

# Interactive Rock Identification

Click your favorite rock to enter





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Sample 1



Sample 2



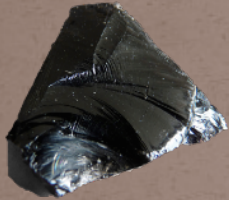
Sample 3



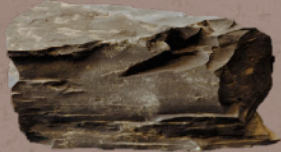
Sample 4



Sample 5



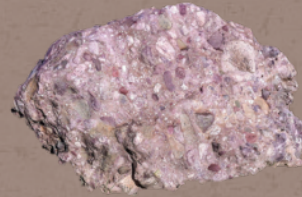
Sample 6



Sample 7



Sample 8



Sample 9



Sample 10



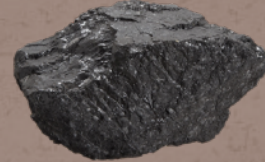
Sample 11



Sample 12



Sample 13



Sample 14



Sample 15



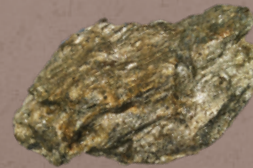
Sample 16



Sample 17



Sample 18



Sample 19

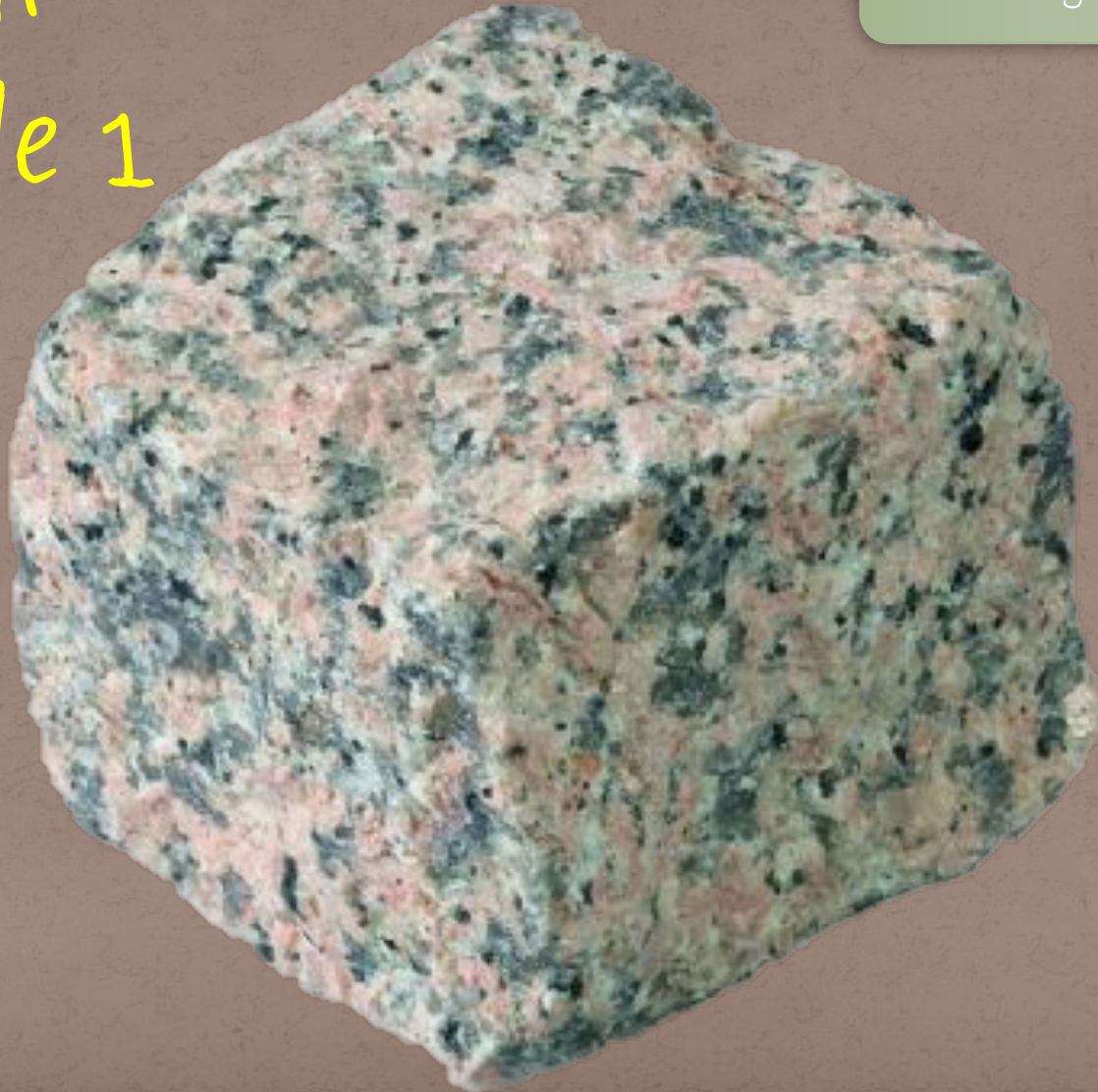
Begin with any rock!



Credits/Terms of Use



# Rock Sample 1



Click the rock to  
begin!

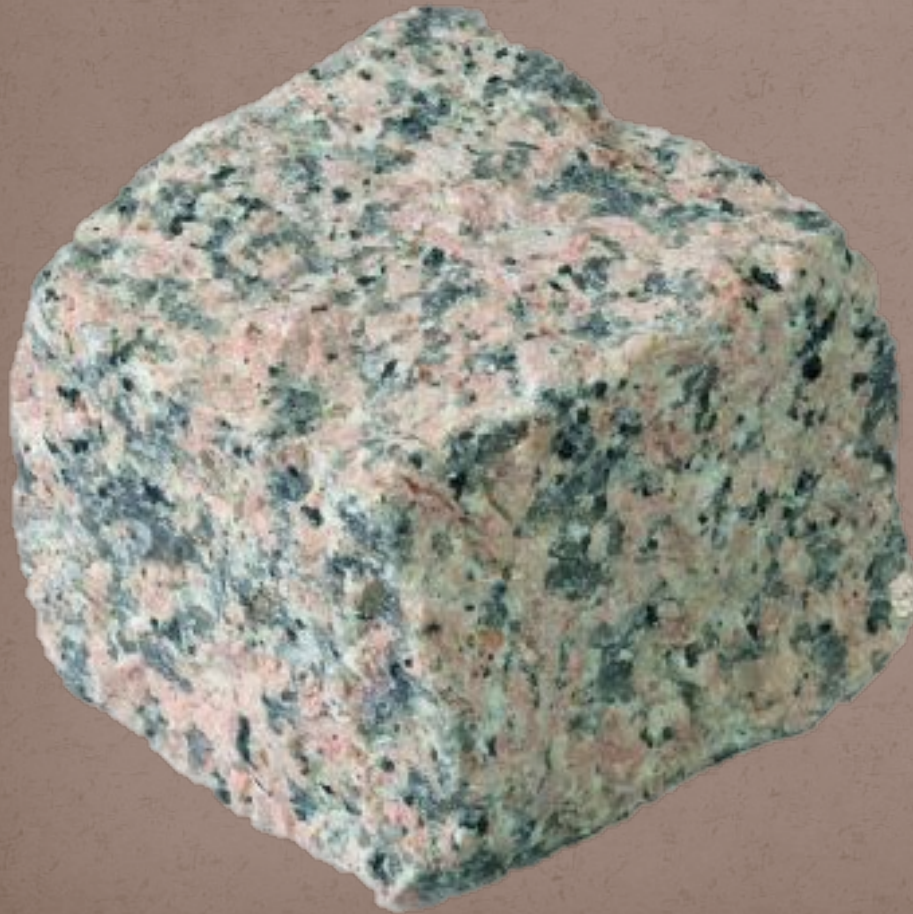




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Sample 1

The texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn  
more about a  
rock's texture!





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Sample 1

Yes! This rock has a *crystalline* texture.

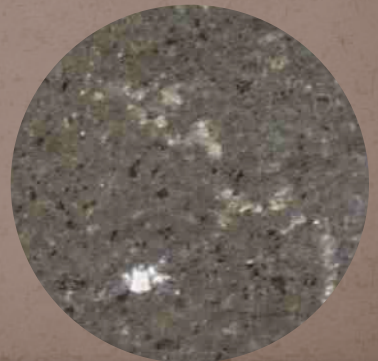
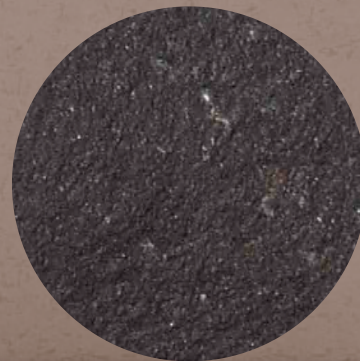
Are the crystal grains large (coarse grained) or small (fine grained)?



Examples of Coarse Crystal Grains



Examples of Fine Crystal Grains





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### Sample 1

That's right! The rock is *coarse grained*.

Does this rock contain light colored minerals  
(*feldspar, quartz*) or is made of mostly dark  
colored minerals (*biotite, hornblende, olivine*)?

Light

Dark



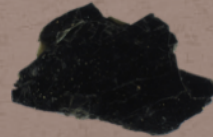
Plagioclase  
Feldspar



Orthoclase  
Feldspar



Quartz



Biotite



Hornblende



Olivine

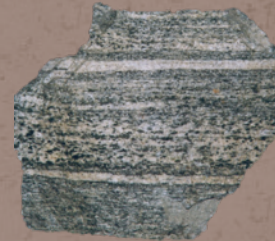


## Sample 1

Correct! The rock contains both light and dark colored minerals.  
Are the minerals lined up in stripes or bands (layers)?

Yes

No



Examples of Rocks with minerals lined up in stripes or bands (layers).





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### Sample 1

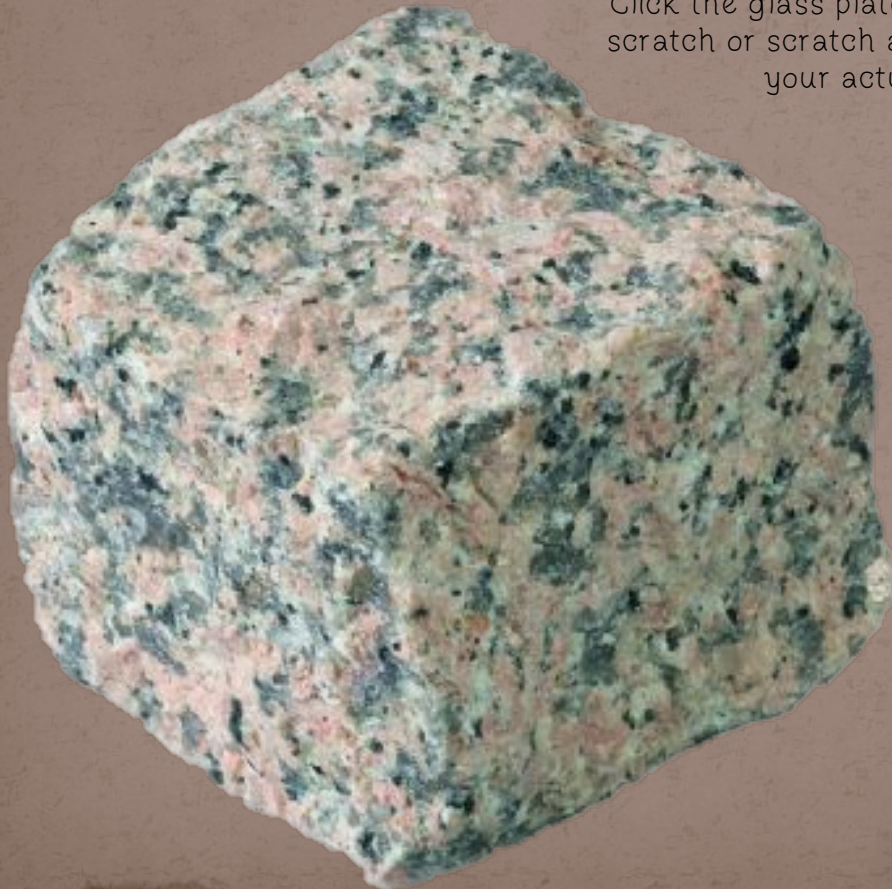
Correct! The rock *does not* have layers.

## Will this rock scratch glass?

Yes

No

Click the glass plate picture to test for a scratch or scratch a real glass plate with your actual sample.



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



## Sample 1

Next

Yes! Sample 1 will scratch glass.



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



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Sample 1

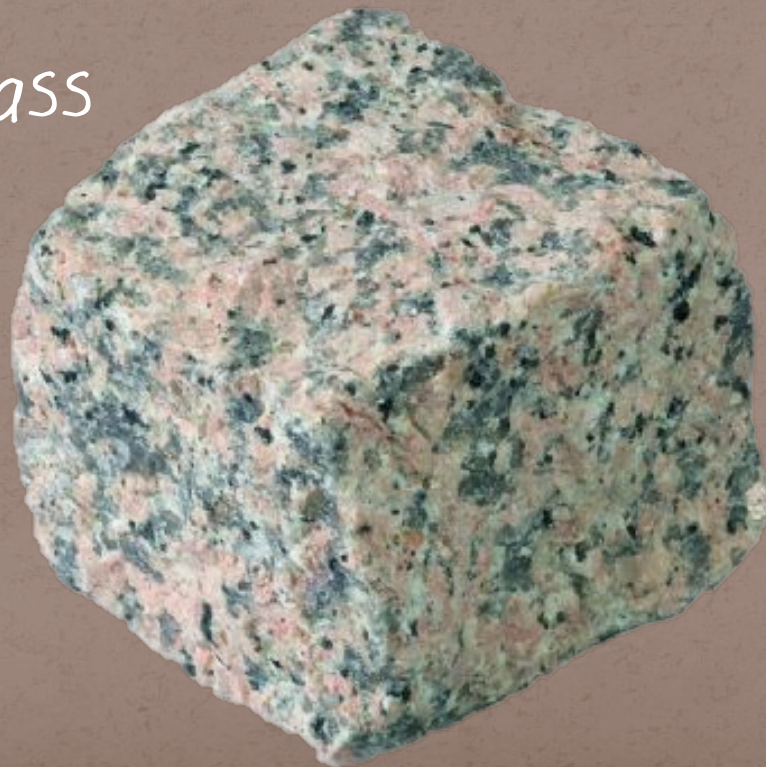
Crystalline

Coarse Grained

Light and Dark colored minerals

No Layers

Scratches Glass



Sample 1  
is ...





Sample 1

# Granite

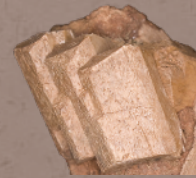
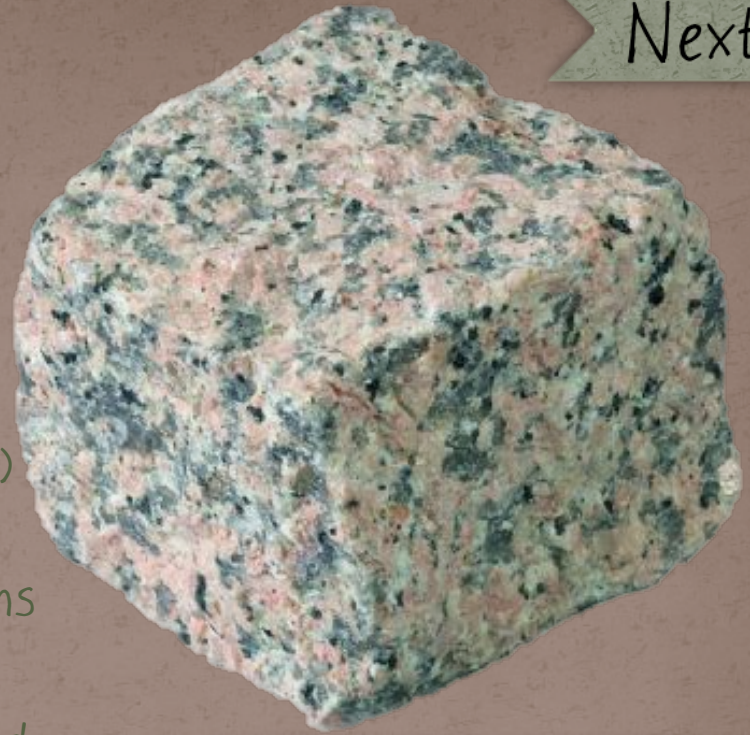
Granite is an intrusive igneous rock that cooled slowly from hot molten rock (magma) buried deep under the ground. Because the rock cooled slowly, the mineral crystal grains are large.

Granite contains both light and dark colored minerals scattered randomly (not arranged in rows or bands).

Granite is commonly used as a building material for floors, walls, countertops, and more. Granite is the most abundant rock on land (continental crust).

Varieties of granite include pink granite, gray granite, and red granite.

Next



Orthoclase  
Feldspar



Quartz




Biotite



Hornblende



# Sample 1

Pick another rock 

## Varieties of Granite



Red Granite with red feldspar



Pink Granite with pink feldspar



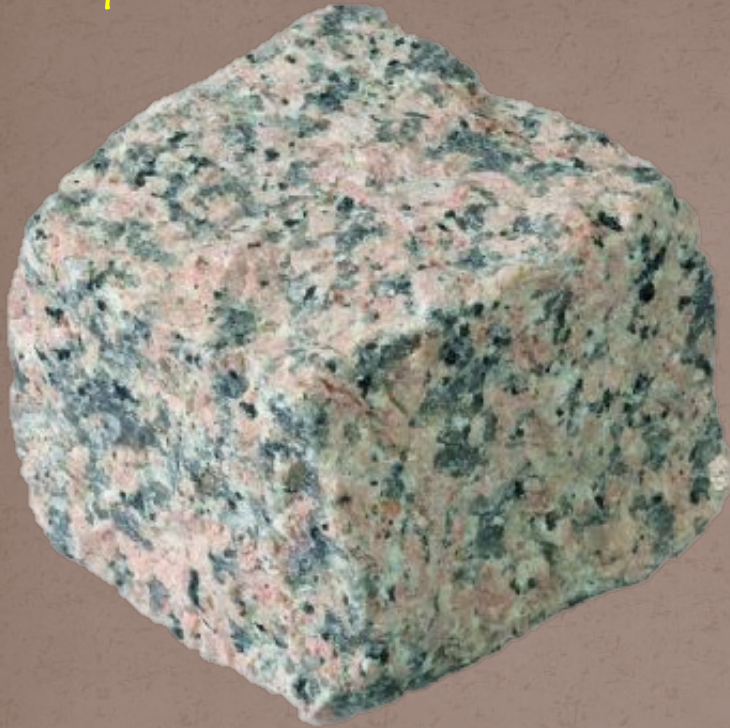
Gray Granite with gray to white feldspar





# Sample 1

[Back to Sample 1](#)



Oops! That's the wrong answer. Let's start this rock sample over again.

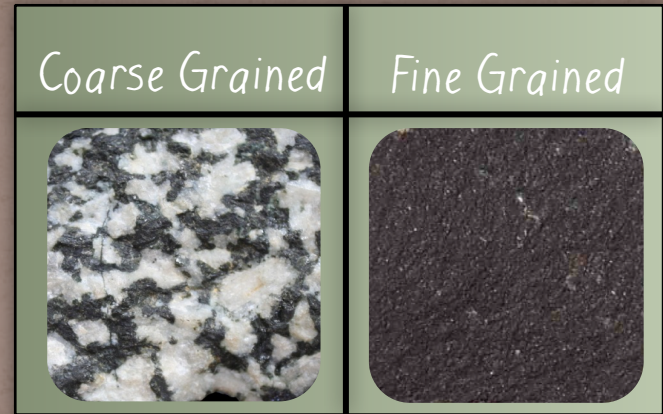




# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy



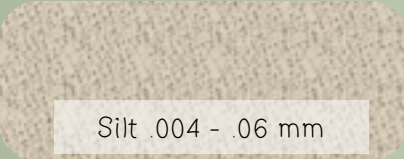
**Crystalline** - mineral crystals with flat shiny surfaces that reflect light like little mirrors. Crystals can be coarse grained or fine grained. [Read more](#)

Crystalline



**Clastic** - mineral or rock pieces that are stuck together to make up the rock. These pieces are named according to their size:

Clastic

Coarse Grained	Medium Grained	Fine Grained
 <p>Pebble 4-64 mm</p>  <p>Coarse Sand .5 - 2 mm</p>  <p>Granule 2 - 4 mm</p>	 <p>Medium Sand .25 - .5 mm</p>  <p>Fine Sand .06 - .25 mm</p>	 <p>Silt .004 - .06 mm</p>  <p>Clay &gt; .004mm</p>

**Glassy** - the rock's surface is smooth like glass. →

Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material

(sea shells, coral, plants, etc.). These rocks are usually fine grained. →





# Crystal Grains:

Use your  
hand lens!

[Back to Rock  
Texture](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Large crystals are "coarse grained" while smaller crystals are "fine grained".

