# Sedimentary Rocks

Over the course of millions of years, the igneous rocks are weathered down by forces of wind and water. Fine particles of dirt begin to cover the landscape. Often, these small rock particles end up being suspended in water, and find their way to the bottom of lakes, streams, and the ocean.

Slowly, the layer of sediment on the bottom of lakes, and especially on the bottom of the ocean grows deeper and deeper, reaching depths of thousands of feet. The weight of all the sediment becomes immense, pushing down on lower layers of sediment with tremendous force. In addition, a number of minerals, which act like cement, bond the sediment together, causing it to form sedimentary rock.

Sedimentary rocks are formed from the broken down pieces of other rocks or debris cemented together by intense pressure and minerals deposited by water. There are many kinds of sedimentary rocks. Scientists divide the types of sedimentary rocks into four kinds. These are: clastic, biochemical, chemical, and other. We will talk about each kind.

So how does rock become broken down in the first place to form the sediments that make up sedimentary rocks? Over time water, wind, heat, and ice wear the rock down causing it to fall apart. This process is called weathering and erosion. The weathered bits of rock are carried by what geologists call agents. Agents are streams, rivers, wind, glaciers, or really anything else that carries the bits of weathered rock away from the large rock that formed them. The most common agent is water in the form of streams or rivers. The weathered bits of rock are carried by the agent until the agent can't move them anymore. The weathered bits of rock pile up into a big pile. The weathered rocks are called sediments. The pile is called a sediment bed. Sediments are usually classified by size: Gravel is the biggest, sand is the next smallest, followed by mud, and silt is the smallest.

- Clastic sedimentary rocks are sedimentary rocks formed out of broken down bits of rocks. There are several kinds of clastic sedimentary rocks; they are categorized by the size and sometimes the shape of the pieces that make up the rock. The kinds of clastic sedimentary rocks are called: Conglomerates, breccias, sandstone, mudstone, siltstone.
- Conglomerates are made from bits of rounded gravel that were deposited by the agent, usually water. Over time the wet pile of sediments becomes so heavy that the gravel gets compacted together, and minerals in the water cement the bits of gravel together. The only difference between conglomerates and breccias is: Conglomerates are made from rounded gravel and breccias are make from angular gravel.
- Sandstone is basically the same. Piles of sand are piled up by water or wind and over time the piles get so heavy the sand is pressed together and cemented by minerals found in ground water. There are some interesting things that can be found in sandstone. Fossils are often found in sandstone. Also, have you ever been to the beach or a lake and looked out into the water and noticed that the sand is piled up in ripples by the motion of the waves? Sometimes the sand will get buried and the ripple pattern is preserved. Over time the sand will harden into rock and the ripple marks will still be in the rock. I have found this “ripple marked” sandstone. Somewhere in my house I still have some. Sometimes sand dunes will become so large they harden into rock preserving the hump shape of the sand dune. There is a very famous fossil that was found in China in one of these preserved sand dunes. The fossil is called the “fighting dinosaurs.” Paleontologists think a velociraptor and protoceratops were fighting and were trapped by a collapsing sand dune.
- Mudstone is the same as sandstone except the particles of rock that make up the mudstone are too small to be called sand. As the name sounds, the rock used to be mud that was buried and hardened into rock. Siltstone is made from even smaller particles than mudstone. Fossils can also be found in

mudstone and siltstone. These types of rocks are sometimes called slate. In the United States, the national monument named Fossil Butte is near mudstone and siltstone formations that hold hundreds of fish fossils.

Like “ripple marked” sandstone, mudstone can have marks made by water on it. Sometimes when mud hardens the surface cracks; these cracks can be preserved and harden into rock. Even more rare, the marks made by falling raindrops will be preserved in the rock. I have found the mud crack-marked rocks, but not the rain-marked rocks. I'll have to keep looking.

Biochemical sedimentary rocks are formed from the debris of life. For example, limestone is formed from out of decayed animal shells. Animals use calcium to form their shells. After the animal dies, the shell falls apart and the calcium combines with other elements and minerals and hardens into rock. Fossils are very common in this type of rock. I have found fossil trilobites in this rock. Another example of this type of rock is coquina. Coquina is formed from pieces of seashells cemented together. My geology professor had some, it was really neat to look at. Coal and chert are also common biochemical sedimentary rocks.

Chemical sedimentary rocks are formed when water evaporates and leaves behind minerals that harden into rock. A great example of this kind of rock is salt. So remember when you're eating salt, you're eating a rock. It's a rock called halite.

Sedimentary rocks only form about 8 percent of the rocks on Earth that cover the other types of rocks like a thin coat of paint. Even though they are only a tiny percentage of the rocks on Earth, they are very important. They tell us a lot about the history of life on earth because sedimentary rocks are the only type of rock that can hold fossils and they are formed in layers with the oldest rocks on the bottom and the newest rocks on the top.

*http://www.kidsgeo.com/geology-for-kids/0027D-sedimentary-rocks.php*