Apatite: Characteristics, Origin and Applications by Judy

Article published on November 25th 2011 | Business

Learn more about the mineral called apatite - its characteristics, history, and uses and applications.

Apatite is term used to describe a group of phosphate minerals with the following chemical composition: Ca10 (PO4)6(OH,F,Cl,Br)2. As a mineral group, apatite includes hydroxylapatite, fluorapatite, chlorapatite, and bromapatite. It is distributed in all types of rocks: sedimentary, igneous, and metamorphic rocks.

Hydroxyl apatite or hydroxyapatite is so-called due to its hydrogen and oxygen content. It is found in bone mineral and tooth enamel. Fluorapatite, on the other hand, is rich in fluoride ions which are more resistant to acid attack compared to hydroxyapatite. This can be found in fluoridated water and toothpaste. Other types of elements found in apatite include apatites with high chlorine ions called chlorapatite; and apatites with high bromine content called bromapatite.

Characteristics

Apatite comes in crystal forms which may be transparent or translucent. Except for transparent apatite crystals, it is commonly green in color, but also appears as blue, purple, pink, brown, reddish brown, or yellow. Another characteristic which may or may not be present in all apatite crystals is its white streaks which can be noticed only in translucent apatite crystals. The Mohs hardness scale places apatite at 5 â€“ solid but brittle.

Origin and History

Apatite was first discovered in 1788. It was named after the Greek word apatao which means deception or misleading. This is due to its very close similarity â€“ and accidental confusion with â€“ other, more valuable minerals such as peridot, beryl, and olivine. It was found to be present in Mexico and Canada in North America; Germany in Europe; and Russia in Asia.

Uses and Applications

Apatite is used in many industries, most notably in the manufacture of fertilizer. Due to its high phosphorus and phosphate content, it contributes a lot to agriculture. Many farms in the United States benefit from the high phosphate content of apatite.

Apatite produces hydrogen fluoride as a byproduct of the mixture of apatite and sulfuric acid to make phosphoric acid. Hydrogen fluoride, the byproduct of making phosphoric acid, is in turn used by industries as a good source of hydrofluoric acid.

Another use for apatite is in gems and precious stones. Transparent stones of apatite are used as gems, with chatoyant specimens being referred to as catâ€™s eye apatite and transparent green stones referred to as asparagus stone. There are also transparent blue stones which are better known as moroxite. While most apatites are found as grains or fragments, large and well-formed apatite crystals have been found in many metamorphic rocks. These became good sources of gem apatites. Most gem apatites are found in Mexico and Brazil in Central and South America, and Burma in Southeast Asia.

Apatite is also a major source of rare earth elements which are crucial to many industries and technologies. Unlike other minerals that contain rare earth elements, apatite has been found to be

non-radioactive. Itâ€™s also been found that mining apatite has a minimum impact on the environment, making it a better and more preferable choice over other traditional rare earth ores.

This article is brought to you by PublicMining.org, a free resource for mining investors that serves as a showcase of public mining companies, including copper mining companies, gold mining companies and more.

Article Source:
http://www.articleside.com/business-articles/apatite-characteristics-origin-and-applications.htm - Article Side

Judy - About Author:
PublicMining.org is a free resource directory listing thousands of public mining companies and offers a free a mining newsletter.

Article Keywords:
mining, metals, gold, silver, platinum, business, metallurgy, newsletters, investing, finance, stocks

You can find more free articles on Article Side. Sign up today and share your knowledge to the community! It is completely FREE!