Rocks and the Rock Cycle

A solid material made up of one or more minerals or other substances is called a rock. Geologists classify rocks based on the rocks’ color, texture, composition, and how the rocks formed. A rock’s texture refers to the size, shape, and arrangement of its grains. A grain is one of the particles that make up a rock.

Geologists classify rocks into three major groups: igneous, sedimentary, and metamorphic. The rocks in each of these groups are formed in different ways.

Igneous rocks form when magma or lava cools and hardens. Geologists classify igneous rocks according to whether they formed above or below Earth’s surface. Igneous rock formed from magma beneath the surface is called intrusive rock. One common intrusive rock is granite. Igneous rock formed from lava on the surface is called extrusive rock. Basalt is probably the most common extrusive rock.

Sedimentary rock forms when particles of rock and other materials are pressed and stuck together. Geologists use the term sediment for particles of rock or material from living things. Sediment such as sand, gravel, and the remains of animals and plants can become sedimentary rock.

The formation of sedimentary rock involves several processes. First, erosion moves sediment from place to place on Earth. Second, sediment is laid down in a process called deposition. Slowly, thick sediment layers build up. The weight of layers above presses down on the layers below in a process called compaction. Then the process of cementation glues the sediment together.

There are three major kinds of sedimentary rock: clastic rock, organic rock, and chemical rock. Clastic rock forms from pieces of rock that have been pressed and stuck together. Organic rock forms from the remains of plants and animals. Chemical rock forms when dissolved minerals come out of solution and form crystals.

Heat and great pressure deep beneath Earth’s surface can change rock to metamorphic rock. As a rock becomes a metamorphic rock, its texture changes, and chemical reactions may also occur that change its minerals.

Forces inside Earth and at the surface produce a rock cycle that builds, destroys, and changes the rocks in the crust. The rock cycle is a series of processes on and beneath Earth’s surface that slowly change rocks from one kind to another.