

LAB EXERCISE 2 - MINERAL IDENTIFICATION

Name:	Course ID:
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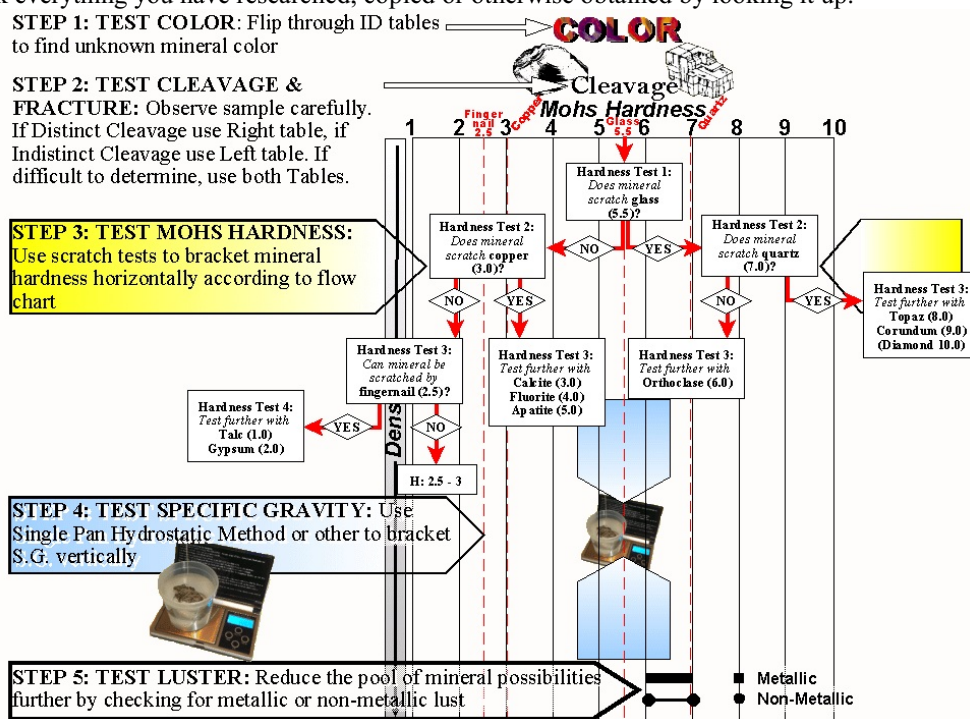
During this lab you are required to positively identify by name ALL minerals given to you in the attached determinative table. You will complete the provided blank Mineral ID Exercise Table in conjunction with your testing.

Materials needed:

- Professional Rock / Mineral Identification Kit (See above for ordering information)
- Set of Minerals included in the kit above (Mineral set as well as Mohs Hardness Minerals)
- MINERAL IDENTIFICATION TABLES
- other helpful determinative Mineral ID tables and mineral descriptions

Procedure:

1. Pick an unknown mineral sample (write down sample number or letter). Follow the outline given in the MINERAL IDENTIFICATION CHARTS. Write down the results in the blank Mineral ID Exercise Table as you go.
2. Use two colors to complete the table. Mark in blue all the values you have obtained by your own measurements or observations. Write in black everything you have researched, copied or otherwise obtained by looking it up.
3. **MINERAL IDENTIFICATION:** Use the Professional Rock/Mineral ID kit and the provided TABLES FOR THE DETERMINATION OF NON-METALLIC AND METALLIC MINERALS and follow the steps for mineral identification as outline to the right. Be sure to record your findings as you go in the Lab Answer Tables, such as “color,” “cleavage,” “hardness,” as well as “streak,” “magnet,” “acid,” and “other” using ONLY OWN OBSERVATIONS / MEASUREMENTS. Under “other” mark also the type of test or observational tool used to derive your answer, such as *taste*, or *smell* tests.
4. For the field “MINERAL NAME” write down your own identification first in blue. Mark also the correct identification from the key below your answer in “black.”
5. The answers for all remaining fields should be meticulously researched. For “formula” look up the chemical formula of the mineral. “Group” should indicate the chemical group such as sulfate or phyllosilicate. “Crystal sys” should answer the crystal system as accurately as possible.



