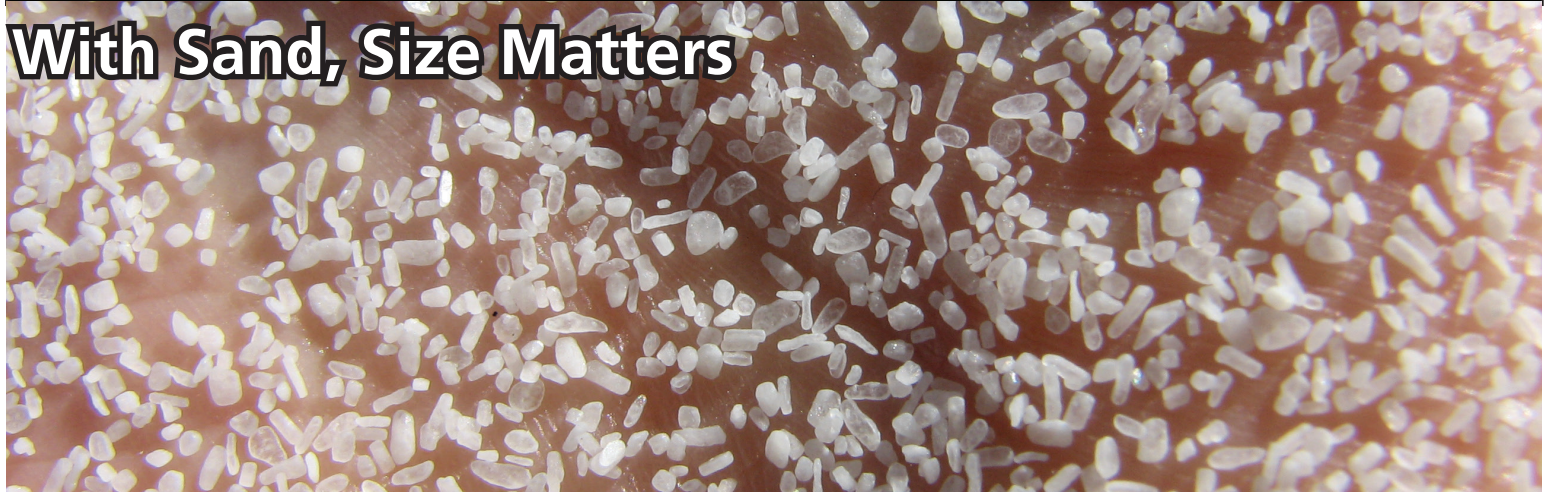




## With Sand, Size Matters



**W**hen it comes to sand, size is all that matters. That is because sand is defined as any mineral between .065 millimeters and 2 millimeters in diameter, which is about the width of a nickel. Any mineral? Now that opens up some interesting options!

There are two general types of sand: mineral sand and organic sands. Mineral sands are formed by geological forces. Most sand on earth is quartz. Quartz begins as a rock like granite, sandstone or limestone. Weathering breaks apart granite's two major components: quartz and feldspar. When quartz, which is silica (SiO<sub>2</sub>) based mineral, reaches the correct size the quartz becomes sand. The feldspar part of quartz breaks down over the ages to form the primary component of clay.

Quartz sand can take on many different colors. Take the pink sand at the Pink Coral Reef dunes in Southern Utah. Like most other sand it is quartz but it has been stained by rusting hematite (iron) when it was part of the Navajo Sandstone formation. And there is green sand, very rare but found on beaches in Hawaii and Guam. It gets its color from the mineral olivine which eroded from basalt flows from nearby volcanos. There are even two kinds of black

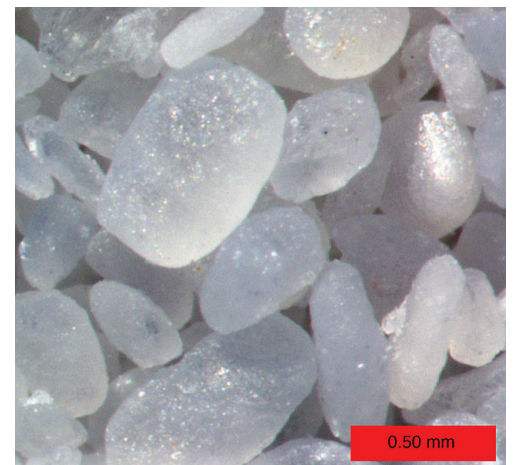
sand. One type of black sand is formed from heavy metals like gold. It contains minerals like hematite and magnetite. The second type of black sand can be found on beaches near volcanos and is made of basalt.

The mineral that has formed the White Sand Dunes here in Southern New Mexico is gypsum. Gypsum sand is considered rare. It is even rarer to find gypsum sand forming into the dunes. The 275 square mile of dunes are comprised of over 4.5 billion tons of gypsum sand. It is one of the many things that make this a unique and special place.

Organic sand is formed from completely different process. Most organic sand is found in tropical regions on beaches near coral reefs. Some of the sand is created from the shells of clams and snails but a large portion comes from fish poop. Yes - fish poop. Parrot fish can "manufacture" up to 140 lbs. of coral sand per year. Their

unique beak is strong enough to bite off pieces of the coral reef that contain the polyp's parrot fish eat. The polyps and their coral shell are digested and the coral rock excreted to wash on shore and form the white sandy beach.

So the next time you plan a vacation think carefully. Would you rather build castles out of fish poop in the Bahama's, or spend your time at White Sands National Monument and play in unique, non-organic, beautifully white gypsum sand.



Grains of Gypsum sand