Click any picture to  
[Enlarge](#)



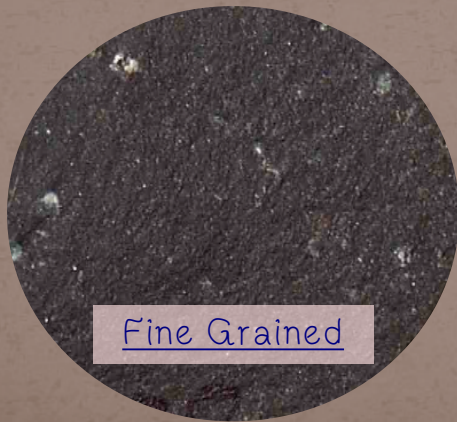
[Coarse Grained](#)



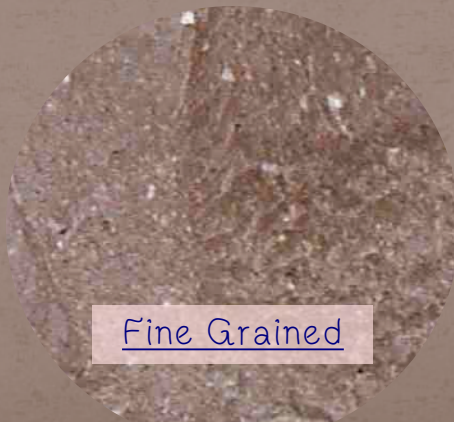
[Coarse Grained](#)



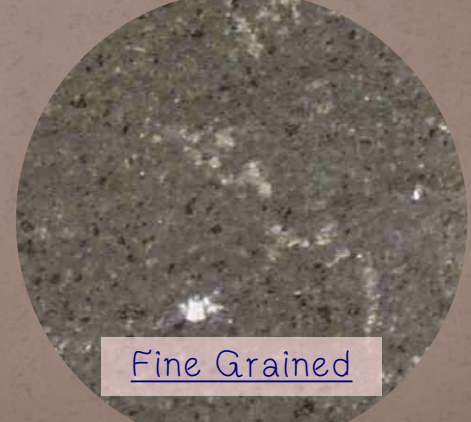
[Coarse Grained](#)



[Fine Grained](#)



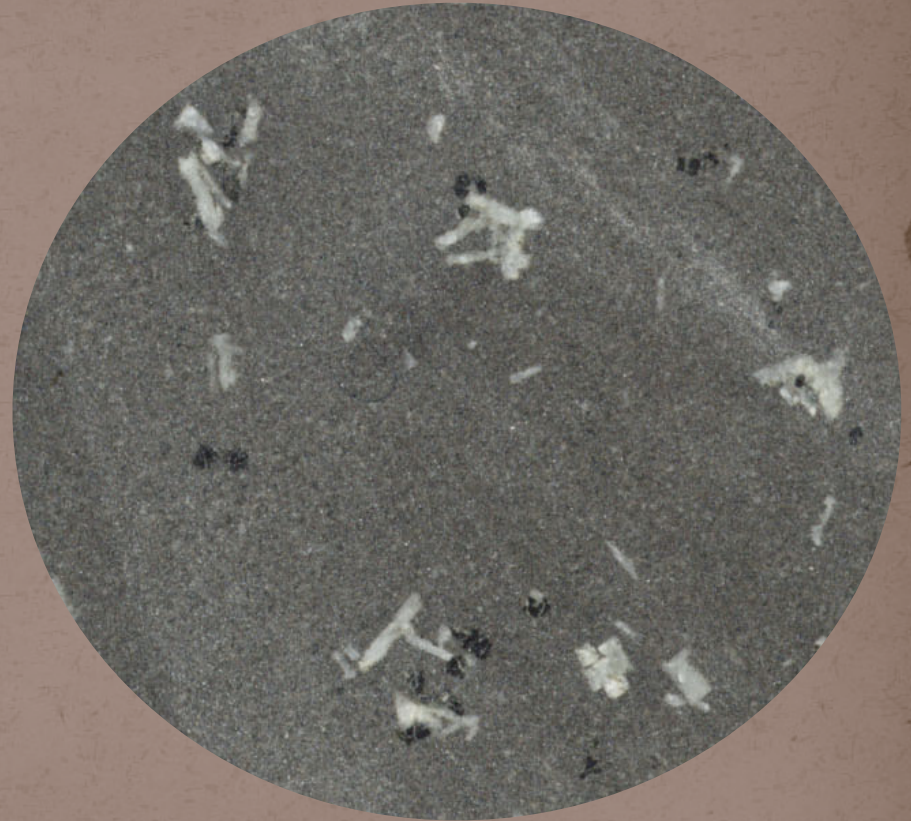
[Fine Grained](#)



[Fine Grained](#)



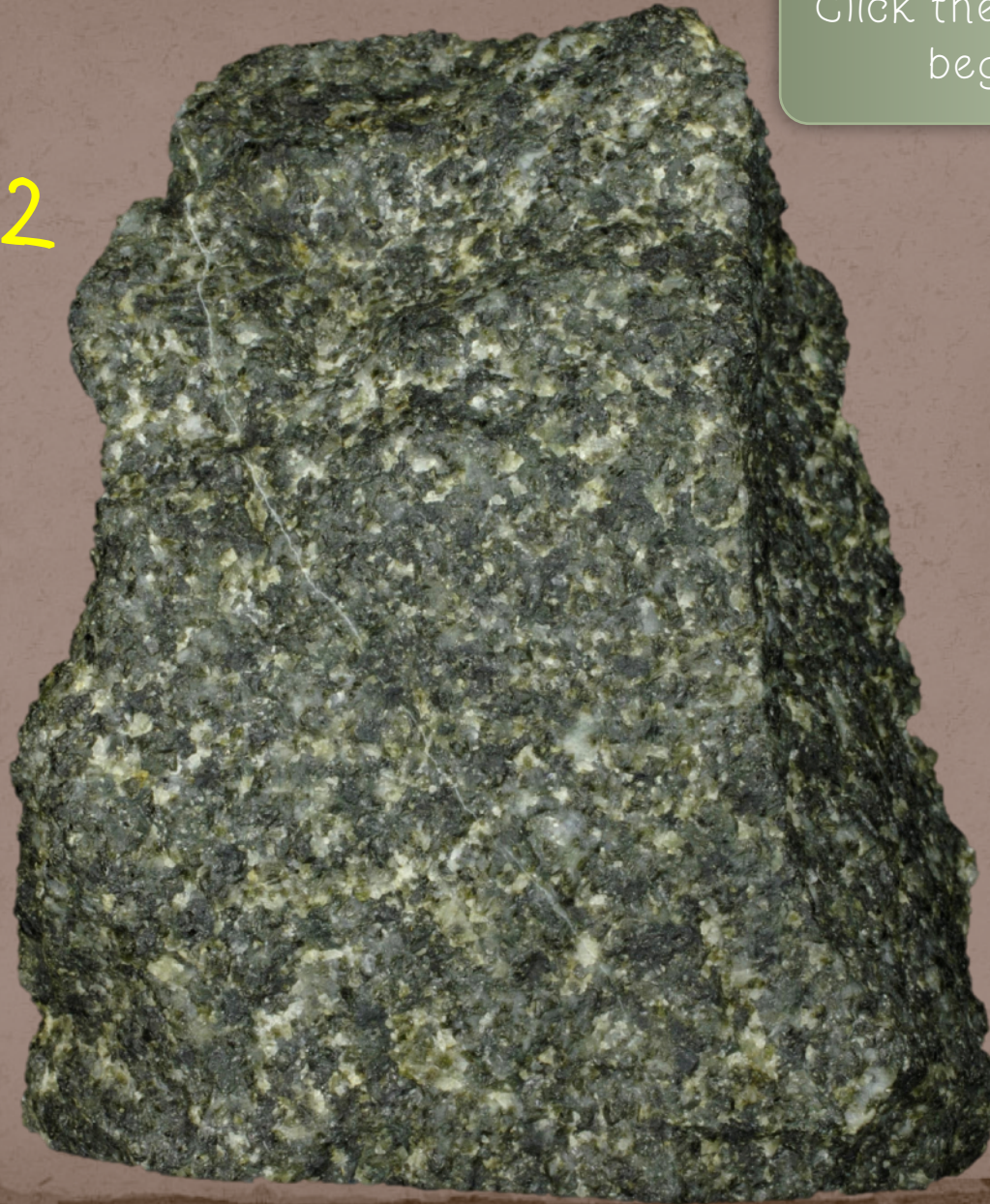
Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



# Rock Sample 2



Click the rock to  
begin!





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Sample 2

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn  
more about a  
rock's texture!





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Sample 2

Yes! This rock has a *crystalline* texture.

Are the crystal grains large (coarse grained) or small (fine grained)?

Large

Small



Examples of Coarse Crystal Grains



Examples of Fine Crystal Grains

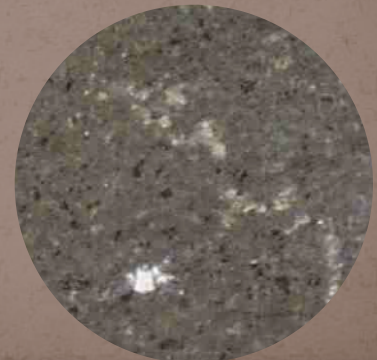
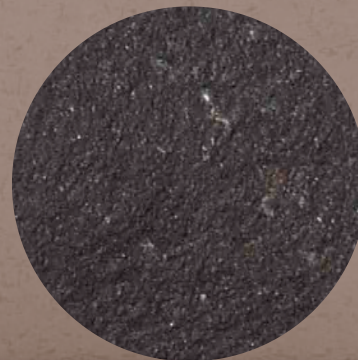




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Sample 2

That's right! The rock is coarse grained.

Does this rock contain many light colored minerals (feldspar, quartz) or is it made of mostly dark colored minerals (biotite, hornblende, olivine)?



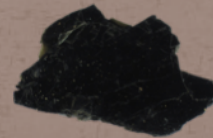
Plagioclase  
Feldspar



Orthoclase  
Feldspar



Quartz



Biotite



Hornblende



Olivine

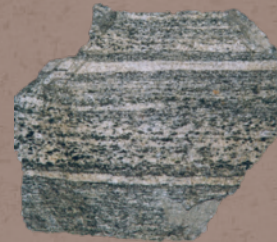


## Sample 2

Correct! The rock contains *mostly dark colored minerals*.  
Are the minerals lined up in stripes or bands (layers)?

Yes

No



Examples of Rocks with minerals lined up in stripes or bands (layers).





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Sample 2

Right again! The mineral crystals *are not* aligned in bands (layers).

Will this rock scratch glass?

Yes

No

Click the glass plate picture to test for a scratch or scratch a real glass plate with your actual sample.



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



## Sample 2

Next

Yes! Sample 2 will scratch glass.



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



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Sample 2

Crystalline

Coarse Grained

Mostly Dark colored minerals

No Layers

Scratches Glass



Sample 2  
is ...



Click me



## Sample 2

Next

# Gabbro

Gabbro is an intrusive igneous rock that cooled slowly from hot molten rock (magma) buried deep under the ground. Because the rock cooled slowly, the mineral crystal grains are large.

Gabbro contains mostly dark colored minerals with some light colored feldspar but no quartz (minerals are not arranged in rows or bands).

Gabbro is commonly used as a building material for floors, walls, countertops, and more.

Varieties of gabbro depend upon the mineral content and rate of cooling.



Plagioclase  
Feldspar



Olivine




Biotite



Hornblende



Sample 2

Pick another rock 

# Varieties of Gabbro



Gabbro with reddish feldspar



Gabbro with hornblende



Gabbro Pegmatite very course grained



Gabbro medium grained



# Sample 2

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Oops! That's the wrong answer. Let's start this rock sample over again.




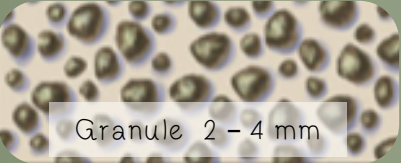

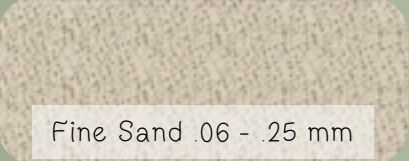
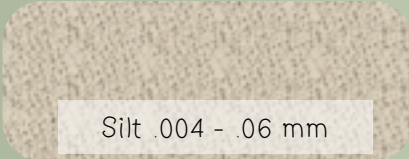



# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy

**Crystalline** - mineral crystals with flat shiny surfaces that reflect light like little mirrors. Crystals can be coarse grained or fine grained. [Read more](#)

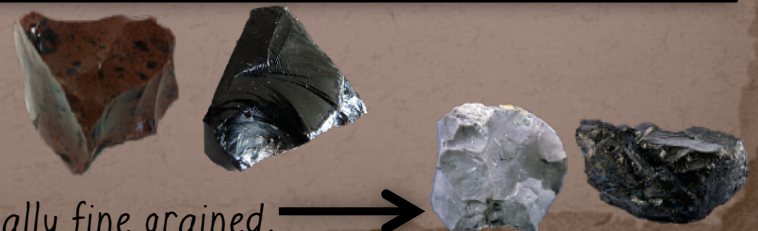
**Clastic** - mineral or rock pieces that are stuck together to make up the rock. These pieces are named according to their size:



Coarse Grained	Medium Grained	Fine Grained
 <p>Pebble 4-64 mm</p>  <p>Coarse Sand .5 - 2 mm</p>  <p>Granule 2 - 4 mm</p>	 <p>Medium Sand .25 - .5 mm</p>  <p>Fine Sand .06 - .25 mm</p>	 <p>Silt .004 - .06 mm</p>  <p>Clay &gt; .004mm</p>

**Glassy** - the rock's surface is smooth like glass.  $\longrightarrow$   
Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material (sea shells, coral, plants, etc.). These rocks are usually fine grained.  $\longrightarrow$





# Crystal Grains:

Use your hand lens!

[Back to Rock Texture](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Large crystals are "coarse grained" while smaller crystals are "fine grained".

Click any picture to [Enlarge](#)



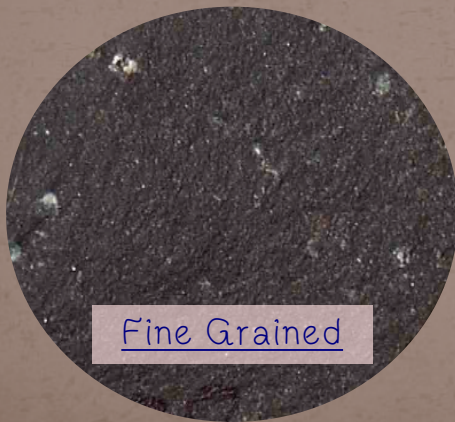
[Coarse Grained](#)



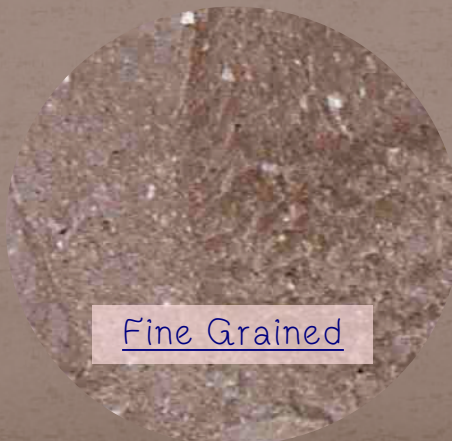
[Coarse Grained](#)



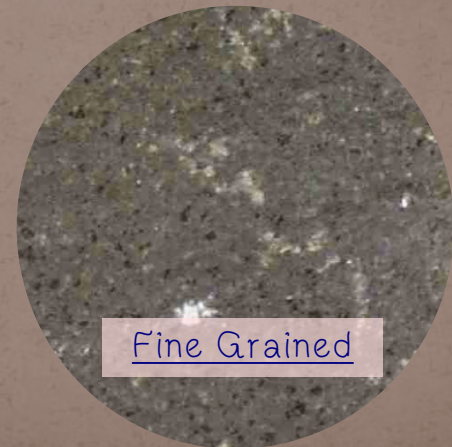
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



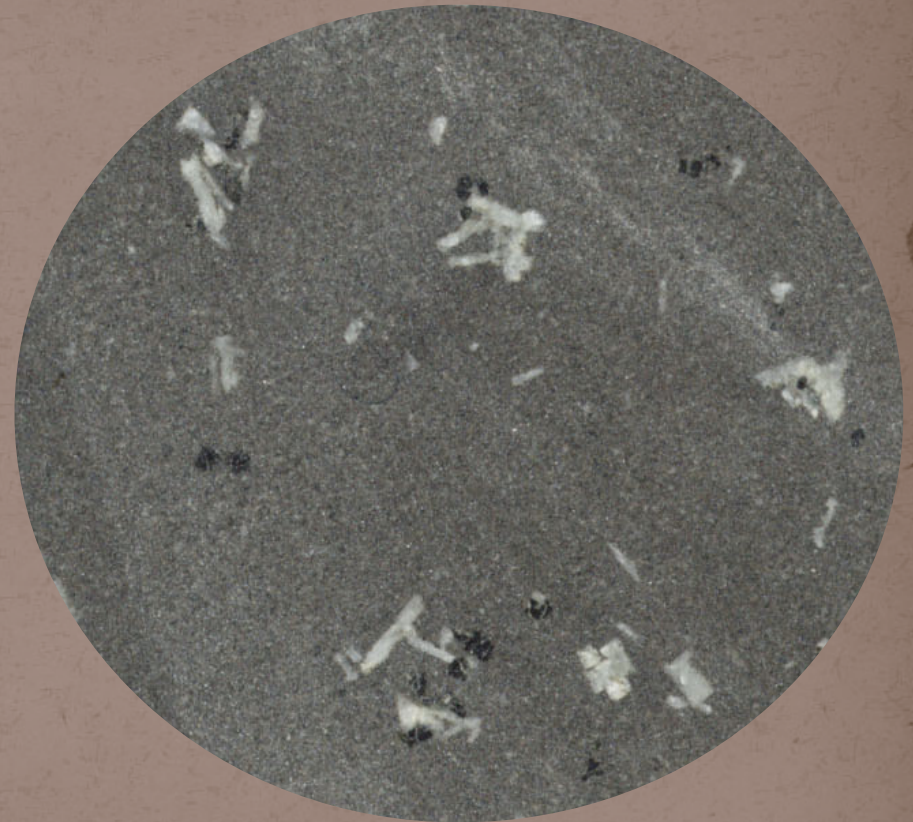
[Fine Grained](#)



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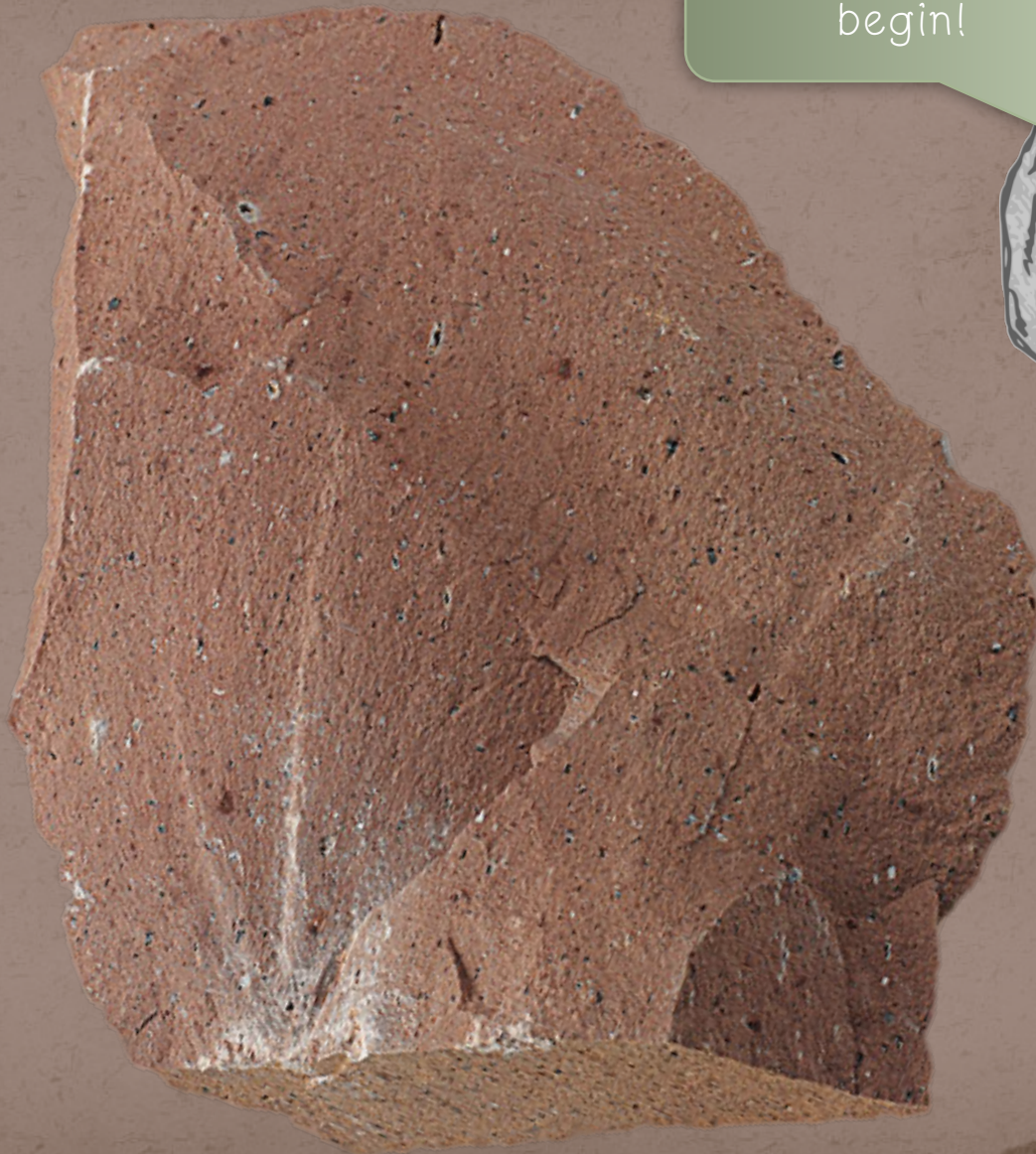
Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



# Rock Sample 3



Click the rock to  
begin!





## Sample 3

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn  
more about a  
rock's texture!



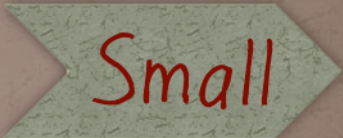


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# Sample 3

Yes! The rock has a *crystalline* texture.

Are the crystal grains large (coarse grained) or small (fine grained)?



Examples of Coarse Crystal Grains



Examples of Fine Crystal Grains

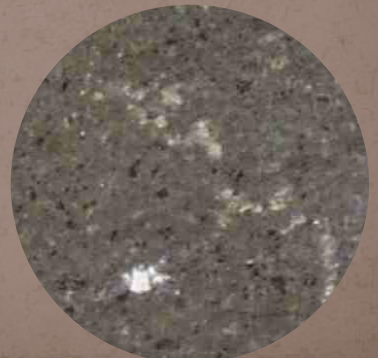
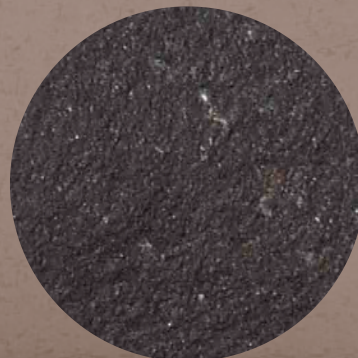




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Sample 3

That's right! The rock is fine grained.

Does this rock contain many light colored minerals (feldspar, quartz) or is made of mostly dark colored minerals (biotite, hornblende, olivine)?

Light

Dark



Plagioclase  
Feldspar



Orthoclase  
Feldspar



Quartz



Biotite



Hornblende



Olivine



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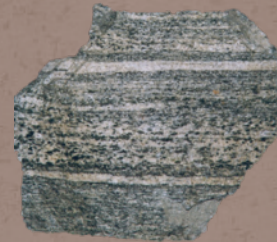
Sample 3

Correct! The rock contains mostly light colored minerals.

Are the minerals lined up in stripes or bands (layers)?

Yes

No



Examples of Rocks with minerals lined up in stripes or bands (layers).





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Sample 3

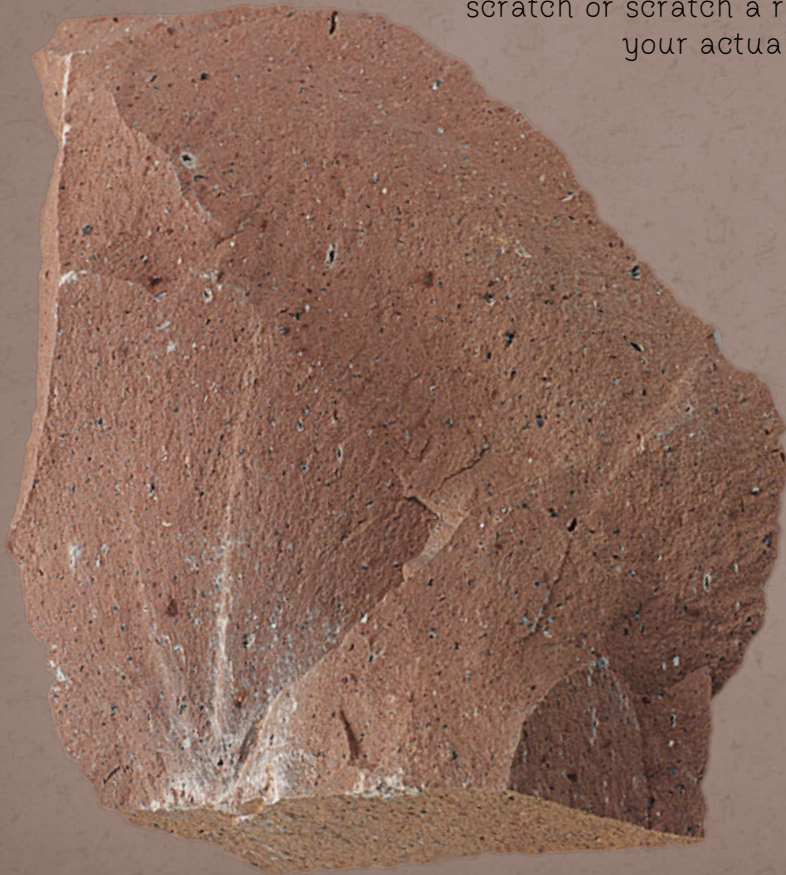
Right again! The mineral crystals are *not* aligned in bands (layers).

