TOPAZ

The imperial Gem

Topaz is a semiprecious gemstone. The name topaz is believed to be derived from Topazios, the old Greek name for a small island in the Red Sea, now called Zabargad. Some believed it came from a Sanskrit word "Tapas", meaning “fire.”

It is a silicate mineral of aluminium and fluorine. Topaz is allochromatic gemstone and they receive colour from impurities or defects in its crystal structure. Purest topaz is colorless. Topaz is popular because it is available in a wide range of colours like – Yellow, Blue, Green, Light Blue, Red and Pink. The most expensive topaz colour ranges from golden – yellow to pink – orange as these colours are rare. These topaz are known as "Imperial Topaz" or "Precious Topaz". Citrine Quartz is a one the closest simulants, for imperial topaz, which is sold in the market as "Citrine-Topaz".

It is found in many locations where igneous rocks like pegmatite and rhyolite are formed. Brazil is one of the largest producer of good quality topaz. Besides Brazil, Pakistan is also a source of pink, violet and red topaz. Sri-Lanka is a known source for colourless topaz. Other sources are Australia, India, Madagascar, Mexico, Myanmar, Namibia, Nigeria, Russia, and Zimbabwe.

Gemmological Properties

Chemical formula of topaz is $Al_2SiO_4(F,OH)_2$. Topaz is a transparent to translucent gem and it's luster is vitreous. It has a hardness of 8 on Mohs scale. Topaz is the hardest of the silicate minerals. It has a distinct basal cleavage. It is a hard stone but distinct cleavage makes topaz a very fragile gemstone. Because of which Topaz jewellery are given a protective settings. Topaz jewellery should also be protected against sharp blows and damaging activities.

Under 10x and Microscope Topaz shows a typical inclusions known as as Two immiscible liquids. Topaz with high concentration of fluorine have lower refractive index 1.61-1.62 than those with high concentration of hydroxyl group (refractive index 1.63 -1.64). Similarly, specific gravity also changes with the concentration of fluorine & hydroxyl ions; 3.53 and 3.6 for excess of hydroxyl and fluorine respectively..

Treatment:

The most popular color of topaz is blue. As blue topaz is extremely rare in nature, the blue topaz around the world is treated in one or another way. Irradiation method is used to convert colorless untreated topaz to blue color. "Swiss blue" and "London blue" are the two famous trade names used in the gem market for treated blue topaz.

Colorless topaz is heated, Irradiated or coated with layers to alter the colors. Some topaz which are coated with metallic oxides exhibits a multicolor luster these topaz are sold under the name of "Mystic Topaz". Extremely rare natural pink to purple topaz can be produced in the laboratory as well.

How to recognize a topaz?

The hardness is one of the criteria to separate topaz from other gemstones. Diamond, Sapphire, Ruby, Citrine & Tourmaline have different hardness than topaz. But hardness of Aquamarine & topaz is nearly same, so it is hard to recognize topaz only on the basis of hardness. Specific gravity test is useful identification in such cases.

Colourless Topaz rough crystals are fashioned to imitate diamond rough (fig on left side). This is because topaz crystallises in the orthorhombic system and, diamond crystallises in cubic system and have an octahedral habit. But labs like GII with in-depth knowledge and sophisticated solid state spectroscopic equipment, can differentiate topaz and diamonds. In fact we received a couple of samples for identification. They could be identified by just observing trigon markings made on the rough Topaz samples were not oriented in the opposite direction of the octahedral face of the stone as is seen in diamonds (fig on right side).

Bibliography

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