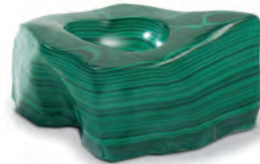


MINERAL PROPERTIES



Individual **minerals** have unique physical and chemical properties that allow us to tell them apart. Differences in **chemical composition** and **crystal structure** establish the mineral's **species**. Within a mineral species, there may be multiple varieties determined by differing **physical properties** or impurities. For example, amethyst is a variation of quartz. The proportions of elements within a compound is known as its composition, and the way that its atoms are arranged are known as its structure. These two things help determine a mineral's properties.

Hardness is the ability of a mineral to resist abrasion or scratching. It is measured on the **Mohs scale of hardness**, an ordinal scale of 1 to 10. **Cleavage** is the tendency for a mineral to break along parallel planes, where atomic bonds are weakest. A mineral may have multiple cleavage planes, in different directions. **Habit** is the external shape of the mineral, and its physical proportions. It may have smooth, geometric crystals, or poorly-formed, fine-grained aggregates. It may be cubic, hexagonal, prismatic, bladed, and so on.



Lustre is the style and extent to which a mineral reflects light. It may be considered metallic, or non-metallic, with further distinctions such as waxy, pearly, or earthy. Almost 70% of minerals show a vitreous (glass-like) lustre, and 15% are metallic.

Colour, resulting from the reflection and absorption of different wavelengths of light, is a limited way to identify a mineral, since the same compound may exhibit different colours due to slight variations in chemical composition. However, **streak**—the colour revealed when a mineral is dragged across a porcelain plate—is much more reliable.



Some other chemical properties that are used to identify minerals include: **fluorescence**, **magnetism**, **solubility**, and the **specific gravity**, or **density**, of the compound.

MINERAL PROPERTIES



Use these questions to complete the chart on the last page



1 Hardness

Using the Mohs Hardness scale below to find out how hard your mineral is.

- 1 - Does it feel soapy or greasy?
- 2 - Can you scratch it with your nail?
- 3 - Can you scratch it with a penny?
- 4 - Can it scratch a penny?
- 5 - Can you scratch it with a steel nail?
- 6 - Can it scratch steel?
- 7 to 10 - Can it scratch glass?

2 Cleavage

Does the mineral show regular surfaces or planes? (**Cleavage**)

Or, does the mineral have an irregular, broken surface? (**Fracture**)

3 Habit

What is the general, external shape of the mineral (e.g. cubic, prismatic, fibrous, pyramid, equant, radial, etc.)?

4 Lustre

Is your mineral shiny or dull or....?

- Glassy/vitreous (Shines like glass)
- Earthy/chalky (Dull)
- Metallic (Looks like metal)
- Waxy/silky/pearly (Has a muted shine)

5 Colour

What is the primary colour of the mineral?

6 Streak

When you scratch the mineral across the streak plate (the porcelain), what color is the streak?

7 Magnetic Attraction

Is the mineral attracted to a magnet?

8 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 feel heavy for their size. Is the mineral heavy or light weight relative to its size?