Will this rock scratch glass?

Yes

No

Click the glass plate picture to test for a scratch or scratch a real glass plate with your actual sample.



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



## Sample 3

Next

Yes! Sample 3 will scratch glass.



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



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Sample 3

Crystalline

Fine Grained

Many light colored minerals

No Layers

Scratches Glass



Sample 3  
is ...



Click me



## Sample 3

# Rhyolite

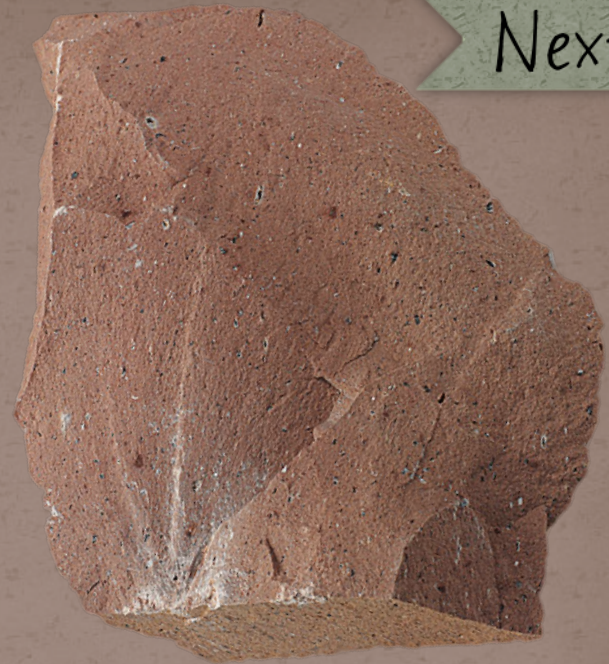
Rhyolite is an extrusive igneous rock that cooled quickly from hot molten rock (lava) at the Earth's surface. Because the rock cooled quickly, the mineral crystal grains are small.

Rhyolite contains both light and dark colored minerals scattered randomly (not arranged in rows or bands). Rhyolite has the same minerals as Granite.

Rhyolite is commonly used as a building material, road fill, and as an abrasive.

Varieties of Rhyolite include pink Rhyolite, gray Rhyolite, and more.

Next



Orthoclase  
Feldspar



Quartz




Biotite



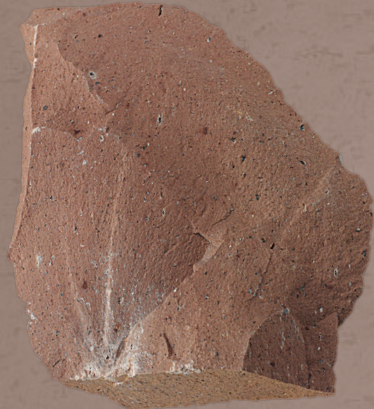
Hornblende



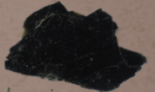
Sample 3

Pick another rock 

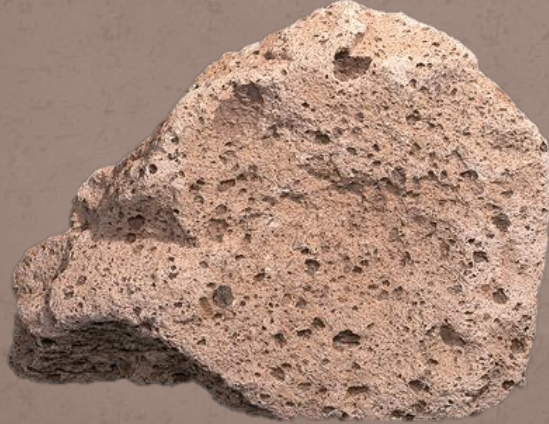
# Varieties of Rhyolite



Pink Rhyolite with pink feldspar



Rhyolite with hornblende and mica



Rhyolite Tuff with welded mineral crystals



Gray Rhyolite with gray to white feldspar



# Sample 3

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Oops! That's the wrong answer. Let's start this rock sample over again.

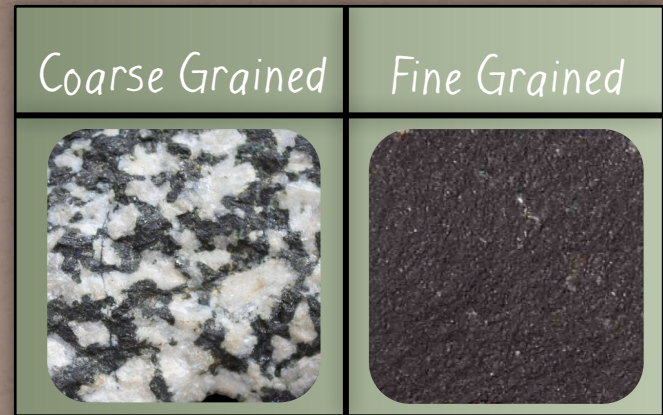




# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy

**Crystalline** - mineral crystals with flat shiny surfaces that reflect light like little mirrors. Crystals can be coarse grained or fine grained. [Read more](#)

**Clastic** - mineral or rock pieces that are stuck together to make up the rock. These pieces are named according to their size:



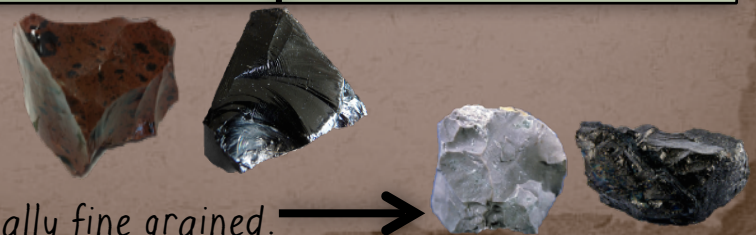
Coarse Grained	Medium Grained	Fine Grained
<p>Pebble 4-64 mm</p> <p>Coarse Sand .5 - 2 mm</p> <p>Granule 2 - 4 mm</p>	<p>Medium Sand .25 - .5 mm</p> <p>Fine Sand .06 - .25 mm</p>	<p>Silt .004 - .06 mm</p> <p>Clay &gt; .004mm</p>

**Glassy** - the rock's surface is smooth like glass. →

Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material

(sea shells, coral, plants, etc.). These rocks are usually fine grained. →





# Crystal Grains:

Use your  
hand lens!

[Back to Rock  
Texture](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Large crystals are "coarse grained" while smaller crystals are "fine grained".

Click any picture to  
[Enlarge](#)



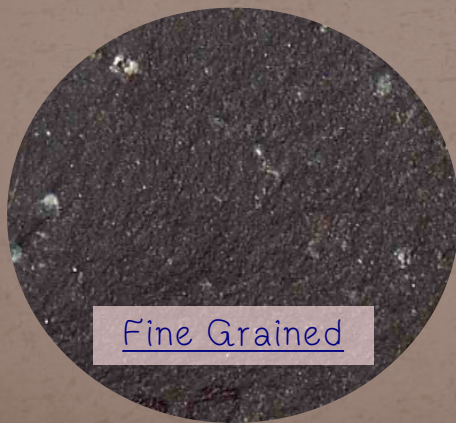
[Coarse Grained](#)



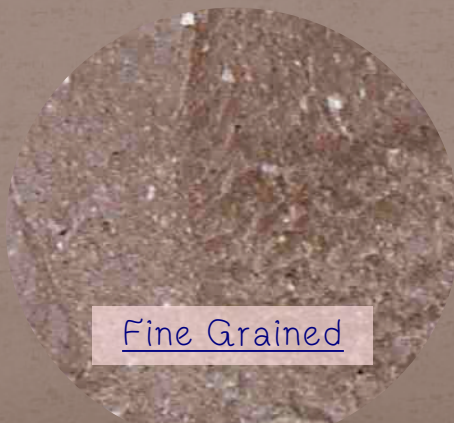
[Coarse Grained](#)



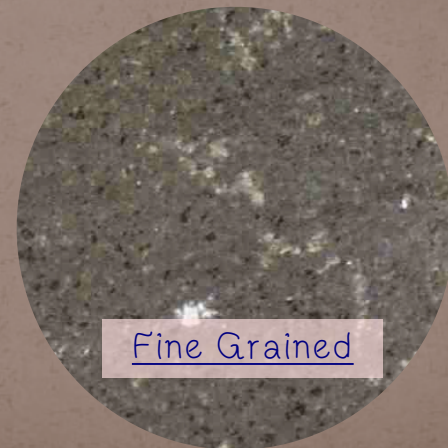
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



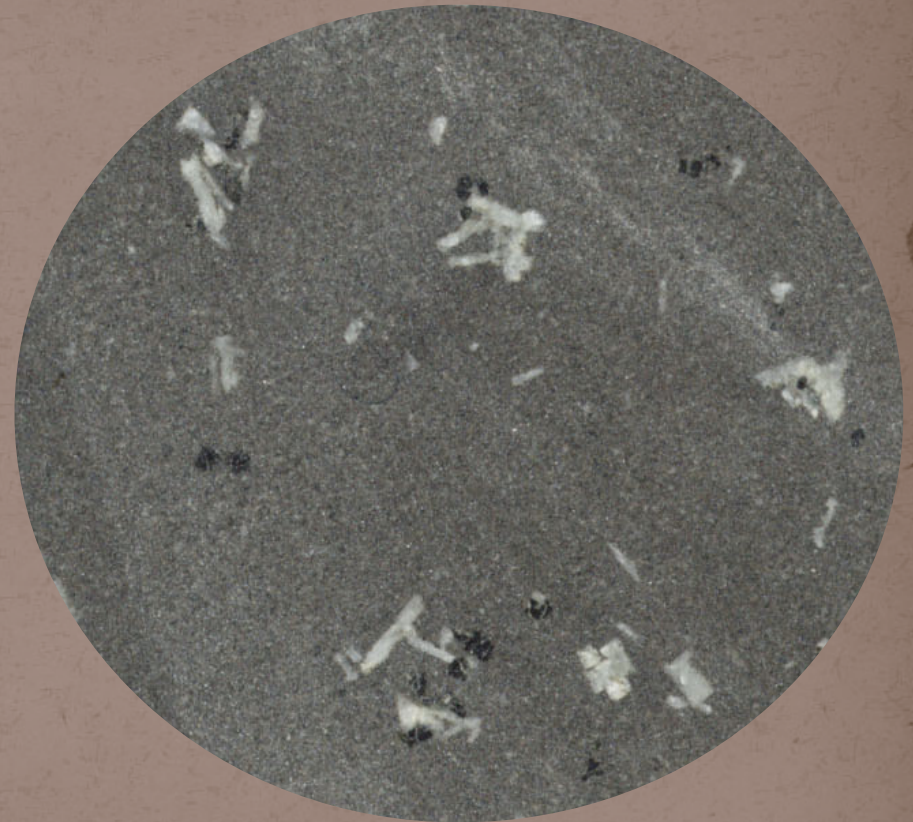
[Fine Grained](#)



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Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



# Rock Sample 4

Click the rock to  
begin!





## Sample 4

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn  
more about a  
rock's texture!





Table of Contents

# Sample 4

Yes! The rock has a *crystalline* texture.

Are the crystal grains large (coarse grained) or small (fine grained)?



Examples of Coarse Crystal Grains



Examples of Fine Crystal Grains

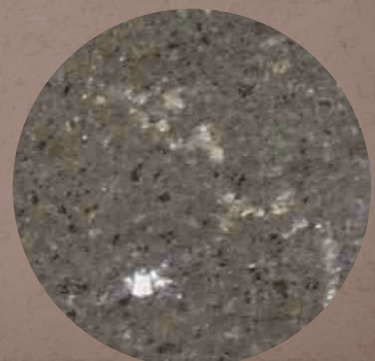
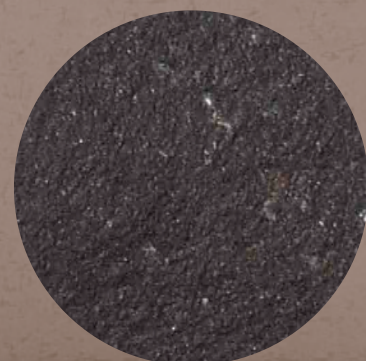




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Sample 4

That's right! The rock is fine grained.

Does this rock contain many light colored minerals (feldspar, quartz) or is made of mostly dark colored minerals (biotite, hornblende, olivine)?



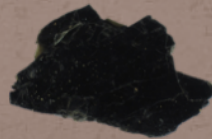
Plagioclase  
Feldspar



Orthoclase  
Feldspar



Quartz



Biotite



Hornblende



Olivine



Table of Contents

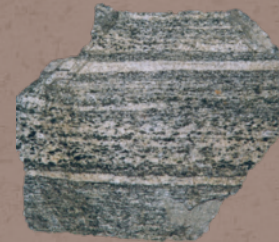
Sample 4

Correct! The rock contains mostly dark colored

Are the minerals lined up in stripes or bands (layers)?

Yes

No



Examples of Rocks with minerals lined up in stripes or bands (layers).





## Table of Contents

### Sample 4

Right again! The mineral crystals *are not* aligned in bands (layers).

## Will this rock scratch glass?

Click the glass plate picture to test for a scratch or scratch a real glass plate with your actual sample.

Yes

No



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



## Sample 4

Next

Yes! Sample 4 will scratch glass.



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



Table of Contents

Sample 4

Crystalline Texture

Fine Grained

Mostly Dark colored minerals

No Layers

Scratches Glass



Sample 4  
is ...



Click me



## Sample 4

# Basalt

Next

Basalt is an extrusive igneous rock that cooled quickly from hot molten rock (lava) at the surface of the Earth. Because the rock cooled quickly, the mineral crystal grains are small. Basalt is the most abundant rock on Earth (much of the ocean floor is Basalt).

Basalt contains mostly dark colored minerals with some light colored feldspar but no quartz (minerals are not arranged in rows or bands).

Basalt is commonly used as a filler in construction as it adds strength to concrete. It is also used as a heat insulator and an electrical insulator.



Plagioclase  
Feldspar



Olivine



Biotite




Hornblende



Sample 4

# Varieties of Basalt

Pick another rock 



*Vesicular Basalt*  
with tiny holes formed by escaping gas



*Vesicular Basalt* formed from flowing lava



*Basalt Columns* formed in volcanic vents



# Sample 4

[Back to Sample 4](#)



Oops! That's the wrong answer. Let's start this rock sample over again.




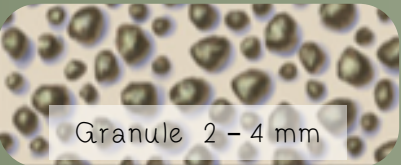


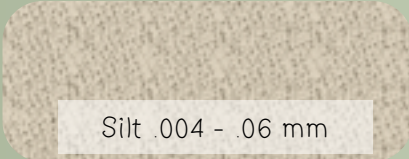



# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy

**Crystalline** - mineral crystals with flat shiny surfaces that reflect light like little mirrors. Crystals can be coarse grained or fine grained. [Read more](#)

**Clastic** - mineral or rock pieces that are stuck together to make up the rock. These pieces are named according to their size:



Coarse Grained	Medium Grained	Fine Grained
 <p>Pebble 4-64 mm</p>  <p>Coarse Sand .5 - 2 mm</p>  <p>Granule 2 - 4 mm</p>	 <p>Medium Sand .25 - .5 mm</p>  <p>Fine Sand .06 - .25 mm</p>	 <p>Silt .004 - .06 mm</p>  <p>Clay &gt; .004mm</p>

**Glassy** - the rock's surface is smooth like glass. →

Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material

(sea shells, coral, plants, etc.). These rocks are usually fine grained. →





# Crystal Grains:

Use your  
hand lens!



[Back to Rock  
Texture](#)

Click any picture to  
[Enlarge](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Large crystals are "coarse grained" while smaller crystals are "fine grained".



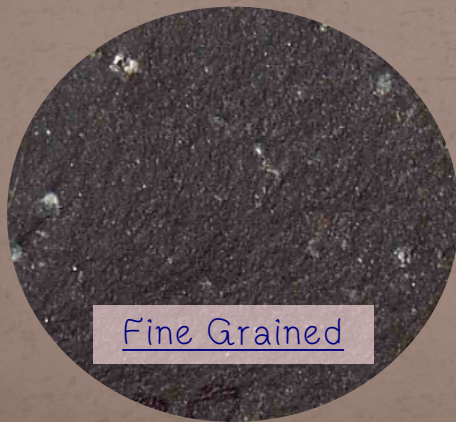
[Coarse Grained](#)



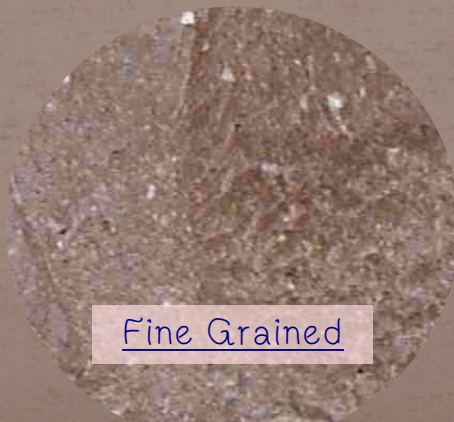
[Coarse Grained](#)



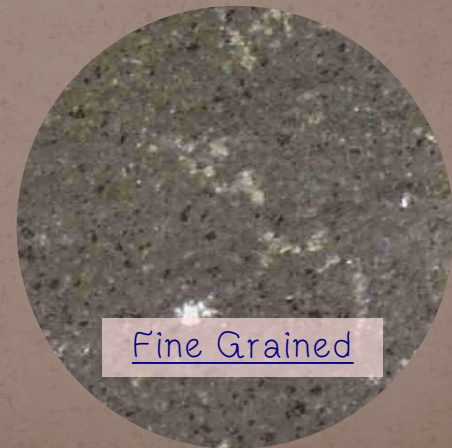
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



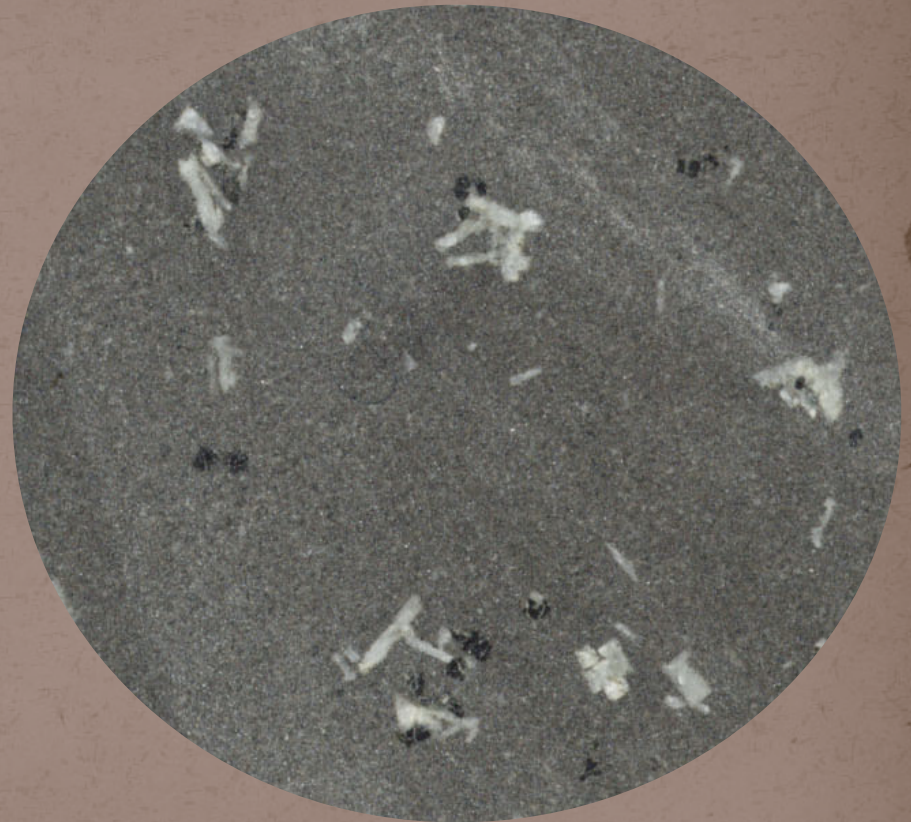
[Fine Grained](#)



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[Back to Crystal Grains](#)

Course Grained ...rock cooled slowly

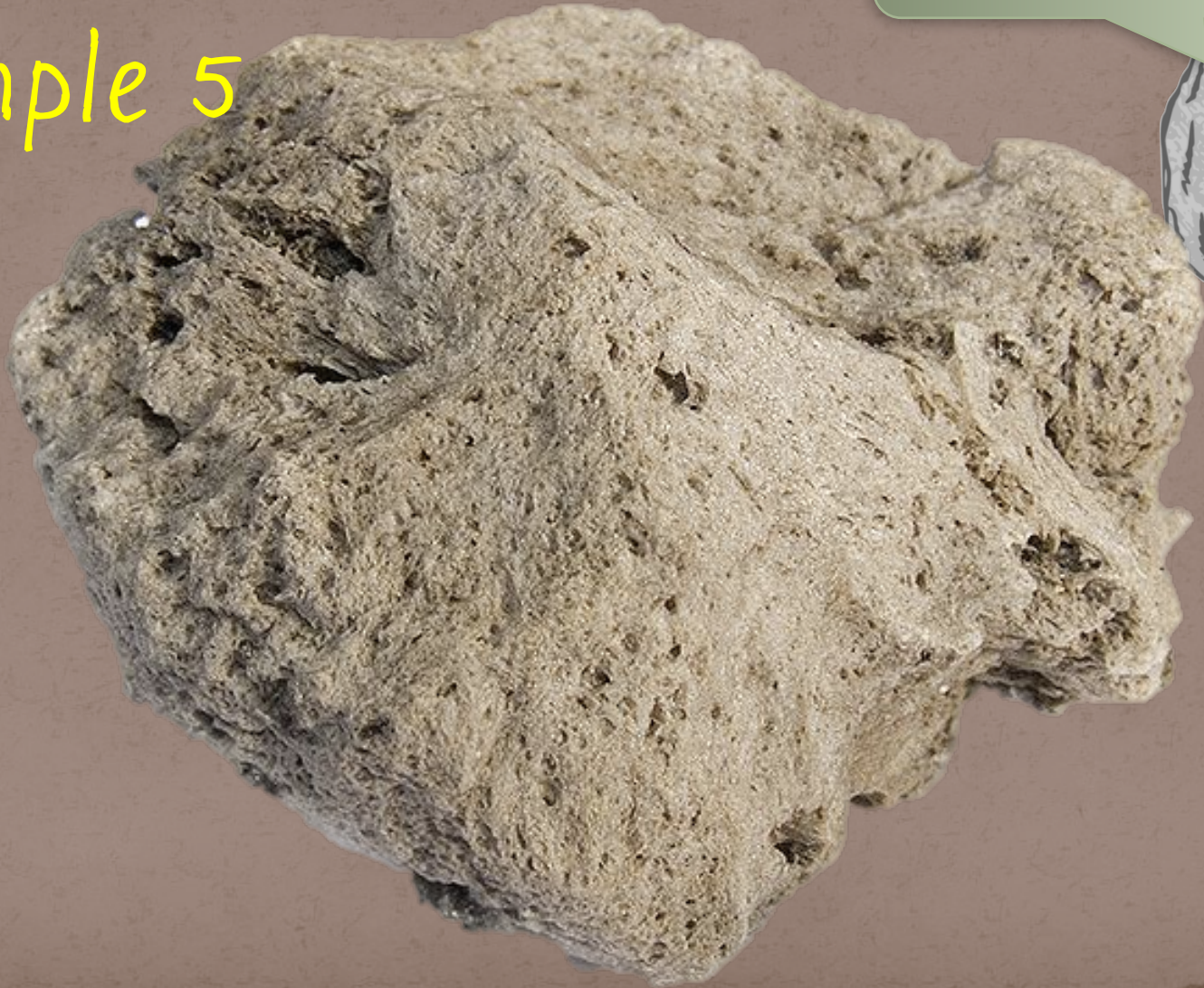


Fine Grained ...rock cooled quickly



# Rock Sample 5

Click the rock to  
begin!





