



# Properties of Rocks and Minerals

Have you ever wondered what rocks are made of? Rocks are made of one or more minerals. A mineral is a solid. Some minerals are elements and are made of only one kind of atom. Other minerals are compounds and are made of at least two different elements joined together.

Each mineral has a definite structure and is formed naturally. A mineral is not alive and it does not form from anything that was once alive. Gold is a mineral. But coal is not a mineral because it forms from decaying plant and animal material.

atom – the smallest whole unit of matter  
structure – the orderly arrangement of atoms

A rock can be made of just one mineral. But most rocks are made of a mixture of minerals. Different minerals come together to form a specific type of rock. Look at the granite rock on this page. You can see that there are different minerals in it.

▼ Granite is a mixture of minerals.

mixture – something made of two or more different things



**KEY IDEA** Rocks are made of minerals.

## Identifying Minerals



Look at the rocks in these pictures. Each rock is made of the mineral quartz. How would you describe these types of quartz? You might say they are pink, purple, orange, and brown. When you describe the colors of the quartz, you are telling about its **properties**.

Properties help us identify, or name, minerals. For example, color is a **property** of minerals. The rose quartz mineral in the picture has a pink color.

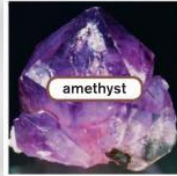
But some minerals, such as quartz, come in many colors. Also, different minerals can sometimes have the same color. For example, the minerals gold and pyrite have almost the same color. For these reasons, sometimes other properties must be used to identify minerals.

**properties** – qualities that can be observed or measured

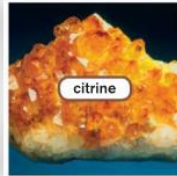
► These types of quartz all have different colors.



rose quartz



amethyst



citrine



smoky quartz

Some minerals are identified by a **property** called **streak**. A streak is the powdery mark that some minerals leave behind when they are rubbed on special tile. The color of the streak may be different from the color of the **mineral**. For example, if you rub gold and pyrite across white tile, each leaves a different streak of color. The streaks help tell these two minerals apart.

Another **property** called **luster** tells how a **mineral** reflects light. **Hardness** is a property of minerals that measures how easily a mineral can be scratched.

**streak** – the powdery mark left when some minerals are rubbed across a surface

**luster** – a property that describes how a mineral reflects light

**hardness** – a property of minerals that measures how easily a mineral can be scratched



graphite

◀ Graphite has a shiny luster.



pyrite



gold

▲ Gold and pyrite leave different streaks.

### BY THE WAY...

Pyrite is often called “fool’s gold” because so many people are fooled into thinking it is real gold.



diamond

▲ A diamond is the hardest mineral.

## Identifying Rocks



You know that rocks, such as granite, can be identified by the minerals they contain. But rocks can be identified in other ways, too.

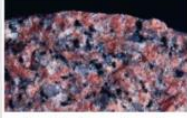
Sometimes rocks can be identified by how the pieces of **mineral** in a rock fit together. Many times, the minerals in rocks fit together to make the rock look like one solid piece. Other times, a rock looks like it is made of chunks or pieces that are stuck together.

**Texture** also helps identify some rocks. Texture is based on the size and shape of the material that makes up the rock. If a rock looks and feels bumpy, its texture is rough. If it looks and feels smooth, its texture is glassy.

**texture** – a property that is based on the size and shape of the material making up the rock

**KEY IDEA** Properties help identify minerals and rocks.

### Minerals



Granite has minerals that are easily seen.

### Fit



Conglomerate rocks look chunky.

### Texture



Obsidian is a rock with a glassy texture.

## YOUR TURN

### COMMUNICATE

Look at the pictures of pyrite and gold on page 7. With a friend, take turns answering these questions.

1. Why can't you use the **property** of color to tell these minerals apart?

The color of these two minerals .

2. How can you tell pyrite from gold?

A  test can help tell these minerals apart.

3. Why is pyrite called fool's gold?

Pyrite is called fool's gold because .

### MAKE CONNECTIONS

Diamonds are sometimes used in the tips of drilling machines that dig through many layers of rock. Tell why you think a diamond is good for this job.

### USE THE LANGUAGE OF SCIENCE

What are some of the properties that can be used to identify minerals?

Color, streak, luster, and hardness are properties that can be used to identify minerals.

Earth's Changing Surface: Rocks and Minerals  
**Chapter 1: Properties of Rocks and Minerals**

**ORANGE LEVEL**  
Student Book,  
pages 4-8

**USE KEY WORDS**

Look at the Key Words on page 23 of your book.  
Answer these questions about the Key Words in Chapter 1.

**KEY WORDS**

mineral  
property  
structure

1. A quality that can be observed or measured is a \_\_\_\_\_.
2. The orderly arrangement of atoms is a **mineral's** \_\_\_\_\_.
3. The \_\_\_\_\_ of hardness measures how easily a **mineral** can be scratched.

**ORGANIZE IDEAS**

As you read Chapter 1, complete the chart.

**PROPERTIES OF MINERALS AND ROCKS**

Property	Definition
color	the color of the mineral
streak	
	how a mineral reflects light
texture	

**STRATEGY FOCUS: SYNTHESIZE**

Review the ideas in the chapter. Think about what you already know about different kinds of rocks and minerals. Write one sentence that includes most of the information.