



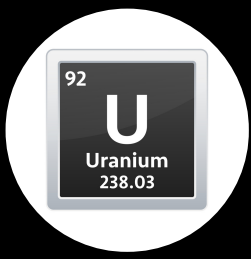
URANIUM



WHAT IS URANIUM?

Uranium is a naturally occurring radioactive element that has the atomic number 92. It is a heavy metal that is primarily used as a fuel for nuclear power plants, but it also has other uses, such as in the production of nuclear weapons. Uranium occurs in small amounts in most rocks, soils, and waters, but it is typically mined from deposits in the Earth's crust.

It can exist in several different forms, or isotopes, with the most common being uranium-238 and uranium-235. The isotope uranium-235 is the one that is used in nuclear reactors and weapons.



URANIUM

DID YOU KNOW?

Uranium is a radioactive and unstable element. That is how it can transform into different isotopes. The element can transform into thorium, radium, protactinium, and other elements through radioactive decay. Uranium decays into lead through a series of radioactive decay processes.

WHAT IS THE HISTORY OF URANIUM?

Uranium was discovered in 1789 by the German chemist Martin Heinrich Klaproth, who named it after the planet Uranus. However, it was not until the late 19th and early 20th centuries that scientists began to understand the potential uses and dangers of the element.

In the late 1800s, French physicist Antoine-Henri Becquerel discovered that uranium emitted a type of radiation later called radioactivity. This led to further research into the properties of uranium and other radioactive elements.

During World War II, the United States, Germany, and the Soviet Union all worked on developing nuclear weapons, which relied on the fissile isotope uranium-235. The United States was the first to successfully develop and use a nuclear weapon, dropping atomic bombs on the Japanese cities of Hiroshima and Nagasaki in 1945.

In the decades following World War II, the use of uranium as a fuel for nuclear power plants became widespread. However, the potential dangers of nuclear power, including the risk of accidents and the problem of nuclear waste, have led to ongoing debate about the use of uranium and other nuclear materials.

In recent years, Uranium mining has been hit by a price slump as a result of oversupply, but as the global population is growing and the demand for energy is increasing, the world is expected to need more nuclear energy and thus more Uranium in the future.





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DID YOU KNOW?

Uranium is a silvery-white metal with a slight yellowish tint. Uranium metal is a malleable and ductile element stronger than gold, silver, or platinum. Additionally, uranium does not rust, corrode or tarnish. Pure uranium is so soft that its density is 0.7 g/cm³. It is also highly reactive in that it oxidizes in air.

WHY IS URANIUM AN IMPORTANT COMMODITY?

Uranium is an important commodity because it is used as fuel for nuclear power plants, which generate electricity without producing greenhouse gases or other pollutants. Nuclear power is a reliable and efficient source of energy that can help to reduce dependence on fossil fuels, which are a major contributor to climate change. Uranium is also used in the production of nuclear weapons, although this is a less common use.

Additionally, Uranium is a finite resource, and thus, it is considered a strategic commodity that is vital for national security and energy security. With increasing demand for electricity and growing concerns about climate change, many countries are looking to expand their use of nuclear power as a way to meet their energy needs.

Uranium mining also provides jobs and economic benefits for communities, and the mining and refining process of Uranium is a complex, large-scale operation that requires a significant amount of capital, equipment, and skilled labor.

Furthermore, Uranium is also used in various industrial and medical applications such as cancer treatment, sterilization of medical equipment, and as a source of heat in spacecraft and remote power systems.

Overall, Uranium's importance as a commodity is based on its strategic, economic and environmental importance.





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DID YOU KNOW?

Uranium mining was officially formalised in Zambia in 2008, following the discovery of large uranium deposits in various parts of the country. Today, uranium is extracted at the Lumwana Mine in Northwestern Province as a by-product of its copper mining operations.

HOW IS URANIUM MINED?

Uranium is typically mined using one of two methods: underground mining or open-pit mining.

Underground mining involves excavating tunnels and rooms underground to reach and extract the uranium ore. This method is used when the ore is located at a depth that makes it impractical to extract using open-pit mining. Underground mining is considered to be more expensive and dangerous than open-pit mining.



Open-pit mining, also known as strip mining, involves removing the top layers of soil and rock to access the ore. This method is used when the ore is located near the surface. Once the ore is exposed, it is extracted and transported to a processing facility where it is refined into uranium concentrate, also known as yellowcake.

Both methods of mining can have significant environmental impacts, including the destruction of habitats and the displacement of local communities. Waste rock and tailings, which are the by-products of mining, can also contain radioactive materials and heavy metals that can harm the environment and human health if not properly managed.

In-situ recovery (ISR) is another method used to extract uranium from underground. This method pumps a solution into the ground to dissolve the uranium and bring it to the surface, where it is separated from the solution and processed. This method is considered to be less invasive than underground mining, but it still has the potential to impact water resources and the environment.

Overall, Uranium mining is a complex and large-scale operation that requires significant capital, equipment, and skilled labor, and it also has environmental, social and health impacts that need to be carefully managed.





URANIUM

DID YOU KNOW?

Uranium glass used to be extremely common, reaching peak popularity from the 1880s to 1920s. Nowadays, though, it has fallen out of widespread use, mainly due to the sharp decline of uranium availability during the Cold War. Most uranium glass found today is considered antique and is highly sought-after by collectors.

WHAT EVERYDAY PRODUCTS CONTAIN URANIUM?

Uranium is not commonly used in everyday consumer products, but there are a few examples of products that have used or currently use uranium in small amounts.

- Some colored glass, such as Vaseline glass, is made using uranium compounds, which gives the glass a yellow-green color.
- Ceramic glazes used in pottery and tile also sometimes contain small amounts of uranium.
- Certain types of cameras and other optical equipment used to contain a small amount of uranium in their lenses or light-sensitive components.
- Uranium has also been used as a source of heat in spacecrafts and remote power systems
- Some medical instruments and equipment, such as those used in cancer treatment, are sterilized using radiation from small amounts of uranium.

It's worth mentioning that in most of these cases, the amount of Uranium used is so small that it poses no risk to human health, and the levels of radioactivity are well below the levels considered harmful.

It's also important to note that Uranium is not a naturally occurring element in most consumer products. Instead, it is added in small amounts as a component during the manufacturing process.