Sample 5

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn more about a rock's texture!

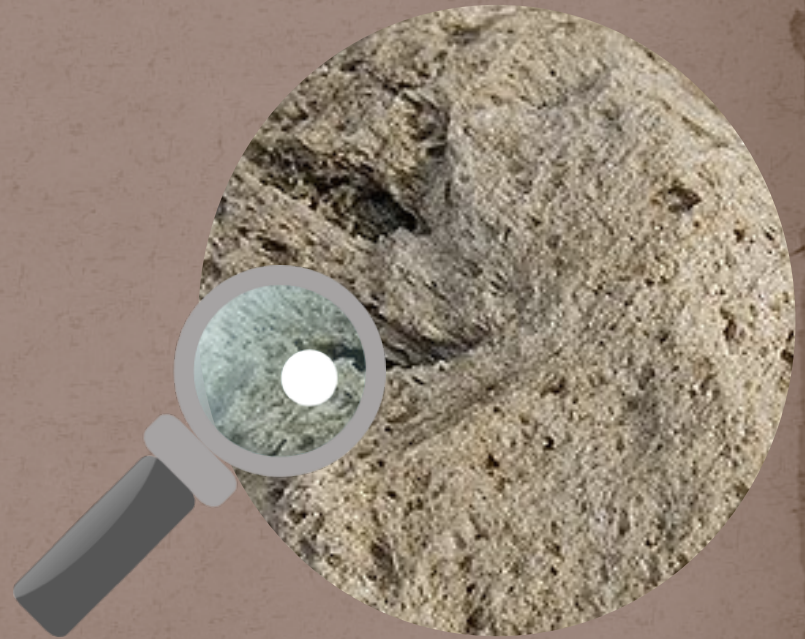




## Sample 5

Next

That's right! This rock has a special type of glassy texture called a *frothy glass*.



If you have an actual rock sample, look at it with a hand lens. Otherwise, look closely at this picture.



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Sample 5

Does this rock contain mostly light colored minerals (feldspar, quartz) or is made of mostly dark colored minerals (biotite, hornblende, olivine)?

Light

Dark



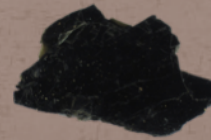
Plagioclase  
Feldspar



Orthoclase  
Feldspar



Quartz



Biotite



Hornblende



Olivine



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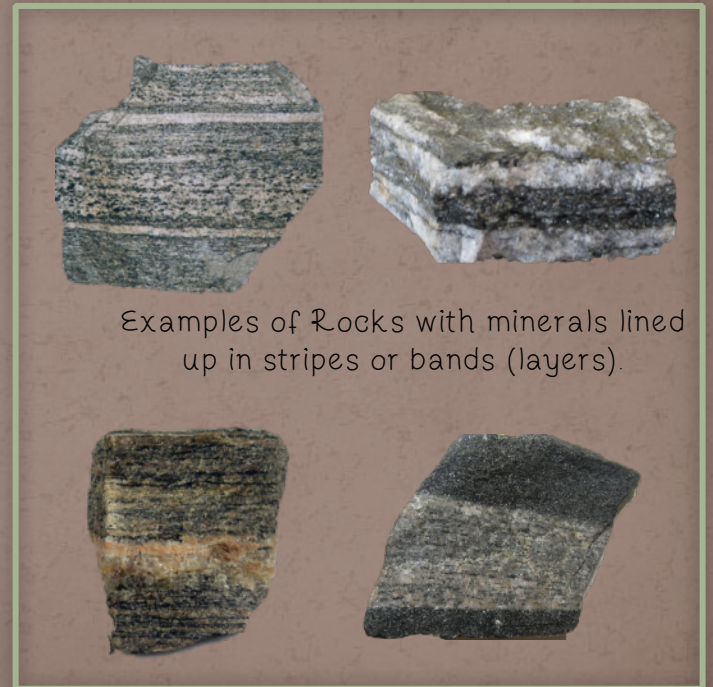
Sample 5

Correct! The rock contains mostly light colored minerals.

Are the minerals lined up in stripes or bands (layers)?

Yes

No



Examples of Rocks with minerals lined up in stripes or bands (layers).



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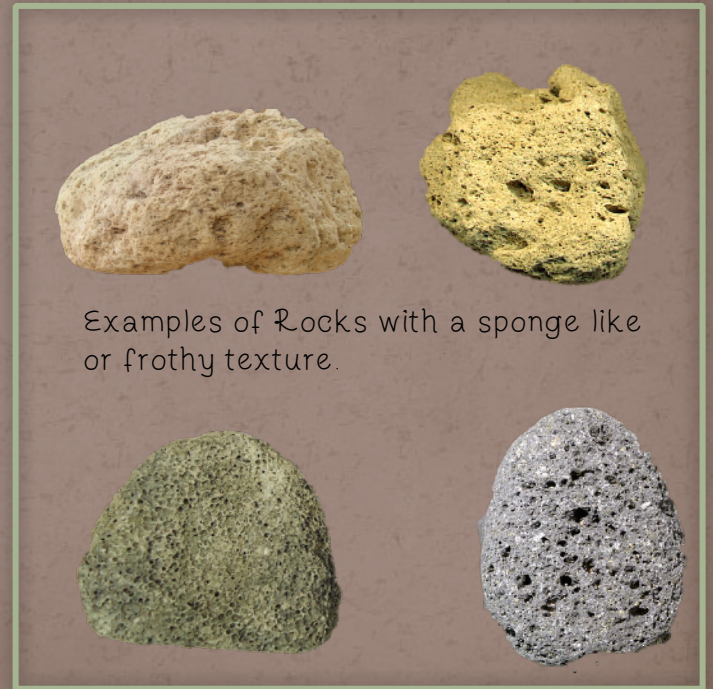
Sample 5

Right again! The mineral crystals *are not* aligned in bands (layers).

Is the rock full of tiny holes (gas bubbles) making it look like a sponge?

Yes

No



Examples of Rocks with a sponge like or frothy texture.



## Sample 5

Next

Yes! Sample 5 is full of tiny holes formed by escaping gas as the rock formed.





Table of Contents

Sample 5

Frothy Glass Texture

Mostly light colored minerals

No Layers

Full of holes (gas bubbles)



Sample 5  
is ...



Click me



Sample 5

# Pumice

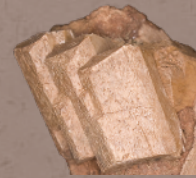
Next



Pumice is an extrusive igneous rock that cooled very quickly from hot molten rock (lava) at the surface of the Earth. Because the rock cooled quickly, and because the lava had a lot of trapped gasses, the rock texture is a frothy glass.

Pumice contains both light and dark colored minerals but they are usually hard to identify. Sometimes sparkly mica crystals can be seen. Pumice has the same minerals as Granite.

Pumice is commonly used as an additive to concrete, as an abrasive, and is the stone used to "stone wash" jeans.



Orthoclase  
Feldspar



Quartz




Biotite



Hornblende



Sample 5

Pick another rock 

# Varieties of Pumice



White Pumice



Pumice with yellow tint



Gray Pumice



Pumice with Biotite crystals



# Sample 5

[Back to Sample 5](#)



Oops! That's the wrong answer. Let's start this rock sample over again.

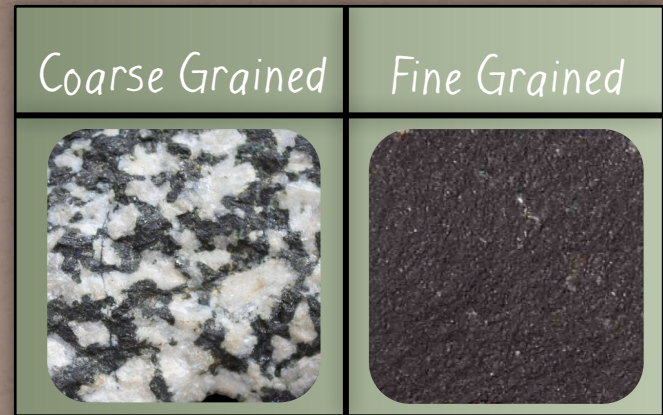


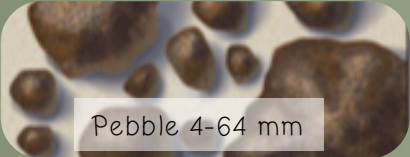


# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy

**Crystalline** - mineral crystals with flat shiny surfaces that reflect light like little mirrors. Crystals can be coarse grained or fine grained. [Read more](#)

**Clastic** - mineral or rock pieces that are stuck together to make up the rock. These pieces are named according to their size:



Coarse Grained	Medium Grained	Fine Grained
 <p>Pebble 4-64 mm</p>  <p>Coarse Sand .5 - 2 mm</p>  <p>Granule 2 - 4 mm</p>	 <p>Medium Sand .25 - .5 mm</p>  <p>Fine Sand .06 - .25 mm</p>	 <p>Silt .004 - .06 mm</p>  <p>Clay &gt; .004mm</p>

**Glassy** - the rock's surface is smooth like glass.  $\longrightarrow$   
Note: a Frothy glass only looks smooth under magnification

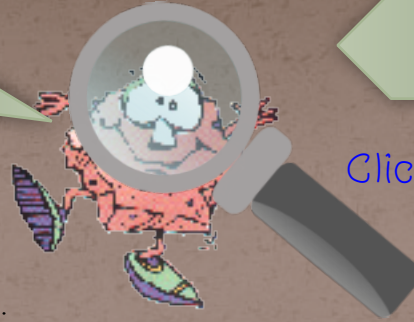
**Other** - formed from dissolved minerals or organic material (sea shells, coral, plants, etc.). These rocks are usually fine grained.  $\longrightarrow$





# Crystal Grains:

Use your  
hand lens!



[Back to Rock  
Texture](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Click any picture to  
[Enlarge](#)

Large crystals are "coarse grained" while smaller crystals are "fine grained".



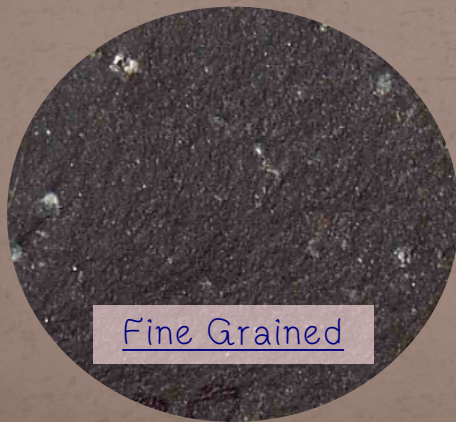
[Coarse Grained](#)



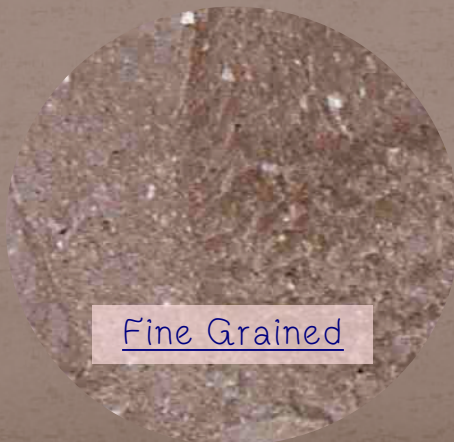
[Coarse Grained](#)



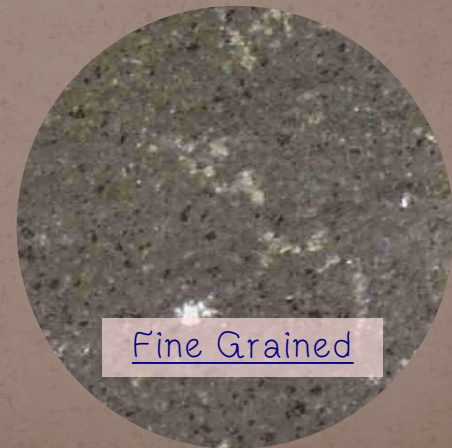
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



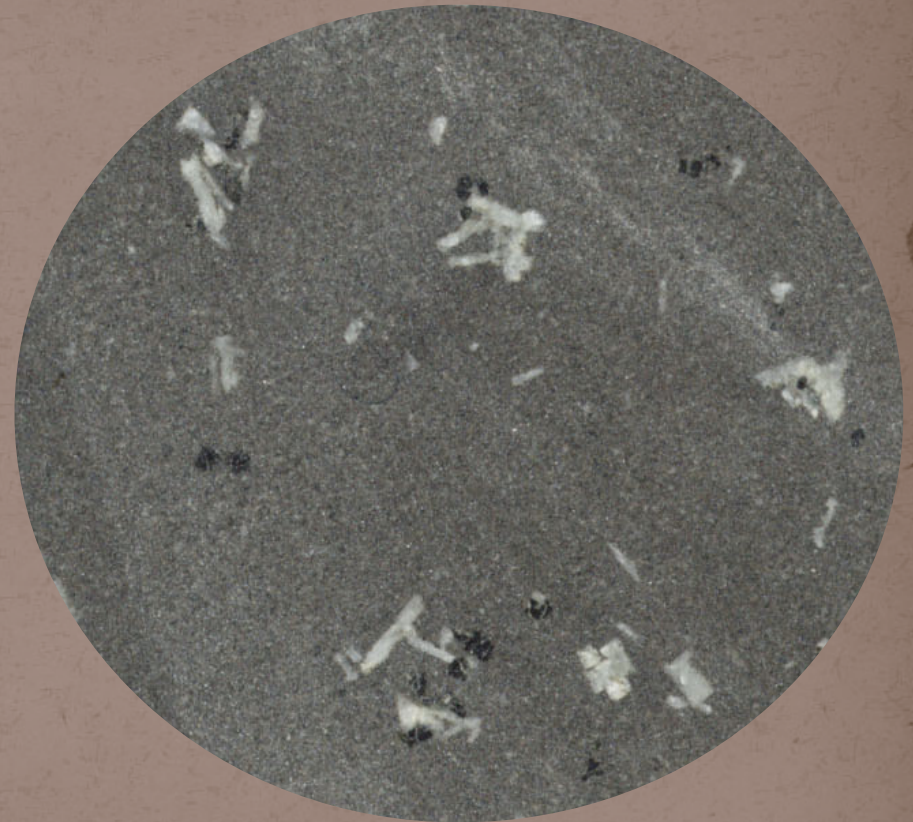
[Fine Grained](#)



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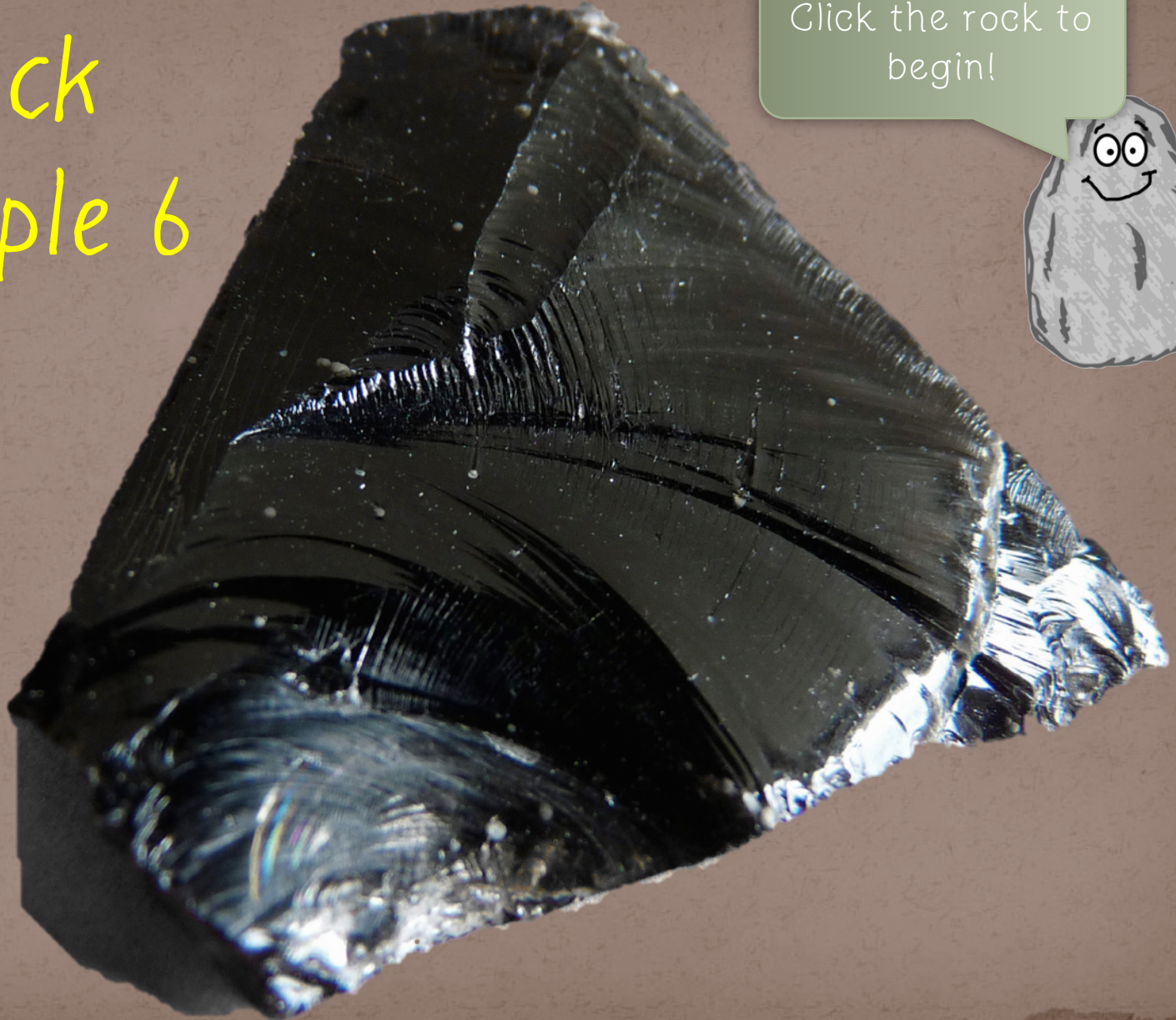
Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



# Rock Sample 6



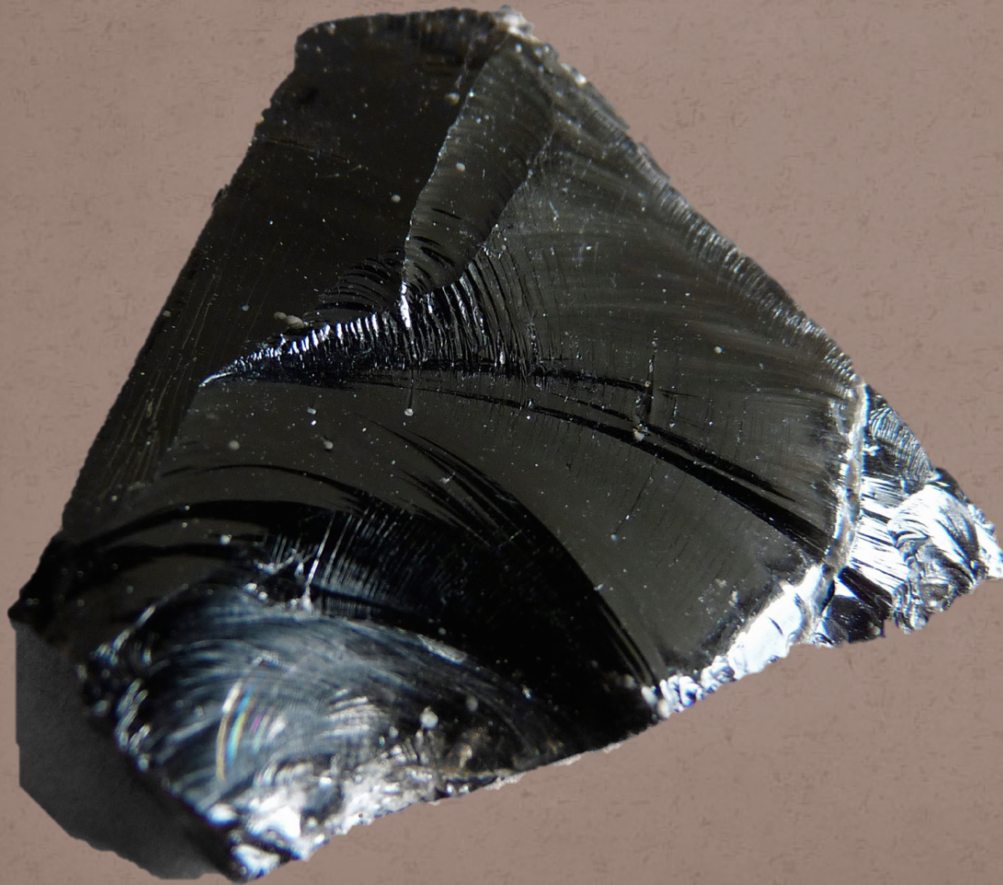
Click the rock to  
begin!





Sample 6

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn  
more about a  
rock's texture!





