

Crystals, Gemstones and Stones 101

Whether you are buying jewellery or using crystals or stones for art or other purposes, here are some basics that may help you. Advice on how to further improve the content will always be appreciated.

1. Rocks, Stones and Crystals

To be rather unscientific you can think of stones as small rocks and you can think of crystals as very pure stones. The terms 'stone' and 'crystal' are often used interchangeably. It is correct to call crystals stones (as they are all stones) but it is not normal to refer to common stones as crystals. Metallic and organic substances are not stones or crystals so you cannot get a gold stone or crystal as gold is a metal.

People tend to define a crystal as something that has a typical crystal structure (flat surfaces with sharp edges or corners and one or both ends with a pyramid shaped termination) and to define stones as having a random shape. This distinction is useful and is the way we differentiate between stones and crystals on our website. The definitions are actually incorrect as many pure stones are actually crystals even if they don't have a crystal shape.

Think of examples where we refer to crystals as stones: "Gemstones" are crystals like diamonds and rubies but when found in nature they often have a stone shape. Think of the term "hailstones". Frozen water (and hail) are crystals but hailstones have a stone shape.

So crystals can look like crystals or like stones. Some stones are pure enough to be crystals while other are not.

Crystals start off as ions, atoms and molecules in a liquid. They deposit out or crystallize, eventually forming a crystal. This process of forming crystals can be quite fast if the liquid evaporates (as the concentration of crystal forming minerals in the liquid increases) or very slow if the crystal just grows slowly without any liquid evaporation (as in a closed geode). Freezing a liquid can also make ice crystals very quickly.

The structure of crystals is very ordered and the repeating units are quite pure (few impurities). The chemical formula and molecular arrangement within a specific crystal and in other crystals of the same type does not vary.

Usually crystals with a distinct crystal shape are not re-worked into a different shape although they may be polished.

This subject is complex but it is useful to think of common examples. Clear Quartz is often found in distinct crystal shaped crystals but Rose Quartz is almost always found in stone shaped crystals.

2. Natural Geodes

A geode is small cavity in rock lined with crystals or other mineral matter.

Geodes are hollow, vaguely circular rocks, in which masses of mineral matter are secluded. They occur in both sedimentary and volcanic rocks. The most beautiful geodes contain a large number of crystals.

They are rocks found in nature that have contained a liquid inside from which minerals have deposited or crystals have grown. The crystals precipitate out gradually from the minerals in the water. Once the rocks break open they reveal the beautiful crystal structures within.

3. The 4 c's of valuable gemstones

The value of crystals is dependent on their **carat, clarity, colour and cut**.

Carat

The term carat is simply mass and is used as the measurement of mass for gemstones and pearls.

1 carat is 200 mg, 0.2 g and 0.007055 oz.

(A different unit called karat is a measure of the purity of gold although this can also be spelt carat. This measurement of gold purity has nothing to do with the measurement of gemstone mass.)

Clarity

A main factor determining the quality of many crystals is clarity. In coloured crystals a useful term is translucence (when translucent you can see the colour but some light still passes right through the stone). A high clarity indicates fewer impurities and faults and thus commands a high price. When faceted, gemstones with higher clarity will give a higher sparkle.

Generally the inclusion of impurities of gas and liquid make a crystal cloudy and opaque and reduces the quality.

Colour

Most crystal types come in various colours. For example crystals of Quartz, Beryl, Corundum and Diamond all occur in a range of colours. Often these colours are created by the inclusion of another mineral. Rather than be an unwanted impurity, the inclusion may create a highly desirable colour and increase the value of the crystal. The following are a few examples:

- Deep green beryl crystals are emeralds while light blue beryl crystals are aquamarine (which is significantly less valuable than emerald).
- Red corundum crystals are rubies while other colour corundum crystals are sapphires. Sapphires are most well known to be a rich blue colour but any colour of corundum other than red are actually sapphires so one does get purple, orange, yellow, green and pink sapphires.
- Certain colours of diamond are rare and particularly beautiful thus commanding a premium. While white diamonds are the standard the value of coloured diamonds varies a lot. Red diamonds are extremely rare and command a huge premium. Pink, purple, violet, green and blue diamonds command a high price. Intense yellow and orange diamonds tend to have a mid-way price while grey, brown and mixed yellow coloured diamonds tend to be affordable.

