

Mineral Identification

MINERAL – *naturally occurring, solid crystalline substance, generally inorganic, with a specific chemical composition.*

MINERALOGY – *branch of geology that studies the composition, structure, appearance, stability, occurrence, and association of minerals.*

Minerals are identified by examining physical properties. We examine what we can see, feel, and sometimes taste to understand the sample. Physical properties include:

HARDNESS: Refer to Mohs Scale. Harder minerals will scratch softer minerals, but not the reverse. We will use glass (5.5), nail (5.0), copper penny (3.0), and fingernail (2.5) to determine hardness.

CRYSTAL FORM: Minerals have a characteristic crystal form which develops during the growth of the crystal and reflects the internal atomic structure of the mineral. Information on the crystal form of a mineral can be found in various mineralogy books.

COLOR/STREAK: Not all minerals have a characteristic color. Color often depends on the impurities that are present in the mineral's chemical formula. Most minerals do, however, have a characteristic streak. The streak is the powder seen when rubbing a mineral on an unglazed white porcelain plate.

CLEAVAGE/FRACTURE: When a mineral breaks preferentially along a plane of weakness it is said to have cleavage. This is a diagnostic property for many minerals. If a mineral does not have a specific cleavage direction, it is said to fracture.

LUSTER: This is the description of how a mineral reflects light. Choices are – *metallic, dull, silky, pearly, earthy, vitreous.*

SPECIFIC GRAVITY/DENSITY: Denser minerals will feel heavier than less dense minerals of the same size.

Magnetism, effervescence (reaction with acid), **taste**, and **double refraction** are physical properties that are also useful, but these are very diagnostic properties that typically work well with only a small number of minerals.

Complete the chart for each mineral listed on the reverse side and answer the questions that follow.

Name:

Section:

<i>Mineral</i>	<i>Crystal Form</i>	<i>Color</i>	<i>Hardness</i>	<i>Cleavage</i>	<i>Streak</i>	<i>Luster, Density, other</i>
Graphite	hexagonal					
Muscovite	pseudo-hexagonal; tabular					
Feldspar						
Halite	cubic					
Pyroxene	stubby prisms					
Biotite	pseudo-hexagonal; tabular					
Amphibole	stubby prisms					
Hematite	rhomboidal					
Limonite						
Magnetite	isometric octahedral					
Sphalerite	isometric					
Quartz	hexagonal					
Calcite	rhomboidal					
Corundum	hexagonal					
Tourmaline	hexagonal; prismatic					
Talc	pseudo-hexagonal; tabular					
Asbestos	fibrous					
Galena	cubic					
Pyrite	cubic					

Answer the following questions based on your data:

Which physical property would you use to distinguish Quartz from Calcite?

Which minerals have metallic luster?

Which mineral has double refraction?

What causes Quartz to be different colors? (clear, rose, etc..)

What type of luster does Asbestos (serpentine) have?

Tourmaline has an unusual streak compared to the mineral color. What is the color?