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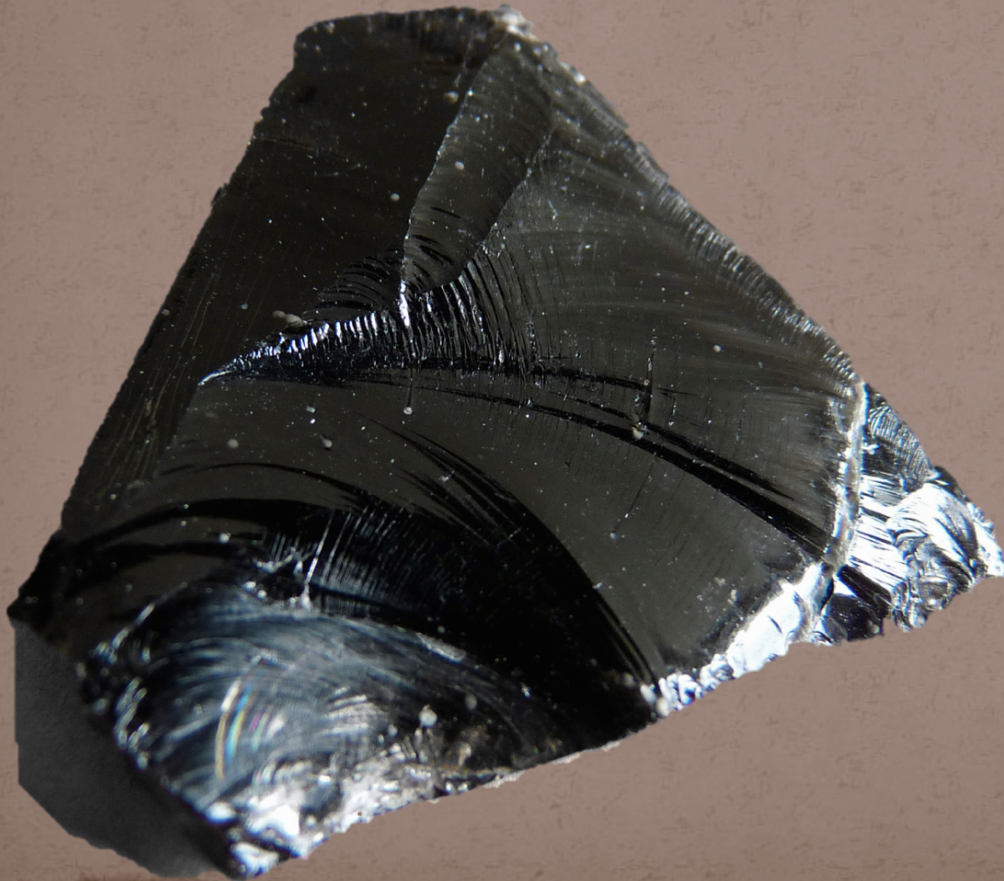
Sample 6

Yes! The rock has a *glassy* texture.

Is the entire rock mostly light colored or dark colored?

Light

Dark



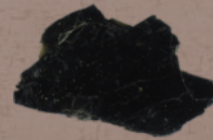
Plagioclase  
Feldspar



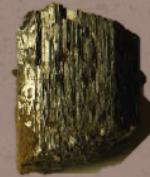
Orthoclase  
Feldspar



Quartz



Biotite



Hornblende



Olivine



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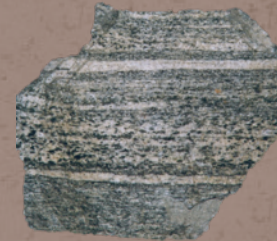
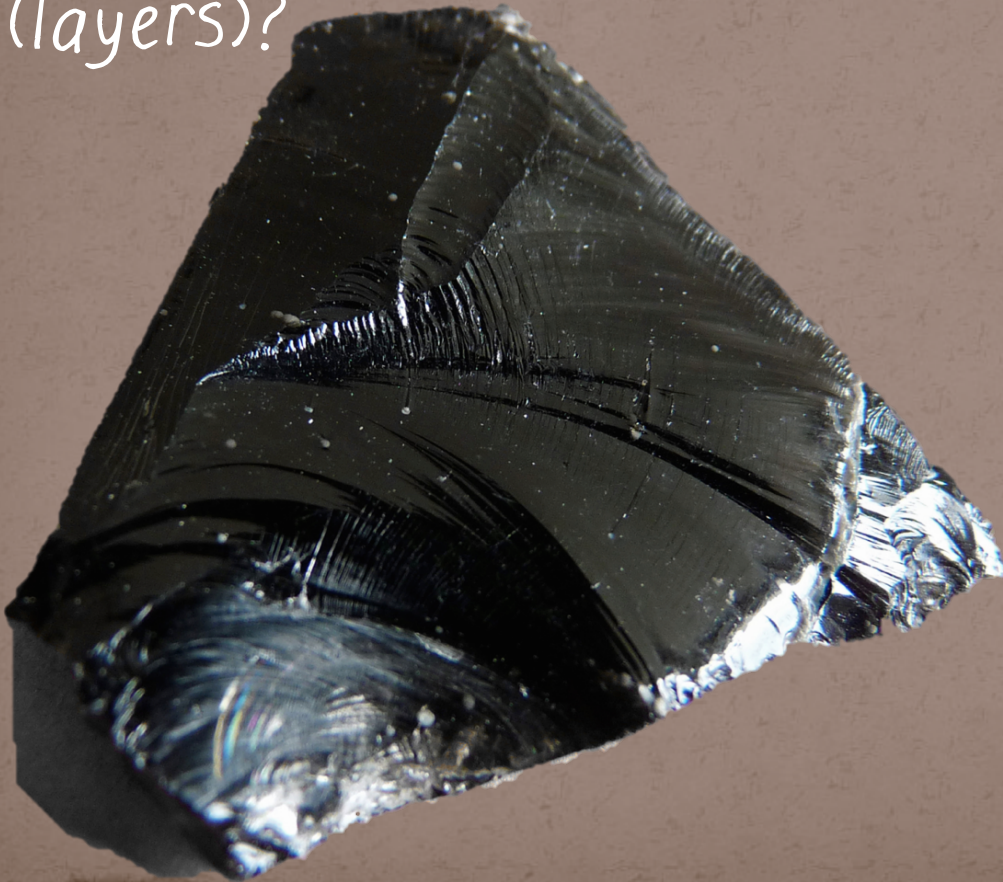
### Sample 6

Correct! The rock is mostly dark colored (even though it does contain some light colored minerals).

Does the rock have stripes or bands (layers)?

Yes

No



Examples of Rocks with minerals lined up in stripes or bands (layers).





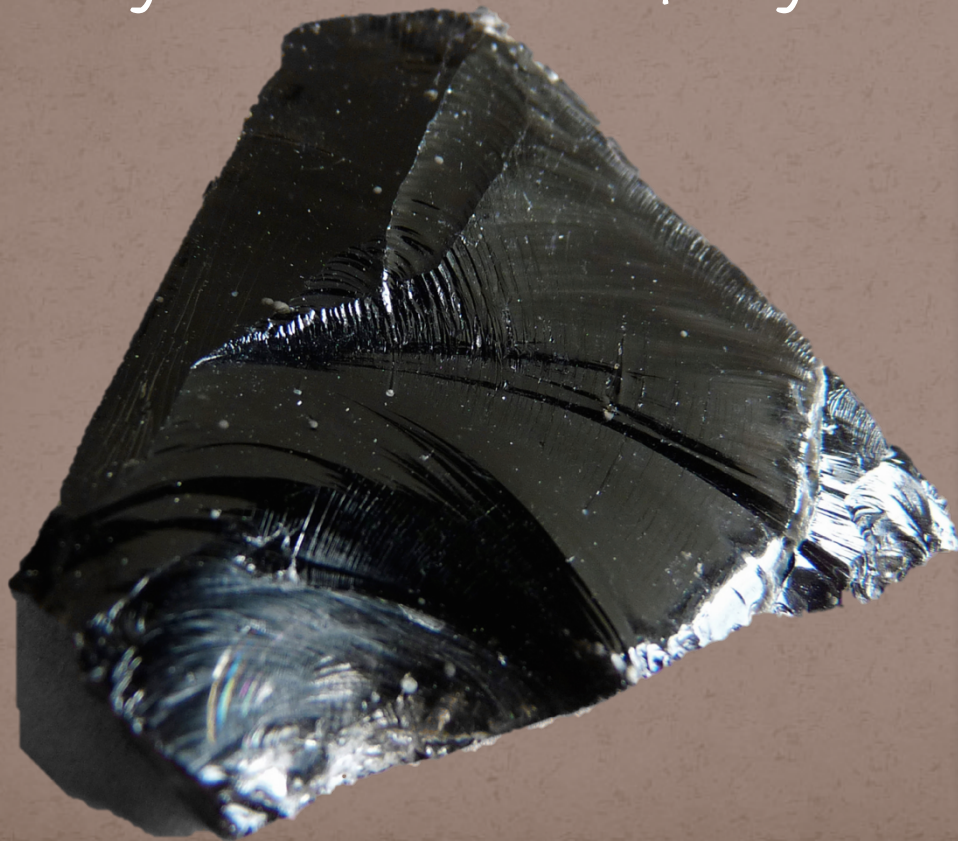
## Sample 6

Right again! There are *no bands* (layers) of minerals.

Is the rock full of tiny holes (gas bubbles) making it look like a sponge?

Yes

No



Examples of Rocks with a sponge like or frothy texture.

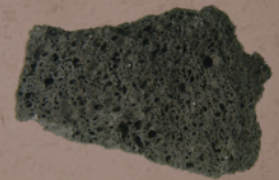




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Sample 6

There are *no gas bubbles* in this rock.

Does the rock look like black, brown, or dark reddish glass?

Yes

No

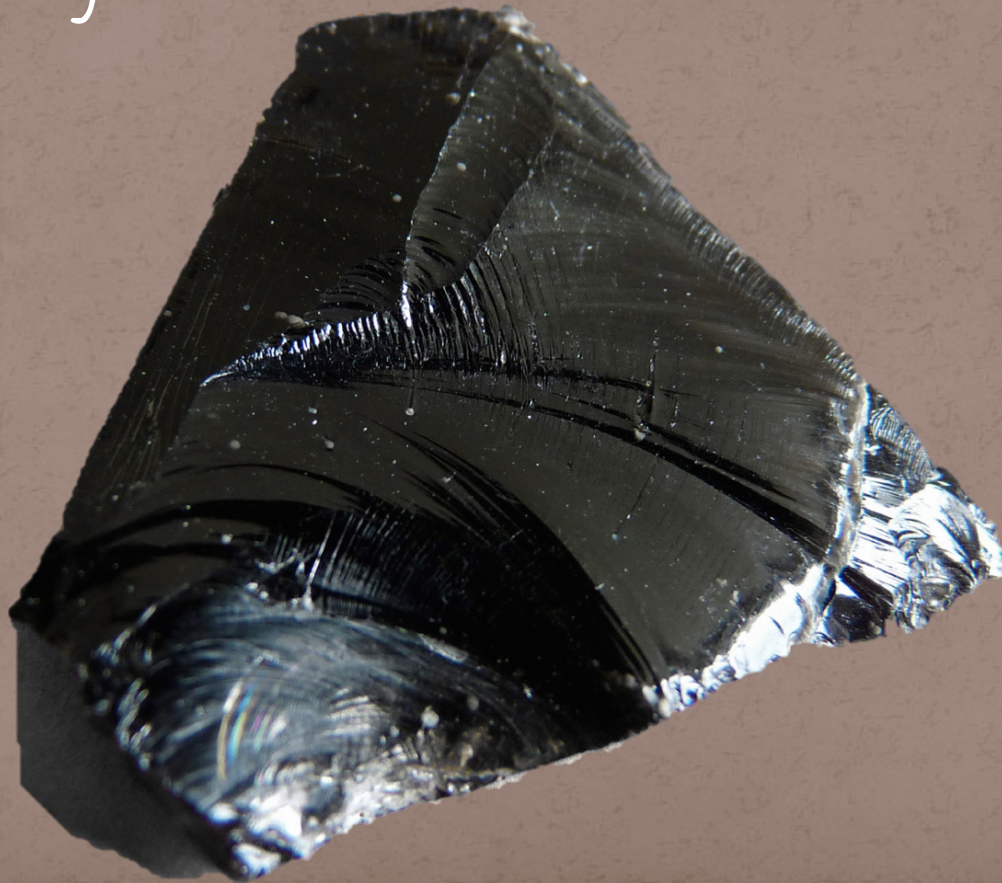




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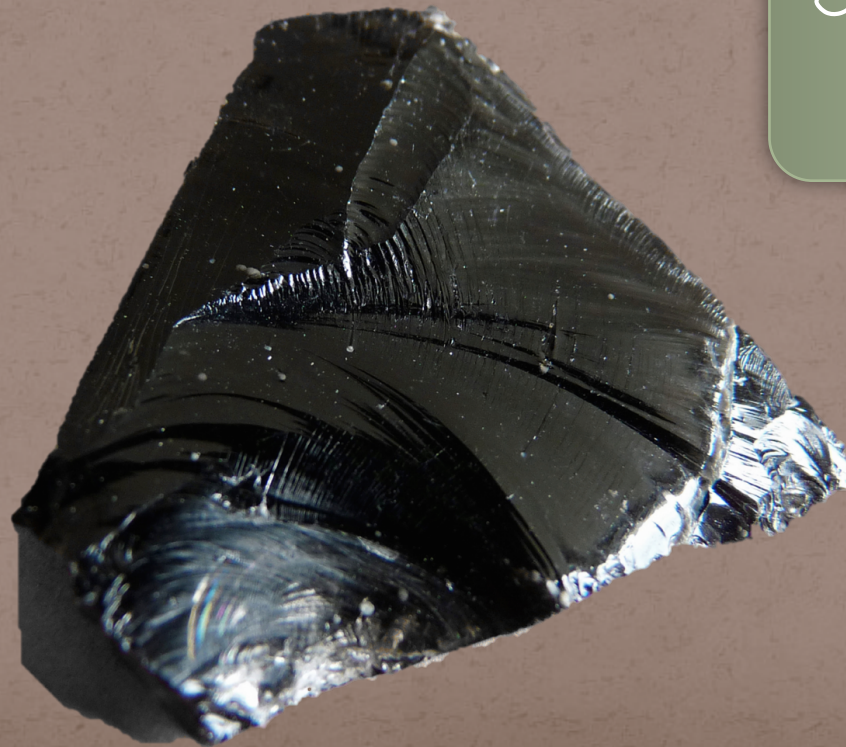
Sample 6

Glassy Texture

Mostly Dark colored

No Layers

No holes (gas bubbles)



Sample 6  
is ...



Click me



## Sample 6

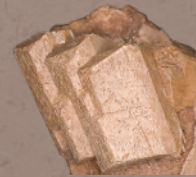
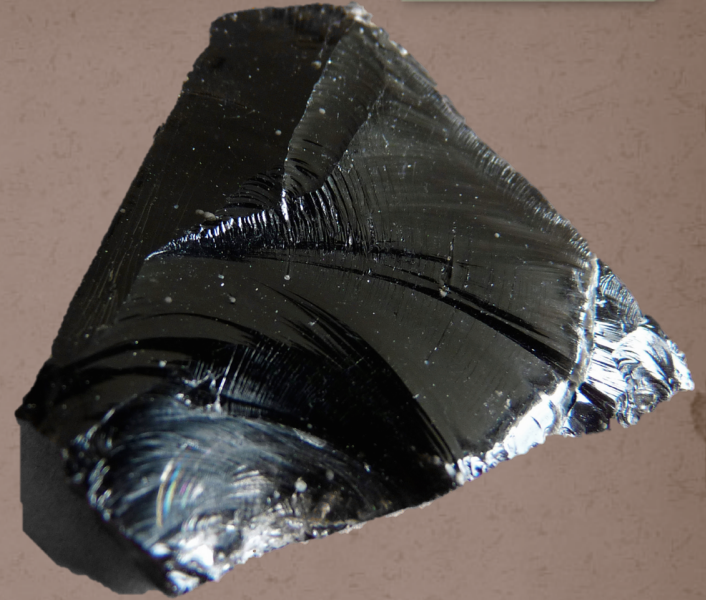
# Obsidian

Obsidian is an extrusive igneous rock that cooled very quickly from hot molten rock (lava) at the surface of the Earth. Because the rock cooled so quickly, the mineral crystal grains never had a chance to form. Because the lava had little trapped gasses, no gas bubbles formed and the rock has a smooth glassy texture.

Obsidian contains both light and dark colored minerals but the overall rock is dark. Obsidian has the same minerals as Granite.

Obsidian is commonly used in jewelry and other ornamental objects. It is also used to make blades for very sharp knives (it may some day be approved for surgical scalpel blades).

Next



Orthoclase  
Feldspar



Quartz



Biotite




Hornblende



Sample 6

# Varieties of Obsidian

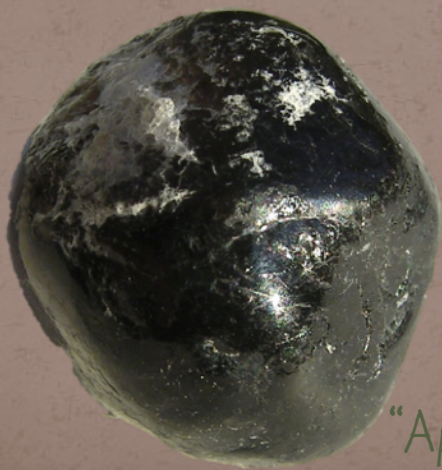
Pick another rock 



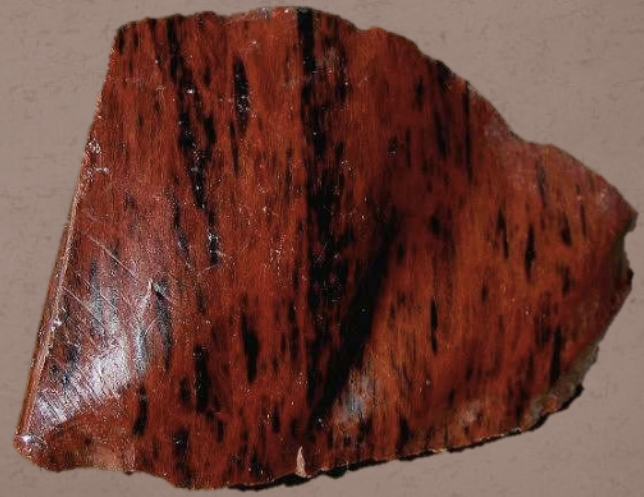
Brown Obsidian



Mahogany Obsidian



"Apache Tear"  
Obsidian

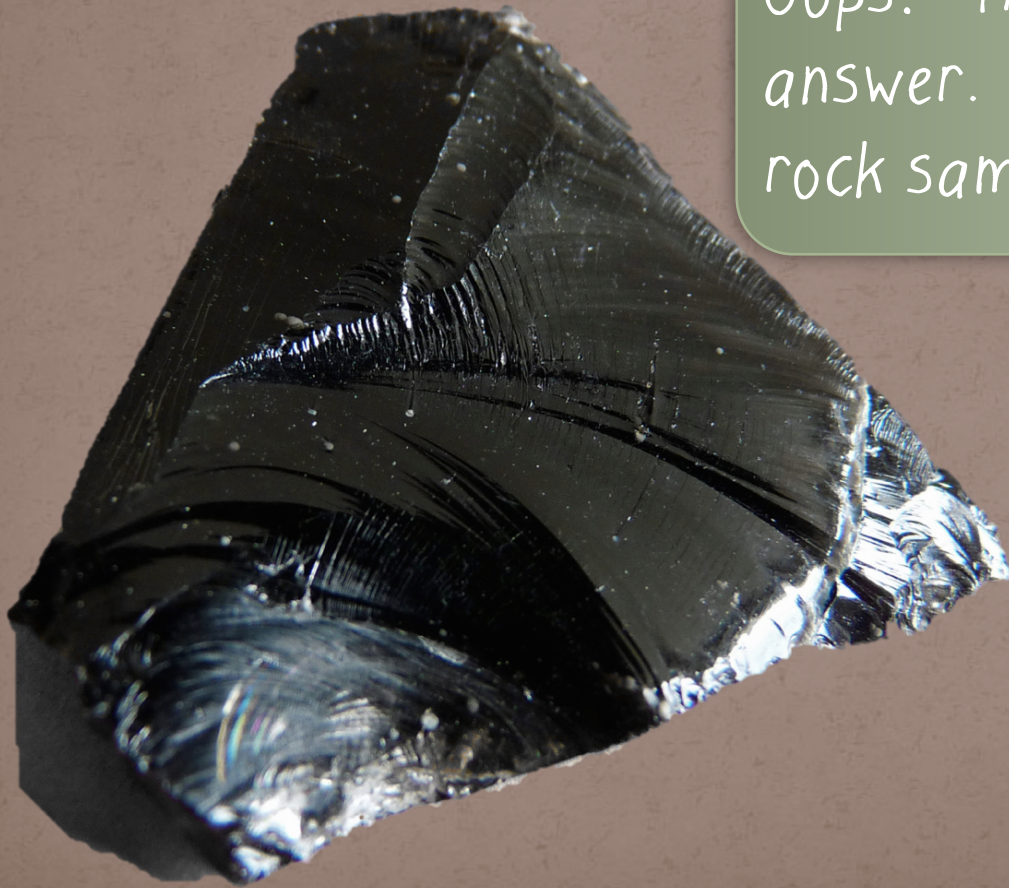


Red Obsidian



# Sample 6

[Back to Sample 6](#)



Oops! That's the wrong answer. Let's start this rock sample over again.

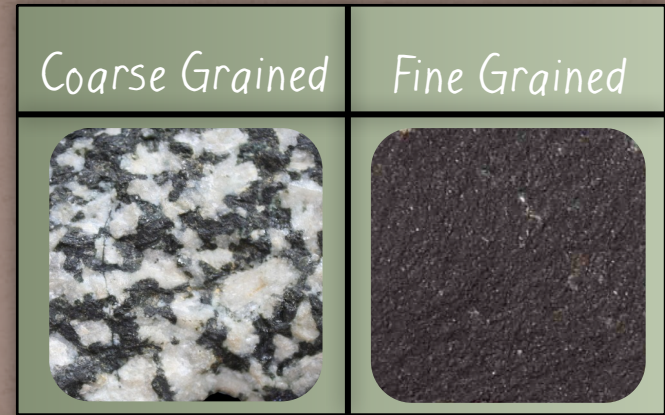




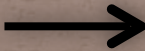
# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy

**Crystalline** - mineral crystals with flat shiny surfaces that reflect light like little mirrors. Crystals can be coarse grained or fine grained. [Read more](#)

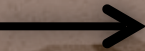
**Clastic** - mineral or rock pieces that are stuck together to make up the rock. These pieces are named according to their size:

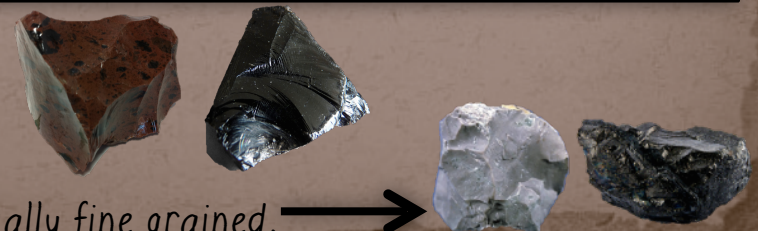


Coarse Grained	Medium Grained	Fine Grained
 <p>Pebble 4-64 mm</p>  <p>Coarse Sand .5 - 2 mm</p>  <p>Granule 2 - 4 mm</p>	 <p>Medium Sand .25 - .5 mm</p>  <p>Fine Sand .06 - .25 mm</p>	 <p>Silt .004 - .06 mm</p>  <p>Clay &gt; .004mm</p>

**Glassy** - the rock's surface is smooth like glass. 

Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material (sea shells, coral, plants, etc.). These rocks are usually fine grained. 





# Crystal Grains:

Use your  
hand lens!

[Back to Rock  
Texture](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Large crystals are "coarse grained" while smaller crystals are "fine grained".

