

## Physical Properties:

- 1. Color** - Describe the color of your mineral. Such as yellow, brown, whit or yellowish green etc.
- 2. 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. The streak may be described as colorless, white, black, gray, red, etc.
- 3. Transparency** – The amount of light passed through a mineral determines its transparency.  
**Transparent:** minerals more light passes through,  
**Translucent:** minerals partially let light pass through  
**Opaque:** minerals do not let any light through.
- 4. Luster**- refers to the general appearance of a mineral surface to reflect light. Two general types of luster are designated as follows:
  - a. Metallic** - looks shiny like a metal. Usually opaque and gives black or dark colored streak.
  - b. Nonmetallic** - Nonmetallic lusters are referred to as
    - 1. Vitreous** - looks glassy - examples: **clear quartz, tourmaline**
    - 2. Resinous** - like resin or amber from a tree - examples: **sulfur.**
    - 3. Pearly** – iridescent (تقرح لوني) pearl-like - example: **Apophyllite**
    - 4. Greasy** - appears to be covered with a thin layer of oil - example: **Talc.**
    - 5. Silky** - looks fibrous. - Example - some **Gypsum, Asbestos, Malachite.**
    - 6. Adamantine** - brilliant luster like **Diamond.**
- 5. 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.



- 6. Cleavage**- The ability of a mineral to break or come apart in a consistent way--breakage is along Atomic planes. Cleavage quality is described **present and not present.**
- 7. Fracture** occurs when a mineral breaks into odd shapes or an irregular pattern. It may be described as:  
**Conchoidal, Fibrous, Hackly, Uneven and Even.**
- 8. Specific Gravity**- This property is the weight of the mineral.

## **Mineral Class : Silicate**

The Silicate mineral class is one of great important than any other minerals. With minor exceptions all the igneous rock forming minerals are silicate, and they constitute over 90% of the earth crust.

The soil from which our food is ultimately drawn is made up in large part of silicates, the brick, stone, concrete, and glass used in the construction of our building are silicate or largely derived from silicates. The fundamental unit on which the structure of all silicate is based consists of four O at the apices of a regular tetrahedron surrounding one Si at the center.

### **Sub Class: Tectosilicates**

Nearly  $\frac{3}{4}$  of the rock crust of the earth is made up of mineral with tectosilicate structure; which all four oxygen of  $\text{SiO}_4$  tetrahedron shared by adjoining tetrahedral and build a three-dimensional network. The simplest mineral is Quartz, except of Quartz all the mineral in this sub-class are aluminosilicate.

<b>Silicate Class / Tectosilicate sub-class</b>	
<b>Name</b>	<b>Chemical Composition</b>
Quartz	$\text{SiO}_2$
Tridymite	$\text{SiO}_2$
Cristobalite	$\text{SiO}_2$
Opal	$\text{SiO}_2 \cdot n\text{H}_2\text{O}$
Sanidine	$\text{KAlSi}_3\text{O}_8$
Orthoclase	$\text{KAlSi}_3\text{O}_8$
Microcline	$\text{KAlSi}_3\text{O}_8$
Albite	$\text{NaAlSi}_3\text{O}_8$
Oligoclase	$\text{Ab}_{90}\text{An}_{10}$
Anorthite	$\text{CaAl}_2\text{Si}_2\text{O}_8$
Leucite	$\text{KAlSi}_2\text{O}_6$
Nepheline	$\text{NaAlSiO}_4$

### The Work Table:

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