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LAPIS LAZULI AS AN OBJECT OF JEWELLERY ART

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Lapis lazuli is a semi-precious stone with a blue or bluish colour that belongs to the class of silicates, subclass tectosilicates, crystallising mainly in cubic singony, a hexoctahedral symmetry class (Fig.1). Oddly enough, lapis lazuli is not a gem itself. In nature it is found as veins within marble, self-contained crystals do not exist - or they occur as an exception.



Fig. 1 – Lapis lazuli

Lapis lazuli is an opaque mineral (some species are translucent) with a glassy, silky and oily lustre, a density of 2.38 to 2.42 g/cm³, and a hardness of 5.5 on the Mohs scale (because of its low density and hardness, lapis lazuli is easy to cut). It has a rakish or granular fracture. In

artificial light, lapis lazuli is almost lustrous, but in bright sunlight it sparkles. Under ultraviolet light, the mineral will glow orange in colour. The optical character of lapis lazuli is isotropic, sometimes changing to anomalous anisotropy (differences in the properties of the medium). It has a refractive index of 1.498 to 1.522. The birefringence of this mineral is anomalously weak. Dichroism: weak (yellowish-green), and light dispersion: 0.018 (BG) or none at all [1].

Lapis lazuli is divided into several types characterised by the content of calcite and pyrite impurities in different percentages, colour and properties of the mineral itself. Afghan lazurite and Chilean lazurite are two of the best known and highest quality sources of this mineral [2]. Afghan Lapis Lazuli is characterised by its translucency and deep blue or deep blue colour. It often contains pyrite, which gives it its characteristic golden lustre. Chilean lapis lazuli is darker, with a greenish tinge. It contains both pyrite and calcite, but in small quantities, which makes it usually more transparent than Afghan lapis lazuli. This makes its lustre less oily and more glassy. In turn, Afghan lapis lazuli is divided into three other types: nili, asmani and sufsi. The most valuable of them is nili, because of its rich, dense blue colour and homogeneous surface with occasional veins of pyrite. It is also worth mentioning Baikal lazurite, which is also in demand.

The name of this mineral is derived from the Persian word “lazurite” (blue). The name finally took hold in the 18th century. This stone was highly prized in ancient times. The Bible states that the sacred laws of Moses were inscribed on slabs of this stone. In the time of Pliny, this mineral was called sapphire [3]. In Babylon, Assyria, and Egypt, lapis lazuli was considered one of the most expensive stones. Even in ancient China, lapis lazuli was highly prized. It was considered a symbol of power. In Europe, lapis lazuli was used to paint frescoes. In Russia, icon painters also crushed “lazurik” and mixed it with egg yolks for painting. The paint was saturated and did not fade in the sun. Lapis lazuli was considered the stone of the emperor and was highly valued.

The very process of lapis lazuli mining should also be noted. First, geologists and mineral experts search for lapis lazuli deposits. Usually, lapis lazuli is found in rocks such as granite, slate or limestone. Once a deposit is identified, exploration is carried out to determine the exact location and depth of the lapis lazuli. This may involve drilling wells and conducting geophysical surveys. Open pit mining or underground mines

are often used to extract lapis lazuli. In the case of open pit mining, the rock is excavated from the surface, while underground mining uses shafts and tunnels up to 25 metres long. Once the mine is developed, the extraction of lapis lazuli begins. The lapis lazuli ore is extracted from the ground and transported to the surface for further processing. The extracted ore contains not only lapis lazuli, but also other minerals and impurities.

Therefore, the ore is treated with special methods to separate the lapis lazuli from other materials. After ore beneficiation, lapis lazuli undergoes a cleaning and treatment process. This may include removing dirt, sand and other impurities, as well as polishing and treating it to give it a lustrous sheen. It is important to note that mining lapis lazuli can be a difficult process due to its brittle nature.

The faceting of lapis lazuli takes place in six stages. First, the raw stone is cleaned of dirt, dust and other impurities. Then it is examined for defects, cracks and inclusions. The master cutter marks on the surface of the stone the places where facets or chamfers will be located. The stone is cut into pieces using diamond discs or other tools to facilitate subsequent processing. The craftsman begins to create the main facets and chamfers on each of the pieces of stone - this stage is called rough cutting and helps to determine the final shape of the stone. After rough cutting, the craftsman moves on to creating more precise and detailed facets and facets, this is done using smaller and more precise tools. The last stage of cutting is polishing: the stone is treated with special materials to give it a shiny and smooth surface.

Thus, lapis lazuli is a versatile mineral that is actively found among jewellery, used both for inlaying and creating unique costume jewellery.

References

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