

82  
**Pb**  
Lead  
207.2

### Key Properties

Atomic Mass	207.2
Category	Post-Transition Metals
State at 20°C	solid
Melting Point	327.462°C
Boiling Point	1749°C
Density	11.34
Electron Config	[Xe] 4f145d106s26p2
Electronegativity	2.33
Year Discovered	Ancient
Discovered By	Unknown

### Did You Know?

- 1 Its chemical symbol, Pb, comes from its Latin name, 'plumbum', which is also the root of the words 'plumbing' and 'plumber'.
- 2 The ancient Romans used lead extensively for making water pipes, which historians believe may have led to widespread chronic lead poisoning and contributed to the fall of the Roman Empire.
- 3 Lead is extremely dense, making it an excellent shield against radiation (like X-rays) in hospitals and nuclear facilities.
- 4 For centuries, lead was a key ingredient in paints and gasoline, but it has been phased out in most countries due to its high toxicity.
- 5 Lead is a potent neurotoxin that is especially harmful to children, causing developmental delays and learning disabilities.

#### APPEARANCE

Lead is a heavy, soft, bluish-gray metal.

#### SUPERHERO PERSONA

"The Heavy Shield, a dense hero who protects from deadly radiation but has a toxic dark side."

#### EVERYDAY CONNECTION

Lead is found in the lead-acid battery that starts your car.

#### POP CULTURE

Lead is famously opaque to X-rays. Superman can't see through it.

### Lead: The Soft, Versatile, and Toxic Metal

Lead is a soft, dense, silvery-gray metal that can be easily shaped into sheets. It resists corrosion, which is why it was used for centuries in pipes, paints, and everyday objects. But lead is also highly toxic, especially to children, so many of its traditional uses have been banned.

### Why Is Lead Still Used?

Even though its use is restricted, lead's special properties make it valuable in certain areas:

**Batteries:** Lead is the key ingredient in lead-acid batteries, still common in cars, backup power systems, and telecommunications because they're cheap, reliable, and deliver a strong current.

**Radiation Shielding:** Because it's so dense, lead blocks radiation. It's used in x-ray aprons, medical imaging machines, and nuclear facilities.

**Ammunition & Weights:** Lead is ideal for bullets, shotgun pellets, and fishing sinkers because it's heavy and easy to shape.

**Alloys & Architecture:** Lead is found in solders, pewter, roofing, and stained glass windows, where its durability and flexibility are still useful.

### Biological Role & Natural Abundance

Lead has no role in living organisms. In fact, it's a neurotoxin—it builds up in the body and can cause brain damage, especially in children.

The main lead ore is galena (PbS). Today, much of the world's lead supply is recycled—about 40% in the UK comes from scrap batteries. Pure lead is extracted by roasting galena, which removes impurities and leaves molten lead that can be poured into molds.

### A Glimpse into History

Lead has been mined and used for over 6,000 years.

**Ancient Uses:** The Romans used lead for water pipes, coins, and tableware, while the Greeks made white lead, a pigment used in paint for over 2,000 years.

**Middle Ages:** Lead appeared in pottery glazes, printing type, and bullets.

**Modern Times:** In the 20th century, lead was added to gasoline to improve engine performance. However, due to its toxicity, leaded petrol has been banned worldwide.