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THE MINERAL BENITOITE



Fluorescent Cursor Passover

- **Chemistry:** $\text{BaTiSi}_3\text{O}_9$, Barium Titanium Silicate.
- **Class:** [Silicates](#)
- **Subclass:** [Cyclosilicates](#)
- **Uses:** As a [gemstone](#) and as a mineral specimen
- [Specimens](#)

Benitoite is a somewhat obscure, but wonderful gemstone mineral that was only discovered at the beginning of this century. It has a sapphire blue color and was first thought to be a variety of [sapphire](#). But x-ray studies showed that the crystal structure was unlike any mineral previously discovered. It is one of only a few minerals to crystallize in the bar 6 m 2 class called the [ditrigonal-dipyramidal](#) symmetry class. While this class is technically hexagonal, it produces trigonal (triangular) looking crystals. Additionally benitoite is also a fluorescent mineral. Nearly all specimens of benitoite will [fluoresce](#) a beautiful pale blue color under UV light (see above).

Benitoite is associated with a few rare minerals such as black-red [neptunite](#), snow white [natrolite](#) and brown-yellow [joaquinite](#). The only source of this rare combination occurs at San Benito, California. They are formed in fractures of a serpentine rock from hydrothermal solutions. These solutions contained a number of unusual elements such as barium, titanium, fluorine, iron, cesium, niobium, manganese and lithium in relatively high concentrations. How such a solution occurred and what other conditions caused the crystallization of these rare minerals is still not well understood. The rare clusters of blue benitoite and black neptunite on top of a crust of white natrolite produces a truly fantastic and a one of a kind mineral combination that is a must have for a serious mineral collector.

PHYSICAL CHARACTERISTICS:

- **Color** is typically blue, but also colorless and yellowish.
- **Luster** is vitreous.
- **Transparency:** Crystals are transparent to translucent.
- **Crystal System** is hexagonal; [bar 6 m 2](#)
- **Crystal Habits** include the flattened six faced dipyramid that has a distinct triangle shape often modified by minor faces. Also found as small grains.
- **Cleavage** is absent.
- **Fracture** is irregular.

- **Hardness** is **6 - 6.5**
- **Specific Gravity** is approximately **3.6** (above average)
- **Streak** is white.
- **Other Characteristics:** Nearly all specimens **fluoresce** blue under UV light.
- **Associated Minerals** include **serpentine, neptunite, natrolite, joaquinite, sanbornite, taramellite, albite** and **fresnoite**.
- **Notable Occurrences** include only the mines of San Benito County, California, USA for good excellent crystals. SW Texas produces tiny grains in eocene sands as well as some other California localities.
- **Best Field Indicators** are crystal habit, fluorescence, color, associations and locality.

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