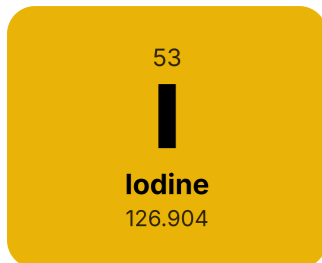


Iodine (I)

Element 53 — Complete Summary
theperiodictable.io



Key Properties

Atomic Mass	126.904
Category	Halogens
State at 20°C	solid
Melting Point	113.7°C
Boiling Point	184.4°C
Density	4.933
Electron Config	[Kr] 4d105s25p5
Electronegativity	2.66
Year Discovered	1811
Discovered By	Bernard Courtois

Did You Know?

- 1 Iodine gets its name from the Greek word ἰώδης (iōdēs), meaning "violet" or "purple".
- 2 Iodine is one of the few elements that can be seen with the naked eye as a dark purple solid.
- 3 This tiny element is absolutely critical for your thyroid gland. Your thyroid uses iodine to make hormones that control your metabolism, energy levels, and even brain development!
- 4 Not enough iodine in your diet? Your thyroid gland can swell up, leading to a condition called goiter. That's why many countries add iodine to table salt – to keep everyone healthy!
- 5 Iodine was first discovered in 1811 by French chemist Bernard Courtois while he was making gunpowder! He extracted it from the ash of seaweed. Who knew seaweed held such a secret?
- 6 Before modern antibiotics, iodine was a superstar antiseptic. Tincture of iodine, a solution of iodine in alcohol, was a common first-aid staple for cleaning wounds.
- 7 Back in the early days of photography, iodine compounds were crucial! They helped make photographic plates sensitive to light, capturing the world in black and white.
- 8 Radioactive isotopes of iodine (like Iodine-131) are powerful tools in medicine. Doctors use them to diagnose thyroid problems, scan for cancers, and even treat thyroid cancer. It's a life-saver!
- 9 Iodine is part of the periodic table's halogen group.
- 10 Iodine deficiency is a major global health problem, impacting cognitive development in children. Universal salt iodization programs have dramatically reduced these issues worldwide, proving how a tiny element can make a huge difference.
- 11 You can even find trace amounts of iodine in interstellar dust clouds and some stars! It's not just an Earth thing; it's a cosmic element.

Appearance

A mysterious, dark purplish-black solid crystal that vaporizes into a vibrant purple gas.

Superhero Persona

"The Violet Vigilante, Iodine ensures your thyroid gland, the body's energy controller, operates perfectly, silently protecting you from within."

Everyday Connection

The essential additive in your table salt, keeping your body's engine humming.

Pop Culture

Its stunning purple vapor inspired its name, much like a magical glow in a fantasy epic.

Overview of Iodine

Iodine is a black, shiny crystalline solid with atomic number 53. When heated, it undergoes sublimation, transforming directly into a striking purple vapor. As a member of the halogen group, iodine is both chemically reactive and biologically essential. It plays a vital role in human health, especially in thyroid function, while also being widely used in medicine, technology, and industry.

Why Is Iodine So Useful?

Iodine's importance comes from its antibacterial properties and its role in the human body:

Medicine and disinfectants: Iodide salts are used in antiseptics, such as tincture of iodine, to clean wounds. The radioactive isotope iodine-131 is a critical treatment for thyroid cancer and other thyroid-related conditions.

Health supplements: To prevent iodine deficiency, which can cause goiter (swelling of the thyroid gland), small amounts of iodide are added to table salt (iodized salt).

Photography: Historically, iodine compounds were vital in early photography, such as daguerreotypes, and they still play a role in modern photographic chemicals.

Technology and industry: Iodine is used in polarizing filters for LCD displays, in printing inks and dyes, and as a catalyst in chemical reactions.

Biological Role of Iodine

Iodine is an essential trace element for humans. The thyroid gland uses iodine to produce hormones that regulate growth, metabolism, and body temperature.

Daily requirement: The average human body contains about 20 milligrams of iodine, mostly concentrated in the thyroid.

Sources in diet: Seafood, seaweed, and iodized salt are the main dietary sources of iodine.

▮ Natural Abundance and Production of Iodine

Iodine is not abundant in the Earth's crust, but it is widely distributed in trace amounts:

Seawater: Present as iodide ions, though in very low concentrations.

Seaweed: Historically, seaweed was a major source of iodine as it accumulates the element from seawater.

Modern production: Today, iodine is primarily obtained from iodate minerals and brine deposits left by evaporated ancient seas. Commercial production involves extracting iodine vapor from processed brine.

▮ History of Iodine

1811 – Discovery: French chemist Bernard Courtois discovered iodine while producing saltpeter (potassium nitrate) from seaweed ash. Adding sulfuric acid released a vivid purple vapor that condensed into crystals of a new element.

Confirmation: Chemists Joseph Gay-Lussac and Sir Humphry Davy confirmed iodine as a new element shortly afterward, helping to establish it as part of the halogen family.