Crystal colours are often 'man-made' by altering a crystals colour though various treatments.

Cut and other methods of gemstones processing

- Rough Stones are sold basically as they are found in nature. Large rocks may be crushed to form rough stones.
- Tumbled Stones are tumbled in batches to smoothen them and round the edges. This may be followed by a process of polishing.
- Gallets are individually hand cut or machined, rounded and polished. The most common shape is oval but they can be egg-shaped, heart-shaped and even spherical.
- Cabochons are also individually hand cut or machined, rounded and polished (usually into an oval shape) but unlike gallets they have a flat side. The flat side makes them easier to include in jewellery.
- A Faceted Stones is precision cut to give numerous flat edges that reflect and refract light in spectacular ways through the gem to enhance its brilliance and give it a sparkle. The more facets a gemstone has, the more "lively" it will be. Of course the harder a certain crystal type is the harder it is to cut which is why diamond faceting is a real skill and well faceted diamonds are expensive. Even though a significant portion of a crystal can be lost during faceting, the increased beauty greatly increases its value.

It is common to facet translucent gemstones and to make gallets or cabochons from opaque (solid colour) gemstones.

4. Chatoyancy (playing with light)

This is not a characteristic of high value translucent gems and is thus not one of the normal 4 C's.

The inclusion of certain minerals in specific ways can create a cats-eye effect which is also sort-after. This is most common in correctly shaped and polished Tiger's Eye stones but can occur in a large number of crystal types; in some crystal types this is very rare. This cats-eye effect is called 'chatoyancy'. Some crystal stones have a high tendency to play with light such that colours or reflected light patterns change as the observer or the crystal moves. This is also due to chatoyancy. Polished labradorite and Moonstone are examples of crystals that give this colour changing effect.

5. Laboratory grown and colour altered crystals

Since the chemistry is understood, many crystal types can now be made in laboratories or even in crystal factories. Usually natural crystals are more valuable but it can be extremely hard to tell the difference. Often natural crystals have 'faults' which reduce their value but in some cases (such a ruby) certain faults make the crystal more valuable as it is proof that they are natural and not lab grown.

Some countries, most notably the USA, have strict, well enforced laws regarding classification and punishment for misrepresentation is harsh. In many countries misrepresentation is common and the average jewellery buyer often does not get what they think they are getting.

6. Crystals for tranquillity, alignment, healing and protection

In many cultures and in various aspects of spirituality, crystals have played important roles in improving the quality of life. A common belief is that crystals absorb negative energy. This has been commercially exploited but we do not dispute the fact that many people report experiencing the benefits of crystals. Including crystals into art is a good way to experience their beauty and other potential benefits.

7. Real crystals in geode art

Resin is able to bring out the colour and beauty of crystal and stones. Since natural geodes all contain natural crystals we feel that geode art should too. It is not possible to include valuable gemstones in normal art but fortunately many cheaper crystal types are almost as beautiful. Generally faceted crystal stones will be too expensive (unless you have been commissioned by royalty).

Natural stones come in beautiful colour varieties and give artwork and projects a natural character. Tumbled stones, polished stones, gallets and cabochons are also very affordable.

The inclusion of some crystals that have a characteristic crystal shape gives a real geode feel. In natural geodes and in geode art such crystals will often be a type of quartz crystal. Quartz crystals are often referred to a rock crystals. Clear quartz, smoky quartz and amethyst are the most common naturally occurring with a characteristic crystal shape. Rose quartz is very common but in nature it is almost never found in a 'crystal shape' but is common in stone shape. Other natural quartz coloured crystals are rarer and more expensive such as citrine (yellow), blue quartz and prasiolite (green). Treatment of clear quartz and amethyst quartz is often used to create yellow and green quartz which are much cheaper than citrine and prasiolite although they look almost identical.

Cabochons are also easy to include as they have a flat surface making them relatively thin (often about 5mm). Lower cost crystals with chatoyancy (iridescent, pearl like nature) such as moonstone and labradorite give a great effect so chatoyant cabochons are a good option.

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