

# Oregon Sunstone

## A Rare and Beautiful American Gemstone

Even though Oregon Sunstone has been commercially mined for over 30 years, it is still fairly new to collectors, investors, and even the majority of professionals. Miners such as Don Bufford of Dust Devil mine, John Aldrich of Double Eagle mine, and Chris Rose of Spectrum mine have spent a lifetime mining and popularizing this rare American gemstone. Notwithstanding, Oregon Sunstone didn't really take off in popularity and price until 2012 with the discovery of the now famous Sunstone Butte and PANA Mine, both located on Little Eagle Butte.

*By Ales Patrick Krivanek*

The Sunstone Butte and PANA Mines started producing rare colors in large, sustainable quantities and the world gemstone market began listening and positively reacting. As of late 2019, every well-known American gem artist is working with Oregon Sunstone. It is also frequently seen on popular TV channels in the USA (JTV, Gem Shopping Network), and in the UK (Gemporia TV, in part hosted by renowned gem artist and dealer Glen Lehrer). Whichever category Oregon Sunstone is entered into, it regularly places in the Top 3 at the annual AGTA Spectrum Awards, many times winning multiple categories in the same year.

### Physical Properties of Oregon Sunstone

Technically, Oregon Sunstone is a copper-bearing labradorite of the plagioclase series of the feldspar mineral group. Its chemical formula is a solid solution between anorthite ( $\text{CaAl}_2\text{Si}_2\text{O}_8$ ) and albite ( $\text{NaAlSi}_3\text{O}_8$ ), typically 70% and 30%, respectively. Important properties of this gemstone are:

- Hardness: While the generally accepted hardness is 6.0 - 6.5, the author has seen gemology reports from some area mines that it is up to 7.0 (directional). This is similar to or greater than tanzanite, some garnets, peridot, kunzite and opal and therefore is suitable for use in jewelry.
- Pavilion Angle: 42° (best if cut at 43° or higher).
- Specific Gravity: 2.62 - 2.70 g/cm<sup>3</sup>.
- Crystal System: Triclinic.
- Chemical Formula:  $(\text{Ca},\text{Na})[\text{Al}(\text{Al},\text{Si})\text{Si}_2\text{O}_8]$ .
- Geologic Age: 15.5-16.5 million years.

According to many experts and top award-winning gemstone artists like John Dyer, Dalan Hargrave, John Bailey, and Darryl Alexander, Oregon Sunstone is one of the easiest materials to facet and polish, and yet can be one of the most complex materials optically. It offers a wide range of sizes, colors, and entry costs—with a range of potential returns on investment.

Oregon Sunstone varies from the most affordable and simple material, to some of the most elegant and highly-complex material. For gem cutters, it truly supports every level of learning, practice, and expression as well as fitting every budget along that continuum. And, since it is found only on a few square kilometers in the southeast Oregon high desert, Oregon Sunstone is one of the rarest gems in the world.

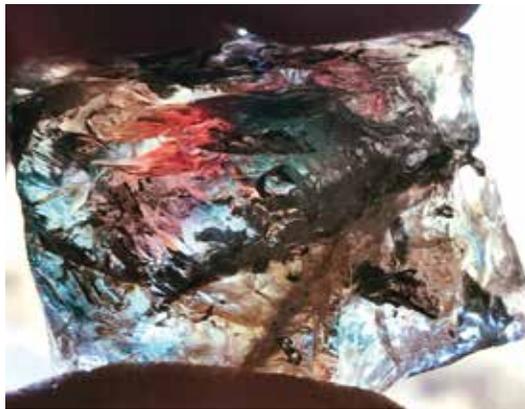


Photos:

1. 10.62-ct teal-blue schiller "Sunstone Dreamscape" by John Dyer, rough from John Aldrich, Double Eagle Mine. (Photo: John Dyer & Co.)
2. Graffiti pattern by Ryan J. Anderson, rough from Sunstone Butte.
3. 6.2-ct Mystique multicolor Oregon Sunstone from PANA Mine.
4. Multicolor Oregon Sunstone, carving by Ryan Joseph Anderson, rough from Sunstone Butte.
5. Top quality Mystique multicolor Oregon Sunstone, faceted by Ravenstein Gem Co, rough from Ales P. Krivanek.
6. 22.98-ct neon red Oregon Sunstone faceted by Jeff Hapeman, one of the most valued red Oregon Sunstones ever discovered, rough from Ales P. Krivanek.



Mystique-multicolor Oregon Sunstone from PANA Mine



122-ct Oregon Sunstone in rarest color combination, found by Ales P. Krivanek, PANA Mine 2018.



