

Rocks

Dana Desonie, Ph.D.

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AUTHOR

Dana Desonie, Ph.D.

CHAPTER

1

Rocks

- Define rock.
- Describe the three major rock types.

**Will this rock be there forever?**

Rocks may seem permanent, but they're not. Over time a rock will change into another type of rock. How this happens is known as the **rock cycle**. There are three main types of rocks. There are several processes that can change one type into another. First we need to learn what the rocks types and processes are.

What is a Rock?

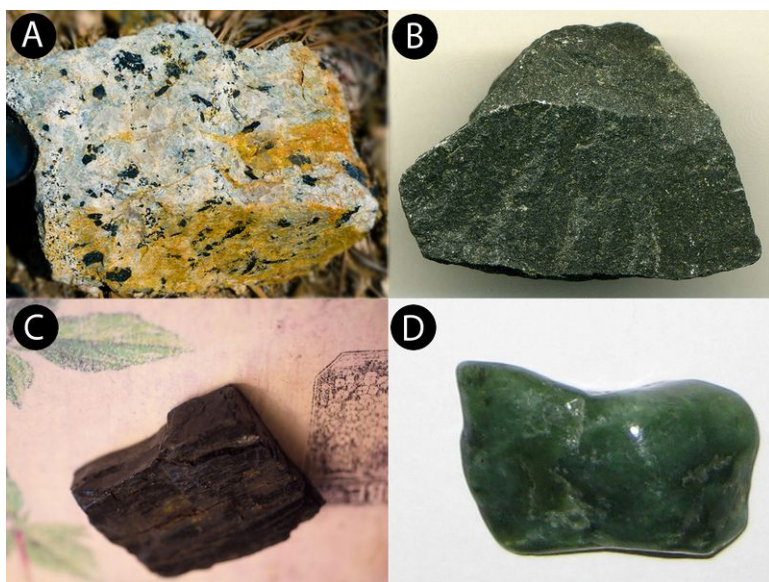
A **rock** is a naturally formed, non-living Earth material. Rocks are made of minerals. The minerals may be so tiny that you can only see them with a microscope. The minerals may be really large. A rock may be made of only one type of mineral. More often rocks are made of a mixture of different minerals. A few types of rocks are made from materials that are not minerals. For example, coal is organic so it is not a mineral, nor is it made of minerals. Yet coal is a rock.

Rocks are named for the combinations of minerals they are made of and the ways those minerals came together. Remember that different minerals form under different environmental conditions. So the minerals in a rock contain clues about the conditions in which the rock formed (**Figure 1.1**).

Rock Types

Geologists group rocks based on how they form. There are three major rock types. Each will be described in more detail in the coming concepts.

- **Igneous rocks** form when magma cools below Earth's surface or lava cools at the surface.

**FIGURE 1.1**

(A) Granite has large crystals because it cools slowly. (B) Basalt has very small crystals because it cools quickly. (C) Coal is made up of organic material. (D) Jade is made of the mineral jadeite.

- **Sedimentary rocks** form when sediments are compacted and cemented together. **Sediments** are pieces of rock. They may be gravel, sand, silt, or clay. Some sedimentary rocks form the solid minerals left behind after a liquid evaporates.
- **Metamorphic rocks** form when an existing rock is changed by heat or pressure. The minerals in the rock change but do not melt. The rock experiences these changes within the Earth.

Rocks can change from one type to another. The rock cycle describes how this happens.

Vocabulary

- **igneous rock**: Rock that forms when magma cools.
- **metamorphic rock**: Rock that forms when another rock is changed by heat and/or pressure.
- **rock**: Usually, a collection of minerals. Sometimes a rock may be made of materials that are not minerals.
- **sediment**: Small particle of soil or rock deposited by wind or water.
- **sedimentary rock**: Rock that forms from sediments that are compacted and/or cemented together, or from the precipitation of material from a liquid.

Summary

- Nearly all rocks are made of minerals. A few are made of materials that do not fit the definition of minerals.
- Igneous rocks form from cooled magma or lava.
- Metamorphic rocks form as an existing rock is altered by high temperature or pressure.
- Sedimentary rocks form from sediments that are cemented and compacted.

Explore More

Use the resource below to answer the questions that follow.

- **Rocks and Minerals** at <http://www.youtube.com/watch?v=mkrm5GUGJ3U> (1:37)

**MEDIA**

Click image to the left for use the URL below.

URL: <http://www.ck12.org/flx/render/embeddedobject/1609>

1. What is a rock?
2. What type of rock is this?
3. What mineral forms the pink pieces?
4. What mineral forms the white pieces?
5. What mineral forms the black pieces?
6. What are minerals?

Review

1. Name a rock type that is not made of minerals. How can a rock be made of material that is not minerals?
2. What is an igneous rock?
3. What is a metamorphic rock?
4. What is a sedimentary rock?

References

1. (A) www.sqfp.info; (B) James St. John (Flickr:jsj1771); (C) Smabs Sputzer; (D) Stephanie Clifford (Flickr:sdixclifford). Picture of granite, basalt, coal, and jade. CC BY 2.0