Omya, a leading global producer of ground calcium carbonate, produces white calcium carbonate from the White Knob quarry in Lucerne Valley, California. The quarry is located on the north slope of the San Bernardino Mountains in the Mojave Desert area of southern California. The quarry is developed in multiply folded, deformed, and metamorphosed Paleozoic miogeoclinal carbonate rocks that have been intruded by a variety of Mesozoic age plutonic rocks. The formation being mined is the Bullion Member of the Monte Cristo Limestone of Mississippian age that has been metamorphosed to amphibolite grade to form very coarse-grained, high-purity white calcite marble ore. At the quarry the steeply dipping rocks are exposed over a vertical interval of over 1,000 feet. Mining is by standard open pit drill and blast, load and haul methods. Ore is processed at the plant into fine-grind calcium carbonate utilized in hundreds of common consumer products.

Although mining started in 1988 at White Knob, it was not until 2004 that fluorescent minerals were recognized. Fluorescent minerals occur in waste rock and not within the high-purity calcium carbonate ore. Fluorescent minerals at the quarry respond to short-wave ultraviolet light. Fluorescent minerals have several modes of occurrence at the quarry. Most occur within the Arrowhead Member of the Mississippian Monte Cristo Limestone, originally an impure cherty limestone that has been metamorphosed to wollastonite calc-silicate marble. Several pink-colored Mn-bearing minerals occur, including manganiferous calcite, rhodochrosite, piedmontite, spessartine garnet, and Mn vesuvianite. Small amounts of Mn within the rock allow fluorescence to occur. Several fluorescent minerals occur in the Arrowhead, including orange-fluorescing calcite, bright yellow wollastonite, lime green hyalite and aragonite, blue diopside, white dolomite and unknown minerals that fluoresce violet, azure blue, sky blue, and shades of green. Another common fluorescent mineral occurrence is magenta-fluorescing feldspar, which occurs in granite dikes and veins. When the dikes cut the fluorescent Arrowhead Member, spectacular multicolor specimens are present. Other common fluorescent occurrences include highly phosphorescent travertine and caliche. Least common are skarn mineral occurrences, including calcisilicates and metallic minerals such as disseminated powelite (a molybdenum mineral), which fluoresces as bright white “snowflakes.” Another well-known fluorescent mineral location in the general area is the Desert View Mine. The presence of activator impurities in the host rock, including Mn, U, Zn, and Fe, are likely responsible for the fluorescence at both the Desert View Mine and the White Knob quarry.