Click any picture to  
[Enlarge](#)



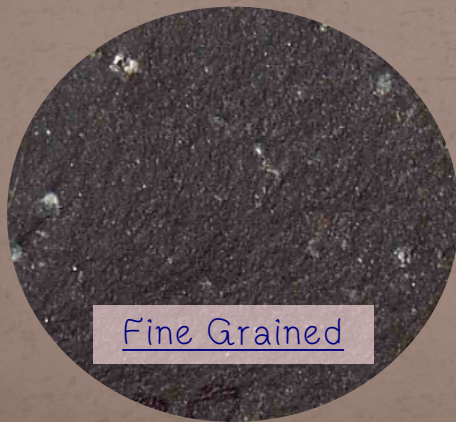
[Coarse Grained](#)



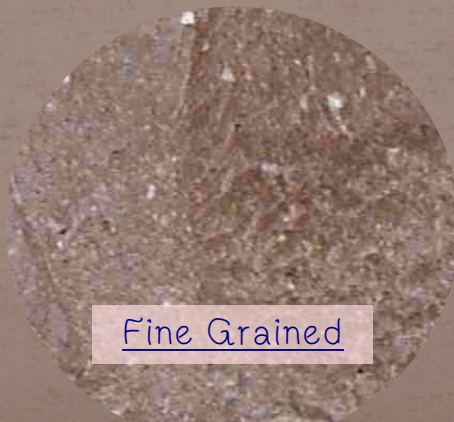
[Coarse Grained](#)



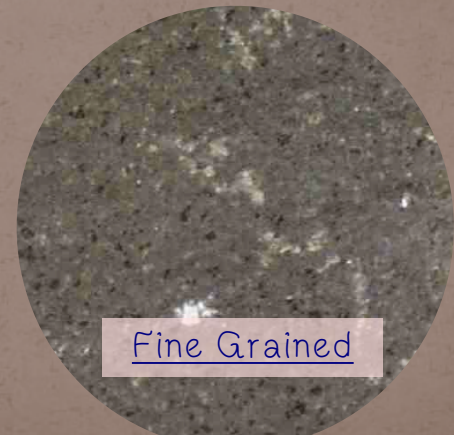
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



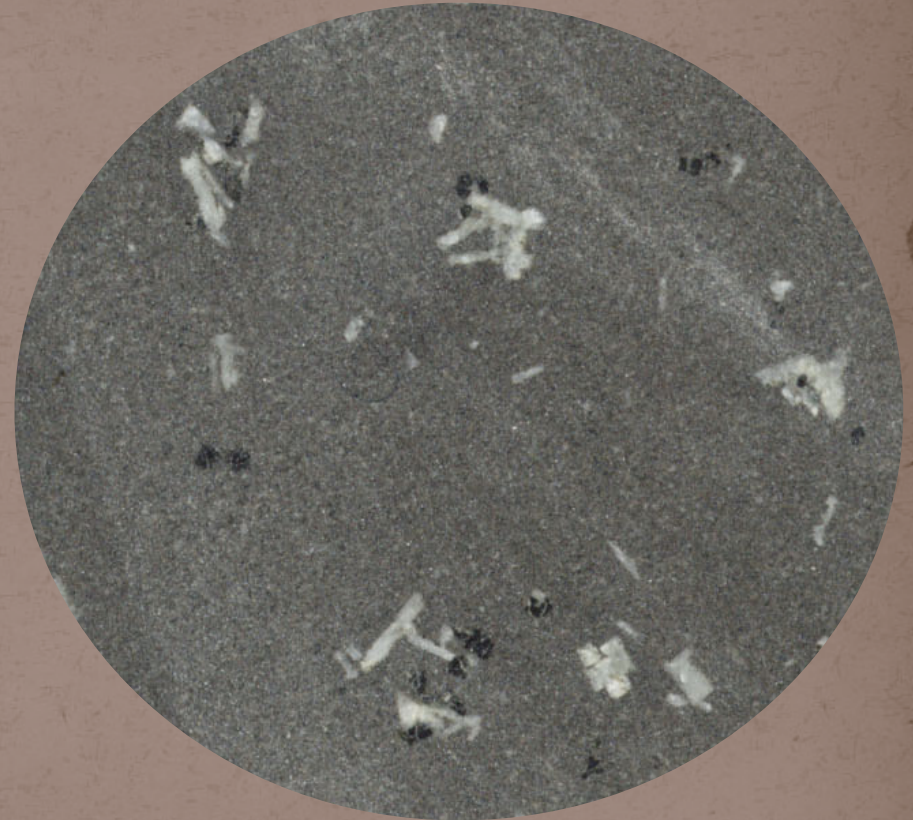
[Fine Grained](#)



# Table of Contents

[Back to Crystal Grains](#)

Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



# Rock Sample 7

Click the rock to  
begin!





Sample 7

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn more about a rock's texture!





## Table of Contents

### Sample 7

Yes! This rock has a *Clastic* texture

What size are the particles that make up the rock's clastic texture?

Click the nail picture to test particle size or use a real nail if you have an actual rock sample



[Click nail to test](#)

Coarse Grained

Medium Grained

Fine Grained

A Mixture of particle sizes

If you have an actual rock sample:

Hold the rock over a sheet of white paper and scrape the rock with a steel nail. Look on the sheet of paper for the particles that came off of the rock (sand, silt, clay, etc.).

Tell me about rock texture again!  
(Click me)





Table of Contents

Sample 7

Very fine silt and clay particles scraped off this rock. Now go back and answer that last question.

Go Back



Silt and clay dust



# Sample 7

That's right! The rock is fine grained.  
Does the rock have layers?

Yes

No



Examples of Rocks with layers





Table of Contents

Sample 7

Correct! This rock has layers.  
Are the layers thick or thin?



Thin Layers

Thick Layers



Table of Contents

# Sample 7

Right again! This rock has *thick layers*

Clastic texture

Fine grained (made of silt and clay)

Thick layers



Sample 7  
is ...



Click me



## Sample 7

Next

# Shale

Shale is a clastic sedimentary rock that formed as fine silt and mud settled to the bottom of a sea floor. As more sediment piled on top, the water was squeezed from the sediment and it became solid rock.

Some shale contains organic material that can form into natural gas and oil. Shale can also be used to make clay for pottery and brick.

Varieties of shale include black shale, gray shale, red, brown, yellow, and green.





Sample 7

# Varieties of Shale

Pick another rock 



Black Shale with organic material



Red or pink shale



Gray Shale



Green Shale



# Sample 7

[Back to Sample 7](#)



Oops! That's the wrong answer. Let's start this rock sample over again.

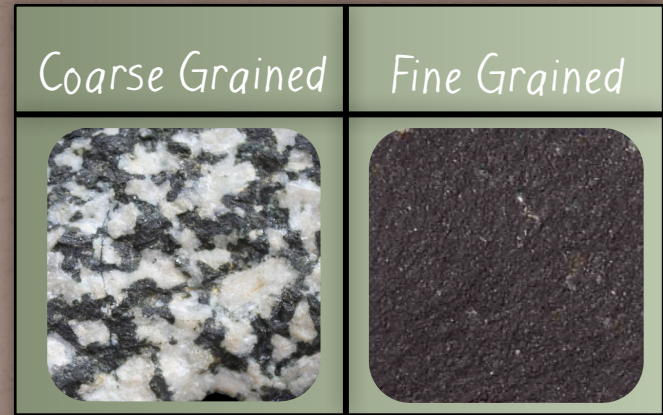




# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy

**Crystalline** - mineral crystals with flat shiny surfaces that reflect light like little mirrors. Crystals can be coarse grained or fine grained. [Read more](#)

**Clastic** - mineral or rock pieces that are stuck together to make up the rock. These pieces are named according to their size:



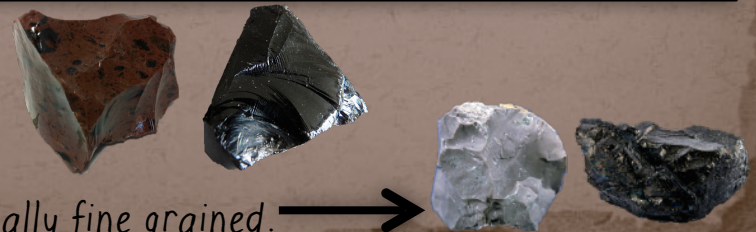
Coarse Grained	Medium Grained	Fine Grained
<p>Pebble 4-64 mm</p> <p>Granule 2 - 4 mm</p> <p>Coarse Sand .5 - 2 mm</p>	<p>Medium Sand .25 - .5 mm</p> <p>Fine Sand .06 - .25 mm</p>	<p>Silt .004 - .06 mm</p> <p>Clay &gt; .004mm</p>

**Glassy** - the rock's surface is smooth like glass. →

Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material

(sea shells, coral, plants, etc.). These rocks are usually fine grained. →





# Crystal Grains:

Use your  
hand lens!

[Back to Rock  
Texture](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Large crystals are "coarse grained" while smaller crystals are "fine grained".

Click any picture to  
[Enlarge](#)



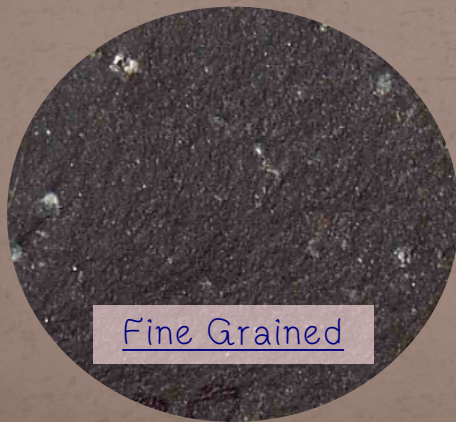
[Coarse Grained](#)



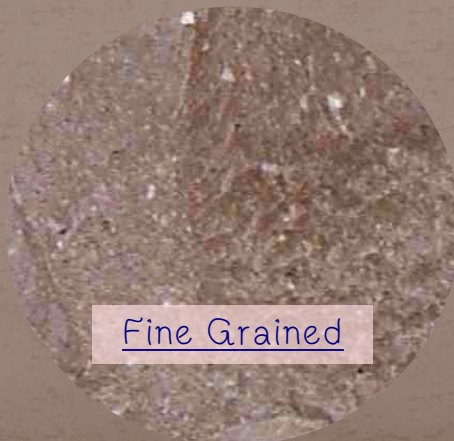
[Coarse Grained](#)



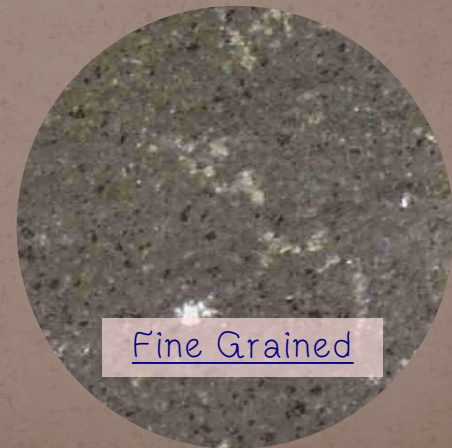
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



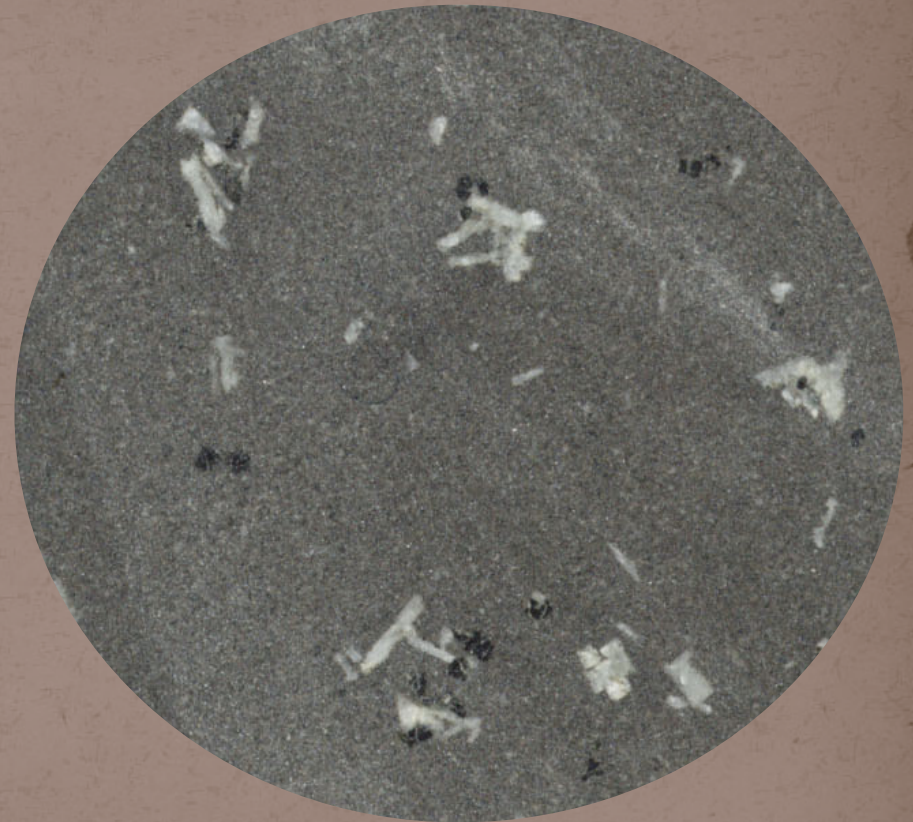
[Fine Grained](#)



Table of Contents

[Back to Crystal Grains](#)

Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



# Rock Sample 8



Click the rock to  
begin!





# Sample 8

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn  
more about a  
rock's texture!





Table of Contents

# Sample 8

Yes! The rock has a *clastic* texture.

What size are the particles that make up the rock's clastic texture?

Click the nail picture to test particle size or use a real nail if you have an actual rock sample

Coarse Grained

Medium Grained

Fine Grained

A Mixture of particle sizes



Click nail to test

If you have an actual rock sample:

Hold the rock over a sheet of white paper and scrape the rock with a steel nail. Look on the sheet of paper for the particles that came off of the rock (sand, silt, clay, etc.).

Tell me about rock texture again!  
(Click me)

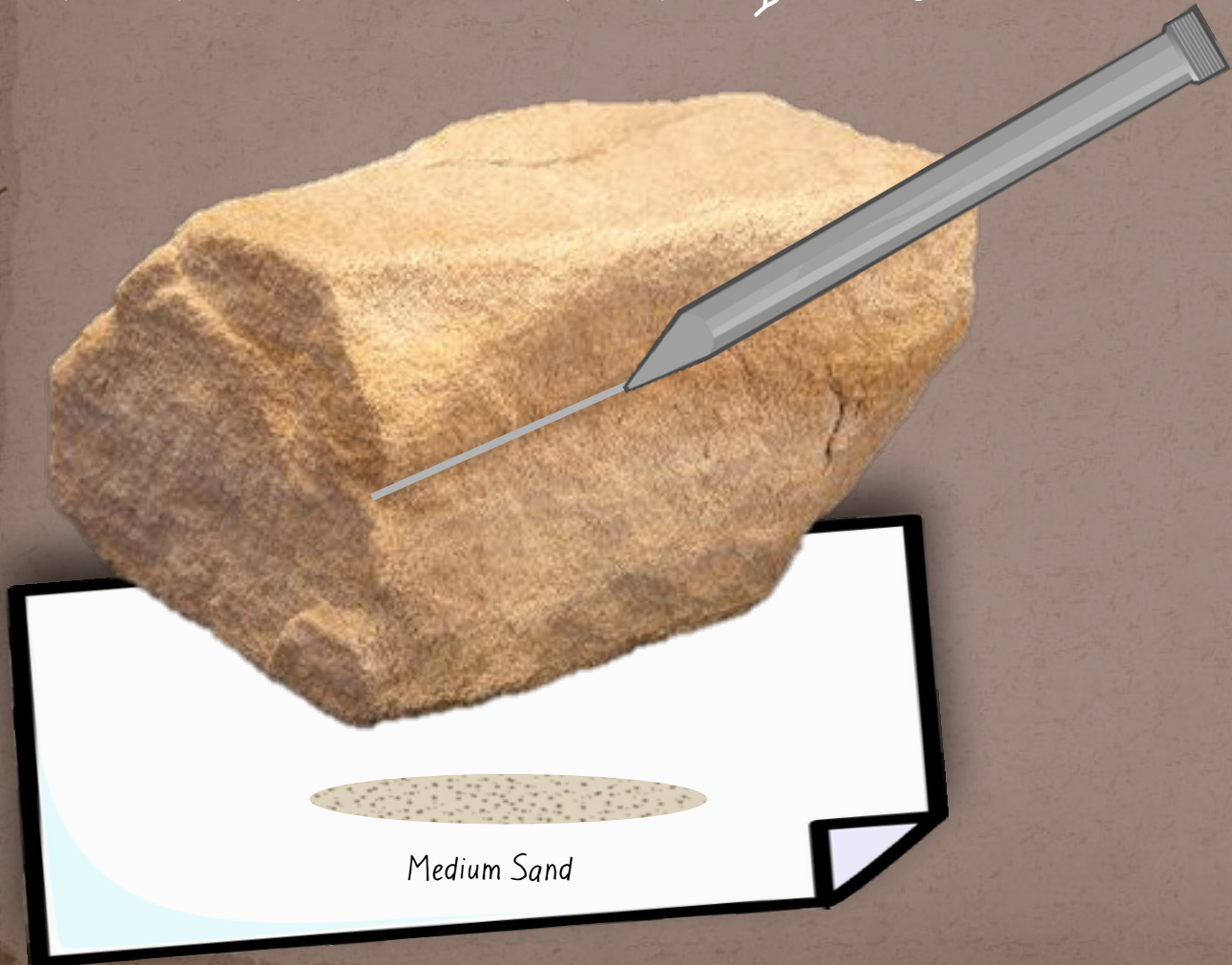




Table of Contents

Sample 8

Medium sand sized particles scraped off this rock? Now go back and answer that last question.



Go Back



# Sample 8

That's right! The rock is *medium grained*.  
Does the rock have layers?

Yes

No



Examples of Rocks with layers





Table of Contents

# Sample 8

Right again! This sample *does not* have layers.

Clastic texture

Medium grained (made of sand)

Little or no layers



Sample 8  
is ...



Click me



# Sandstone


Sandstone is a clastic sedimentary rock that formed as sand settled at the sea shore. As more sediment piled on top, the water was squeezed from the sediment and it became solid rock. A banded (layered) sandstone forms over time from seasonal changes in the material being deposited.

Sandstone is used as a building and paving material and as an abrasive (grinding wheels).

Varieties of sandstone include quartz sandstone, arkose sandstone (a lot of feldspar), and banded (layered) sandstone.





Pick another rock 

# Varieties of Sandstone

Sandstone  
Formations



Arkosic  
Sandstone



Quartz  
Sandstone



Banded (layered)  
Sandstone



# Sample 8

[Back to Sample 8](#)



Oops! That's the wrong answer. Let's start this rock sample over again.

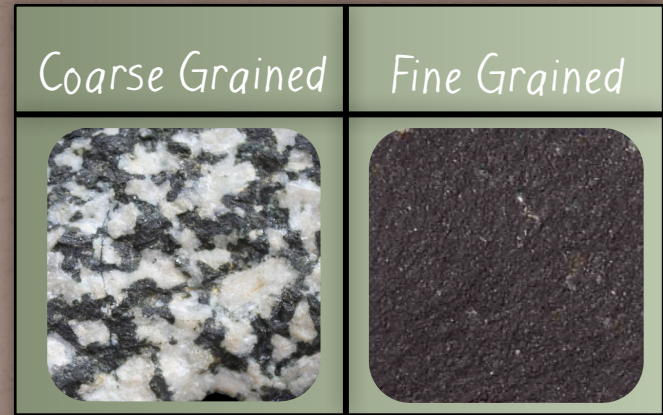




# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy

**Crystalline** - mineral crystals with flat shiny surfaces that reflect light like little mirrors. Crystals can be coarse grained or fine grained. [Read more](#)

**Clastic** - mineral or rock pieces that are stuck together to make up the rock. These pieces are named according to their size:



Coarse Grained	Medium Grained	Fine Grained
<p>Pebble 4-64 mm</p> <p>Granule 2 - 4 mm</p> <p>Coarse Sand .5 - 2 mm</p>	<p>Medium Sand .25 - .5 mm</p> <p>Fine Sand .06 - .25 mm</p>	<p>Silt .004 - .06 mm</p> <p>Clay &gt; .004mm</p>

**Glassy** - the rock's surface is smooth like glass. →

Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material

(sea shells, coral, plants, etc.). These rocks are usually fine grained. →





# Crystal Grains:

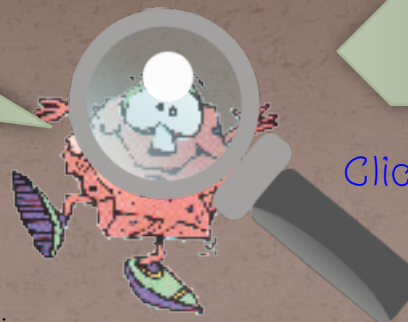
Use your  
hand lens!

[Back to Rock  
Texture](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Large crystals are "coarse grained" while smaller crystals are "fine grained".

Click any picture to  
[Enlarge](#)



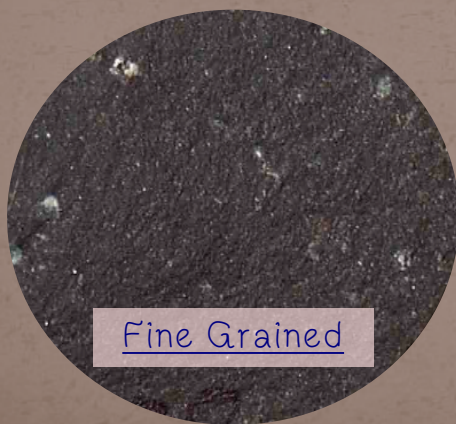
[Coarse Grained](#)



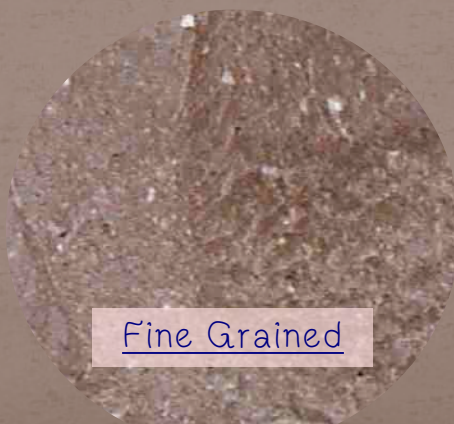
[Coarse Grained](#)



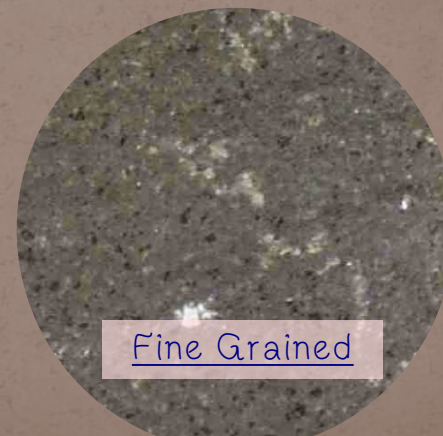
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



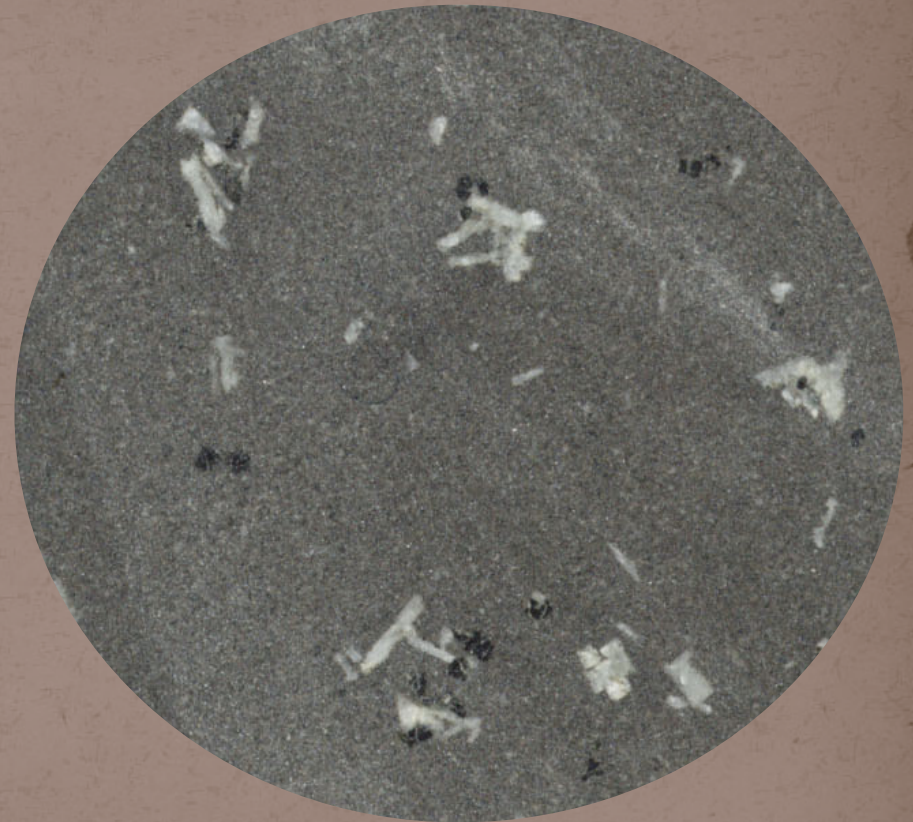
[Fine Grained](#)



# Table of Contents

[Back to Crystal Grains](#)

Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



Table of Contents

# Rock Sample g

Click the rock to  
begin!





