

30  
**Zn**  
Zinc  
65.38

### Key Properties

Atomic Mass	65.38
Category	Transition Metals
State at 20°C	solid
Melting Point	419.527°C
Boiling Point	907°C
Density	7.14
Electron Config	[Ar] 3d104s2
Electronegativity	1.65
Year Discovered	1746
Discovered By	Andreas Sigismund Marggraf

### Did You Know?

- 1 The process of galvanization, which protects steel from rusting, involves coating it with a thin layer of zinc.
- 2 The U.S. penny is no longer made of copper; since 1982, it has been made of zinc with a very thin copper plating.
- 3 Zinc is an essential trace mineral for human health, playing a vital role in the immune system, wound healing, and sense of taste and smell.
- 4 When zinc burns in air, it produces a fluffy, white solid called zinc oxide, which is a common ingredient in sunscreens.
- 5 Brass, an alloy of copper and zinc, has been used for thousands of years to make everything from musical instruments to ammunition casings.

#### APPEARANCE

Zinc is a bluish-white, brittle metal at room temperature.

#### SUPERHERO PERSONA

*"The Protector, a hero who sacrifices itself to coat and protect steel from its arch-nemesis, Rust."*

#### EVERYDAY CONNECTION

Zinc is found in the galvanized coating on a nail or a chain-link fence.

#### POP CULTURE

Zinc is a key component of brass, the metal used for many musical instruments.

## Zinc: The Versatile Metal for Protecting Others

Zinc is a silvery-white metal with a bluish tint that quickly tarnishes in air. Its most important role is as a protector metal—it coats other metals, especially iron and steel, to keep them from rusting.

### Why Is Zinc Useful?

Zinc's strength comes from its ability to shield, strengthen, and support:

**Galvanization:** Most zinc is used to coat steel and iron, creating a protective layer that prevents rust. This process is used for car bodies, street lamps, suspension bridges, and countless everyday items.

**Die-Casting:** Zinc is widely used to make die-cast parts for the auto, electrical, and hardware industries.

**Alloys:** Zinc teams up with other metals to make useful alloys, like brass (zinc + copper) and nickel silver.

**Compounds:** Zinc oxide is used in paints, rubber, sunscreen, cosmetics, and medicines, while zinc sulfide appears in glow-in-the-dark paints and fluorescent lights.

### Biological Role

Zinc is essential for life. It's part of more than 20 enzymes that keep our bodies running smoothly. The average human body contains about 2.5 g of zinc, and we need about 15 mg a day, which we get from foods like meat, fish, seeds, and cheese. Too much zinc, however, can be harmful.

### Natural Abundance

Zinc is found in minerals such as zinc blende (zinc sulfide) and calamine (zinc silicate). Major mining areas include China, Australia, and Peru. The metal is obtained by roasting its ores and reducing them to pure zinc.

### History of Discovery

**Ancient Uses:** Zinc compounds were known to the Romans, and by 1100–1500 AD, large-scale zinc refining was taking place in India and China.

**1746 – Official Discovery:** German chemist Andreas Marggraf was the first in Europe to recognize zinc as a new metal, confirming its identity.