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Ag
Silver
107.868

Key Properties

Atomic Mass	107.868
Category	Transition Metals
State at 20°C	solid
Melting Point	961.78°C
Boiling Point	2162°C
Density	10.49
Electron Config	[Kr] 4d105s1
Electronegativity	1.93
Year Discovered	Ancient
Discovered By	Unknown

Did You Know?

- 1 It has the highest electrical and thermal conductivity of any metal.
- 2 Its chemical symbol, Ag, comes from the Latin word 'argentum', which means 'silver' or 'white'.
- 3 Polished silver is the most reflective of all metals, which is why it has been used to make high-quality mirrors.
- 4 Silver compounds are toxic to bacteria and other microorganisms, a property used for centuries to disinfect water and prevent infections.
- 5 Before the advent of digital photography, the photographic process relied on the light sensitivity of silver halide crystals.

APPEARANCE

Silver is a soft, white, lustrous metal.

SUPERHERO PERSONA

"The Silver Bullet, the super-conductive, reflective hero who is the nemesis of werewolves."

EVERYDAY CONNECTION

Silver is found in jewelry, silverware, and old photographic film.

POP CULTURE

Silver is the traditional weakness for werewolves and other supernatural creatures.

Overview

Silver is a soft, shiny, and highly reflective metal valued for its beauty and practical properties. While it can tarnish over time when exposed to sulfur compounds in the air, it has been prized for thousands of years for its luster, rarity, and versatility.

Uses of Silver

Silver's unique physical and chemical properties give it an exceptionally wide range of applications:

Jewelry and tableware: Sterling silver (92.5% silver and 7.5% copper) is commonly used in jewelry, coins, and decorative objects.

Electronics: Silver is the best conductor of electricity of all metals, making it vital in electrical contacts, switches, batteries, and printed circuits.

Mirrors and optics: Because it reflects visible light better than any other metal, silver is used in high-quality mirrors and specialized optics.

Photography and lenses: Light-sensitive silver halides (such as silver bromide and silver iodide) formed the basis of traditional film photography and are still used in some high-quality photographic papers and photochromic lenses.

Antibacterial applications: Silver ions and nanoparticles have natural antimicrobial effects. They are incorporated into medical dressings, water filters, clothing, and even touchscreen-compatible fabrics.

Natural Occurrence and Production of Silver

Silver is relatively rare in the Earth's crust. It can occur in its pure metallic form but is more often found in ores such as argentite. Today, most silver is obtained as a valuable by-product of mining other metals, including copper, lead-zinc, and gold. Global production is about 20,000 tonnes per year.

History of Silver

Ancient origins: Evidence of silver mining dates back to around 3000 BC in present-day Turkey and Greece.

Refining innovations: The Chaldeans of Mesopotamia developed cupellation, a method of refining silver by oxidizing impurities.

Economic role: Silver fueled prosperity in many civilizations, including ancient Athens with its nearby mines. In later centuries, Europe's wealth grew from silver mining in Germany and, later, vast deposits in Central and South America (notably in Mexico, Bolivia, and Peru).

Biological Role of Silver

Silver has no known biological role in humans. While it can kill bacteria, prolonged exposure to silver compounds can cause argyria, a harmless but permanent condition that gives skin a grayish-blue tint.