Table of Contents

Sample g

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn  
more about a  
rock's texture!





Table of Contents

# Sample g

Yes! This rock has a *clastic* texture.

What size are the particles that make up the rock's clastic texture?

Click the nail picture to test particle size or use a real nail if you have an actual rock sample



Coarse Grained

Medium Grained

Fine Grained

A Mixture of particle sizes

If you have an actual rock sample:

Hold the rock over a sheet of white paper and scrape the rock with a steel nail. Look on the sheet of paper for the particles that came off of the rock (sand, silt, clay, etc.).

Tell me about rock texture again!  
(Click me)





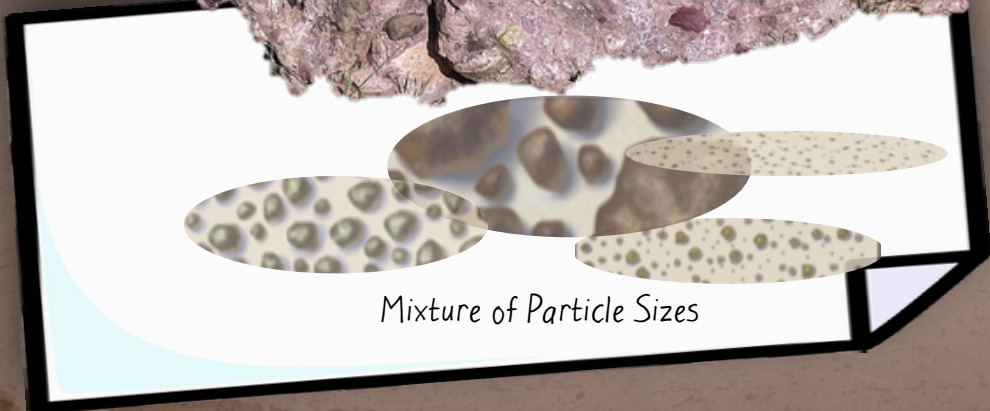
Table of Contents

Sample g

A mixture of particle sizes scraped off this rock. Now go back and answer that last question.



Go Back



Mixture of Particle Sizes



Table of Contents

# Sample g

That's right! The rock contains a mixture of particle sizes.

## Does the rock have layers?

Yes

No



Examples of Rocks with layers

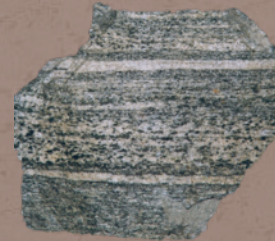




Table of Contents

Sample g

Correct! The rock *does not* have layers.

Are the particles mostly Rounded or Angular?



Rounded

Angular

Examples of Rounded and Angular Particles





## Sample 9

Right again! The particles are mostly rounded.

Clastic texture

Mixture of particle sizes (made of sand, granules, pebbles, etc)

Rounded Particles

No layers



Sample 9  
is ...



Click me



# Conglomerate

Conglomerate is a clastic sedimentary rock that formed when rounded particles of various sizes were deposited by a river, stream, or glacier and cemented together. The particles are said to be "poorly sorted" because they are of all different sizes. The "matrix" is the fine material that holds everything together.




Conglomerate is used in construction as a building stone, road fill, etc.

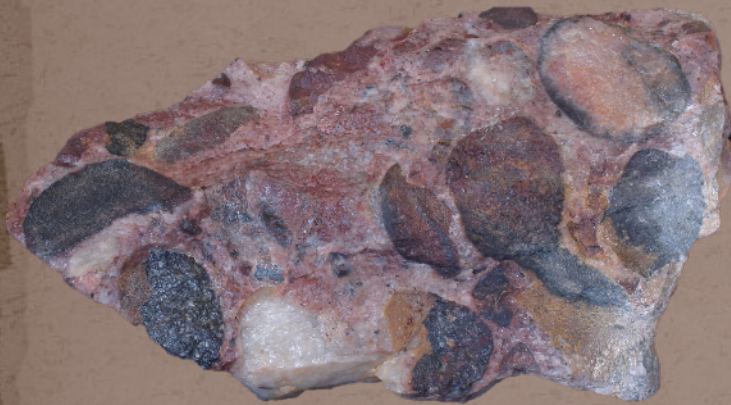
Conglomerate varies in appearance depending upon the particles that make it up.



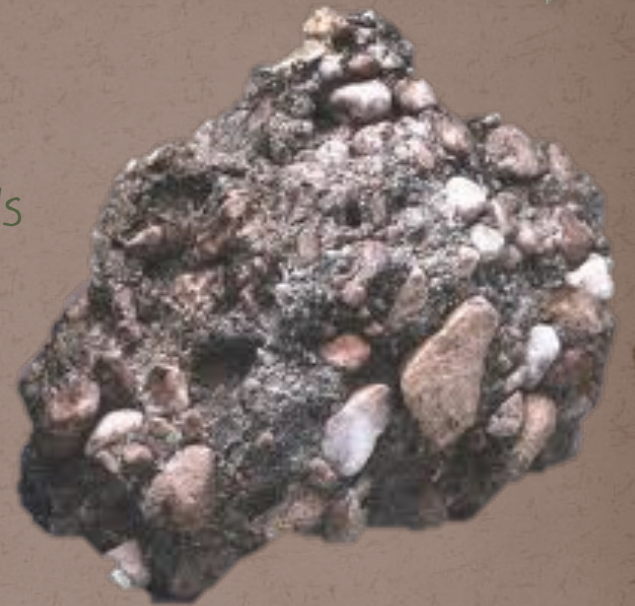
# Sample g

Pick another rock 

## Varieties of Conglomerate



Appearance depends upon the particles that make up the rock.





# Sample g

[Back to Sample g](#)



Oops! That's the wrong answer. Let's start this rock sample over again.





# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy

**Crystalline** - mineral crystals with flat shiny surfaces that reflect light like little mirrors. Crystals can be coarse grained or fine grained. [Read more](#)

**Clastic** - mineral or rock pieces that are stuck together to make up the rock. These pieces are named according to their size:



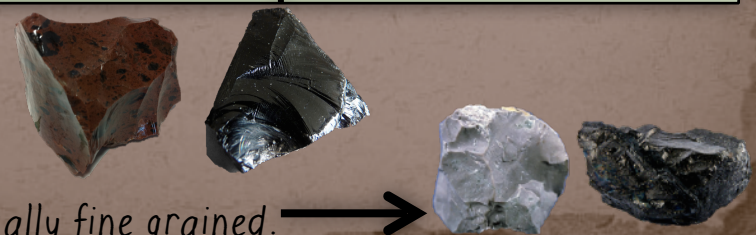
Coarse Grained	Medium Grained	Fine Grained
<p>Pebble 4-64 mm</p> <p>Granule 2 - 4 mm</p> <p>Coarse Sand .5 - 2 mm</p>	<p>Medium Sand .25 - .5 mm</p> <p>Fine Sand .06 - .25 mm</p>	<p>Silt .004 - .06 mm</p> <p>Clay &gt; .004mm</p>

**Glassy** - the rock's surface is smooth like glass. →

Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material

(sea shells, coral, plants, etc.). These rocks are usually fine grained. →





# Crystal Grains:

Use your  
hand lens!



[Back to Rock  
Texture](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Click any picture to  
[Enlarge](#)

Large crystals are "coarse grained" while smaller crystals are "fine grained".



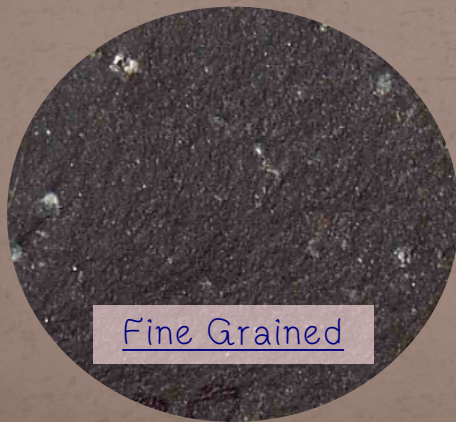
[Coarse Grained](#)



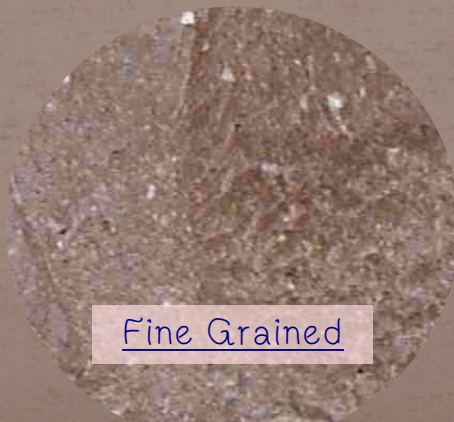
[Coarse Grained](#)



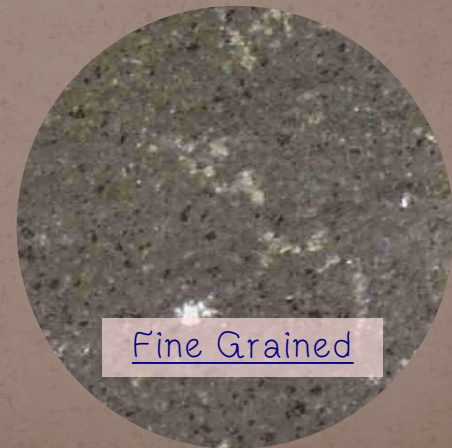
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



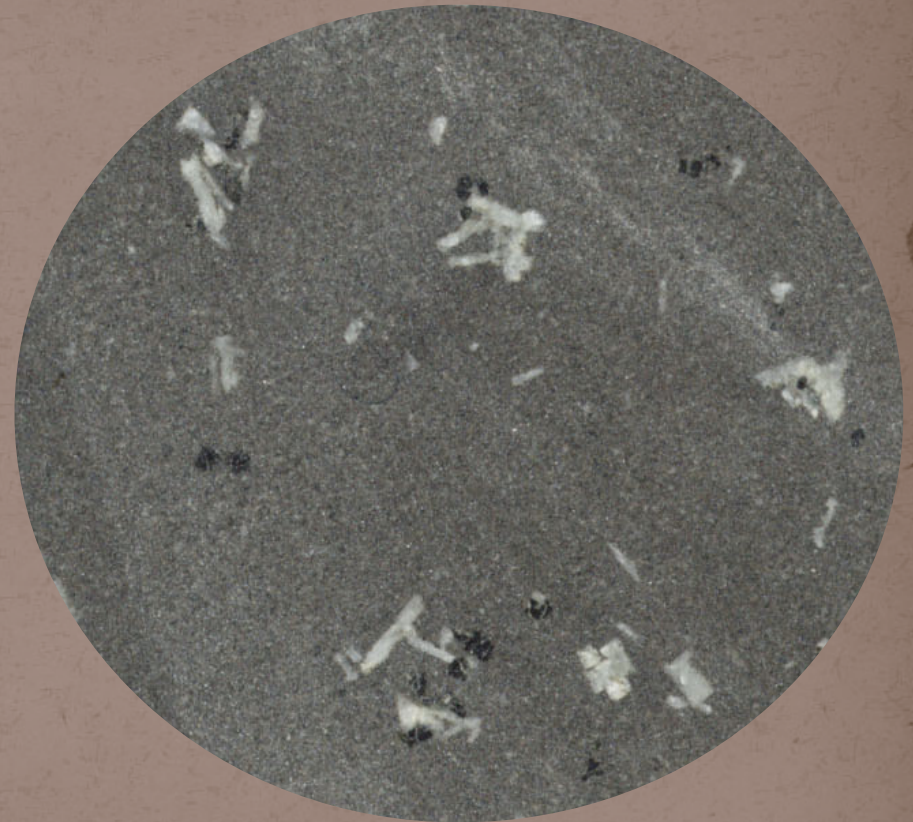
[Fine Grained](#)



# Table of Contents

[Back to Crystal Grains](#)

Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



# Rock Sample 10

Click the rock to  
begin!





Table of Contents

## Sample 10

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn  
more about a  
rock's texture!





## Table of Contents

### Sample 10

Yes! The rock has a *clastic* texture.

What size are the particles that make up the rock's clastic texture?

Click the nail picture to test particle size or use a real nail if you have an actual rock sample



Coarse Grained

Medium Grained

Fine Grained

A Mixture of particle sizes

If you have an actual rock sample:

Hold the rock over a sheet of white paper and scrape the rock with a steel nail. Look on the sheet of paper for the particles that came off of the rock (sand, silt, clay, etc.).

Tell me about rock texture again!  
(Click me)





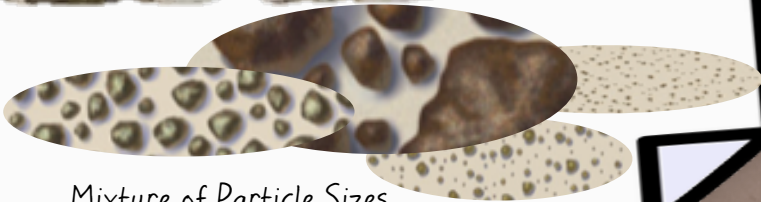
Table of Contents

Sample 10

A mixture of particle sizes scraped off this rock. Now go back and answer that last question.



Go Back



Mixture of Particle Sizes



Table of Contents

Sample 10

That's right! The rock is made up of a mixture of particle sizes.

Does the rock have layers?

Yes

No



Examples of Rocks with layers

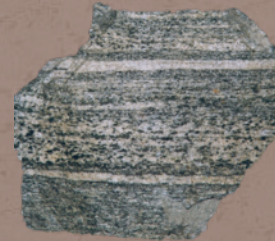




Table of Contents

Sample 10

Correct! The rock *does not* have layers.

Are the particles mostly Rounded or Angular?

Rounded

Angular



Examples of Rounded and Angular Particles

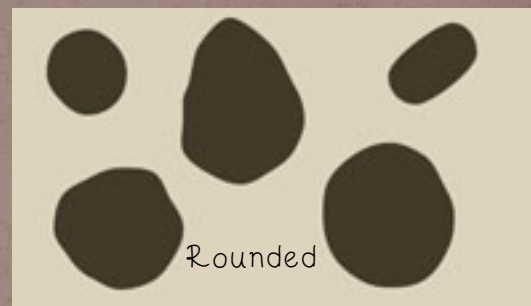




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Sample 10

That's right! The particles are *angular*.

Clastic texture

Mixture of particle sizes (made of sand, granules, pebbles, etc.)

Angular Particles

No layers



Sample  
10 is ...



Click me



# Breccia



Next

Breccia is a clastic sedimentary rock that formed when angular particles of various sizes were deposited by a river, stream, or glacier and cemented together. The angular particles indicate the sediments were not carried far from their source (deposited quickly). Breccia can also be volcanic in origin as lava is ejected during explosive eruptions.

The particles are said to be "poorly sorted" because they are of all different sizes. The "matrix" is the fine material that holds everything together.

Breccia is used in construction as a decorative building stone, road fill, etc.

Breccia varies in appearance depending upon the particles that make it up.

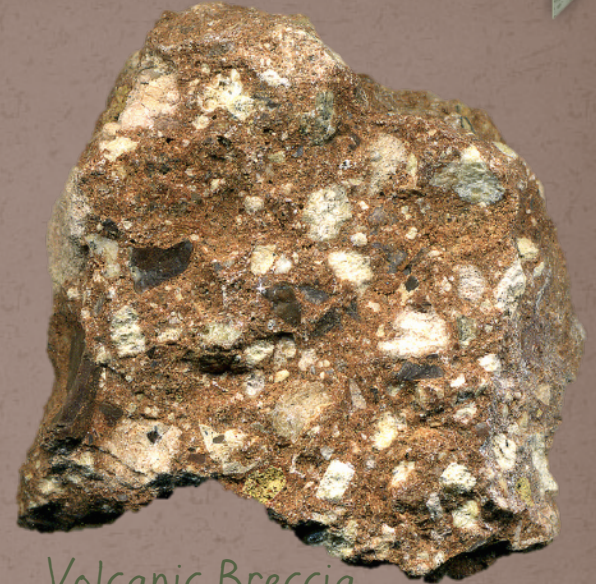


Pick another rock 

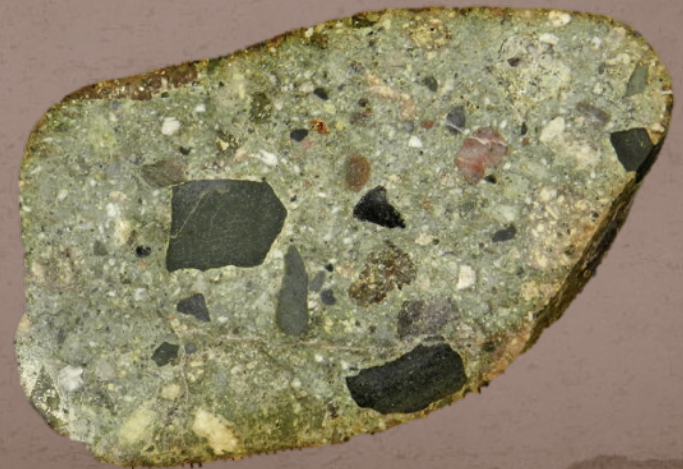
# Varieties of Breccia



Appearance depends upon the particles that make up the rock.



Volcanic Breccia





# Sample 10

[Back to Sample 10](#)



Oops! That's the wrong answer. Let's start this rock sample over again.

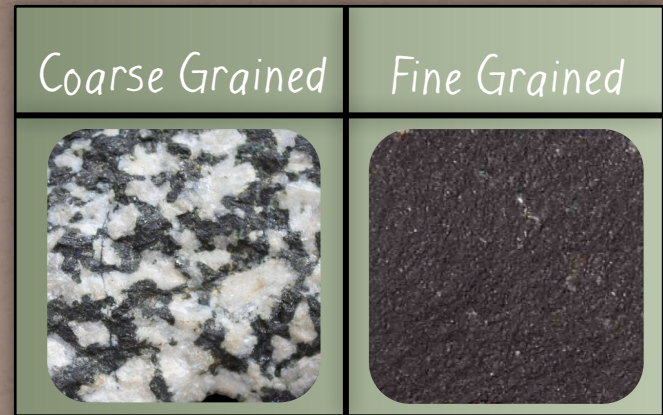


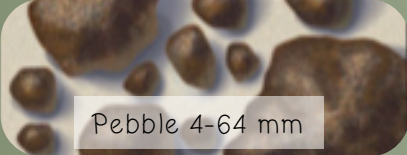


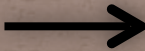
# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy

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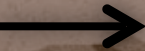
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Coarse Grained	Medium Grained	Fine Grained
 <p>Pebble 4-64 mm</p>  <p>Coarse Sand .5 - 2 mm</p>  <p>Granule 2 - 4 mm</p>	 <p>Medium Sand .25 - .5 mm</p>  <p>Fine Sand .06 - .25 mm</p>	 <p>Silt .004 - .06 mm</p>  <p>Clay &gt; .004mm</p>

**Glassy** - the rock's surface is smooth like glass. 

Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material (sea shells, coral, plants, etc.). These rocks are usually fine grained. 





# Crystal Grains:

Use your  
hand lens!

[Back to Rock  
Texture](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Large crystals are "coarse grained" while smaller crystals are "fine grained".



Click any picture to  
[Enlarge](#)



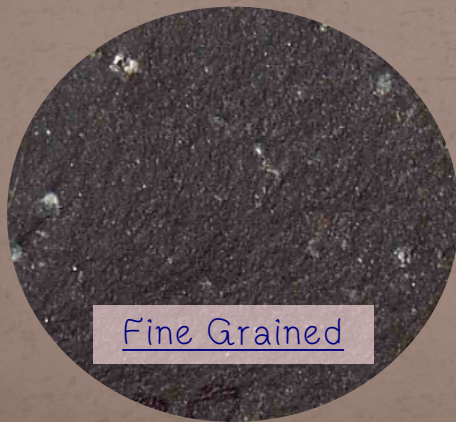
[Coarse Grained](#)



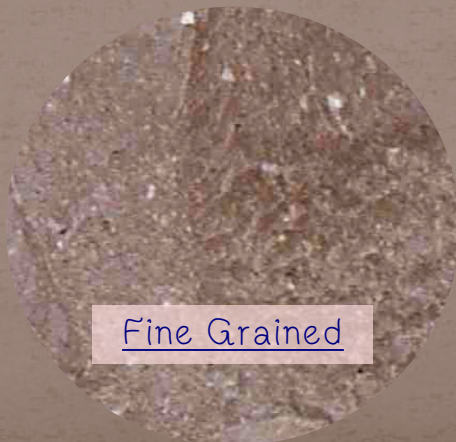
[Coarse Grained](#)



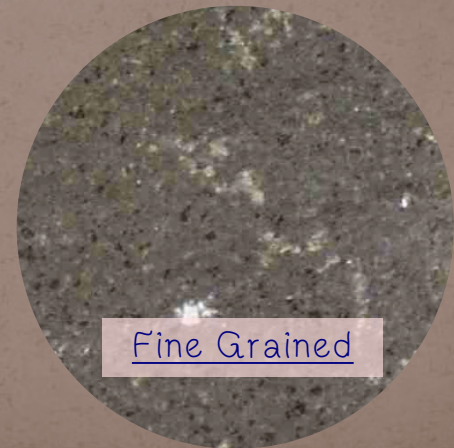
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



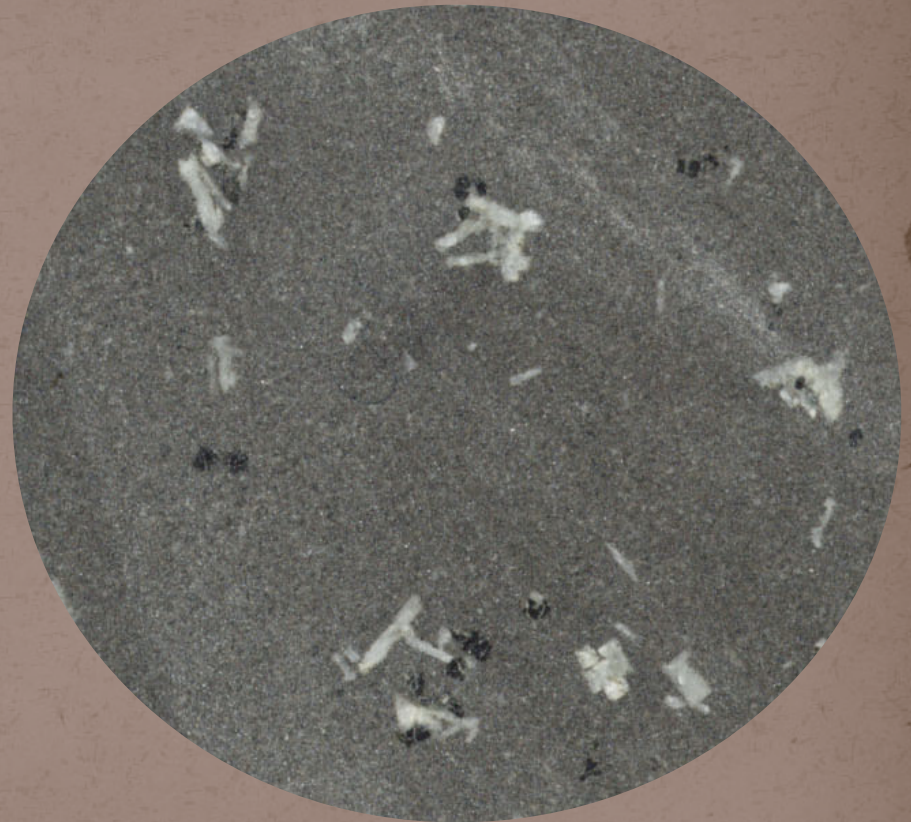
[Fine Grained](#)



# Table of Contents

[Back to Crystal Grains](#)

Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



# Rock Sample 11

Click the rock to  
begin!





