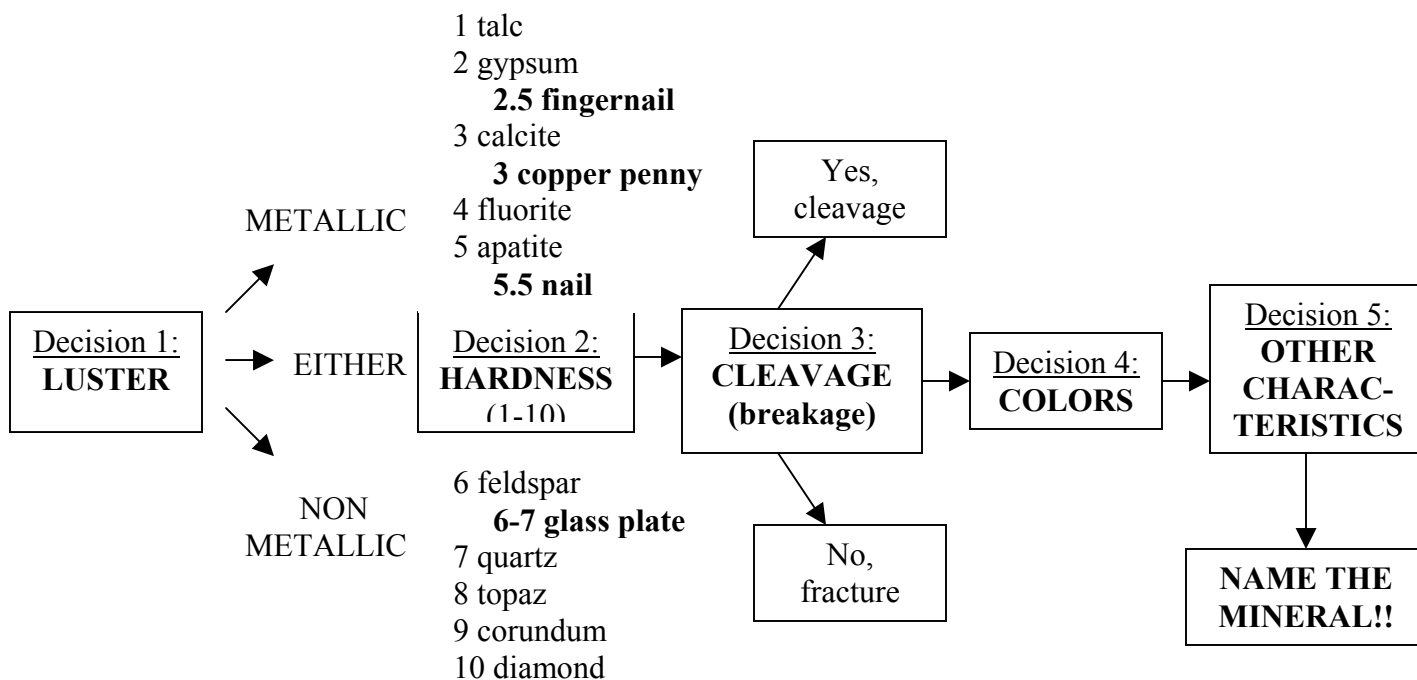


As you now know, a mineral is a **naturally occurring, inorganic solid with a definite chemical composition and arrangement**. The easiest way to identify different minerals is compare a variety of physical (and sometimes chemical) characteristics using your senses, and some simple tools. In this lab, you will follow the **Mineral Identification Chart** found in your reference tables (also provided here) to classify then identify a variety of different minerals.

PROCEDURE

- First, take some time to familiarize yourself with the **flow** of the identification chart. The chart is read from LEFT to RIGHT, and you should not proceed until you have reached a decision about the **physical property** you are examining. The outline below may be helpful as a guide:



- Now that you have taken a look at the **flow** of the chart you will use to identify a mineral, take a minute to determine the flow for the mineral **SULFUR**:

Luster= _____ Hardness= _____ Cleavage (Y /N)? _____










Color= _____ Other Characteristics= _____

- Before going on, be certain that you understand how to read the chart. It is almost time to start the identification process. First, make sure you **ALSO** know how to use the tools available to you:
 - Streak Plate
 - Fingernail
 - Penny
 - Glass Plate
 - Hydrochloric Acid (HCl)- **Upon Request ONLY!**

4. Okay, you are ready to give it a shot. Use the Mineral ID Chart to identify each of the minerals on the lab tables. DETERMINE THE PROPERTIES FIRST, THEN DECIDE WHICH MINERAL IT IS! Good Luck, and ask for help when necessary.

