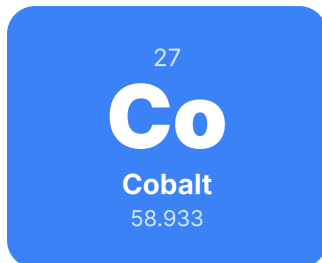


Cobalt (Co)

Element 27 — Complete Summary
theperiodictable.io



Key Properties

Atomic Mass	58.933
Category	Transition Metals
State at 20°C	solid
Melting Point	1495°C
Boiling Point	2927°C
Density	8.9
Electron Config	[Ar] 3d74s2
Electronegativity	1.88
Year Discovered	1735
Discovered By	Georg Brandt

Did You Know?

- 1 Its name comes from the German word 'kobold,' meaning goblin, because medieval miners found its ores tricky and toxic, blaming mischievous spirits!
- 2 Cobalt is the absolute *star* of Vitamin B12 (cobalamin), the ONLY metal that is an essential part of a human vitamin – crucial for your nerves and blood!
- 3 Get ready for BLUE! Cobalt compounds create some of the most stunning, intense blue pigments known, used in everything from stained glass to famous paintings.
- 4 Just like iron, cobalt is ferromagnetic, meaning it can be strongly magnetized – perfect for powerful magnets in motors and hard drives.
- 5 This tough guy forms superalloys used in jet engines and gas turbines! It's super strong and heat-resistant, keeping planes flying high.
- 6 A radioactive cousin, Cobalt-60, is a medical marvel! It's used to treat cancer through radiation therapy and sterilize medical equipment.
- 7 Pop quiz: What powers your phone? Cobalt! It's a key ingredient in the lithium-ion batteries that energize our modern world, from gadgets to electric cars.
- 8 Ancient Egyptians loved its blue! They were using cobalt pigments to color glass and ceramics thousands of years ago. Talk about timeless tech!
- 9 This element isn't just on Earth; it's found in meteorites, hinting at its cosmic journey through space.
- 10 Feeling super? Your body only needs tiny traces of cobalt, but without it, major body functions would grind to a halt. It's a tiny but mighty essential!
- 11 It's a fantastic catalyst! Cobalt helps speed up chemical reactions in many industrial processes, making everything from fuel to plastics.

APPEARANCE

A lustrous, silvery-blue metal that shines with a subtle, cool glow, catching the light like a hidden gem.

SUPERHERO PERSONA

*"Meet **Cobalt Crusader**, the master of magnetism and vibrant hues! This hero infuses life with vital energy and forges super-strong alloys, ready to color your world!"*

EVERYDAY CONNECTION

It's the power behind your phone's battery and the magic behind that striking blue in your favorite artwork.

POP CULTURE

Named after mischievous 'kobold' goblins, it's the element Magneto would secretly love for its magnetic might!

Overview of Cobalt

Cobalt is a hard, lustrous, silvery-blue transition metal that is both magnetic and durable. It plays a vital role in high-strength alloys, super-powerful magnets, and as a source of vivid blue pigments that have been prized for thousands of years. The element also has modern applications in medicine, electronics, and energy production.

Uses of Cobalt

Cobalt's physical and chemical properties make it valuable across multiple industries:

Magnets: Cobalt can be magnetized like iron. When combined with aluminum and nickel, it forms Alnico magnets, which are among the strongest permanent magnets available.

High-performance alloys: Cobalt alloys are used in jet turbine blades, gas turbines, and cutting tools, as they retain strength even at very high temperatures.

Color pigments: For centuries, cobalt salts have been used to produce the brilliant cobalt blue pigment in glass, ceramics, and paints.

Medical and industrial isotopes: Cobalt-60 emits gamma rays and is used in radiotherapy to treat cancer, sterilizing medical equipment, food irradiation, and as a tracer in research.

Electroplating: Cobalt provides a corrosion-resistant, attractive finish when used in electroplating metals.

Natural Occurrence and Production of Cobalt

Cobalt occurs in minerals such as cobaltite (CoAsS) and skutterudite (CoAs₃), but most commercial cobalt is obtained as a by-product of nickel and copper refining. Vast potential reserves also exist in manganese nodules on the ocean floor, though these are not yet exploited on a large scale.

History of Cobalt

Ancient pigment use: Cobalt compounds were used as blue colorants as early as ancient Egypt and China. A blue glass object containing cobalt was found in the tomb of Pharaoh Tutankhamun (14th century BC).

1739 – Discovery of the element: Swedish chemist Georg Brandt demonstrated that the intense blue color in glass came from a new element, not from bismuth or copper as previously thought. He named it cobalt, after the German word kobold (“goblin”), used by miners who considered cobalt ores troublesome because they often yielded no silver and released toxic fumes.

Biological Role of Cobalt

Cobalt is an essential trace element in humans and animals. It is a central component of vitamin B12 (cobalamin), which is required for red blood cell production and nervous system function. The body requires only trace amounts—around 1 mg in total. In excess, however, cobalt compounds can be toxic and carcinogenic.