

Mineral Identification Lab

Introduction:

Most minerals can be easily identified by using the properties that we have covered in chapter 2. Recall that we have talked about color, luster, streak, crystal form, hardness, cleavage, fracture, and density. In this lab, you will use your knowledge of mineral properties and the given table to identify common rock-forming minerals. In Chapter 3 you will learn about rocks, which are mixtures of one or more minerals.

Purpose:

Identifying minerals will enable you to understand more about the processes that form and change the rocks at and beneath Earth's surface.

Problem: How can I use simple tests and tools to identify common minerals?

Pre-Lab:

1. What tool will you use to examine the color and luster of each mineral? _____

2. What is the Mohs scale hardness rating for our streak plate? _____

3. Why do you think there will not be any streak if the mineral is harder than the streak plate? _____
4. Knife blades are made out of steel. What is the Mohs scale hardness value for our steel plate? (Refer to the Mohs scale of mineral hardness in your resource folder or book).

5. Name two important resources included in your resource folder. How will you use these resources in order to identify your sample minerals? _____

Materials:

- Mineral samples
- Hand lens (magnifying glass)
- Streak plate
- Copper penny/plate
- Steel plate
- Piece of quartz (#8)
- Magnet
- Resource folder
- Resource 16
- DataBank (mineral tables)

Procedure:

Part A: Color and Luster

1. Examine each mineral sample with and without the hand lens. Examine both the central part of each mineral as well as the edges of the samples.
2. Note whether each mineral has a metallic or non-metallic (pearly, brilliant, earthy etc) luster.
3. Record the color and luster of each sample in the Data Table.

Part B: Streak and Hardness

4. To determine the streak of a mineral, gently drag it across the streak plate and observe the color of the powdered mineral. If a mineral is harder than the streak plate ($H = 7$), it will not produce a streak.
5. Record the streak color for each mineral in the Data Table.
6. Use your fingernail, the penny, the steel plate (what knife blades are made out of), and the piece of quartz to test the hardness of each mineral. Remember that if a *mineral scratches an object, the mineral is harder than the object. If an object scratches a mineral, the mineral is softer than the object.*
7. Use your Mohs scale to record the hardness values for each sample in the Data Table.

Part C: Other Properties

8. Use the magnet to determine if any of the minerals are magnetic. Record your observations in the Data Table under Other Properties.
9. Place the transparent minerals over a word on this page to see if any have the property of double refraction. If a mineral has this property, you will see two sets of the word. Record your observations in the last column under Other Properties
10. Compare the feel, smell, and look of the minerals. In the Data Table, note any differences in the last column.

Observations

DATA TABLE

Copy & complete this table in your lab report.

Mineral Number	Color	Luster	Streak	Relative Hardness	Cleavage/ Fracture	Density	Other Properties
#3					Cleave	3.2 g/cm^3	
#7					Cleave	2.6 g/cm^3	
#9					Cleave	2.7 g/cm^3	Bubbles when exposed to acid
#10					Cleave	2.2 g/cm^3	Salty taste
#11					Fracture	5.2 g/cm^3	
#12					Fracture	8.9 g/cm^3	
#14					Fracture	5.0 g/cm^3	
#17					Fracture	2.0 g/cm^3	

Analysis and Conclusion

1. **Identifying:** Use the data and mineral table to identify each of the minerals tested.

Mineral Number	Mineral Name
#3	
#7	
#9	
#10	
#11	
#12	
#14	
#17	

2. **Evaluating:** Which of the properties did you find most useful for identifying your minerals? Least useful? Give reasons for your answers. (Properties include: Color, luster, streak, relative hardness, cleavage/fracture, density, and other)_____

3. **Comparing and Contrasting:** In general, how did the minerals with metallic luster differ from those with nonmetallic luster?_____

4. **Classifying:** Classify your minerals into at least three groups based on your observations.

	Group 1	Group 2	Group 3
Mineral Names			
Group properties			

5. **Classifying:** How does your classification scheme differ from those of two other groups?_____

6. **Reflection:** How did this lab help you understand how minerals are classified?_____
