

STONES WITH UNUSUAL PROPERTIES

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Various stones and minerals are widely used in jewelry production because of their beauty. Most stones look similar: clear or tinted, reflective, without any unusual optical effects. The difference between many of them is the chemical composition, hardness and transparency or “clarity”. However, there are stones that do not fit this description, they are not transparent or have various inclusions, but this does not make them less valuable. On the contrary, such features make these stones rare and desirable. The first of such stones is opal. Its features are opalescence, play of color and luminescence [1]. The color of opal glare depends on the base tone of the stone. There are light, dark and black opals. Opals are formed from a solution of silicon dioxide and water: the water seeps through the sandstone, raising tiny particles of silica [2]. Opal is part of the skeletons and shells of many organisms. Due to the fact that their skeletons are made of opal, the remains of these algae and animals are perfectly preserved to this day. Some opal fossils are up to 500 million years old. Silica can completely replace the trunks of dead trees and form the so-called “woody opal”, which is usually called petrified wood [3]. Now opals are mined in different regions of the world: Australia and Ethiopia, Mexico, USA, Peru, Brazil, Indonesia, New Zealand, Madagascar, Czech Republic, Slovakia and Russia [4].

The next rare and very unusual stone is the star sapphire, an opaque sapphire with an asterism effect (the pattern of a 6-pointed star). During the growth of this stone in natural conditions, rutile needles form a unique optical effect. Such sapphires can be of various colors. In very rare cases, sapphires have a double asterism [5]. Deposits of star sapphires are found in Sri Lanka, Vietnam, Australia, Myanmar, USA and China [6].

Another unique stone is alexandrite. This amazing and rather expensive stone has many unusual properties. For example, the alexandrite

effect, which exactly is what the gem is named after. This means that alexandrite can change its hue depending on the light. Some stones are endowed with an equally entertaining “cat’s eye” effect. It is as if a thin strip of light is hidden inside them. The mineral alexandrite is mined in various countries, including Russia, Sri Lanka, Brazil, and African countries [7].

One more unique stone – sphene. Sphene is a fairly rare stone, also known as “titanite” because of the titanium it contains. Sphene is most often found in yellow and green shades. The purer the color of the stone, what means the less brown impurities it contains, the more valuable the stone is. Sphene is unique due to its pronounced luster, almost like a diamond, and dispersion, as a result of which the sphere has highlights of bright green, yellow, red and other colors. Jewelry with sphene should be worn very carefully, as this stone is very easy to scratch, because the hardness of the sphere on the Mohs scale is between 5 and 5.5 units. For comparison, the hardness of glass on the same scale is 6-7 units. Sphene is mined in such countries as Brazil, Russia, Pakistan, Madagascar, Burma, India, Kenya, Austria, USA and others [8].

Different inclusions can also give stones an unusual appearance, for example, rutile or crystals of various minerals. Rutile is a substance that is often found in the world of gemstones. Rutile is a mineral composed mainly of titanium dioxide. Its refractive index is one of the highest of all known minerals, ranging from 2.616 to 2.903. Rutile is most often the cause of asterism and iridescence. Also in some minerals rutile is present in the form of thin needle-like inclusions, which can look like stars or threads [9]. Inclusions in crystals of one mineral can be crystals of another. This happens when, for example, a crystal of emerald or tourmaline begins to grow quartz crystals, as a result, one crystal is inside the other as an inclusion. In some cases, these stones look very unusual and can be highly prized.

Another thing that can make almost any gemstone better is the cut. The best cut is chosen for each stone, taking into account features such as the size, shape, and refractive index of the stone. The cut that makes gemstones shine.

There are many types of cuts, the most common being: diamond cut, marquis (boat or seed cut), pear (resembles a drop), oval, princess (square or rectangle), octagon or emerald cut (rectangle with truncated corners, has an octagonal outline), heart, trillion (triangle), baguette and

cushion [10]. These types of cuts can be called “traditional” cuts. In addition to them, there are also fantasy cuts, which are a combination of various techniques of standard cuts.

References

1. Опал: интересные факты о камне, которые вас удивят [Электронный ресурс] – Режим доступа: <https://diamant.ua/ru/articles/opal-interesnye-fakty-o-kamne-kotorye-vas-udivyat/> – Дата доступа: 15.02.2024.

2. Опалы [Электронный ресурс] – Режим доступа: <https://nestandart.shop/blog-mk/opaly/> – Дата доступа: 18.02.2024.

3. Опалы можно мочить? [Электронный ресурс] – Режим доступа: <https://mineral-kirka.ru/mineralso/opaly-mozhno-mochit> – Дата доступа: 05.03.2024.

4. Опалы месторождений Австралии и Эфиопии [Электронный ресурс] – Режим доступа: https://www.gem-center.ru/news_594.htm – Дата доступа: 09.03.2024.

5. Звездчатый сапфир [Электронный ресурс] – Режим доступа: https://vesna.shop/stones/zvezdchatyy_sapfir/ – Дата доступа: 11.03.2024.

6. Сапфир звездчатый: невероятно красивый камень с удивительным узором [Электронный ресурс] – Режим доступа: <https://www.diamonds-are-forever.ru/blog/sapfir-zvezdchatyj/> – Дата доступа: 15.03.2024.

7. Камень александрит: магические свойства, кому подходит [Электронный ресурс] – Режим доступа: https://www.alltime.ru/blog/?page=post&blog=watchblog&post_id=kamen-aleksandrit-magicheskie-svoystva-komu-podkhodit – Дата доступа: 18.03.2024.

8. Информация о драгоценном камне сфен [Электронный ресурс] – Режим доступа: <https://www.gemselect-russia.com/russian/gem-info/sphene/sphene-info.php> – Дата доступа: 20.03.2024.

9. Все о рутиле в драгоценных камнях [Электронный ресурс] – Режим доступа: <https://www.gemselect-russia.com/russian/other-info/all-about-rutile.php> – Дата доступа: 20.03.2024.

10. Виды огранки ювелирных вставок [Электронный ресурс] – Режим доступа: <https://ogrankakamnei.ru/blog/detail/vidy-ogranki-yuvelirnykh-vstavok> – Дата доступа: 20.03.2024.