MINERAL ID EXERCISE TABLES

Name: _____

Complete using 2 colors. Mark your own measurements in **blue**. Mark researched or copied values in **black!**

PASTE MINERAL SAMPLE from KIT HERE! <i>(Clear scotch tape)</i>							
Luster:	<input type="checkbox"/> Metallic <input type="checkbox"/> Nonmetallic	<input type="checkbox"/> Metallic <input type="checkbox"/> Nonmetallic	<input type="checkbox"/> Metallic <input type="checkbox"/> Nonmetallic	<input type="checkbox"/> Metallic <input type="checkbox"/> Nonmetallic	<input type="checkbox"/> Metallic <input type="checkbox"/> Nonmetallic	<input type="checkbox"/> Metallic <input type="checkbox"/> Nonmetallic	<input type="checkbox"/> Metallic <input type="checkbox"/> Nonmetallic
Hardness:	Measured Researched	Measured Researched	Measured Researched	Measured Researched	Measured Researched	Measured Researched	Measured Researched
Color:	Measured Researched	Measured Researched	Measured Researched	Measured Researched	Measured Researched	Measured Researched	Measured Researched
Other observations:							
T e s t	Cleavage:	<input type="checkbox"/> distinct <input type="checkbox"/> indistinct	<input type="checkbox"/> distinct <input type="checkbox"/> indistinct	<input type="checkbox"/> distinct <input type="checkbox"/> indistinct	<input type="checkbox"/> distinct <input type="checkbox"/> indistinct	<input type="checkbox"/> distinct <input type="checkbox"/> indistinct	<input type="checkbox"/> distinct <input type="checkbox"/> indistinct
	Density: <i>Measure (see reverse side)</i>	Measured Researched	Measured Researched	Measured Researched	Measured Researched	Measured Researched	Measured Researched
	Streak:	Measured Researched	Measured Researched	Measured Researched	Measured Researched	Measured Researched	Measured Researched
	Acid:	<input type="checkbox"/> effervesces	<input type="checkbox"/> effervesces	<input type="checkbox"/> effervesces	<input type="checkbox"/> effervesces	<input type="checkbox"/> effervesces	<input type="checkbox"/> effervesces
	Magnet:						
	Other:						
MINERAL NAME:							
R e s e a r c h	Chemical Formula:						
	Mineral Group:						
	Crystal System:						

Make additional copies of this page if needed. Show all calculations on the next page:

*There is a tendency to just copy information from any source, This is completely acceptable for the area labeled RESEARCH. It is **NOT acceptable** for the fields indicated under TEST. You **MUST** actually perform tests and show **YOUR** results, not just copied references.*

MINERAL ID EXERCISE TABLES

Name: _____

DENSITY CALCULATIONS

Sample:								
D e n s i t y T e s t	Density calc.: <i>(see Lab 2b)</i>							
MINERAL NAME:								

Make additional copies of this page if needed.

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LAB EXERCISE 2b - DENSITY

Name:	Course ID:
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This lab addendum is designed to give you practice and confidence using the SINGLE PAN HYDROSTATIC METHOD. Using a mineral of known density and trying to match the result will help you build skills of proper use with the system.

Materials needed:

- Minerals or materials of known density
- Calculator or nomograph
- Single Pan Digital Scale
- Other helpful determinative Mineral ID tables and mineral descriptions
- Water
- Small cup and some thread or string

Procedure:

1. Set the scale on a hard level surface. Turn it on and set readout to grams (g). Calibrate the scale according to manufacturers instruction.
2. Use a homogenous, dry mineral specimen and weigh in grams on balance. Record measurement as “m” (mass). **Note: A minimum weight / size of >2 grams is recommended.**
3. Tie your unknown mineral sample to the string with the slip knot. Fill a small cup with enough water to completely submerge the sample. Place the water filled cup on the scale and tare readout to zero (0).
4. Lower your tied-on mineral into the water. Neither the object nor string should touch the vessel while measuring and your mineral must be completely submerged. Make sure no major air bubbles are trapped on the sample or the string. Otherwise retrieve and submerge in rapid succession to dislodge air bubbles. Hold mineral on string steady and record the readout on the scale as “V” (volume).
5. Use the equation and a calculator or the associated nomograph in this text to compute specific gravity (SG).

$$SG\left(\frac{g}{cm^3}\right) = \frac{m(g)}{V(cm^3)}$$

Specimen Name	Measurements & Calculations	S.G.	% error
Quartz (SiO ₂) S.G. = 2.65 g/cm ³	$SG\left(\frac{g}{cm^3}\right) = \frac{m}{V}$	$\frac{g}{cm^3}$	
Galena (PbS) S.G. ~ 7.40 g/cm ³	$SG\left(\frac{g}{cm^3}\right) = \frac{m}{V}$	$\frac{g}{cm^3}$	

What is the percent error of your measurement? You should be below ±5%. Use your measurement for quartz according to:

$\%error_{quartz} = 100\% - \left(\frac{S.G._{your\ measurement}}{2.65\ g/cm^3} \times 100\right)$
 If your error is greater than ±5%, you MUST REPEAT the part of the experiment that introduced your error until your error margin is acceptable.