

Learning Series: Birthstones – July

Ruby – The July Birthstone

Background

The story of the July birthstone traces to the ancient Silk Road of China. Notes about the transport of rubies can be found all the way back to 200 BC, as Asian traders imported rubies into their native cultures where they were held in very high regard for their gem quality and red color; a good luck color in many Asian cultures. Rubies were used not just for jewelry, but to ornament armor, scabbards and harnesses for wealthy noblemen. Some wealthy people even laid rubies into the foundations of their homes as a good luck charm.

The word “ruby” comes from the Latin “ruber,” meaning red. It is a variety of the mineral Corundum and for a ruby to be born in the natural environment, a perfect combination of aluminum oxide, correct temperature, correct pressure in the earth’s crust and very low silicon content is a requisite. This makes rubies very rare and large rubies (over 2 carats) even rarer. Host rocks of rubies often include metamorphic dolomite marbles, gneiss, and amphibolite. However, rubies are not normally extracted from the primary deposits due to the high cost of mining. They are retrieved from the secondary deposits which are usually alluvial. Mining of rubies is still fairly primitive and takes many man-hours of labor to find the stones. Once the gem bearing alluvial material is identified, then the gravel is sifted through wire screens and picked out by hand.

Rubies were once known in eastern legends as “blood drops from the heart of the Mother Earth”. Until about 1800 all red gemstones were called rubies. Many stones which were initially thought to be rubies were in fact red spinel, red tourmaline, and red garnet. An example of this is the “Black Prince’s ruby” in the English State crown that was thought to be a ruby, but in fact is red spinel.

Inclusions of tiny parallel Rutile needles causes an asterism effect in polished rubies. These are known as “star rubies” and often show six-ray stars and occasionally twelve-ray stars. The type of inclusion in the ruby makes it easy to identify the origin of the gem. In terms of clarity, rubies tend to be less clean than sapphires. Many rubies will fluoresce in long or short wave UV and this property can also often be used to help identify a stone’s geographic origin. Burmese rubies often fluoresce so strongly that the effect is noticeable even in sunlight; such stones seem literally to glow. Thai rubies generally lack this property. Ruby is considered to be a superior gemstone for its unique color, outstanding hardness, and dazzling light performance. In fact, in the Sanskrit language ruby is called “ratnaraj”, which translates as “King of Gemstones”.

Composition, Chemical Formula, Colors, and Sources

Composition – aluminum oxide

Chemical Formula – Al_2O_3

Colors – rubies are always some shade of red. Depending upon the chromium and iron content of the stone, the secondary hues can range from pink, orange, purple and brown. Of the four, purple is preferred because it reinforces the red making it appear richer. The finest ruby, often referred to as “pigeon’s blood”, is best described as being a vivid medium-dark toned red with a hint of blue. Color is the most important consideration for choosing a ruby, with clarity a distant second.

Sources – The most beautiful crystals are thought to be from Burma (now Myanmar) and 90% of the world’s supply comes from there. Quality rubies are also found in Thailand, Sri Lanka, Madagascar, and Tanzania, Other deposits of some importance are found in: Afghanistan, Cambodia, Kenya and Vietnam. Less significant deposits are in: Australia, Brazil, India, Malawi, Nepal, Pakistan, Zimbabwe and the United States (specifically Montana, North Carolina and South Carolina). More recently large ruby deposits have been found in Mozambique and under the receding ice shelf of Greenland.

Note: Aside from having good color, the most valuable ruby has a high level of clarity with few or no milky inclusions. However, because many ruby treatments exist that artificially enhance the color or clarity of the stone, a complete lack of needle-like rutile inclusions can sometimes signal treatment by a gemologist. More than 90% of the rubies found in the market today are treated to enhance their quality. A notorious and undesirable treatment is known as “glass filling” and involves adding lead glass to the fractures inside the ruby which dramatically improves the transparency of the stone.

Identification

Streak – white

Hardness – 9

Crystal system – hexagonal

Transparency – transparent to opaque

Specific gravity – 3.97 - 4.05

Luster – adamantine to vitreous luster

Cleavage – none, but separation planes parallel to the basal plane common

Fracture – small conchoidal, splintery, brittle

Fluorescence – strong; carmine red

Pleochroism – strong; yellow-red, deep carmine red

Associated Minerals – occurs with albite, acmite, andalusite, cordierite, muscovite, almandine

Best Field Indicators – hardness, high specific gravity, and striations on parting faces

Folklore, Legend and Healing Properties

The ancient Hindus thought the color of a ruby was due to an inextinguishable fire that burned inside the gem. It would endow its wearer with long life and could even cause water to boil.

Ancient Burmese warriors believed that when a ruby was inserted beneath the skin it generated a mystical force, making them unconquerable in battle.

Ruby was thought to grow darker when peril was imminent, and to return to its original color once danger was past—provided it was in the hands of its rightful owner!

The ruby aids in the cure of peptic ulcer, fever, rheumatism, and gout. They are also believed to eliminate depression in the wearer and make him bold and courageous. For therapeutic purposes, the gem must be set in gold and worn on the ring finger.

Women are discouraged from the regular use of rubies for it is believed to destroy body luster.

Trivia

Ancient Hindus, Burmese, and Ceylonese believed that rubies ripen with age. They believed that sapphires were unripe rubies and that inclusions in stones meant that they were overripe. They also used the gems as bullets for blowguns.

The Breastplate of Aaron is described in Exodus as containing a "sardius", the ancient name for ruby. Other books of the bible that mention ruby by various names include Ezekiel, Isaiah, Job, Proverbs, and Lamentations.

Rubies have a famous place in science - the first lasers were made from artificial ruby crystals. Some natural ruby crystals show the fluorescence (actually very short term phosphorescence) that makes a laser possible.

There have been many large size rubies recorded in history, however, such large sizes are extremely rare today. Some famous rubies include: the 40-carat oval Chhatrapati Manick Ruby; the 43-carat Peace Ruby found in 1919; the 167-carat Edwards Ruby--a large gem, though not of top quality--kept in the British Museum; the 138.7-carat Rosser Reeves Ruby from Sri Lanka (one of the finest star rubies on display at the Smithsonian); the 100-carat oval cabochon De Long Star Ruby located in the American Museum of Natural History in New York; the 105-carat Anne of Brittany Ruby, a polished but irregular gem housed in the Louvre in Paris; and, the unfaceted 250-carat ruby mounted in the Bohemian St. Wenzel's Crown.

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