| ID | LUSTER (M or NM) | HARD- NESS | CLEAVAGE / FRACTURE | COLOR | OTHER CHARACTERISTICS | MINERAL NAME |
|------------------|---------------------|---------------|------------------------|-------|--------------------------|-----------------|
| A | | | | | | |
| B | | | | | | |
| C | | | | | | |
| D | | | | | | |
| E | | | | | | |
| F | | | | | | |
| G | | | | | | |
| H | | | | | | |
| I | | | | | | |
| J | | | | | | |
| K | | | | | | |
| L | | | | | | |
| M | | | | | | |
| N | | | | | | |
| O | | | | | | |
| P | | | | | | |
| Q | | | | | | |
| R | | | | | | |
| S | | | | | | |
| T | | | | | | |
| EXTRA CREDIT! | | | | | | |
| EXTRA CREDIT! | | | | | | |

Properties of Common Minerals

| LUSTER | HARD-NESS | CLEAVAGE FRACTURE | COMMON COLORS | DISTINGUISHING CHARACTERISTICS | USE(S) | MINERAL NAME | COMPOSITION* |
|--------------------|-----------|----------------------|-------------------------------|--|---------------------------------|--|--|
| Metallic Luster | 1-2 | ✓ | silver to gray | black streak, greasy feel | pencil lead, lubricants | Graphite | C |
| | 2.5 | ✓ | metallic silver | very dense (7.6 g/cm ³), gray-black streak  | ore of lead | Galena | PbS |
| | 5.5-6.5 | ✓ | black to silver | attracted by magnet, black streak | ore of iron | Magnetite | Fe ₃ O ₄ |
| | 6.5 | ✓ | brassy yellow | green-black streak, cubic crystals  | ore of sulfur | Pyrite | FeS ₂ |
| Either | 1-6.5 | ✓ | metallic silver or earthy red | red-brown streak | ore of iron | Hematite | Fe ₂ O ₃ |
| Nonmetallic Luster | 1 | ✓ | white to green | greasy feel | talcum powder, soapstone | Talc | Mg ₃ Si ₄ O ₁₀ (OH) ₂ |
| | 2 | ✓ | yellow to amber | easily melted, may smell | vulcanize rubber, sulfuric acid | Sulfur | S |
| | 2 | ✓ | white to pink or gray | easily scratched by fingernail | plaster of paris and drywall | Gypsum (Selenite) | CaSO ₄ •2H ₂ O |
| | 2-2.5 | ✓ | colorless to yellow | flexible in thin sheets  | electrical insulator | Muscovite Mica | KAl ₃ Si ₃ O ₁₀ (OH) ₂ |
| | 2.5 | ✓ | colorless to white | cubic cleavage, salty taste  | food additive, melts ice | Halite | NaCl |
| | 2.5-3 | ✓ | black to dark brown | flexible in thin sheets  | electrical insulator | Biotite Mica | K(Mg,Fe) ₃ AlSi ₃ O ₁₀ (OH) ₂ |
| | 3 | ✓ | colorless or variable | bubbles with acid  | cement, polarizing prisms | Calcite | CaCO ₃ |
| | 3.5 | ✓ | colorless or variable | bubbles with acid when powdered | source of magnesium | Dolomite | CaMg(CO ₃) ₂ |
| | 4 | ✓ | colorless or variable | cleaves in 4 directions | hydrofluoric acid | Fluorite | CaF ₂ |
| | 5-6 | ✓ | black to dark green | cleaves in 2 directions at 90°  | mineral collections | Pyroxene (commonly Augite) | (Ca,Na)(Mg,Fe,Al)(Si,Al) ₂ O ₆ |
| | 5.5 | ✓ | black to dark green | cleaves at 56° and 124°  | mineral collections | Amphiboles (commonly Hornblende) | CaNa(Mg,Fe) ₄ (Al,Fe,Ti) ₃ Si ₆ O ₂₂ (OH) ₂ |
| | 6 | ✓ | white to pink | cleaves in 2 directions at 90° | ceramics and glass | Potassium Feldspar (Orthoclase) | KAlSi ₃ O ₈ |
| | 6 | ✓ | white to gray | cleaves in 2 directions, striations visible | ceramics and glass | Plagioclase Feldspar (Na-Ca Feldspar) | (Na,Ca)AlSi ₃ O ₈ |
| | 6.5 | ✓ | green to gray or brown | commonly light green and granular | furnace bricks and jewelry | Olivine | (Fe,Mg) ₂ SiO ₄ |
| | 7 | ✓ | colorless or variable | glassy luster, may form hexagonal crystals  | glass, jewelry, and electronics | Quartz | SiO ₂ |
| | 7 | ✓ | dark red to green | glassy luster, often seen as red grains in NYS metamorphic rocks | jewelry and abrasives | Garnet (commonly Almandine) | Fe ₃ Al ₂ Si ₃ O ₁₂ |

*Chemical Symbols: Al = aluminum Cl = chlorine H = hydrogen Na = sodium S = sulfur
 C = carbon F = fluorine K = potassium O = oxygen Si = silicon
 Ca = calcium Fe = iron Mg = magnesium Pb = lead Ti = titanium

✓ = dominant form of breakage