

# MINERAL IDENTIFICATION

Unit 4 - CHAPTER 2.3

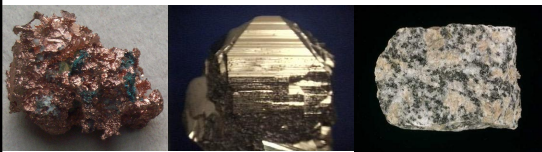
## What are minerals?

- A **mineral** is defined as any naturally occurring crystalline **inorganic** material.
- The internal structure of a mineral is also important.
- Its chemicals and how they are arranged makes a difference.
- Some are composed of one **element** (Gold)
  - A single item off of the periodic table
- Most mineral are **compounds** – they consist of two or more elements that are combined in constant proportions.
- Some are **mixtures** – Multiple compounds where you can see the different compounds ( layers, colors, or shapes) - **Rocks**

## Names and Importance?



## Element, Compound, or Mixture



Copper – Cu  
Element

Pyrite – FeS<sub>2</sub> –  
Iron Sulfate  
Compound

Granite - Minerals are mostly quartz and feldspar, with small amounts of mica (muscovite or biotite). Igneous **Rock**

Minerals

## Minerals

- There are over 2000 kinds of minerals, Which one's are worth looking at?
- Almost any rock you find will contain one or more minerals.
- Some are very rare and valuable



## Mineral Identification

- Based on **physical** and **chemical** properties
- Best to use **combination** of mineral **tests** for identification



## Mineral Properties

- Color
- Crystal form
- Hardness
- Cleavage
- Streak
- Luster
- Density
- Solubility
- Physical
- Physical
- Physical
- Physical
- Physical
- Chemical
- Chemical

## COLOR

– Presence of **chemical compounds** within mineral

– **LEAST** reliable identification test



## LUSTER

■ **Definition:** Ability to **reflect** light from its **surface**

■ **Metallic** Luster = **shiny** surfaces

■ **Nonmetallic** Luster = **dull, waxy, or silky**



## TEXTURE

■ **Definition:** **Feel** to touch

■ **Described as:**

- Smooth
- Rough
- Ragged
- Greasy
- Soapy
- Glassy



## STREAK

■ **Definition:** **Color** of mineral **powder** when broken up

■ **NOTE:** Streak does **NOT** always match **external** color



## HARDNESS



– **Definition:** **Measure** of ability to be **scratched**

– Most **useful** and **reliable** test

# Mohs Hardness Scale

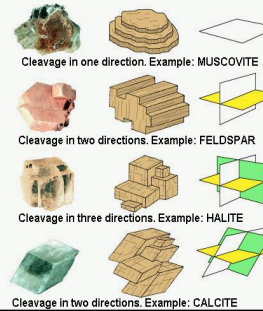
Table 4-3 Mohs Hardness Scale

	Hardness	Hardness of Common Objects
Talc	1 (softest)	
Gypsum	2	fingernail (2.5)
Calcite	3	piece of copper (3.5)
Fluorite	4	iron nail (4.5)
Apatite	5	glass (5.5)
Feldspar	6	steel file (6.5)
Quartz	7	streak plate (7)
Topaz	8	scratches quartz
Corundum	9	scratches topaz
Diamond	10 (hardest)	scratches all common materials

# CLEAVAGE

## – Definition:

– Ability to **split** relatively **even** along **flat** planes



# FRACTURE

## ■ Definition:

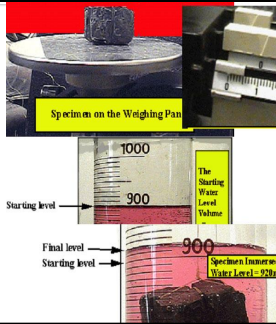
■ A **break** with **rough** or **jagged** edges

■ Breaks **irregularly**



# DENSITY

■ Ratio of **mass** and **volume** of mineral



## Density

- **Density = Mass / volume**
- The structure is highly ordered and constant for that mineral
  - A grain of salt has the same structure as a boulder of salt.

