

Which Are Examples Of Extrusive Igneous Rocks? Check All That Apply. (You May Use Your Igneous Rock Identification

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Understanding the different types of rocks is fundamental in geology. Among these, igneous rocks are formed through the cooling and solidification of magma or lava. Igneous rocks are broadly classified into two categories based on their formation process: intrusive (plutonic) and extrusive (volcanic). Extrusive igneous rocks are formed when magma erupts onto the Earth's surface as lava and cools rapidly. This rapid cooling results in fine-grained textures, often making these rocks distinguishable from their intrusive counterparts.

In this article, we will explore the key examples of extrusive igneous rocks, their characteristics, and how to identify them. Whether you're a geology student, a rock enthusiast, or someone interested in earth sciences, understanding these rocks will enhance your knowledge of Earth's dynamic processes.

What Are Extrusive Igneous Rocks?

Extrusive igneous rocks, also known as volcanic rocks, are formed when magma reaches the Earth's surface and solidifies quickly. The rapid cooling prevents large crystals from forming, resulting in rocks with fine-grained or glassy textures. These rocks often display features such as vesicles (gas bubbles), a glassy appearance, or a porphyritic texture (large crystals embedded in a fine matrix).

Common features of extrusive igneous rocks include:

- Fine-grained texture due to rapid cooling
- Presence of vesicles or gas bubbles
- Sometimes a glassy or amorphous appearance
- Often darker in color, but not exclusively

The formation environment influences the properties and appearance of these rocks. For example, lava flows produce extensive sheets of volcanic rock,

while ash deposits create tuffs.

Key Examples of Extrusive Igneous Rocks

Below are some of the most common and recognizable examples of extrusive igneous rocks. Checking all that apply can help in identification and understanding of volcanic processes.

Basalt

- Description: Basalt is the most widespread extrusive igneous rock on Earth. It is dark-colored, usually black or dark gray, and has a fine-grained texture.
- Formation: Forms from the rapid cooling of basaltic lava during volcanic eruptions.
- Characteristics: Contains plagioclase and pyroxene minerals; often has vesicles due to gas escape during solidification.
- Uses: Construction material, road base, decorative stones.

Andesite

- Description: Andesite is an intermediate volcanic rock, with a color that ranges from gray to light brown.
- Formation: Typically erupts from stratovolcanoes in subduction zones.
- Characteristics: Fine-grained, sometimes contains phenocrysts; moderate silica content.
- Uses: Building stones, decorative stone in landscaping.

Rhyolite

- Description: Rhyolite is a felsic volcanic rock, usually light-colored—pink, white, or gray.
- Formation: Forms from highly viscous, silica-rich lava.
- Characteristics: Fine-grained, often with a glassy texture or flow banding; may contain quartz and feldspar.
- Uses: Decorative stones, crushed for aggregate.

Obsidian

- Description: Obsidian is a natural volcanic glass, with a smooth, glassy appearance.
- Formation: Rapid cooling of felsic or intermediate lava prevents crystal formation.
- Characteristics: Conchoidal fracture, very sharp edges, black or dark brown.

- Uses: Arrowheads, cutting tools, jewelry.

Pumice

- Description: Pumice is a light, porous volcanic rock with a rough texture.
- Formation: Forms from frothy lava that cools and depressurizes rapidly.
- Characteristics: Contains air bubbles; floats on water.
- Uses: Abrasives, lightweight concrete.

Tuff

- Description: Tuff is a rock made of volcanic ash that has compacted and cemented.
- Formation: Ash and small volcanic fragments settle and lithify.
- Characteristics: Soft, porous, and varies in color.
- Uses: Building material, decorative stone.

How to Identify Extrusive Igneous Rocks

Identification involves examining texture, mineral composition, color, and formation features.

Steps for identification:

1. Observe the texture: Fine-grained (aphanitic) textures indicate rapid cooling typical of extrusive rocks.
2. Check for glassiness: A glassy appearance suggests rapid cooling, as seen in obsidian.
3. Look for vesicles: Gas bubbles trapped in the rock are characteristic of volcanic rocks like pumice or basalt.
4. Assess color: Dark colors often indicate mafic composition (e.g., basalt), while light colors suggest felsic rocks (e.g., rhyolite).
5. Identify mineral content: Presence of minerals like quartz, feldspar, or pyroxene helps narrow down the type.

