgenium. Nuclear/atomic evidence and theory are kept separate from unmeasured bulk material properties.

Evidence boundary

Atomic identity and source-reviewed reference values are separated from predictions. Search demand shapes headings and FAQs but never overrides scientific evidence; unknown bulk structure/density/phase values remain visibly unknown.

Where is it used?

Scientific research only - Research-only context; no operational production or handling guidance.

Nuclear-decay and superheavy-element studies - Research-only context; no operational production or handling guidance.

Discovery and history

1994 - Peter Armbruster, Gottfried Münzenberg and colleagues at GSI produced element 111; it was named for Wilhelm Conrad Röntgen.

Naming / context - The element name and discovery story are part of the historical record; search-led questions are answered without turning history into scientific evidence for bulk properties.

Today - Current use is described at the level supported by the element's availability and evidence, with research-only elements kept research-only.

Safety / interpretation

This page is educational and non-operational. It provides no radioactive-material production, separation, source-preparation, handling or access instructions.

Search-led questions and review

The questions below reflect genuine learner/search intent. Answers remain source- and evidence-led.

What is the atomic number of roentgenium?

The atomic number is 111, meaning every roentgenium nucleus has 111 protons.

What is the symbol for roentgenium?

The chemical symbol is Rg.

What is roentgenium?

Roentgenium is element 111, symbol Rg, a synthetic superheavy element in Group 11.

What is roentgenium used for?

Roentgenium has no practical use and is produced only for scientific research.

Why is it called roentgenium?

It is named after Wilhelm Conrad Röntgen, discoverer of x-rays.

What does roentgenium look like?

Only a few atoms have been produced. No measured macroscopic color, density or crystal lattice is available.

Quick review

What is Roentgenium's atomic number?

Answer: 111

Atomic number 111 defines Roentgenium by its proton count.

Which statement best describes the material evidence for Roentgenium?

Answer: Bulk crystal structure unknown

The Structure view follows measured/reviewed evidence; unknown bulk structures remain unknown.

What is the safest rule for Roentgenium uses?

Answer: Distinguish the element from its isotopes, compounds and engineered materials

Elemental, isotope-specific and compound properties must not be conflated.

Sources

Royal Society of Chemistry - Roentgenium: <https://periodic-table.rsc.org/element/111/>

NIST - Atomic Weights and Isotopic Compositions: https://physics.nist.gov/cgi-bin/Compositions/stand_alone.pl

IUPAC - Periodic Table of Elements: <https://iupac.org/what-we-do/periodic-table-of-elements/>