

Topaz

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a group of topaz crystals on matrix

General

Category	Silicate mineral
Chemical formula	$\text{Al}_2\text{SiO}_4(\text{F},\text{OH})_2$

Identification

Color	Clear (if no impurities), blue, brown, orange, gray, yellow, green, pink and reddish pink.
Crystal system	orthorhombic
Fracture	conchoidal
Mohs Scale hardness	8
Luster	Vitreous/glossy
Specific gravity	3.4-3.6

Topaz is a silicate mineral of aluminium and fluorine with the chemical formula $\text{Al}_2\text{SiO}_4(\text{F},\text{OH})_2$. It crystallizes in the orthorhombic group and its crystals are mostly prismatic terminated by pyramidal and other faces, the basal pinacoid often being present. It has an easy and perfect basal cleavage, meaning that gemstones or other fine specimens have to be handled with care to avoid developing cleavage flaws. The fracture is conchoidal to uneven. Topaz has a hardness of 8, a specific gravity of 3.4-3.6, and a vitreous luster. Pure topaz is transparent but is usually tinted by impurities; typical topaz is wine or straw-yellow. They may be made white, gray, green, blue, pink or reddish-yellow and transparent or translucent.

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1. Treatments

When heated, yellow topaz often becomes reddish-pink. The color change upon heating was first discovered by a Parisian jeweler around 1750. In particular the yellow Topaz of Brazil has been known to be treated frequently, by wrapping Topaz in Asbestos. Only stones of a brown-yellow color yield the pink; the pale yellow ones usually turn white. The pink color is stable. ^[1] Topaz can also be irradiated, turning the stone blue, ranging from a light pure color to very dark almost electric blue. A recent trend in jewelry is the manufacture of topaz specimens that display iridescent colors, by applying a thin layer of titanium oxide via physical vapor deposition, this stone is then sold as 'mystic topaz'.

2. Localities and occurrence

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 like those at Topaz Mountain in western Utah. It may be found with fluorite and cassiterite. It can be found in the Ural and Ilmen mountains, Afghanistan, Czech Republic, Germany, Norway, Pakistan, Italy, Sweden, Japan, Brazil, Mexico, and the United States.

Topaz crystals from Brazilian pegmatites are up to 80 cm x 60 cm x 60 cm in size. The biggest topaz crystal ever found, named "El Dorado", was found in Brazil in 1984. It weighs 6.2 kg and belongs to the British Royal Collection. The famous Braganza diamond is in most likelihood a Topaz. The Topaz of Aurungzebe, observed by Jean Baptiste Tavernier measured 157.75 carats.

3. Etymology and historical and mythical usage



Colorless topaz, Minas Gerais, Brazil

The name "topaz" is derived from the Greek *Τοπάζιος* (Topázios), which was the ancient name of St. John's Island in the Red Sea which was difficult to find and from which a yellow stone (now believed to be chrysolite: yellowish olivine) was mined in ancient times; topaz itself (rather than *topazios*) wasn't really known about before the classical era. In the Middle Ages the name topaz was used to refer to any yellow gemstone, but now the name is only properly applied to the silicate described above.

Many modern English translations of the Bible, including the King James Version mention *topaz* in Exodus 28:17 in reference to a stone in the Hoshen: "And thou shalt set in it settings of stones, even four rows of stones: the first row shall be a sardius, a topaz, and a carbuncle: this shall be the first row." However, since these translations as *topaz* all derive from the Septuagint translation *tòpazi[òs]*, which as mentioned above referred to a yellow stone that wasn't topaz, probably chrysolite, it should be borne in mind that topaz is not meant here. The masoretic text (the Hebrew on which most modern bible translations of the Old Testament are based) has *pitdah* as the gem the stone is made from; *pitdah* is of unknown meaning, though scholars think it is related to an Assyrian word meaning *flashed*. There is a wide range of views among traditional sources about which tribe of the Israelites the stone refers to.

Yellow topaz is the traditional November birthstone, and the state gemstone for the US State of Utah.

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