Tools that assist in identification include:

- Hand lens or microscope
- Streak plate
- Acid tests (for carbonate presence)

Checking All That Apply: Examples of Extrusive Igneous Rocks

Based on the above descriptions and identification criteria, the following are examples of extrusive igneous rocks:

- Basalt ☐
- Andesite ☐
- Rhyolite ☐
- Obsidian ☐
- Pumice ☐
- Tuff ☐

Other rocks like granite or diorite are intrusive and form beneath the surface, so they are not examples of extrusive rocks.

Summary: Key Takeaways

- Extrusive igneous rocks form from lava that cools quickly on Earth's surface.
- They typically have fine-grained, glassy, or vesicular textures.
- Examples include basalt, andesite, rhyolite, obsidian, pumice, and tuff.
- Identification involves examining texture, mineral composition, and appearance.
- Recognizing these rocks enhances understanding of volcanic activity and Earth's geology.

Conclusion

Knowing which rocks are extrusive igneous is essential for geologists and earth science enthusiasts. Recognizing examples like basalt, obsidian, pumice, and tuff allows for better interpretation of volcanic environments and Earth's internal processes. Whether for academic purposes, fieldwork, or personal interest, mastering igneous rock identification opens a window into Earth's dynamic crust and its ongoing geological evolution. Remember to always check all applicable options when identifying rocks and use proper tools for accurate assessment.

Frequently Asked Questions

Which of the following are examples of extrusive igneous rocks?

Basalt and rhyolite are common examples of extrusive igneous rocks.

Can granite be classified as an extrusive igneous rock?

No, granite is an intrusive igneous rock; extrusive examples include basalt

and obsidian.

What features typically help identify extrusive igneous rocks?

Extrusive rocks often have fine-grained textures or glassy surfaces due to rapid cooling.

Are volcanic rocks considered extrusive or intrusive?

Volcanic rocks are extrusive igneous rocks, formed from lava that cools quickly on the Earth's surface.

Which rock type would you classify as an extrusive igneous rock: pumice or gabbro?

Pumice is an extrusive igneous rock; gabbro is intrusive.

Is basalt an example of an extrusive or intrusive igneous rock?

Basalt is an example of an extrusive igneous rock.

Additional Resources

Which Are Examples Of Extrusive Igneous Rocks? Check All That Apply. (You May Use Your Igneous Rock Identification)

When delving into the fascinating world of geology, one of the most intriguing categories of rocks to explore is extrusive igneous rocks. These rocks form on or near the Earth's surface from lava that cools quickly after volcanic eruptions. Their rapid cooling results in fine-grained textures, often making them distinct from their intrusive counterparts, which cool slowly beneath the surface. If you're studying rock identification or simply interested in understanding Earth's geological processes, recognizing examples of extrusive igneous rocks is essential. This guide will walk you through the key features, examples, and identification tips to help you distinguish extrusive igneous rocks from other types.

Understanding Extrusive Igneous Rocks

Before examining specific examples, it is important to clarify what extrusive igneous rocks are and how they differ from intrusive igneous rocks.

What Are Igneous Rocks?

Igneous rocks are formed through the cooling and solidification of magma or lava. They are classified based on their origin and texture:

- Intrusive (Plutonic) Igneous Rocks: Formed when magma cools slowly beneath the Earth's surface, resulting in coarse-grained textures.
- Extrusive (Volcanic) Igneous Rocks: Formed when lava cools rapidly on or near the Earth's surface, resulting in fine-grained or glassy textures.

Characteristics of Extrusive Igneous Rocks

- Cooling Rate: Rapid cooling causes the formation of small crystals or a glassy texture.
- Texture: Generally fine-grained (aphanitic), sometimes glassy or vesicular.
- Appearance: Often have a uniform, smooth appearance due to the small crystal size; may contain gas bubbles (vesicles).

Common Examples of Extrusive Igneous Rocks

Now, let's explore some of the most well-known and identifiable examples of extrusive igneous rocks. Remember, when identifying these rocks, look for features such as grain size, color, texture, and presence of vesicles.

1. Basalt

Description:

Basalt is one of the most abundant extrusive igneous rocks on Earth, making up much of the oceanic crust. It forms from the rapid cooling of basaltic lava during volcanic eruptions.

Features:

- Usually dark-colored (black to dark gray)
- Fine-grained (aphanitic) texture
- May contain small mineral crystals visible with a hand lens
- Often has vesicles (gas bubbles) that give it a porous appearance

Common Locations:

- Ocean floors
- Volcanic islands (e.g., Hawaii)
- Lava flows

2. Andesite

Description:

Andesite is an extrusive igneous rock with intermediate silica content, often associated with volcanic arcs above subduction zones.

