

Name: \_\_\_\_\_

Date: \_\_\_\_\_ Period: \_\_\_\_\_

## Minerals and Rocks

The Physical Setting: Earth Science

---

# Lab Activity: Igneous Rocks

---

### INTRODUCTION:

Mineral composition and the rate at which lava or magma cools results in the different types of igneous rocks.

Igneous rocks that form deep within the Earth are called plutonic or intrusive rocks. They tend to form from magma and have larger crystal sizes and can only be seen when erosion wears away the overlying layers of rock.

Igneous rocks that form on the outside on the surface are called volcanic or extrusive. They tend to form from lava around volcanoes and have smaller crystal sizes and glassy textures. Also, they can have vesicular textures which are tiny gas holes found inside the rock.

### OBJECTIVE:

Learn how to identify igneous rocks based on their properties.

### VOCABULARY:

Igneous -

Intrusive -

Extrusive -

Felsic -

Mafic -

Vesicular -

### PROCEDURE A:

For each unknown igneous rocks, identify the key characteristics. After identifying the characteristics, use your Earth Science Reference Tables and determine the name of the rock based on your observations.

# Lab Activity: Igneous Rocks

Crystal Size	Texture	Color	Density	Composition	
<input type="checkbox"/> non-crystalline <input type="checkbox"/> less than 1 mm <input type="checkbox"/> 1 mm - 10 mm <input type="checkbox"/> 10 mm or larger	<input type="checkbox"/> Glassy <input type="checkbox"/> Fine <input type="checkbox"/> Coarse <input type="checkbox"/> Very Coarse	<input type="checkbox"/> Non-vesicular <input type="checkbox"/> Vesicular	<input type="checkbox"/> Lighter <input type="checkbox"/> Darker	<input type="checkbox"/> Lower <input type="checkbox"/> Higher	<input type="checkbox"/> Felsic <input type="checkbox"/> Mafic
Environment of Formation		<input type="checkbox"/> Intrusive (plutonic)	<input type="checkbox"/> Extrusive (volcanic)		
Mineral Composition:		<input type="checkbox"/> Potassium feldspar <input type="checkbox"/> Plagioclase feldspar	<input type="checkbox"/> Quartz <input type="checkbox"/> Biotite	<input type="checkbox"/> Pyroxene <input type="checkbox"/> Olivine	<input type="checkbox"/> Amphibole
Rock Name:					

Crystal Size	Texture	Color	Density	Composition	
<input type="checkbox"/> non-crystalline <input type="checkbox"/> less than 1 mm <input type="checkbox"/> 1 mm - 10 mm <input type="checkbox"/> 10 mm or larger	<input type="checkbox"/> Glassy <input type="checkbox"/> Fine <input type="checkbox"/> Coarse <input type="checkbox"/> Very Coarse	<input type="checkbox"/> Non-vesicular <input type="checkbox"/> Vesicular	<input type="checkbox"/> Lighter <input type="checkbox"/> Darker	<input type="checkbox"/> Lower <input type="checkbox"/> Higher	<input type="checkbox"/> Felsic <input type="checkbox"/> Mafic
Environment of Formation		<input type="checkbox"/> Intrusive (plutonic)	<input type="checkbox"/> Extrusive (volcanic)		
Mineral Composition:		<input type="checkbox"/> Potassium feldspar <input type="checkbox"/> Plagioclase feldspar	<input type="checkbox"/> Quartz <input type="checkbox"/> Biotite	<input type="checkbox"/> Pyroxene <input type="checkbox"/> Olivine	<input type="checkbox"/> Amphibole
Rock Name:					

Crystal Size	Texture	Color	Density	Composition	
<input type="checkbox"/> non-crystalline <input type="checkbox"/> less than 1 mm <input type="checkbox"/> 1 mm - 10 mm <input type="checkbox"/> 10 mm or larger	<input type="checkbox"/> Glassy <input type="checkbox"/> Fine <input type="checkbox"/> Coarse <input type="checkbox"/> Very Coarse	<input type="checkbox"/> Non-vesicular <input type="checkbox"/> Vesicular	<input type="checkbox"/> Lighter <input type="checkbox"/> Darker	<input type="checkbox"/> Lower <input type="checkbox"/> Higher	<input type="checkbox"/> Felsic <input type="checkbox"/> Mafic
Environment of Formation		<input type="checkbox"/> Intrusive (plutonic)	<input type="checkbox"/> Extrusive (volcanic)		
Mineral Composition:		<input type="checkbox"/> Potassium feldspar <input type="checkbox"/> Plagioclase feldspar	<input type="checkbox"/> Quartz <input type="checkbox"/> Biotite	<input type="checkbox"/> Pyroxene <input type="checkbox"/> Olivine	<input type="checkbox"/> Amphibole
Rock Name:					

