

Gem Chrysocolla

Chalcedony infused with neon colored copper minerals

The date was May 1, 1893. As darkness fell on the World Exposition, President Grover Cleveland pushed a button providing electricity to one hundred thousand incandescent lamps, illuminating the entire fairgrounds for the first time. This "City of Light" was the brainchild of Nikola Tesla working for Westinghouse, and it marked a turning point in the battle between Thomas Edison's direct current and Tesla's alternating current. From that time on, more than 80 percent of all electrical devices ordered in the United States were for alternating current.

As consumers demanded more and more electrical devices made with copper wire, the demand for copper ore skyrocketed and the mining industry responded. Mines across the country that had previously ignored copper in the pursuit of gold and silver, suddenly discovered a new source of revenue. For gem and mineral collectors, the result was an increased supply of the green and blue minerals associated with copper ore. Two of the more recognizable minerals are malachite and turquoise, but there are well over 100 minerals containing copper.

The mineral we are interested in here is chrysocolla, a hydrated copper silicate with formula $(\text{Cu,Al})_2\text{H}_2\text{Si}_2\text{O}_5(\text{OH})_4 \cdot n\text{H}_2\text{O}$. (Try to say that three times fast!) This bluish-green mineral forms as botryoidal or rounded masses and crusts, or vein fillings in copper ore, and it is usually found mixed with malachite, cuprite and azurite. Its neon colors make it an extremely attractive mineral specimen. Unfortunately its hardness of 2.5 to 3.5 makes it too soft for use in jewelry. Fortunately, there have been some instances where the chrysocolla combines with chalcedony quartz resulting in a durable and beautiful

gemstone known as gem silica, or gem chrysocolla.

The most prolific source for gem chrysocolla was Arizona, and the two top producers were the Ray mine and the Inspiration mine. Unfortunately neither mine has produced for over twenty years so the majority of gem silica in the market today is coming from collections. As modern methods of mining become more automated, it is increasingly difficult to stop operations and extract gem chrysocolla if it is encountered. There are still some pick and shovel mining operations that produce small quantities of gem chrysocolla, most notably in Peru.

The name chrysocolla comes from the Greek words chryso meaning gold and kolla meaning glue. The name was first used by Theophrastus in 315BC as the name of material used to solder gold. Ironically, as scientists continue to study ancient gold artifacts the latest data indicates that the material was probably a cadmium sulfide known as greenockite instead of chrysocolla!

Since chrysocolla is almost always found with other copper minerals, desirable local mixes are often given specific trade names. Perhaps the two most well-known are Parrot Wing jasper, and Eilat stone. Eilat stone is a variegated blue and green mixture of chrysocolla, malachite, turquoise and other copper minerals found on the Gulf of Aqaba, near the northwestern end of the Red Sea. Parrot Wing jasper is a copper mineral mix that featured a neon green color with red, brown, darker green, and blue mixed in. The original deposit was mined in the 1980s near Sinaloa, Mexico, but is no longer available. Since both of these materials are mixes, copper minerals from all over the globe frequently get substituted and it is virtually impossible to prove or disprove origin.

Gem chrysocolla in yellow gold with South Seas pearls \$1250

Gem chrysocolla in palladium with diamonds \$1900

Chrysocolla/malachite and black jade in 18KT gold and palladium pendant \$1450

Chrysocolla and fine silver PMC turtle pendant \$990