Features:

- Light to dark gray coloration
- Fine-grained texture
- Typically has a porphyritic texture (larger crystals embedded in a fine matrix)
- May contain vesicles and sometimes display a mottled appearance

Common Locations:

- Volcanic regions in South America, the Pacific Ring of Fire

3. Rhyolite

Description:

Rhyolite is a felsic extrusive igneous rock, rich in silica, and often associated with explosive volcanic activity.

Features:

- Light-colored (pink, white, or light gray)
- Fine-grained or aphanitic texture
- May exhibit a porphyritic texture with larger crystals (phenocrysts)
- Often glassy or contain gas bubbles (vesicles)

Common Locations:

- Volcanic domes and ash flows

4. Obsidian

Description:

Obsidian is a naturally occurring volcanic glass that forms from rapidly cooled felsic lava. It is characterized by its smooth, glassy appearance.

Features:

- Usually jet black or dark in color, but can be brown or greenish
- Glassy, smooth texture with no visible crystals
- Fractures conchoidally (smooth, curved surfaces)
- Usually lacks vesicles, but may contain small inclusions

Common Locations:

- Volcanic areas with high silica lava flows

5. Pumice

Description:

Pumice is a highly vesicular volcanic rock formed from frothy lava during explosive eruptions. It is so porous that it can float on water.

Features:

- Light-colored (white, gray, or pinkish)
- Very porous with numerous vesicles
- Soft enough to be scratched with a fingernail
- Usually lightweight and abrasive

Common Locations:

- Explosive volcanic eruptions, especially in rhyolitic or andesitic volcanoes

6. Vesicular Basalt

Description:

A variation of basalt, vesicular basalt contains numerous gas bubbles trapped during rapid cooling.

Features:

- Dark-colored, porous, and lightweight
- Vesicles visible to the naked eye
- Often used as a decorative stone or aggregate

Common Locations:

- Lava flows in volcanic regions

Check All That Apply: Examples of Extrusive Igneous Rocks

Given the above descriptions, here is a list of example rocks. Your task is to select all that are examples of extrusive igneous rocks:

- Basalt
- Granite
- Obsidian
- Gabbro
- Rhyolite
- Diorite
- Pumice
- Peridotite

Correct selections:

- Basalt
- Obsidian
- Rhyolite
- Pumice

Incorrect selections:

- Granite (intrusive, coarse-grained)
- Gabbro (intrusive)

- Diorite (intrusive)
- Peridotite (intrusive, ultramafic)

Tips for Identifying Extrusive Igneous Rocks

To accurately identify extrusive igneous rocks, consider the following tips:

1. Examine Crystal Size

Extrusive rocks typically have small crystals due to rapid cooling. If crystals are visible to the naked eye, they may be phenocrysts embedded in a fine matrix—indicative of a porphyritic texture.

2. Check Texture

Look for a glassy, vesicular, or fine-grained texture. Glassy textures suggest rapid cooling and the formation of volcanic glass like obsidian.

3. Observe Color

Color can often hint at mineral composition:

- Dark colors (black, dark gray) typically indicate mafic rocks like basalt.
- Light colors (pink, white) suggest felsic rocks like rhyolite.

4. Look for Vesicles

Gas bubbles trapped during eruption create vesicles. Rocks like pumice and vesicular basalt are characterized by their porous appearance.

5. Use a Hand Lens or Magnifier

Small crystal sizes or inclusions can be easier to see with magnification, aiding in more precise identification.

Summary: Which Are Examples Of Extrusive Igneous Rocks?

In summary, common examples of extrusive igneous rocks include:

- Basalt
- Obsidian
- Rhyolite
- Pumice
- Vesicular Basalt

Remember, these rocks are formed from lava that cools rapidly on the Earth's surface, resulting in fine-grained, glassy, or vesicular textures.

Recognizing these features allows geologists, students, and enthusiasts to accurately identify extrusive igneous rocks in the field or laboratory.

Final Thoughts

Understanding the differences among various igneous rocks is fundamental to grasping Earth's geological processes. Whether you're identifying rocks in the field, studying petrology, or simply expanding your knowledge, knowing the examples of extrusive igneous rocks and their distinctive features is invaluable. Practice by examining local volcanic rocks or samples, and utilize your knowledge of textures, colors, and features to become proficient in igneous rock identification.

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