

Tanzanite

A mesmerizing Bluestone

Tanzanite is blue/violet variety of Mineral Zoisite belonging to Epidote group. Top quality tanzanite has violetish blue colour. It is one of the very close simulants for Blue sapphire.

Tanzanite was discovered, by Manual D'Souza a fortune hunter from Goa, in the year 1967. Scientifically called as "Blue Zoisite" Tiffany & Co. renamed the gem after the country it came from. They were the main distributor of the gem Tanzanite. Tanzanite is mined commercially only in one area of the world, in the Merelani Hills, near Arusha, north of Tanzania.

It is Calcium Aluminium Hydroxyl Sorosilicate. Its colour is caused by the presence of small amounts of Vanadium within the zoisite mineral structure.

Its chemical composition is repetitive unit of $\text{Ca}_2 \text{Al}_3 (\text{SiO}_4)_3 (\text{OH})$.



The mineral zoisite occurs in nature in a wide range of colours that include colourless, grey, yellow, brown, pink, green, blue, and violet. The name "tanzanite" is used for a colour variety of zoisite that ranges from blue to bluish purple to bluish violet.

Tanzanite belongs to Orthorhombic crystal system. It has an overall Vitreous lustre except at the cleavage surfaces which gives Pearly lustre. It has prismatic crystals with striations and form varies from Massive to Columnar. It's hardness is around 6.5 on Mohs scale. It has refractive index of 1.69-1.7 and its specific gravity is 3.35.

The normal primary and secondary hues in Tanzanite are blue and Violet. Untreated Tanzanite is trichroic meaning light which enters gets refracted on all three optical axes of the stone. So we get various combinations of Purple/Violet, red, blue, green, yellow, orange, red, brown. It is this trichroism which is responsible for the way tanzanite behaves under different lighting conditions when viewed in different directions. It appears Blue under fluorescent light and Violet under incandescent light.

When vanadium-bearing zoisite is heated to a temperature of 600 degrees Celsius for about 30 minutes, the oxidation state of the vanadium is changed and that change causes or improves the blue colour. After heat treatment the stones show dichroic property and the colours then ranges from Violet through Bluish-Violet to Indigo and Violetish-Blue to Blue.



Natural blue tanzanite: The pair of crystals shown on the left is the same pair of crystals shown on the right. They have different apparent colours because tanzanite is pleochroic – it appears to be different colours when viewed from different directions (from Ref. 1)

Because of its trichroism and cleavage, Tanzanite requires an experienced lapidary who is able to maximize both the stone's size and unique color.

Worlds largest rough Tanzanite weighing 16,839 cts. was mined in the year 2005 by a mining company called "TanzaniteOne" and was named "The Mawenzi" after the second highest peak of Mount Kilimanjaro.

Tanzanite is a single-source gemstone that is a thousand times rarer than diamond, and is only gaining popularity.

References:

1. Geology.com website - <https://geology.com/gemstones/tanzanite/>
2. Wikipedia website - <https://en.m.wikipedia.org/wiki/Tanzanite>
3. irocks.com

4. [www.gia.edu.Tanzanite](http://www.gia.edu/Tanzanite)
5. www.agta.co
6. <http://www.goanvoice.org.uk/supplement/ManuelDSouza.htm>