

What is a Mineral?

S	_____	• Cannot be a _____ or a _____
N	_____ Occurring	• Found in _____, not man-made
I	_____	• Is not _____ and never was, _____
F	_____	• Has a chemical _____, most are formed from _____ of two or more _____, some minerals consist of one _____ ex. Au (Gold)
C	_____ Structure	• A definite _____ in which _____ are arranged

Make your guesses in the first 2 columns, correct answers in the last two columns:

Mineral	Non-Mineral	Mineral	Non-Mineral

Definition: A **mineral** is a naturally formed, inorganic solid that has a definite crystalline structure.

What is a Mineral?**1. Two Groups of Minerals****a. Silicates**

- i. Contains Silicon (Si) and Oxygen (O) - 90% of Earth's crust
- iii. Combine with elements such as Al, Fe, Mg, and K

b. Non-silicates

- i. Do **not** contain combinations of Si and O
 - 1. Classes of Non-silicates
 - a. Native Elements: Au, Cu, Ag
 - b. Oxides : Al or Fe combine with O
 - c. Carbonates: C + O
 - d. Sulfates: S + O
 - e. Halides: F, Cl, I, or Br combine with Na, K, or Ca
 - f. Sulfides: Pb, Fe, Ni, combine with S

2. Identifying Minerals

- a. **Color** – the same mineral can come in a variety of colors, not reliable
- b. **Luster** – the way in which a mineral reflects light
 - i. Metallic - opaque and reflective, like metal
 - ii. Submetallic - to nearly opaque and reflect well
 - iii. Nonmetallic - not looking like a metal at all
 - 1. Vitreous - glassy
 - 2. Silky - fibrous
 - 3. Resinous – yellow, dark orange, brown
 - 4. Waxy
 - 5. Pearly – like inside a mollusk
 - 6. Earthy – dull, looks like dirt or clay
- c. **Streak** – the color of the mineral in a powdered form
- d. **Cleavage** – when minerals break along a smooth, flat surface
- e. **Fracture** – when minerals break unevenly along a curved or irregular surface
- f. **Hardness** – a mineral's resistance to being scratched
 - Moh's Scale of Hardness 1 - 10

G. Density – how much matter is in a given amount of space (mass/volume)**H. Special Properties**

- i. Fluorescence – glow under ultraviolet light
- ii. Chemical Reaction – fizzes with acid test
- iii. Optical Properties – double image formed
- iv. Magnetism – magnetic, attract iron
- v. Taste – salty
- vi. Radioactivity – radium or uranium contained

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