Large Mystique multicolor Oregon Sunstone, found by Ales P. Krivanek, PANA Mine 2018.

**History**

The history of Oregon Sunstone began with Native Americans assigning special value to the unique crystals they found on the surface of the Rabbit Basin area of the south-east Oregon high desert. Native people traded champagne, gold, schiller, and red colored sunstones all across the USA, as far as the East Coast from New York state down to Florida. Excavations of centuries-old archaeological sites have proven that Oregon Sunstone was traded throughout the current United States and parts of Canada.

Today, this ancient trade business has experienced an evolution into a modern mining industry that has expanded throughout Harney and Lake Counties of Oregon. In 1987, Oregon Sunstone was designated as the State of Oregon’s official gemstone due to its beauty, rarity, and uniqueness.

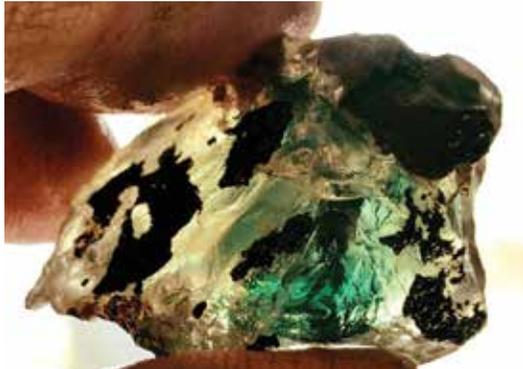
**Why Isn't Oregon Sunstone Really a Sunstone?**

In the early 1970s, the first official research was done in the Rabbit Basin area, which was the first area discovered to contain this species of gemstone. Back then, the field gemologist writing the report made a grave and inexcusable mistake. When he saw glittering schiller in many stones, he mistakenly identified the stone as “typical oligoclase feldspar with hematite inclusions.” In other words, he mistook the gemstone for a common sunstone like those found in other locations such as Tanzania, India, and Mexico.

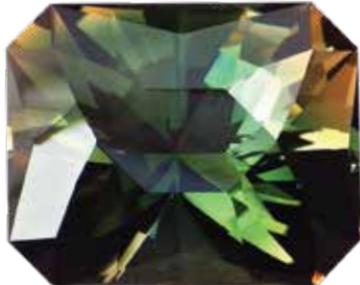
Later research revealed the truth—that it was not a common oligoclase feldspar and that the inclusions inside the stone were not hematite, but rather nano particles of pure copper, down to 10 nm in size.

Additionally, it was found that the gem itself is colored by copper, therefore earning the monikers copper-bearing or cuprian. So instead of being a simple oligoclase (common sunstone), this gem was in reality a new variety of labradorite that had never been seen in any other place in the world.

The color of true Oregon Sunstone ranges from champagne, gold, yellow, pink, orange, and all hues of red to super rare shades of teal/blue and green. In this respect, Oregon Sunstone is similar to tourmaline and can display a nearly limitless range of colors, color combinations, and dichroic and pleochroic color mixes with or without copper



109-ct piece of peacock green Oregon Sunstone from PANA Mine, 2018.



An 10.80-ct flawless Mystique multicolor Oregon Sunstone, faceted by Craig Oliveira, rough from PANA Mine, 2017 production.



1200+-ct flawless OregonSunstone from PANA Mine 2018.



PANA Mine main pit, Summer 2018



Ore processing at PANA Mine.

schiller. Common “sunstone” displays only shades of rusty yellow, pale gold, and in many cases is nearly colorless.

Sadly, by the time the truth came out, the damage had been done and most people were already referring to this new gemstone simply as a “sunstone.” So, instead of assigning a new name to this gemstone to clearly differentiate it from common unremarkable varieties of sunstone, it was decided to call it “Oregon Sunstone.” This is why even today, this rare gemstone is associated with common sunstone. Aside from this being factually wrong, it also creates reservations in the minds of potential buyers and investors.

In short, Oregon Sunstone is a copper-bearing labradorite belonging to the plagioclase series of the feldspar group of minerals. It has triclinic crystal structure and demonstrates biaxial-positive optical properties. In contrast, common sunstone from other locations has oligoclase composition, with more sodium and less calcium in the plagioclase series of the feldspar mineral group and demonstrates biaxial-negative optical properties.

Genuine Oregon Sunstone also exhibits a refractive index in the 1.560 to 1.585 range, which is higher than its common oligoclase counterpart, which is only in the 1.520 to 1.560 range. The attractive range of colors also differentiates Oregon Sunstone from its common and inexpensive counterparts from India, Mongolia, Mexico, and elsewhere.

