

## Titanite or Sphene?

### Name confusion for gem with eye-popping dispersion

Each gemstone has a unique set of material properties that distinguish it from other gems. Sometimes these properties are invisible and only used for identification. In other cases, the material properties of the gemstone are an integral part of its appeal. Such is the case with sphene. Because sphene is a relative newcomer to the jewelry world, it doesn't have much in the way of history or folklore, but it does have some optical properties that grab your attention and won't let go. The official name of sphene is now titanite. In 1982 the International Mineralogical Association voted to give it a new name reflective of the large amount of titanium in its makeup. Most of the trade still refers to it by the traditional name of sphene which comes from a Greek word meaning wedge and refers to the shape of sphene crystals.

The first thing most people notice about sphene is its ability to break light up into all the colors of the rainbow. This property is called dispersion and results in the appearance of fireworks inside the stone as it is turned in the light. Dispersion occurs to some degree in most gemstones, but the amount is so slight that it is usually not seen. Diamond is another gemstone with strong dispersion, as are demantoid garnet and zircon. As light passes through an interface between two different materials, it is refracted, and the angle of that refracted light is based on the properties of the two materials. In stones with strong dispersion, the angle of refraction for

shorter lightwaves like red and orange is much lower than that for higher lightwaves like blue and violet. The result is the white light being split up into different colors. Most people are familiar

with this effect from playing with a prism when they were kids. Because faceted gems have hundreds of different surfaces, there are hundreds of different paths for the light to follow and appear as pinpoints of color throughout the gemstone.

But that's not the only optical property that makes this gemstone so unique. Sphene is also trichroic, meaning an intact crystal appears to be three different colors when viewed from different angles. Although the actual colors vary, typical colors for sphene are yellowish-green, reddish-brown, and clear. A more common gemstone with this property is tourmaline. When the rough allows it, faceters often cut sphene to maximize the appearance of all the different colors in the face. Therefore, a well-cut sphene can show a mix of body colors overlaid with flashing rainbow colors from the dispersion – truly a remarkable display.

It seems quite a coincidence that, in addition to attractive and unusual appearances due to optical phenomenon, opal and sphene are both relatively soft. They are both 5.5 on the Moh's hardness scale making them poor choices for everyday rings, but well suited to pendants and earrings. Many jewelers have difficulty setting them because of their fragility, but those accustomed to setting emeralds and opals encounter no unusual problems. For those determined to wear sphene as an occasional ring, it is important to mount them down low and well protected.

One last fun fact; Titanite or sphene is a source of titanium dioxide which is frequently used as a pigment. In its most common form it is used to whiten toothpaste, skimmed milk, and even mark the white lines for the Wimbledon Championship tennis courts. When deposited as a thin film on the back of clear topaz, the resulting gems are known as mystic fire topaz.

***Sphene and Diamond in  
14KT Gold Broom Cast  
Earrings \$1490***

***Sphene in 18KT Yellow  
Gold Bezel on Cast Sterling  
Silver Ring \$900***

***8.70ct Sphene and  
Diamonds in 18KT Green  
Gold Pendant \$3300***