

Name: _____
Date: _____

Mineral Identification



Although nearly 2500 minerals are known to occur within Earth's crust, most are rare, with only about 100 occurring in abundance. Of those 100 minerals, 15 make up the common rock-forming minerals and some of the remainder has some economic value.

- Materials:**
- > Streak plate
 - > Glass plate

- > Dichotomous Key
- > Magnifying Glass

Procedures: Check the appropriate boxes and determine the name of the minerals based on the physical characteristics!

Step 1
Determine whether your sample has cleavage. **HINT:** If it exhibits cleavage it will show clean breaks or "faces" on the sample. This may be difficult if the mineral is very soft!

Step 2
Using the streak plate in the mineral kit, determine whether the mineral shows a streak (if it is harder than 5.5 it won't) or if it is colored or white.

Step 3
Determine the hardness of your mineral. Using a glass plate, see if the mineral scratches it. Be careful, make sure the glass is on a table. Do NOT hold it in your hand. Firmly grasp your mineral and draw it over the glass. Use your fingernail to feel if the glass is scratched.

Step 4
Determine the luster (metallic or nonmetallic) of your mineral. If it is non-metallic, determine the color of the mineral.

Step 5
Your choices will be narrowed down, using the dichotomous key. Determine which specific properties match up with your mineral and name the mineral.

Mineral Characteristic Chart

Sample 1	Cleavage	Shows cleavage <input type="checkbox"/>	Does not show cleavage <input type="checkbox"/>
	Sreak	Colored <input type="checkbox"/>	None or white <input type="checkbox"/>
	Hardness	As hard as glass Or harder than glass <input type="checkbox"/>	Not as hard as glass <input type="checkbox"/>
	Luster	<input type="checkbox"/> Metallic	<input type="checkbox"/> Nonmetallic

Name of Mineral: _____

Mineral Characteristic Chart

Sample 2	Cleavage	Shows cleavage <input type="checkbox"/>	Does not show cleavage <input type="checkbox"/>
	Sreak	Colored <input type="checkbox"/>	None or white <input type="checkbox"/>
	Hardness	As hard as glass Or harder than glass <input type="checkbox"/>	Not as hard as glass <input type="checkbox"/>
	Luster	<input type="checkbox"/> Metallic	<input type="checkbox"/> Nonmetallic

Name of Mineral: _____

Mineral Characteristic Chart

Sample 3	Cleavage	Shows cleavage <input type="checkbox"/>	Does not show cleavage <input type="checkbox"/>
	Sreak	Colored <input type="checkbox"/>	None or white <input type="checkbox"/>
	Hardness	As hard as glass Or harder than glass <input type="checkbox"/>	Not as hard as glass <input type="checkbox"/>
	Luster	<input type="checkbox"/> Metallic	<input type="checkbox"/> Nonmetallic

Name of Mineral: _____

Mineral Characteristic Chart

Sample 4	Cleavage	Shows cleavage <input type="checkbox"/>	Does not show cleavage <input type="checkbox"/>
	Sreak	Colored <input type="checkbox"/>	None or white <input type="checkbox"/>
	Hardness	As hard as glass Or harder than glass <input type="checkbox"/>	Not as hard as glass <input type="checkbox"/>
	Luster	<input type="checkbox"/> Metallic	<input type="checkbox"/> Nonmetallic

Name of Mineral: _____

Mineral Characteristic Chart

Sample 5	Cleavage	Shows cleavage <input type="checkbox"/>	Does not show cleavage <input type="checkbox"/>
	Streak	<input type="checkbox"/> Colored	<input type="checkbox"/> None or white
	Hardness	As hard as glass Or <input type="checkbox"/> harder than glass	Not as hard as glass <input type="checkbox"/>
Luster	<input type="checkbox"/> Metallic	<input type="checkbox"/> Nonmetallic	

Name of Mineral: _____

Mineral Characteristic Chart

Sample 6	Cleavage	Shows cleavage <input type="checkbox"/>	Does not show cleavage <input type="checkbox"/>
	Streak	<input type="checkbox"/> Colored	<input type="checkbox"/> None or white
	Hardness	As hard as glass Or <input type="checkbox"/> harder than glass	Not as hard as glass <input type="checkbox"/>
Luster	<input type="checkbox"/> Metallic	<input type="checkbox"/> Nonmetallic	

Name of Mineral: _____

Mineral Characteristic Chart

Sample 7	Cleavage	Shows cleavage <input type="checkbox"/>	Does not show cleavage <input type="checkbox"/>
	Streak	<input type="checkbox"/> Colored	<input type="checkbox"/> None or white
	Hardness	As hard as glass Or <input type="checkbox"/> harder than glass	Not as hard as glass <input type="checkbox"/>
Luster	<input type="checkbox"/> Metallic	<input type="checkbox"/> Nonmetallic	

