

Module 2. Basic Geology II
a. Minerals and the Rock Cycle

Instructor: Jim Lehane

Time: 90 minutes

Minerals

Helpful Website: <http://www.dinojim.com/rocksandminerals.htm>

Defintions:

Mineral – A naturally occurring, inorganic, element or compound with a specific crystal structure that defines its physical properties.

Rock – An aggregate of one or more minerals. **Major difference – Know it!!!**

Mineral Properties:

1. Color
2. Hardness
3. Streak
4. Luster
5. Cleavage
6. Specific Gravity
7. Other (Special) Properties

1) **Color -**

Not a good determinate of most minerals. Some minerals have several colors while some colors can be found in many minerals.

Ex. Quartz

2) **Hardness –**

Based on a resistance to scratching where 2 is 10xs harder than 1 and 3 is 1000xs harder than 1.

Mohs Scale

10	Diamond	
9	Corundum	
8	Topaz	
7	Quartz	
6	Orthoclase	Ceramic Tile
5.5		Glass Plate
5	Apatite	
4.5		Steel Nail
4	Fluorite	
3.5		Copper Penny
3	Calcite	
2.5		Fingernail
2	Gypsum	
1	Talc	

3) **Streak –**

This is the ground mineral left after scratching the mineral across a ceramic (streak) plate. This is NOT the same as color.

4) **Luster –**

The quality and intensity of light reflecting off a mineral's surface.

Two main types;

Metallic

Non-Metallic

-Earthy

-Greasy

-Vitreous/ glassy

-Waxy

-Pearly

-Dull

5) Cleavage (and other forms) –

Growth Forms –

Crystals – can contain non-parallel sides and broken sides differ from crystal faces (*May look like cleavage*)

Breakage Forms–

Cleavage – Breakage producing flat surfaces along predetermined surfaces based on the crystal structure. The flat surfaces have a tendency to reflect light.

6 mains types of cleavage - 1 Direction

- 2 Directions at 90°
- 2 Directions not at 90°
- 3 Directions at 90°
- 3 Directions not at 90°
- 4 Directions

Fracture – No clean breakage surfaces

Conchoidal – Curved breakage, like broken glass.

6) Specific Gravity –

The density of a substance. Usually measured by displacing water. Can be estimated by feel.

7) Other properties –

Reaction to HCl – bubbling with addition to acid

Striations – parallel lines on some cleavage faces of minerals

Taste – Not usually a good test unless sure of the mineral

Magnetic – Attracted to a magnet

The Rock Cycle

