

MINERALS INCLUDING THE CLASS OF PURE ELEMENTS AND THEIR SIGNIFICANCE IN THE NATIONAL ECONOMY

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Abstract: This article provides information about minerals belonging to the class of pure elements, their distribution in nature, optical and mechanical properties, as well as their importance in the national economy.

Key words: pure elements, diamond, graphite, gold, iron, copper, electrum, cubic crystal, platinum, specific gravity, hardness, color.

Minerals belonging to the class of pure elements consist of atoms of chemical elements that are the same or close to each other in terms of structure and properties. Now there are more than 30 types of minerals found in nature. The pure elements that form minerals can be metals, semimetals, and nonmetals.

Pure dating is typical for base metals and copper. Meteorite pure iron and its alloy with nickel and cobalt (iron and iron-stone meteorites) are known. Pure metals are rare in their pure state. In most cases, they can be considered as alloys of natural origin. Sulfur and carbon are abundant in non-metals. In rare cases, semimetals - margiumush, antimony, bismuth are observed.



Polymorphism is characteristic for pure elements. For example, carbon can appear as graphite and diamond. Sulfur also has two modifications.

The origin of pure elements is mainly related to endogenous: magmatic, hydrothermal and metamorphic processes. Pure silver and copper are sometimes formed in oxidation zones of sulphide deposits. Industrially important deposits of original pure metals (gold, platinum) can be formed in the formation of scatters.

The importance of pure elements in the structure of the lithosphere is not significant. They make up more than 0.1% of the total mass of the Earth's crust and are not considered rock-forming minerals. But some of them are of great practical importance. Among the original elements, the most common are platinum, gold and silver.

Gold - Au. It has small amounts of Ag, Pd, Rh, Cu, Fe additions. Electrum containing more than 20% silver is called electrum.

The form of encounter is a dense mass, in the form of leaflets. Crystals are in the form of octahedrons, hexahedrons, dodecahedrons and are rare. Sometimes it forms dendrites and filaments.

Hardness 2.5-3, **specific gravity** 15.6-19.0 g/cm³ (pure - 19.3 g/cm³), golden yellow color, metallic yellow streak, strong metallic luster and crushability. It is often found in hydrothermal and scattered deposits. It is a precious metal. The symmetry is cubic, the symmetry is hexaoctahedral-3L₄4L₃6L₂9PC

Special properties of gold include highly malleable and malleable, high chemical stability, non-oxidizing, insoluble in acids. Two main groups of gold can be distinguished: primary, base and secondary, scattered gold. There is a large deposit of pure gold in Central Kyzylkum (Muruntov). Scattered gold deposits are widespread in North Nurota.

Gold is mainly used as an important precious metal in jewelry, coin and medal production, electronics, optics, instrument making and medicine.

Diamond - C mineral comes from the Greek word for indeterminate, and colored and opaque diamonds can have Si, Mg, Ca, Fe, Al, Ti oxides and other mineral inclusions. Cubic syngonia (octohedra, etc.) occurs in the form of crystals.

Hardness is 10 on the Mohs scale (1000 times more than quartz, 150 times more than corundum), specific gravity 3.5 g/cm³, colorless, transparent, blue, yellow, green, brown and black. It is associated with diamond-like, brittle, very basic igneous rocks, and is also common in scattered form.

A diamond is a pure transparent diamond, which is a very precious stone, as a result of its processing, diamonds are obtained. Types of diamonds that are not suitable for jewelry are used as abrasive and cutting material, in drilling, grinding, glass cutting.

Sulfur - C mineral usually has additions of As, Se, Te and is found as a whole, sometimes earthy and powdery heap. Crystals are dipyramidal in shape. Hardness 1-2, specific gravity 2 g/cm³.

The color of pure sulfur is yellow, there are almost no lines, it has a diamond-like luster at the edges, and the refraction is oily.

The origin of sulfur is in most cases endogenous pneumatoliths, water vapor and gases released during and after volcanic eruptions. In hypergenic conditions, it can be formed due to the decomposition of sulfides and gypsum and the activity of sulfur bacteria.

Sulfur is used in the production of sulfuric acid, in the production of sulfate cellulose. It is also used in the production of dyes, explosives, and chemical poisons against agricultural pests in the rubber and textile industries.

The name of **graphite** - C mineral comes from the Greek word grapho - to write. The symmetry is digexogonal-dipyramidal - L₆6L₂7PC. Straight crystals are rare. Sometimes in the form of hexagonal plates, tablets, gray to black in color, with a shiny black stripe. With a hardness of 1, it feels greasy on the hand and darkens the hand and the paper. The relative weight is 2.09-2.23 g/cm³.

The origin of graphite mineral is endogenous, metamorphic and contact-metamorphic, it can be formed due to regional metamorphism processes and can be found in marbles, gneisses, crystalline shales, coal and rocks with organic substances in contact with igneous rocks. The largest mine in Uzbekistan is Taskazgon in Ovminzatov.

Graphite mineral is used in the metallurgical industry for the production of metal welding rods, electrodes in the electrical engineering industry, in the nuclear industry as a retarder and deflector of neutrons, in the production of lubricants, pencils and paints, and in the rubber industry.

Copper-Cu mineral is usually chemically pure, and sometimes Ag, Au, Fe (up to 2.5%) can be included as impurities. The symmetry is cubic, the symmetry is hexaoctahedral- $3L_44L_36L_29PC$.

The optical properties of copper, i.e. its color, are copper-red, sometimes brown. The color of the line is copper-red, shiny. The luster is metallic. Transparency - opaque. Its hardness is 2.5-3, and its density is 8.9 g/cm³.

In Uzbekistan, copper has been shown by many scientists in similar sandstones in Cretaceous and Upper Tertiary deposits. A very small amount is also found in the oxidation zone of ore deposits from the Kurama Mountains. Cretaceous and Upper Tertiary sandstones are very common in Uzbekistan. Copper sandstones are very common in the north-western part of the Fergana valley (Naukat, Varzik, Shakaptar, etc.), in the south-west of the Hisar mountains (Shakarlikoston, Kohitang, Tyubegatan, Kovurdoq, etc.).

Copper mineral is used in electrical engineering, tool making, machine building. Copper is used in the production of electric wires, heat exchangers, pipes and various alloys.

Pure native silver - depending on the content of Ag, the following types are known. Kyustelite (gold content up to 10%), copper silver (copper content up to 0.1%), bismuth silver (bismuth content up to 5%), antimony silver (antimony content up to 11%). Syngonia is cubic. Symmetry is hexaoctahedral- $3L_44L_36L_29PC$.

Silver thin plate occurs in the form of alars, leaves and "woven" dendrites. Wire-like forms are more common. Irregular grains and large solid pieces of silver, i.e. pure, are more common in nature.

Silver crystals are usually cubic, octahedral, and to a lesser extent dodecahedral. Twin crystals are also found. The color is silvery white, and the top

is often covered with a black border. Hardness 2.5-3. fragile There is no connecting plane. Relative weight is 10.1-11.1 g/cm³. It is the best thermal and electrical conductor.

In Uzbekistan, pure native silver is found in the deposits of the Kurama mountains, in the polymetallic deposits of Eastern Karamozor.

Silver is mainly alloyed with copper and used to make silverware, coins and other things. Pure silver is used in fine jewelry, making alkaline melting crucibles, silver-whitening articles, forming chemical compounds, and other purposes. The main mass of silver (about 80%) is obtained not as a pure native, but as a by-product from silver-rich lead, zinc, gold and copper mines.

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