

Rhenium (Re)

Element 75 | Transition metal | Period 6 | d-block

Atomic number	75
Atomic mass	186.207
Electron configuration	[Xe] 4f14 5d5 6s2
Reference isotope	187Re
Density	20.8 g/cm3
Melting point	3458 K
Boiling point	5863 K
Structure	Hexagonal close-packed (HCP)

Big idea

Rhenium combines very high melting temperature with unusual scarcity. Pure Re must be distinguished from rhenium-bearing superalloys and catalytic compounds, which are the forms behind most practical uses.

Five things to remember

- Atomic number 75 means every rhenium nucleus has 75 protons.
- The ground-state/reference electron configuration is [Xe] 4f14 5d5 6s2.
- The representative teaching isotope is 187Re.
- Rhenium combines very high melting temperature with unusual scarcity. Pure Re must be distinguished from rhenium-bearing superalloys and catalytic compounds, which are the forms behind most practical uses.
- Material structure status: Hexagonal close-packed (HCP).

Structure, evidence and real-world context

The viewer represents the reviewed Hexagonal close-packed (HCP) material reference for elemental Rhenium. It is a teaching model, not a refined crystallographic coordinate set or a model of every compound.

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?

Nickel-based superalloys for high-temperature turbine components - Element-specific use context; compounds/alloys are distinguished from pure metal.

Rhenium-containing catalysts - Element-specific use context; compounds/alloys are distinguished from pure metal.

Electrical contacts and refractory alloy applications - Element-specific use context; compounds/alloys are distinguished from pure metal.

Discovery and history

1925 - Walter Noddack, Ida Tacke and Otto Berg identified rhenium; later work clarified earlier spectral observations by Masataka Ogawa.

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

Use material-specific safety information for real substances; element, compound and alloy hazards can differ.

Search-led questions and review

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

What is rhenium?

Rhenium is chemical element 75, symbol Re, classified here as transition metal.

What is the atomic number of rhenium?

The atomic number is 75, meaning every rhenium nucleus has 75 protons.

What is rhenium used for?

Rhenium is used mainly in high-temperature superalloys, selected catalysts and wear-resistant electrical contacts.

Why is rhenium rare?

Rhenium is extremely scarce in Earth's crust and is commonly recovered as a by-product from molybdenum-processing streams.

What is the symbol for rhenium?

The chemical symbol is Re and the atomic number is 75.

Quick review

What is Rhenium's atomic number?

Answer: 75

Atomic number 75 defines Rhenium by its proton count.

Which statement best describes the material evidence for Rhenium?

Answer: Hexagonal close-packed (HCP)

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

What is the safest rule for Rhenium 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 - Rhenium: <https://periodic-table.rsc.org/element/75/>

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/>