## Mines and Miners

As of today, there are six commercial mines producing Oregon Sunstone in various quantities. As far back as 1992, Terry Clark and Don Bufford bought mining claims in the Rabbit Basin in Lake County and established the famous Dust Devil Mine. This was the very first commercial mining operation in the heart of the gemstone-rich lava flows of the Rabbit Basin area. Over the years, vivid top quality red gems from Dust Devil Mine reached almost mythical status. The efforts and genuine enthusiasm of miners Don, Mike, and

13.78-ct Mystique-multicolor Oregon Sunstone, faceted by Ravenstein Gem Co, rough from PANA Mine.



PANA Mine gemstone screening stations, Summer 2018

their new partner Terry soon attracted skilled lapidaries and jewelers to take notice of the gem.

Before long, two more industrial mining operations were established in the Rabbit Basin—the Spectrum Mine owned by skilled geologist Chris Rose, and the Double Eagle Mine operated by John Aldrich and his wife Debbie. All three Rabbit Basin mines are famous for producing some of the finest Oregon Sunstone gems ever discovered.

In 2003, John Woodmark, owner of Desert Sun Mining Gem Company, purchased and created the first full-scale commercial mining operation at the Ponderosa Mine in Har-



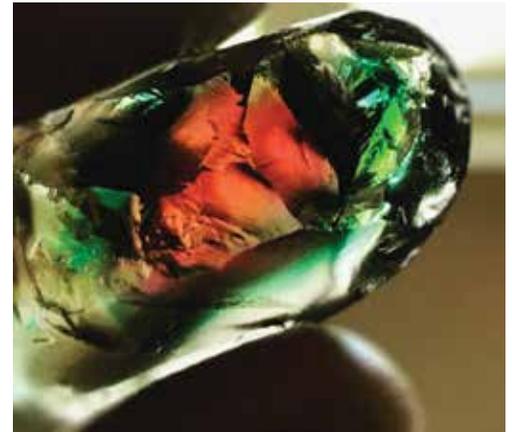
John Aldrich, owner of Double Eagle mine, looking for Oregon Sunstone.



An 18K gold pendant by Robin Callahan, featuring 37.5-ct red Oregon Sunstone carved by Larry Woods.

154-ct rough red Oregon Sunstone, mined by Ales P. Krivanek, PANA Mine.

A watermelon Oregon Sunstone from the PANA Mine.



ney County. This deposit is known to produce the highest concentrations of Oregon Sunstone per cubic meter of ore. That gave the marketplace a second important source and contributed to the further growth of the market.

As more miners and jewelers found the Oregon Sunstone to be profitable, artificially colored imitations known as “Tibetan Andesine” or “Precious Andesine” (usually made by infusing copper into unremarkable oligoclase-feldspar from Mongolia, Mexico, or clear Oregon Sunstone) began to appear in the marketplace.

That created confusion among consumers and the Oregon Sunstone market took a hit. The financial crisis in 2008 reduced sales of all luxury goods, which further suppressed Oregon Sunstone sales.

In 2011, Dave Wheatley and Randy Reinikka discovered and registered claims approximately 12 miles northeast of Rabbit Basin in Harney County, in a locality called Little Eagle Butte. Later that year, they established two mining companies, PANA Mine, owned by Randy Reinikka, and Sunstone Butte Mine, owned by David Wheatley and Tammy Moreau. Both mines were soon breaking records by producing the largest, finest Oregon Sunstone being marketed and distributed by leading American retailers.

Both the geology of the region and the gems found at this new locality were different from the partially decomposed layered lava flows of Rabbit Basin. This new discovery was an important addition for two reasons. First, it increased supply to the marketplace.

Second, the exceptional gem quality discovered at the Little Eagle Butte location “changed everything” for Oregon Sunstone according to a GIA research team during their site visit in 2013. Both mines are located on top of an ancient volcano. Gems created inside the massive magma chamber of calcium-rich lava cooled very slowly resulting in gemstones of extraordinary size and color.

This discovery yielded Oregon Sunstone of extremely high quality at levels never seen before. Impressive green, blue-teal, bicolor, and Mystique (super-rare multi colored) gemstones hit the market with great success.

In 2016, the author purchased all of the PANA mine claims and leveraged his companies’ expertise in online marketing and sales to expand consumer accessibility to Oregon Sunstone. His current efforts are to take all the hard work and accomplishments gained over the years and compile them into the OregonSunstoneGuide.com. He hopes that more and more miners and mines will participate in this project and help grow the market to new levels.

But, after 2.5 years of successful operations, due to personal reasons, the author sold PANA Mine to Sun Summit Sunstones, which is owned by a group of miners and gem-



Red Oregon Sunstone pendant by Robin Callahan, carving and faceting by Aaron Sangenitto, rough from Ales Patrick Krivanek.



