

## Learning Series: Birthstones – November

# Yellow Topaz – The November Birthstone

### Background

At some point in the Middle Ages, the word "topaz" came to mean any yellow stone, but until the 18th century the term was often used when referring to our present day mineral peridot. This can probably be explained by a theory first put forth by Pliny in the first century A. D. which asserted the name topaz was derived from the Greek word *topazos* or *topazion* -- reason being, that was the name of an island in the Red Sea which was an ancient source for peridot (though not topaz). That island is today known as Zeberget, or the Island of St. John. Most scholars, however, believe the name topaz is derived from the Indian Sanskrit word *tapas*, meaning fire.

What is certain is that the term was first used in reference to the mineral we know today as topaz in 1747 when Henckel described the Saxony deposits in modern day Germany. With that in mind, the many modern English translations of the Bible which mention topaz in Exodus 28:17 are likely referring to chrysolite, the golden yellow variety of peridot.

Due to the strong chemical bonds within this gemstone, topaz is the hardest silicate mineral and one of the hardest minerals in nature. It was known in the 1700's in Egypt and Rome, however, it gained wide popularity in Europe in the 18th century and was used extensively with the finest diamonds in the jewelry of the Victorian era.

Topaz is commonly associated with silicic igneous rocks of the granite and rhyolite type. It typically crystallizes in granitic pegmatites or in vapor cavities in rhyolite lava flows where the required hot temperatures and the presence of fluorine are the norm. Due to its hardness, it can usually be mined in eluvial and alluvial deposits. The most striking inclusions found in a topaz gemstone are drop-shaped cavities containing two, or even three, immiscible liquids (with a clear dividing line).

The colors in topaz are mainly the result of a phenomenon known as "color centers", which are not fully understood. These "color centers" can occur and be reversed by natural irradiation and heating processes, resulting in the variety of colors exhibited by natural color topazes, or they can be manipulated by artificial means. In fact, a lot of affordable yellow topaz is used to create blue or red topaz. Some color centers in topaz are stable until heated hundreds of degrees while others are very unstable, fading within a few days merely by exposure to sunlight. To further complicate the situation, some treatments are detectable while others are not.

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

**Composition** – aluminum silicate that gets its color from the inclusion of oxygen, fluorine, hydrogen, silicon or aluminum.

**Chemical Formula** –  $\text{Al}_2\text{SiO}_4(\text{F},\text{OH})_2$

**Colors** – Pure topaz is colorless, and while yellow is the color associated with the month of November, the gemstone actually occurs in a wide range of colors including blue, green, pink, peach, orange, red, violet, brown, and black.

**Types** – The terms "imperial" and "precious" are often used to distinguish between true topaz and the quartz look-alikes (citrine and smoky quartz). Imperial Topaz is a varietal name that originated in the 19<sup>th</sup> century when the Czar of Russia proclaimed topazes with pink tones to belong only to himself and the royal family. Today it specifically refers to a vivid reddish-orange stone. The term "precious" refers to all other colors of topaz.

**Sources** – Classic yellow topaz crystals once came from Germany, but the largest known deposits are located in Brazil. Topaz—in its many color variations—is found throughout the world, including Afghanistan, Australia, China, Czech Republic, Italy, Japan, Madagascar, Mexico, Mongolia, Myanmar, Namibia, Nigeria, Norway, Pakistan, Poland, Russia, Scotland, Siberia, Sri Lanka, Sweden, United States (California, Colorado, Connecticut, Maine, Nevada, New Hampshire, Texas, Utah, Virginia) and Zimbabwe.

**Note:** The vast majority of topaz on the market today has been enhanced, but because yellow topaz is so common and affordable there is a good chance that it has not been subjected to any of the typical treatments (heat, radiation, diffusion or surface coating).

## **Identification**

**Streak** – white

**Hardness** – 8

**Crystal system** – orthorhombic

**Transparency** – transparent to translucent

**Specific gravity** – 3.4 – 3.6

**Luster** – adamantine to vitreous

**Cleavage** – perfect in one direction, basal

**Fracture** – conchoidal, brittle

**Habits** – commonly as euhedral prismatic crystals terminated by dipyrramids, first and second order prisms, and basal pinacoids. Frequently with vertical striations on the prismatic faces. Also appears in crystalline masses.

**Other Characteristics** – index of refraction is 1.61 - 1.64. Mild florescence in some crystals.

**Associated Minerals** – include quartz, tourmalines, micas, brookite, cassiterite and fluorite.

**Best Field Indicators** – crystal habit, color, density and hardness.

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

In ancient lore, topaz could be used to control heat. It was said to have the power to cool boiling water, as well as excessive anger.

Legend has it that topaz dispels all enchantment and provides the wearer the ability to see the truth. In that capacity, yellow topaz was specifically said to reveal poison by changing color in its presence; thus, alerting the person who wore it to dangerous intentions from those around him.

It helps to improve eyesight. A cure for weak vision called for immersing the stone in wine for three days and nights, then rubbing the liquid on the eyes.

The ancient Greeks believed that it had the power to increase strength and make its wearer invisible in times of emergency.

Its mystical curative powers waxed and waned with the phases of the moon and was said to cure insomnia, asthma, and hemorrhages. As medication, topaz was used to cure fever.

## **Trivia**

Blue topaz is given on the 4th anniversary and Golden or Imperial topaz is given on the 23rd anniversary.

Yellow Topaz is the official state gem of Utah.

The most famous topaz is a 1680 carat stone known as the "Braganza Diamond." Set in the Portuguese Crown Jewels, it is colorless and was originally thought to be a diamond. The largest faceted gemstone ever recorded is the "Champagne Topaz" which was mined in Brazil and weighs 36,854 carats. In the 1940s, three topaz crystals were mined from Minas Gerais in Brazil. They weighed about 596 pounds (the world's largest Topaz), 300 and 255 pounds, respectively, and are now housed in the American Museum of Evolution.

Real topaz will sink in bromoform and, if rubbed or gently heated, topaz will produce a spark or become electrically charged to the extent that it will attract pieces of papers.

### **Sources:**

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