



IRON

WHAT IS IRON?

Iron is a chemical element with the symbol Fe and atomic number 26. It is a metal that is abundant in the Earth's crust and is an essential element for the growth and development of living organisms. It is used in the production of steel and other alloys, as well as in various industrial and medical applications.

DID YOU KNOW?

When we say iron is everywhere, we really mean everywhere. In fact, it's the sixth most common element in the entire universe—after hydrogen, helium, oxygen, carbon, and neon—and the most common metal.



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DID YOU KNOW?

According to estimations by archaeologists, iron has been used by people for longer than 5,000 years. Many ancient mythologies contain references to blacksmithing gods. The Bible also makes multiple mentions of this metal. When iron beads from ancient Egypt were examined, they were found to be made from the iron found in meteorites.

WHAT IS THE HISTORY OF IRON?

Iron has been known and used by humans for thousands of years. The ancient Hittites of Asia Minor were the first to smelt iron from iron ore around 1500 BC. The use of iron spread throughout the Near East and into Europe during the Iron Age, which lasted from about 1200 BC to 600 BC. During this time, iron replaced bronze as the primary metal used for tools and weapons.

In the Middle Ages, the process of making iron by smelting iron ore with charcoal was improved through the use of blast furnaces. This allowed for the mass production of iron, which was used to make weapons and tools for the growing industrial and agricultural economies.

In the 18th and 19th centuries, the Industrial Revolution led to the development of new iron-making techniques, such as the Bessemer process and the open-hearth furnace, which allowed for the mass production of steel, an alloy of iron and carbon. These new techniques led to a huge increase in the production of iron and steel and made them more affordable for everyday use. Iron and steel were used to build railroads, bridges, and buildings, and played a key role in the development of modern industry.

Today, iron is still widely used in the production of steel, as well as in various industrial and medical applications. Advances in technology continue to improve the efficiency and environmental sustainability of iron production.





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DID YOU KNOW?

Innovation hasn't stopped in the iron industry, and new alloys and smelting techniques continue to be refined to make lighter, stronger, and more resistant varieties of steel. After all, with better steel, we can make better ships, cars, planes, buildings, and so much more!

WHY IS IRON AN IMPORTANT COMMODITY?

Iron is an important commodity because it is a key ingredient in the production of steel, which is used in a wide variety of industries and applications. Some of the most important uses of steel include:

- **Construction:** Steel is used in the construction of buildings, bridges, and other infrastructure. It is strong, durable, and can be easily shaped and molded to fit a variety of designs.
- **Transportation:** Steel is used in the production of cars, trains, ships, and airplanes. It is lightweight and strong, making it an ideal material for transportation.
- **Manufacturing:** Steel is used in the production of a wide range of products, including machinery, appliances, tools, and consumer goods.
- **Energy:** Steel is used in the production of wind turbines, oil rigs, pipelines, and other energy-related infrastructure.

Iron also has many other uses, including in the medical field, where it is used in the production of blood cells and in the treatment of iron-deficiency anemia. It is also used in the production of certain chemical compounds and in various industrial processes. Due to its abundance, strength, and versatility, Iron is an essential commodity for the growth and development of economies and societies around the world.





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DID YOU KNOW?

Stars, when they grow big and hot enough, produce iron through fusion. Most planets, including Earth, have a mostly iron core, with Mercury boasting more iron content in its core than any other planet in the solar system. If Earth didn't have iron heating and cooling in its core, we wouldn't have a magnetic field!

HOW IS IRON MINED?

Iron is typically mined from minerals that contain iron compounds, such as hematite and magnetite. The most common methods for mining iron ore are open-pit mining and underground mining.

1. Open-pit mining: This method is used when the iron ore deposit is close to the surface. The surface of the ground is removed to access the ore, which is then extracted and transported to a processing facility.
2. Underground mining: This method is used when the iron ore deposit is deeper in the ground. Miners excavate tunnels and shafts to access the ore, which is then extracted and transported to the surface for processing.

Once the iron ore is extracted from the ground, it is typically transported to a processing facility, where it is crushed and separated from other minerals and impurities. The iron ore is then processed, which may include smelting (heating the ore with a reducing agent such as coke to extract the iron) or other methods of extracting the iron. After the iron is extracted from the ore, it is often transformed into steel by removing impurities and adding carbon. Steel is then used in various industries, from construction to transportation. Modern technologies aim to make the mining and processing of iron ore more sustainable and efficient, but the process still has some environmental impacts such as soil erosion, deforestation and loss of biodiversity.





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DID YOU KNOW?

Iron and steel are the easiest materials to recycle. Both are magnetic, making them easy to separate from aluminum and other products in a waste stream, and steel doesn't lose its strength, flexibility, or toughness when you recycle it.

WHAT EVERYDAY PRODUCTS CONTAIN IRON?

Iron is a common element and is found in many everyday products. Some examples include:

- **Steel:** Steel is an alloy of iron and carbon and is used in the construction of buildings, bridges, and other infrastructure, as well as in the production of cars, trains, ships, and airplanes.
- **Tools:** Iron and steel are used to make a wide range of tools, including hammers, screwdrivers, wrenches, and knives.
- **Kitchenware:** Many pots, pans, and other kitchenware are made of cast iron, which is an alloy of iron and carbon. Cast iron is also used to make skillets and other cooking surfaces.
- **Appliances:** Many appliances, such as washing machines, dryers, and refrigerators, contain iron and steel components.
- **Medical:** Iron is used in the production of blood cells and in the treatment of iron-deficiency anemia. Iron compounds are also used in certain medications.
- **Food:** Iron is present in many foods, including red meat, poultry, and leafy green vegetables. Iron is an essential nutrient for the human body and is necessary for the growth and development of living organisms.
- **Cosmetics:** Iron oxides are often used as colorants in makeup, lipsticks and other cosmetics.

These are just a few examples of everyday products that contain iron, but it can be found in many other products as well. Iron is a versatile element and is used in a wide range of industries and applications.

