

# YELLOW SAPPHIRE

## The Gemstone of Fortune

### (PUKHRAJ)

Yellow Sapphire is a variety of the species corundum, crystallized alumina ( $Al_2O_3$ ). In India, Yellow Sapphire is known as Pukhraj or Pushkraaj.

Yellow sapphire is considered as one of the gems of Navgraha (nine planets). Yellow sapphire gemstone is stated as the gemstone of fortune or luck due to its association with planet Jupiter which signifies fortune and wealth. Jupiter is denoted as being 'teacher' of all nine planets.



• Sapphire is crystalline aluminium oxide,  $Al_2O_3$ , and belongs to trigonal crystal system. Optically it is doubly refractive with refractive index 1.760-1.768 and birefringence 0.008. Vitreous lustre and hardness of 9 on the Mohs scale. This property, paired with toughness and durability, make sapphires quite desirable gemstones. It has a specific gravity of 3.99. Corundum in pure form is devoid of color. By replacing about 1 % aluminium ions in the atomic arrangement of corundum with iron ions as oxides, it gets Yellow colour and what is called yellow sapphire.

Color is the most important factor in determining the value of a yellow sapphire than its clarity. Oval, round, cushion and Octagon are the most desired cuts for yellow sapphire.

Yellow sapphires can range in color from greenish yellow to orangish-yellow and everything in between. The preferred yellow sapphire color is a medium canary yellow.

Since yellow sapphires are very attractive, the steady demand has only been increasing, making fine quality, untreated yellow sapphires quite rare.

Sapphire Treatments refers to the process of improving the clarity and colour of Sapphires that have been mined out of the ground. Heat Treatment, Beryllium Diffusion, fracture filling with lead glass and irradiation are different types of Treatments performed on yellow sapphires.

It is interesting that natural Sapphires carry within them clear signs of slow crystallization. Some of the impurity elements sometimes remain preserved in the Gem which help its identification. Like all other natural precious gems, yellow sapphires have natural inclusions which are visible to the naked eye or under magnification, which helps in identification. Yellow sapphires are made in the laboratory by various methods. Synthetic yellow sapphires are often differentiated based on their inclusions.

For decades, the basaltic lava rocks and river sands and gravels of Sri Lanka (Ceylon), Burma, Australia and Madagascar have been major sources for yellow sapphire but Sri Lanka remains as a prime location for excellent quality yellow sapphires.

Gemmological Institute of India (GII) is a renowned institute for imparting gemmology training to contribute to trained man power and testing of gems, diamonds and jewellery, and grading diamonds to assist Gem & Jewellery industry. Detection methods of sapphire and other gems in GII laboratory involves both conventional and advanced gemmological testing methods using state of the art spectroscopic instruments.

The routine testing in GII comprises of identification of gemstones by conventional methods and heat treatments using FTIR and Raman spectroscope. Chromophores are identified using UV visible spectrometers, elemental analysis is done using Energy- dispersive X- ray fluorescence (EDXRF) and Beryllium diffusion is analysed with the help of LIBS. Main objective of GII is to provide test reports to customers that reflect inherent competence and expertise and these certificates are value addition to their goods.

GII with its advance Instrumentation and research expertise detects all types of treatments in Yellow Sapphires and also issues geographical origin certificates for sapphires.

References:

1. Precious Stones and Gems, Their History, Source and Characteristics.
2. [www.quoro.com](http://www.quoro.com)
3. [www.giionline.com](http://www.giionline.com)