Color Streak

Overview: This lesson will introduce you to the shiny world of minerals and crystals by learning how to identify rocks by both the color that you see, and the color that gets left behind.

What to Learn: You will be able to identify minerals by their colors and streaks, and be able to tell a sample of real gold from the fake look-alike called pyrite.

Materials

- 1 handheld magnifying lens
- Unglazed porcelain tile
- Rock samples (the ones in the video are: graphite, pyrite, talc, iron, and jasper)

Experiment

1. Number your rock samples by placing them on your data table.
2. Using your data table, record the color of each sample.
3. Now use your streak plate. Take a rock and draw a short line across your streak plate (unglazed porcelain tile).
4. Record the color of the streak in your data table. Are there any surprises?

Color & Streak Test Data Table

Mineral *(Place it in the box below)*	**Surface Color**	**Streak Color**

Reading

Every mineral has a set of unique characteristics that geologists use to test and identify them. Some of those tests include looking at the color of the surface, seeing if the mineral is attracted to a magnet, dripping weak acids on the rock to see if they chemically react, exposing them to different wavelengths of light to see how they respond, scratching the rocks with different kinds of materials to see which is harder, and many more. There are more than 2,000 different types of minerals and each is unique. Some are very hard like diamonds, others come in every color of the rainbow, like quartz and calcite, and others are very brittle like sulfur.

The color test is as simple as it sounds: Geologists look at the color and record it along with the identification number they've assigned to their mineral or rock. They also note if the color comes off in their hands (like hematite). This works well for minerals that are all one color, but it's tricky for multi-colored minerals. For example, azurite is always blue no matter where you look. But quartz can be colorless, purple, rose, smoky, milky, and citrine (yellow).

Also, some minerals look different on the surface, but are really the same chemical composition. For example, calcite comes in many different colors, so surface color isn't always the best way to tell which mineral is which. So geologists also use a "streak test".

For a streak test, a mineral is used like a pencil and scratched across the surface of a ceramic tile (called a streak plate). The mineral makes a color that is unique for that mineral. For example, pink calcite and white calcite both

leave the same color streak, as does hematite that comes in metallic silvery gray color and also deep red. This works because when the mineral, when scratched, is ground into a powder. All varieties of a given mineral have the same color streak, even if their surface colors vary. For example, hematite exists in two very different colors when dug up, but both varieties will leave a red streak. Pyrite, which looks a lot like real gold, leaves a black streak, while gold will leave a golden streak.

The tile is rough, hard, and white so it shows colors well. However, some minerals are harder than the mineral plate, like quartz and topaz, and you'll just get a scratch on the plate, not a streak.

Exercises

1. What does it mean if there's no streak left?
2. Give an example of a kind of rock that leaves a streak a different color than its surface color.
3. What is a mineral that appears in two different colors, yet leaves the same color streak?

Answers to Exercises: Color & Streak Test

1. What does it mean if there's no streak left? (The mineral is harder than the streak plate.)
2. Give an example of a kind of rock that leaves a streak a different color than its surface color. (Pyrite is gold, but its streak is green-black.)
3. What is a mineral that appears in two different colors, yet leave the same color streak? (hematite, which comes in shiny black and red always leaves the same color behind)