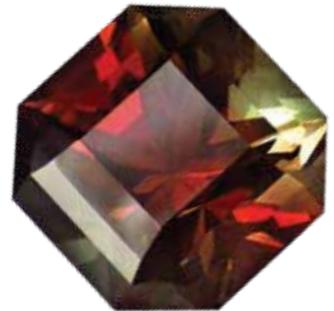
Ales Patrick Krivanek, Oregon Sunstone cutter, distributor and educator.



Large flawless red-pink Oregon Sunstone, faceted by Jeff Hapeman, rough from Ales P. Krivanek, PANA Mine.



Gold "Athena" ring by Robin Callahan, with 18.6-ct red Oregon Sunstone from the Spectrum Mine.



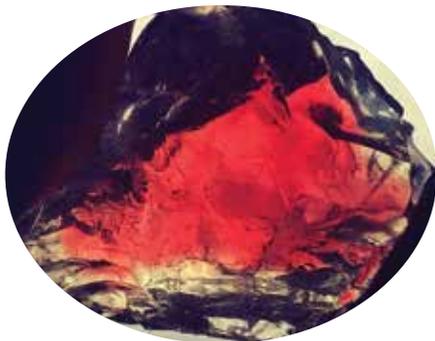
Red-green dichroic Oregon Sunstone, faceted by Ravenstein Gem Co, rough from Ales P. Krivanek.



Frog Prince carving by Dalan Hargrave, AGTA Spectrum Awards winner 2018, rough from Ales P. Krivanek, PANA Mine.



Peacock green-blue dichroic Oregon Sunstone, faceted by Ravenstein Gem Co, rough from Ales P. Krivanek.



One of the largest, best quality neon-red Oregon Sunstone ever discovered at PANA Mine.

stone artists including award-winning cutter Ryan Joseph Anderson, miner/gem carver Kelly King, miner/jewelry curator John Willis, and international entrepreneur/lapidary artist Adam Bigelow. Sun Summit Sunstones is continuing to produce commercial quantities of the finest Oregon Sunstone for the fast growing American and international markets.

### Types and Colors

Unlike many other natural gems, Oregon Sunstone displays a very wide range of colors, color combinations, and mixes. For example, colors range from very affordable champagne, gold, pastel yellow, pastel pink, and schiller to rich pink, peach, mahogany, watermelon, pastel green, orange, and padparadscha.

Highly valuable colors include blue-teal, chrome green, peacock green-blue, intense red, and rarities like Mystique multicolors, which exhibit two, three, or more different colors in a single stone with the intensity of each color gradually changing based on the angle of view. A detailed list of individual color groups can be found at: [oregonsunstoneguide.com/types-and-colors.html](http://oregonsunstoneguide.com/types-and-colors.html)



11.59-ct Mystique "Sunstone Dreamscape" by John Dyer, rough from Ales P. Krivanek, PANA Mine 2018.



Gold pendant by Robin Callahan, with teal-blue Oregon Sunstone from PANA Mine



Red schiller Oregon Sunstone, carving by Ryan Joseph Anderson, rough from Sunstone Butte Mine.

"True North" 18K gold pendant by Robin Callahan, center stone carved by Dalan Hargrave, rough from PANA Mine, accent stones from the Ponderosa Mine.



Gold pendant by Zoltan David, Oregon Sunstone carved by Ryan J. Anderson, rough from Sunstone Butte.

### Value of Oregon Sunstone

This rare American gemstone has been growing both in popularity and value ever since it was first commercially mined over three decades ago. The biggest jump in value was recorded in 2012, right after the Little Eagle Butte location (PANA Mine and Sunstone Butte Mine) started supplying rare green, blue-teals, and strongly dichroic and multicolored (Mystique) gems in sustainable large quantities to satisfy the growing demand. Rough which was sold for \$10/g in 2008 now commands prices of \$50 to \$150/g and is growing fast.

Considering the rarity and beauty aspects, the current prices are still only a fraction of this gemstone's true potential. Faceted top color gems in popular sizes (3 to 10 carats) are currently being appraised at \$800/ct to \$5000/ct for retail-replacement value. Because colored Oregon Sunstone is much rarer compared to gems like tourmaline, spinel, sapphire, and other well-known gems, its value is expected to grow for many years to come.

### About the Author

Ales Patrick Krivanek is the owner of Ravenstein Gem Company, Saint Claire Gems and the Oregon Sunstone Guide. He is also actively engaged in the online education and marketing of Oregon Sunstone.

*All photos are courtesy of the author unless otherwise specified. ■*