

# The Rock Cycle

Wherever you walk on Earth's surface, you're likely at some point to see rocks cropping out of the ground. Each rock tells a story of what happened in that particular location during Earth's past history. To read these stories, we need to read the rocks, just like books; we need to learn how to identify and understand the meaning of the words and pictures within them. The words and pictures in a rock are the physical and chemical characteristics and the basic building blocks of most rocks: minerals.

All rocks on Earth's surface can be classified as one of three kinds: sedimentary, igneous, or metamorphic.

- Sedimentary rocks are those formed from the compaction or cementation of debris that has collected in low-lying areas on Earth's surface, like sands buried in sand dunes, or rocks that formed through the precipitation of minerals from fluids at or near Earth's surface (like when seawater evaporates, and salt crystals are left behind).
- Igneous rocks are those that formed after molten magmas or lavas cool and solidify.
- Metamorphic rocks are those that have changed chemically or physically due to increased temperatures and/or pressures

Once any of these rocks forms, it can and will change with time. When you pick it up to study it, you're seeing it at only one moment in time, and you look for the evidence of its most recent history. Sometimes you can see deeper into its history. For example, imagine that a shallow seabed evaporates and leaves behind salt crystals (a sedimentary rock). The setting is a warm dry climate near the ocean. Over time, these rocks can get buried and heated up and put under pressure where they then change or metamorphose into a new rock. Now the setting is deep under a continent. If buried deep enough and heated up enough, the entire rock can melt to form a magma, which if erupted and cooled and solidified, becomes an igneous rock. Now we are at the surface of an erupting volcano. Over time, the lava flow will break down (weather) and small pieces will collect in low-lying such as river beds and after being buried by other sediment can have percolating waters cement the grains together to create a new sedimentary rock.

When we later find this rock on Earth's surface, we use chemical and physical clues in the rock to peer into its complex history. One of the most important clues we'll look for are the minerals and textures within the rock. To start the journey of reading the stories of rocks, we have to start with learning how to identify minerals and what they tell us about a rock.

Pause now.

For more information and more detail, continue on to the next video in this series.

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Minerals Series:

Part I: The Rock Cycle

Part II: Water Molecule Shape

Part III: Inside Minerals

Part IV: Identifying Minerals

Part V: Minerals Addendum

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