

54
Xe
Xenon
131.293

Key Properties

Atomic Mass	131.293
Category	Noble Gases
State at 20°C	gas
Melting Point	-111.75°C
Boiling Point	-108.099°C
Density	5.894 g/L
Electron Config	[Kr] 4d105s25p6
Electronegativity	2.6
Year Discovered	1898
Discovered By	William Ramsay & Morris Travers

Did You Know?

- 1 Its name comes from the Greek word 'xenos', which means 'stranger', 'foreigner' or 'guest'.
- 2 It was the first noble gas that was coaxed into forming a true chemical compound (xenon hexafluoroplatinate) in 1962, shattering the idea that noble gases were completely inert.
- 3 Xenon is used in high-intensity lamps for car headlights, movie projectors, and stadium lights because it produces a brilliant, white light that is very similar to natural daylight.
- 4 It can be used as a general anesthetic, although it is very expensive.
- 5 Xenon is being explored for use in ion propulsion engines to power spacecraft on long journeys through space.

APPEARANCE

Xenon is a heavy, colorless, odorless noble gas.

SUPERHERO PERSONA

"The Stranger, a mysterious hero who can power intensely bright lights and even act as an anesthetic."

EVERYDAY CONNECTION

Xenon is found in the bright white light of a high-end car's headlight.

POP CULTURE

Xenon is used for ion propulsion engines on deep space probes like NASA's Dawn.

Xenon: The "Stranger" Gas of Light and Propulsion

Xenon is a colorless, odorless noble gas that hardly reacts with anything. Its name comes from the Greek word xenos, meaning "stranger," because it's such a rare and unusual part of Earth's atmosphere.

Why Is Xenon Useful?

Even though it's scarce, xenon has some amazing uses:

Specialized Lighting: When electricity passes through xenon, it gives off a brilliant blue glow. It's used in camera flash lamps, sunbed lamps, bactericidal lamps for sterilizing food, and even in powerful laser systems.

Space Propulsion: Xenon gas fuels ion thrusters on spacecraft. By ionizing and accelerating xenon atoms, these engines provide a gentle but extremely efficient thrust, perfect for long space journeys.

Medical & Industrial Uses: Xenon difluoride is a strong oxidizer used to etch silicon microchips. Xenon is also used in the production of certain cancer drugs and in medical imaging.

Natural Abundance & History

Xenon is one of the rarest gases in Earth's atmosphere—just 0.086 parts per million. It's obtained by distilling liquid air.

1898 – Discovery: British chemists William Ramsay and Morris Travers discovered xenon at University College London while carefully studying krypton. The mysterious new gas glowed a beautiful blue in their discharge tube.

1962 – Not So Inert: For years, scientists thought noble gases couldn't form compounds. But Canadian chemist Neil Bartlett shocked the world by creating xenon hexafluoroplatinate, the first noble gas compound. Since then, over 100 xenon compounds have been made!

Biological Role

Xenon has no biological role. The gas itself is non-toxic, but its compounds are very reactive and poisonous because they're such strong oxidizers.