# Lab Activity: Igneous Rocks

Crystal Size	Texture		Color	Density	Composition
<input type="checkbox"/> non-crystalline	<input type="checkbox"/> Glassy	<input type="checkbox"/> Non-vesicular	<input type="checkbox"/> Lighter	<input type="checkbox"/> Lower	<input type="checkbox"/> Felsic
<input type="checkbox"/> less than 1 mm	<input type="checkbox"/> Fine	<input type="checkbox"/> Vesicular	<input type="checkbox"/> Darker	<input type="checkbox"/> Higher	<input type="checkbox"/> Mafic
<input type="checkbox"/> 1 mm - 10 mm	<input type="checkbox"/> Coarse				
<input type="checkbox"/> 10 mm or larger	<input type="checkbox"/> Very Coarse				
Environment of Formation		<input type="checkbox"/> Intrusive (plutonic)		<input type="checkbox"/> Extrusive (volcanic)	
Mineral Composition:		<input type="checkbox"/> Potassium feldspar	<input type="checkbox"/> Quartz	<input type="checkbox"/> Pyroxene	<input type="checkbox"/> Amphibole
		<input type="checkbox"/> Plagioclase feldspar	<input type="checkbox"/> Biotite	<input type="checkbox"/> Olivine	
Rock Name:					

Crystal Size	Texture		Color	Density	Composition
<input type="checkbox"/> non-crystalline	<input type="checkbox"/> Glassy	<input type="checkbox"/> Non-vesicular	<input type="checkbox"/> Lighter	<input type="checkbox"/> Lower	<input type="checkbox"/> Felsic
<input type="checkbox"/> less than 1 mm	<input type="checkbox"/> Fine	<input type="checkbox"/> Vesicular	<input type="checkbox"/> Darker	<input type="checkbox"/> Higher	<input type="checkbox"/> Mafic
<input type="checkbox"/> 1 mm - 10 mm	<input type="checkbox"/> Coarse				
<input type="checkbox"/> 10 mm or larger	<input type="checkbox"/> Very Coarse				
Environment of Formation		<input type="checkbox"/> Intrusive (plutonic)		<input type="checkbox"/> Extrusive (volcanic)	
Mineral Composition:		<input type="checkbox"/> Potassium feldspar	<input type="checkbox"/> Quartz	<input type="checkbox"/> Pyroxene	<input type="checkbox"/> Amphibole
		<input type="checkbox"/> Plagioclase feldspar	<input type="checkbox"/> Biotite	<input type="checkbox"/> Olivine	
Rock Name:					

Crystal Size	Texture		Color	Density	Composition
<input type="checkbox"/> non-crystalline	<input type="checkbox"/> Glassy	<input type="checkbox"/> Non-vesicular	<input type="checkbox"/> Lighter	<input type="checkbox"/> Lower	<input type="checkbox"/> Felsic
<input type="checkbox"/> less than 1 mm	<input type="checkbox"/> Fine	<input type="checkbox"/> Vesicular	<input type="checkbox"/> Darker	<input type="checkbox"/> Higher	<input type="checkbox"/> Mafic
<input type="checkbox"/> 1 mm - 10 mm	<input type="checkbox"/> Coarse				
<input type="checkbox"/> 10 mm or larger	<input type="checkbox"/> Very Coarse				
Environment of Formation		<input type="checkbox"/> Intrusive (plutonic)		<input type="checkbox"/> Extrusive (volcanic)	
Mineral Composition:		<input type="checkbox"/> Potassium feldspar	<input type="checkbox"/> Quartz	<input type="checkbox"/> Pyroxene	<input type="checkbox"/> Amphibole
		<input type="checkbox"/> Plagioclase feldspar	<input type="checkbox"/> Biotite	<input type="checkbox"/> Olivine	
Rock Name:					

---

## Lab Activity: Igneous Rocks

---

### DISCUSSION QUESTIONS:

1. How is the size of the mineral crystals affected by the rate at which molten rock cools?
2. How can you determine if an igneous rock has an intrusive or extrusive origin?
3. How does the density of a light colored igneous rock differ from that of a dark?
4. What is the main difference between lava and magma?
5. How is a vesicular texture created?

**CONCLUSION:** On what basis are igneous rocks classified?