

Objectives: Know the role of weathering; explain the difference between mechanical and chemical weathering; describe the weathering processes.

Rocks break down over time.

In our last section we learned how objects change physically and chemically. Rocks are regularly subjected to physical and chemical changes. This is known as _____. Weathering is the process that causes rocks to break apart. There are two types of weathering: _____ (also known as disintegration) and _____ (also known as decomposition).

Mechanical weathering produces physical changes in rocks.

Mechanical weathering is the break down of rock through _____ changes. The chemical identity of the rock is left alone. Only the _____ properties of the rock are changed. The result of mechanical weathering is many small pieces of rock from a larger piece. There are five types of mechanical weathering:

- _____ occurs when _____ enters cracks, pores, or other openings in a rock's surface, _____, _____ and forces the rock to break apart. It is most common in places where the temperature rises and falls below the freezing point of water.
- _____ occurs when water containing salt enters the rock, _____, and the salt crystallizes. When it crystallizes, it forces the rock to break apart. This most commonly occurs near _____. It can also happen where salt is used to deice the roads in winter.
- _____ (unloading) occurs when large masses of _____ rock are exposed by erosion and begin to break loose. Confining _____ is put on _____ rocks. When the pressure is removed, the intrusive rock is able to come to the _____. At the surface, the rock is peeled away like an onion.

- _____ occurs when _____, _____, or other objects wear down a rock by _____. When one of these objects hits or scrapes against a rock, it can break off small pieces of the rock. Water is able to do this on its own. However, water usually carries particles of rocks that will cause the abrasion.
- _____ occurs when a living things break down rocks. This includes roots growing into rock cracks and breaking as the root grows.

Chemical weathering changes the chemical composition of rocks.

Chemical weathering is the break down of a rock through _____ changes. As a result, the chemical identity of the rock changes in some way. There are many ways chemical weathering can occur.

The first way is through _____. In general, this occurs when a solution, such as carbonic acid (_____ and _____) breaks down minerals in a rock. Two things are required for dissolving:

1. _____ is the most important factor in chemical weathering. Water is essential in the formation of acidic solutions to dissolve a rock.
2. _____ and other substances are important in forming acidic solutions as they lowers the pH of the water.

However, dissolving can also happen through a second way:

3. _____ naturally secrete very weak acids that cause dissolving to occur.

This is different from biological activity because the organisms' secretions chemically change the rock. In biological activity, the chemical composition remains the same. It is important to know this difference.

The second way chemical weathering occurs is through _____. Rusting occurs when _____ in the air reacts with chemicals found in a rock. The most common example is when oxygen reacts with iron forming iron oxide (rust).