

NAME \_\_\_\_\_ DATE \_\_\_\_\_

INSTRUCTOR \_\_\_\_\_ PERIOD \_\_\_\_\_ PARTNER \_\_\_\_\_

## UNIT 2: Earth Materials

### LAB 2-2: PROPERTIES OF MINERALS

**INTRODUCTION:** Of some 3,000 known minerals, only about a dozen called “common rock-forming minerals” make up most of Earth’s crust. They are identified in the field with a few simple physical tests and observations. This is possible because the physical properties are remarkably constant in a mineral no matter how old it is or where it was formed. In addition to physical tests, there are also some useful diagnostic chemical tests by which minerals can be identified.

**OBJECTIVE:** You will identify mineral samples by their physical and chemical properties.

**VOCABULARY:**

mineral:	Mineral	Hardness
crystal:	calcite	3
inorganic:	fluorite	4
luster:	apatite	5
streak:	halite	2.5
hardness:	quartz	7
cleavage:	quartz	7
	amethyst	7
	diamond	10

\*quartz is the hardest common mineral

fracture:

specific gravity:	Mineral	Specific Gravity
chemical properties:	quartz	2.65
	calcite	2.7
	fluorite	3.18
	apatite	3.16
	halite	2.16
	quartz	2.65
	quartz	2.65
	quartz	2.65

**PROCEDURE:**

1. Obtain a mineral tray and identification kit from your instructor.
2. Check that the twelve mineral samples are in the correct order by matching them to the model tray provided by your instructor.
3. Determine the properties for each of the minerals and record your observations on the Report Sheet.

**If you perform the acid test  
YOU MUST WEAR GOGGLES.**

4. Have your instructor check your Report Sheet after completing Procedure 3.
5. Find the name for each of the mineral samples using your Report Sheet and the reference charts in the Appendix.

<b>HARDNESS SCALES</b>		
<b>Mohs Hardness Scale</b>	<b>Mineral</b>	<b>Simple Test</b>
1	talc	fingernail scratches it easily
2	gypsum	fingernail scratches it
3	calcite	copper penny just scratches it
4	fluorite	steel nail scratches it easily
5	apatite	steel nail scratches it
6	feldspar	steel nail won't scratch it it scratches window glass
*7	quartz	it scratches steel and hard glass
8	topaz	harder than any common mineral (scratches quartz)
9	corundum	it scratches topaz
10	diamond	hardest of all minerals

\*quartz is the hardest common mineral

<b>HARDNESS OF SOME COMMON OBJECTS</b>	
Streak plate	6.5
Glass plate	5.5
Iron nail	4.5
Penny or copper wire	3.5
Fingernail	2.5

**REPORT SHEET**  
**DATA CHART FOR MINERAL IDENTIFICATION**

Sample	Hardness Range	Type of Fracture or No. of Cleavage Planes	Specific Gravity (Lt., Med., Hvy.)	Color	Streak	Type of Luster	Any Special Notes	Name of Mineral
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

**DISCUSSION QUESTIONS:** (Answer in Complete Sentences)

1. What is the distinction between cleavage and fracture?
2. Why is color alone not a reliable means of identifying a mineral?
3. Why is streak a more reliable property than color in mineral identification?
4. How is the hardness range for a mineral determined?
5. What mineral is usually identified by using the acid test?
6. A mineral has a specific gravity of 7.0. What does this mean?

**CONCLUSION:**

- a) List the properties which are most useful in identifying minerals.
- b) Why are other mineral properties less useful for identification?

DAILY CHECK FOR MILEAGE IDENTIFICATION