Name of Mineral: _____

Mineral Characteristic Chart

Sample 8	Cleavage	Shows cleavage <input type="checkbox"/>	Does not show cleavage <input type="checkbox"/>
	Streak	<input type="checkbox"/> Colored	<input type="checkbox"/> None or white
	Hardness	As hard as glass Or <input type="checkbox"/> harder than glass	Not as hard as glass <input type="checkbox"/>
Luster	<input type="checkbox"/> Metallic	<input type="checkbox"/> Nonmetallic	

Name of Mineral: _____

Mineral Characteristic Chart

Sample 9	Cleavage	Shows cleavage <input type="checkbox"/>	Does not show cleavage <input type="checkbox"/>
	Streak	<input type="checkbox"/> Colored	<input type="checkbox"/> None or white
	Hardness	As hard as glass Or <input type="checkbox"/> harder than glass	Not as hard as glass <input type="checkbox"/>
Luster	<input type="checkbox"/> Metallic	<input type="checkbox"/> Nonmetallic	

Name of Mineral: _____

Mineral Characteristic Chart

Sample 10	Cleavage	Shows cleavage <input type="checkbox"/>	Does not show cleavage <input type="checkbox"/>
	Streak	<input type="checkbox"/> Colored	<input type="checkbox"/> None or white
	Hardness	As hard as glass Or <input type="checkbox"/> harder than glass	Not as hard as glass <input type="checkbox"/>
Luster	<input type="checkbox"/> Metallic	<input type="checkbox"/> Nonmetallic	

Name of Mineral: _____

Sample 11	Cleavage	Shows cleavage <input type="checkbox"/>	Does not show cleavage <input type="checkbox"/>
	Streak	Colored <input type="checkbox"/>	None or white <input type="checkbox"/>
	Hardness	As hard as glass Or harder than glass <input type="checkbox"/>	Not as hard as glass <input type="checkbox"/>
Luster	<input type="checkbox"/> Metallic	<input type="checkbox"/> Nonmetallic	

Name of Mineral: _____
Mineral Characteristic Chart

Sample 12	Cleavage	Shows cleavage <input type="checkbox"/>	Does not show cleavage <input type="checkbox"/>
	Streak	Colored <input type="checkbox"/>	None or white <input type="checkbox"/>
	Hardness	As hard as glass Or harder than glass <input type="checkbox"/>	Not as hard as glass <input type="checkbox"/>
	Luster	<input type="checkbox"/> Metallic	<input type="checkbox"/> Nonmetallic

Name of Mineral: _____

- Questions:** Use your notes and/or the reference chart attached to your homework to answer the following questions.
- What is the name of the family of minerals made of the element Silicon (Si)? _____
 - List the minerals in this lab that:
 - Have a colored streak _____
 - Did not have a streak _____
 - Are harder than glass _____
 - Are not as hard as glass _____
 - Have a metallic luster _____
 - Have a nonmetallic luster _____
 - Show cleavage _____
 - Do not show cleavage _____
 - Why is color alone **NOT** a reliable means of identifying a mineral? _____
 - Why is streak a more reliable property than color in mineral identification? _____

- Describe the difference between cleavage and fracture. _____
- What mineral is usually identified by using the acid test? _____

The table at right lists some information about the minerals graphite and diamond.

Mineral	Composition	Depth of Formation	Hardness	Electrical Conductor
graphite	carbon	shallow	1	good
diamond	carbon	very deep	10	poor

- Some properties of diamond are different from those of graphite because diamond
 - has a different arrangement of atoms
 - has a different composition
 - forms larger crystals
 - is older in geologic age

Base your answers to questions 8 and 9 on the data table to the right and on your knowledge of Earth science. The table provides information about four minerals, A through D.

Mineral	Breakage	Hardness	Luster	Color
A	cleavage	2.5	metallic	silver
B	cleavage	2.5	nonmetallic	black
C	cleavage	3	nonmetallic	colorless
D	fracture	6.5	nonmetallic	green

- Mineral A is most likely
 - garnet
 - galena
 - olivine
 - halite
- Which mineral can scratch A, B, and C, but **cannot** scratch D?
 - calc
 - selenite gypsum
 - fluorite
 - quartz

The table shows the approximate mineral percent composition of an igneous rock.

Mineral Name	Percentage of Mineral Present
plagioclase feldspar	55%
biotite	15%
amphibole	30%

- Identify two elements that are commonly found in all three minerals in the data table. _____ and _____
- Which mineral precipitates from oceans and forms rock salt?
 - quartz
 - fluorite
 - halite
 - olivine
- Identify two uses for the mineral graphite. _____ and _____
- Explain why graphite and diamond have different properties. _____