

## Learning Series: Birthstones – May

# Emerald – The May Birthstone

### Background

Emerald, by definition, is a green to blue-green beryl where the color is derived from impurities of chromium, vanadium, or a combination of both. There is controversy, however. Some say that to be an emerald, the stone must have the impurity chromium, even though some intense grass-green emeralds colored only by vanadium impurities look exactly the same as the so called 'real emeralds' with chromium impurities.

Within an emerald's depths are often tiny fractures or inclusions which the French call "jardin", or garden, because of their resemblance to foliage. Owing to the rich green color, emerald has long been associated with spring and symbolizes love and rebirth. It is so prized that, carat for carat, a fine emerald may be two to three times as valuable as a diamond.

According to Indian mythology, the name emerald was first translated from Sanskrit as "marakata," meaning "the green of growing things." The name we know it as today comes from the Greek 'smaragdus' via the Old French 'esmeralde', and really just means 'green gemstone'. The history of emeralds can be traced back to antiquity. Records show that the stone was known and sold in markets in Babylon as early as 4000 BC. It is a stone that was worshiped by the Incas and is mentioned in biblical information about the apocalypse.

Emeralds are most frequently found inside a form of shale – a fine-grained sedimentary rock. Emerald-bearing shale has undergone recrystallization due to changes in the physical environment, such as pressure and temperature. Usually, the chemical ingredients necessary for the formation of beryl frequently migrate from the granitic material into the adjoining basic rocks where the beryl crystallizes, changing the original basic rock composition through the process known as *exometamorphism*. If the basic rocks contain the elements chromium or vanadium, small amounts of these elements may be incorporated into the beryl structure, thereby giving the intense green color characteristic of the gem beryl variety *emerald*. Emerald mining is nearly exclusively from host rocks, where the emerald has grown into small veins or on walls of cavities.

### Composition, Chemical Formula, Colors, and Sources

**Composition** – beryllium aluminum silicate, frequently with some sodium, lithium and cesium

**Chemical Formula** –  $\text{Be}_3\text{Al}_2(\text{SiO}_3)_6$

**Colors** – deep green. Can have slightly yellowish or bluish tones. Top quality emerald is the color of fresh green grass with a strong to vivid saturation and a very faint tint of blue, as in the "drop of oil" emeralds from Colombia. In fact, the term "Colombian" is often used to describe such a stone no matter what its actual geographic origin. Emeralds of lighter color are sometimes called "Brazilian", even if they were mined in Africa.

**Sources** – emeralds are found in many countries, but Columbia and Brazil are the major producers. Deposits are also found in Pakistan, Afghanistan, India, Russia, Norway, Austria, South Africa, Zambia, Zimbabwe, Madagascar, Nigeria, Ghana, Malawi, Mozambique, Namibia, Tanzania, Australia and the United States.

In the US, North Carolina—especially the Spruce Pine area—is the only significant source of emerald. Brazil also supplies the rare cat's eye emerald and the extremely rare Trapiche emerald with a six-ray star.

**Note:** Well over 90% of natural emeralds in commerce have been oil-treated to minimize the appearance of the inclusions and to reduce the likelihood of fracture. The trade generally divides enhancement agents into two categories: natural and man-made. Treating emeralds with *colorless oils* such as Canada balsam or cedarwood oil is a traditional, generally accepted practice. The same cannot be said about treatment with *colored oil* or epoxy-like resin. Avoid cleaning emeralds with hot soapy water or steam, and never clean an emerald in an ultrasonic cleaner because the oil or resin could be removed or damaged, making fissures more visible.

## **Identification**

**Streak** – white

**Hardness** – 7.5 - 8.0

**Crystal system** – hexagonal

**Crystal habit** – typically small elongate first order prisms, often with vertical striations and irregular pinacoidal terminations

**Transparency** – translucent to opaque, very rarely transparent

**Specific gravity** – 2.67 - 2.78

**Luster** – vitreous

**Cleavage** – poor basal cleavage; indistinct, one direction

**Fracture** – conchoidal producing smooth brilliant surfaces, brittle

**Pleochroism** – distinct, blue-green/yellow-green

**Associated Minerals** – most frequently found inside a form of shale along with deposits of dolomite, pyrite, calcite, quartz and albite.

## **Folklore, Legend and Healing Properties**

It is believed that emerald protects against illnesses, physical danger and evil, and that it can improve your mind and character. The traditional metaphysical properties for the emerald are memory, clairvoyance and faith. Emerald is said to increase reasoning power, presence of mind and spiritual power and to assist in predicting the future. Folklore suggests that scholars wore emeralds to strengthen their memory, quicken their intelligence and become more eloquent.

The May birthstone is reputed to be effective for healing health problems relating to the eyes, spine, fertility, and headaches. The use of emerald is also said to help strengthen and heal the heart and kidneys, and to remedy circulatory and neurological disorders. It may also help eliminate free radicals from the body. Emerald has been used to treat fever, inflammations, illness of liver, and diabetes. Historically, they were used as amulets to ward off epilepsy in children. It is said that just looking at this stone before going to sleep can prevent insomnia.

## **Trivia**

Emerald is the only stone, besides Topaz, that is listed in all of the ancient birthstone tables. It is suggested as a gift for the 20th and 35th anniversaries, and as an alternate stone for the 55th wedding anniversary.

Emerald looks best in daylight. Artificial light will expose inclusions.

Mummies in ancient Egypt were often buried with an emerald on their necks carved with a depiction of foliage to symbolize eternal youth.

The Bank of Bogotá's collection includes five emerald crystals with weights of between 220 and 1796 carats.

Several famous historical artifacts were made of emerald. A vase in the Viennese treasury is 4.5 inches high, weighs 2205 carats and is cut from a single emerald crystal. The Mogul Emerald dates from 1695, weighs 217.8 carats, and is 3.94 inches tall. One side is inscribed with prayer texts, and is engraved on the other side with magnificent floral ornaments. A crown belonging to the last Inca king of Peru was set with 453 emeralds, collectively weighing 1523 carats. The Holy Grail Cup at the Cathedral in Genoa, Italy is over 700 years old. It was reportedly taken from King Herod's banquet table by the Disciples to be used by Jesus at the Last Supper. In the twelfth century, Crusaders returning from the Holy Land brought the Grail to Genoa.

## **Sources:**

[http://www.gemstone.org/index.php?option=com\\_content&view=article&id=84:emerald&catid=1:gem-by-gem&Itemid=69](http://www.gemstone.org/index.php?option=com_content&view=article&id=84:emerald&catid=1:gem-by-gem&Itemid=69)

<http://www.bernardine.com/birthstone/emerald.htm>

<http://www.about-birthstones.com/maybirthstone.html>

<http://jewelry.about.com/cs/emeralds/a/emeraldjewelry.htm>

<http://starryskies.com/articles/dln/5-01/may.birthstone.html>

<http://www.jewelryst.com/blog/?p=212>

<http://www.finejewelrydesigns.com/may-birth-stone.html>

<http://www.birthstones.org.uk/may-birthstone.htm>

<http://kwd100.projectsforpeace.org/facts-about-the-birthstone-of-the-month-may-emerald/250/>

<http://www.birthstoneofthemoth.com/May-birthstone-Emerald-Myths-History-Facts>

[http://www.jewelryformother.com/birthstone\\_info/May\\_emerald.html](http://www.jewelryformother.com/birthstone_info/May_emerald.html)

<http://www.mineralminers.com/html/ememinfo.htm>

<http://www.gemselect.com/gem-info/emerald/emerald-info.php>

<http://www.addmorecolortoyourlife.com/gemstones/emerald.asp>