



Mineral ID Guide

What tests can you use to identify a mineral?

Color - Describe the color of your mineral. Color is one of the least reliable tests for identifying a mineral sample, but may provide some clues depending on the specimen.

Streak - The streak is representative of the color of the mineral when it is ground into a fine powder and may not be the same as the color of the mineral. To obtain a streak, rub the mineral across the white plate provided in your testing kit. Streak may be described as colorless, white, black, gray, red, etc. **CAUTION:** The streak plate has a hardness of seven. Using minerals harder than seven will damage the streak plate.

Hardness - Mohs Scale of Hardness is commonly used to determine the hardness of a mineral ranging from 1 for the softest mineral to 10 for the hardest mineral. To determine a mineral's hardness, try scratching the mineral with an object (fingernail, coin, nail, or piece of glass) or scratching an object with a mineral sample. Which one is harder - the object or the mineral? Examples: If a mineral is scratched by a fingernail, it would be softer than 2.5. If the mineral scratches a penny, it would be harder than a 3.

#	Mineral	Common Objects
1	Talc	Easily scratched by fingernail
2	Gypsum	Scratched by fingernail (2.5)
3	Calcite	Very easily scratched by nail (5.5-6); will not scratch penny (3)
4	Fluorite	Easily scratched by nail
5	Apatite	Difficult to scratch with nail; will not scratch glass (5.5-6)
6	Feldspars	Scratched by steel file (6.5-7); may barely scratch glass
7	Quartz	May barely scratch steel file; easily scratches glass
8	Topaz	Scratches a steel file or nail (6.5-7) as well as the streak plate (7)
9	Corundum	
10	Diamond	

Texture - How does the mineral "feel"?

Gritty or sandy?

Powdery or chalky?

Smooth like glass?

Sharp like metal?

Soapy or greasy?

Smooth like wax?

Transparency - Can you see through it? Some minerals are highly transparent and you can see through them. Minerals that are considered translucent only allow light to pass through it. Other minerals are opaque, which means that you cannot see through them.

Luster - How would you describe the way the mineral shines?

Metallic - Looks like metal or appears to have metal flakes

Glassy or vitreous - Shines like glass

Earthy or chalky - Dull; does not reflect much light

Waxy, silky, or pearly - Has a muted shine; may resemble shells or pearls

Other? Describe in your own words.

Crystal Shape - Does the mineral have a well-defined crystal shape? Some minerals show well-defined crystals, while others may have crystals that are too small or hard to distinguish. Describe the crystals in the sample in your own words or sketch a diagram on your data page. How many sides does it have? Does it look like a cube or a pyramid? Provide as much detail as possible.

Cleavage or Fracture - This test describes the way a mineral breaks, which depends on the way the atoms of a mineral are arranged. Some crystals are formed from atoms that have strong bonds between them, while others have areas of weakness. The crystals will tend to break (or cleave) where the bonds between the atoms are the weakest.

CAUTION: Don't break the testing samples unless you have permission from your teacher! Examine the outer surfaces of a mineral specimen for clues!

Cleavage occurs as a mineral breaks smoothly along even planes or surfaces. A few examples include mica forming sheets and halite or galena forming cubes.

Fracture occurs when a mineral breaks into odd shapes or an irregular pattern. It may be described as uneven, splintery, conchoidal (shell-like), jagged, or granular.

Other Tests You Can Try ...

Double Refraction - Some minerals, such as calcite, cause a double image when placed over a word in a book or an object.

Magnetic Attraction - Was the mineral attracted to a magnet or acts as a magnet? If so, it might be magnetite.

Fluorescence - Does it glow under ultraviolet light? If so, it might be fluorite.

Specific Gravity — This property is the weight of the mineral relative to the weight of an equal volume of water. Minerals with a high specific gravity or density feel heavy for their size, such as galena. Those with a low specific gravity, such as graphite, feel light for their size.

Reaction with Acids - Does it fizz when exposed to hydrochloric acid? If yes, it is a carbonate, such as calcite or dolomite.

WARNING: You must have your teacher's permission to perform the acid test!