Table of Contents

## Sample 11

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn  
more about a  
rock's texture!





Table of Contents

# Sample 11

Yes! The rock has a *clastic* texture.

## What size are the particles that make up the rock's texture?

Click the nail picture to test particle size or use a real nail if you have an actual rock sample



Coarse Grained

Medium Grained

Fine Grained

A Mixture of particle sizes

If you have an actual rock sample:

Hold the rock over a sheet of white paper and scrape the rock with a steel nail. Look on the sheet of paper for the particles that came off of the rock (sand, silt, clay, etc.).

Tell me about rock texture again!  
(Click me)



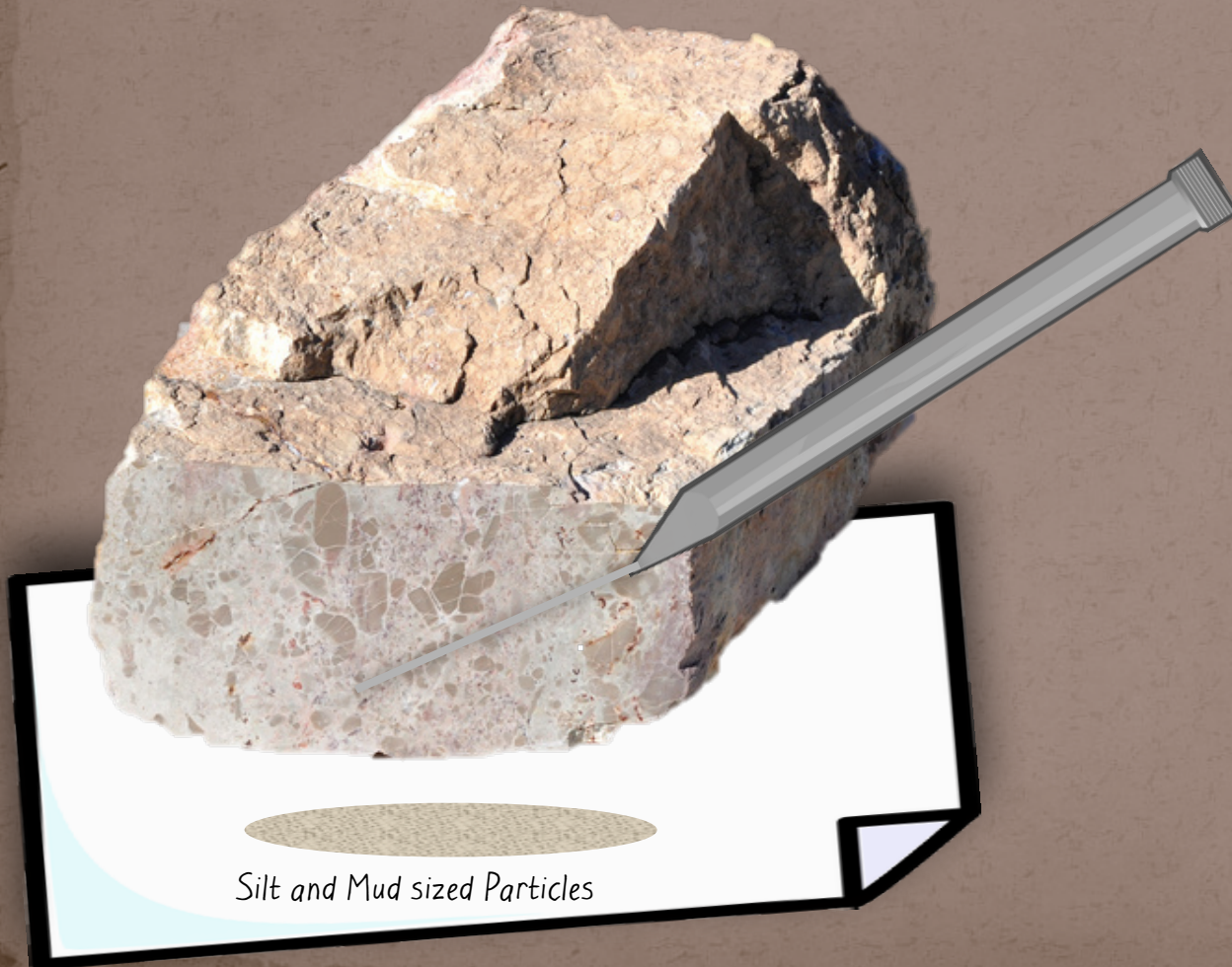


Table of Contents

Sample 11

Fine silt and mud sized particles scraped off this rock (a light dust). Now go back and answer that last question.

Go Back



Silt and Mud sized Particles



# Sample 11

That's right! The rock is fine grained.

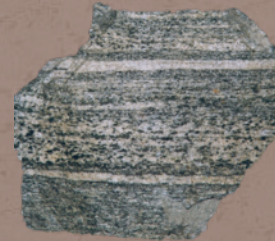
Does the rock have layers?

Yes

No



Examples of Rocks with layers





## Sample 11

Correct! The rock *does not* have layers.

# Will this rock scratch glass?

Click the glass plate picture to test for a scratch or scratch a real glass plate with your actual sample.

Yes

No



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



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## Sample 11

No! Sample 11 will not scratch glass.

Next



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



Table of Contents

Sample 11

# Will the rock fizz in hydrochloric acid?

Click the acid dropper to test for a effervescence (reaction to HCl). Or test an actual rock sample with a drop of 5% HCl.  
See note below



Click the bottle  
to test

Yes, a lot!

Yes, a little

No Fizz

If you have an actual rock sample, carefully test with a drop of dilute (5%) Hydrochloric Acid. Scratch the rock surface to work up a powder and place the drop of acid on the powder. Wear goggles.

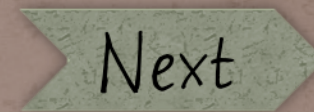
Note:

5% HCl is a 20 to 1 dilution of concentrated HCl to water (Example: 50 ml conc. HCL to make 1 liter)



## Sample 11

Yes! This rock fizzes a lot in Hydrochloric Acid.



If you have an actual rock sample, carefully test with a drop of dilute (5%) Hydrochloric Acid. Scratch the rock surface to work up a powder and place the drop of acid on the powder. Wear goggles.

Note:

5% HCl is a 20 to 1 dilution of concentrated HCl to water  
(Example: 50 ml conc. HCl to make 1 liter)



Table of Contents

Sample 11

Fine grained texture

Silt sized particles

Not layered (this sample)

Will not scratch glass

Fizzes a lot with HCl



Sample 11  
is ...



Click me



## Sample 11

# Limestone

Limestone is a chemical sedimentary rock that formed when dissolved minerals (at least 50% calcium carbonate) precipitated from a solution. Limestone can also form from crushed sea shells that have been cemented together.

Limestone is used in cement, as decorative stone in buildings, and to make fertilizer, paper, pesticides, glass and more.

Limestone has many varieties depending upon the process by which it formed and the material from which it formed.





Sample 11

# Varieties of Limestone

Pick another rock 



Pisolitic Limestone



Fossiliferous Limestone



Dendritic Limestone



Coquina made with crushed sea shells  
(image credit: B.J.Skinner)



# Sample 11

[Back to Sample 11](#)



Oops! That's the wrong answer. Let's start this rock sample over again.



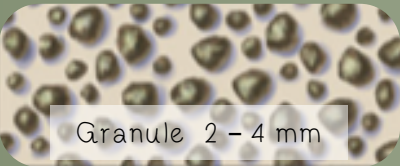


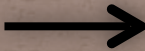
# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy

**Crystalline** - mineral crystals with flat shiny surfaces that reflect light like little mirrors. Crystals can be coarse grained or fine grained. [Read more](#)

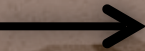
**Clastic** - mineral or rock pieces that are stuck together to make up the rock. These pieces are named according to their size:

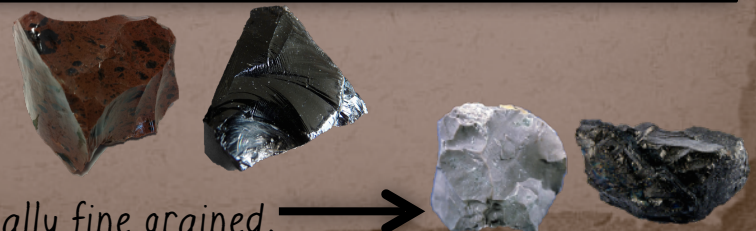


Coarse Grained	Medium Grained	Fine Grained
 <p>Pebble 4-64 mm</p>  <p>Coarse Sand .5 - 2 mm</p>  <p>Granule 2 - 4 mm</p>	 <p>Medium Sand .25 - .5 mm</p>  <p>Fine Sand .06 - .25 mm</p>	 <p>Silt .004 - .06 mm</p>  <p>Clay &gt; .004mm</p>

**Glassy** - the rock's surface is smooth like glass. 

Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material (sea shells, coral, plants, etc.). These rocks are usually fine grained. 





# Crystal Grains:

Use your  
hand lens!



[Back to Rock  
Texture](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Click any picture to  
[Enlarge](#)

Large crystals are "coarse grained" while smaller crystals are "fine grained".



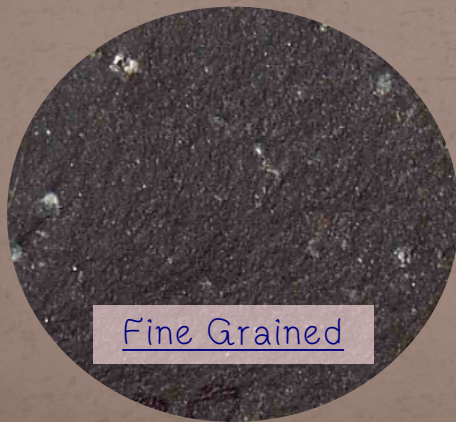
[Coarse Grained](#)



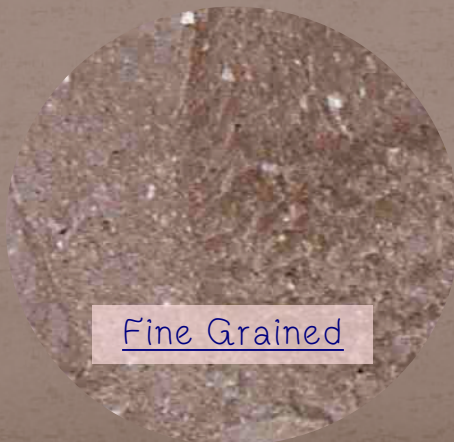
[Coarse Grained](#)



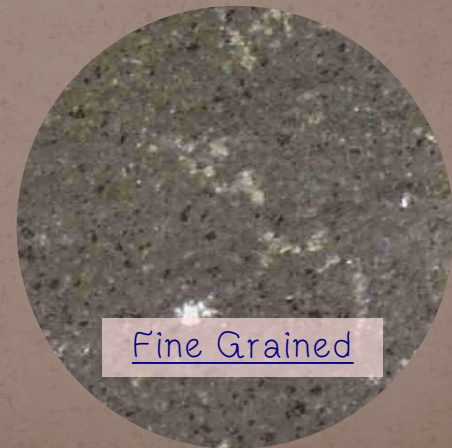
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



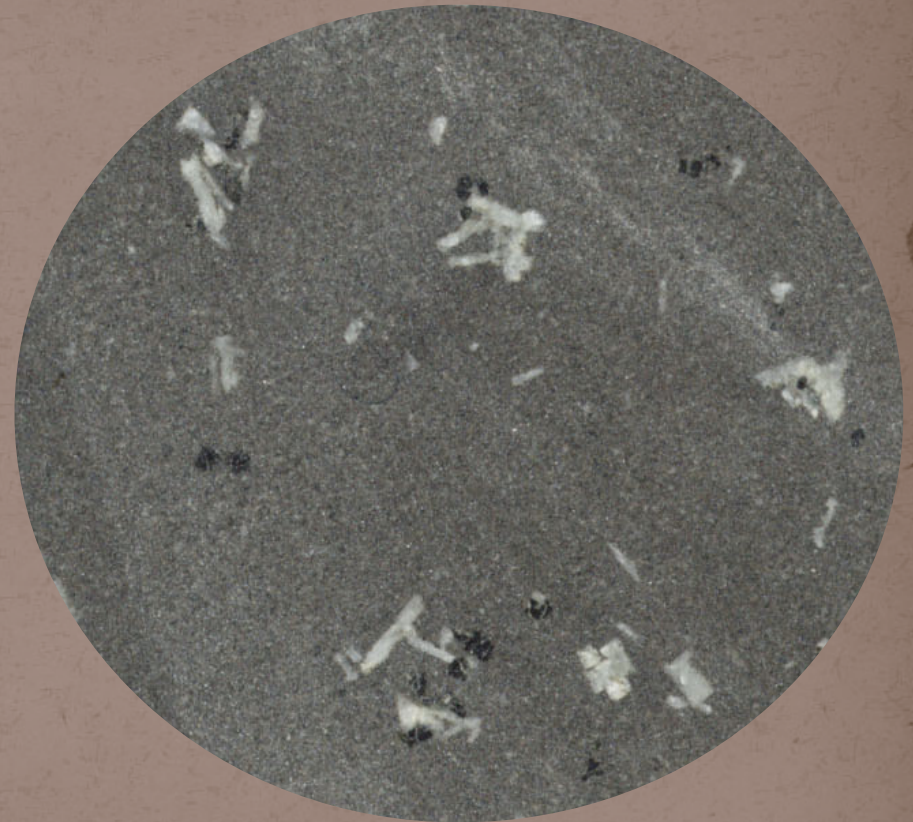
[Fine Grained](#)



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[Back to Crystal Grains](#)

Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



Table of Contents

# Rock Sample 12

Click the rock to  
begin!





Table of Contents

## Sample 12

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn  
more about a  
rock's texture!





## Table of Contents

# Sample 12

Yes! This rock formed from dissolved minerals so its texture belongs to the "other" category.

What size are the particles that make up the rock's texture?

Click the nail picture to test particle size or use a real nail if you have an actual rock sample



[Click nail to test](#)

Coarse Grained

Medium Grained

Fine Grained

A Mixture of particle sizes

If you have an actual rock sample:

Hold the rock over a sheet of white paper and scrape the rock with a steel nail. Look on the sheet of paper for the particles that came off of the rock (sand, silt, clay, etc.).

Tell me about rock texture again!  
(Click me)





Table of Contents

Sample 12

Fine silt and mud sized particles scraped off this rock (a light dust). Now go back and answer that last question.



Go Back



# Sample 12

That's right! The rock has a *fine grained* texture.

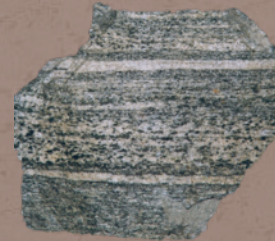
Does the rock have layers?

Yes

No



Examples of Rocks with layers





## Sample 12

Correct! This rock *does not* have layers.

### Will this rock scratch glass?

Click the glass plate picture to test for a scratch or scratch a real glass plate with your actual sample.

Yes

No



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



## Sample 12

Next

No! Sample 11 will not scratch glass.



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



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Sample 12

Will the rock fizz in hydrochloric acid?

Click the acid dropper to test for a effervescence (reaction to HCl). Or test an actual rock sample with a drop of 5% HCl.  
See note below



Click the bottle to test

Yes, a lot!

Yes, a little

No Fizz

If you have an actual rock sample, carefully test with a drop of dilute (5%) Hydrochloric Acid. Scratch the rock surface to work up a powder and place the drop of acid on the powder. Wear goggles.

Note:

5% HCl is a 20 to 1 dilution of concentrated HCl to water (Example: 50 ml conc. HCL to make 1 liter)



## Sample 12

Next

Yes! This rock fizzes a little in Hydrochloric Acid.



If you have an actual rock sample, carefully test with a drop of dilute (5%) Hydrochloric Acid. Scratch the rock surface to work up a powder and place the drop of acid on the powder. Wear goggles.

Note:

5% HCl is a 20 to 1 dilution of concentrated HCl to water  
(Example: 50 ml conc. HCl to make 1 liter)



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Sample 12

Fine grained texture

Silt sized particles

Not layered (this sample)

Will not scratch glass

Fizzes a little with HCl



Sample 12  
is ...



Click me



# Dolomite (Dolostone)

Dolomite is a chemical sedimentary rock that formed from the dissolved mineral dolomite (calcium magnesium carbonate) that precipitated from solution.

Dolomite (also called dolostone) is very similar to limestone and is difficult to distinguish without testing with dilute HCl. Dolomite will only fizz a little while limestone will fizz a lot!

Dolomite is used in cement, as decorative stone in buildings, and to make fertilizer, paper, pesticides, glass and more. As a building material, dolomite is preferred to limestone because it is harder and more resistant to acid.






Table of Contents

Sample 12

# Varieties of Dolomite

Pick another rock 





# Sample 12

[Back to Sample 12](#)



Oops! That's the wrong answer. Let's start this rock sample over again.

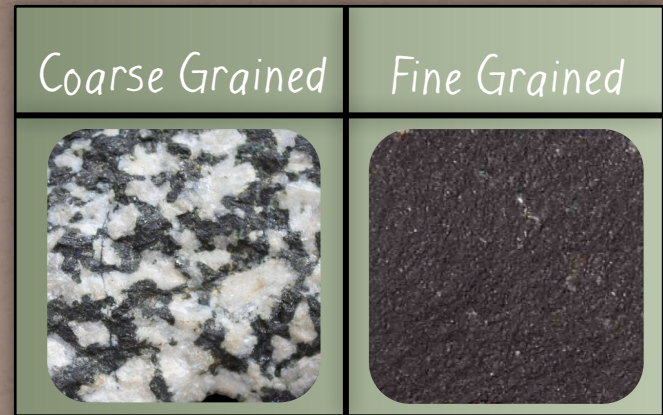




# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy

**Crystalline** - mineral crystals with flat shiny surfaces that reflect light like little mirrors. Crystals can be coarse grained or fine grained. [Read more](#)

**Clastic** - mineral or rock pieces that are stuck together to make up the rock. These pieces are named according to their size:



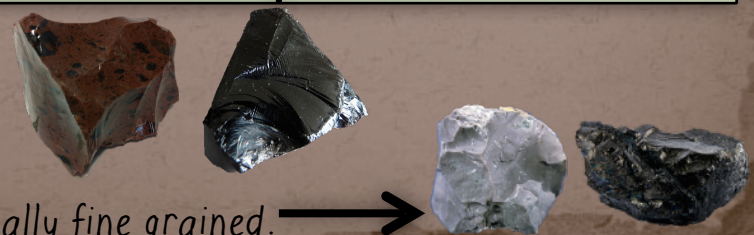
Coarse Grained	Medium Grained	Fine Grained
<p>Pebble 4-64 mm</p> <p>Granule 2 - 4 mm</p> <p>Coarse Sand .5 - 2 mm</p>	<p>Medium Sand .25 - .5 mm</p> <p>Fine Sand .06 - .25 mm</p>	<p>Silt .004 - .06 mm</p> <p>Clay &gt; .004mm</p>

**Glassy** - the rock's surface is smooth like glass.

Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material

(sea shells, coral, plants, etc.). These rocks are usually fine grained.





# Crystal Grains:

Use your  
hand lens!

[Back to Rock  
Texture](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Large crystals are "coarse grained" while smaller crystals are "fine grained".



Click any picture to  
[Enlarge](#)



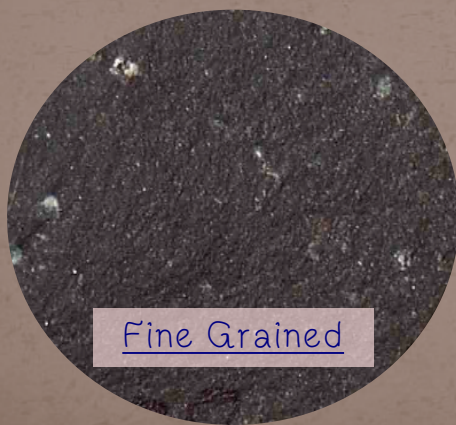
[Coarse Grained](#)



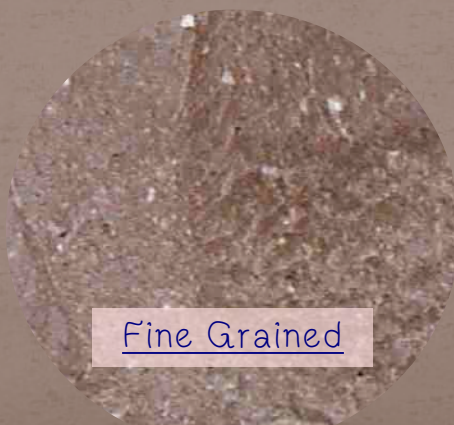
[Coarse Grained](#)



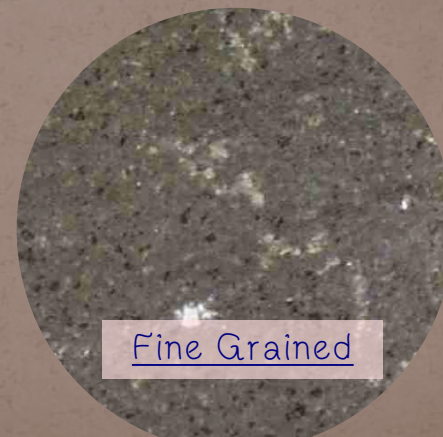
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



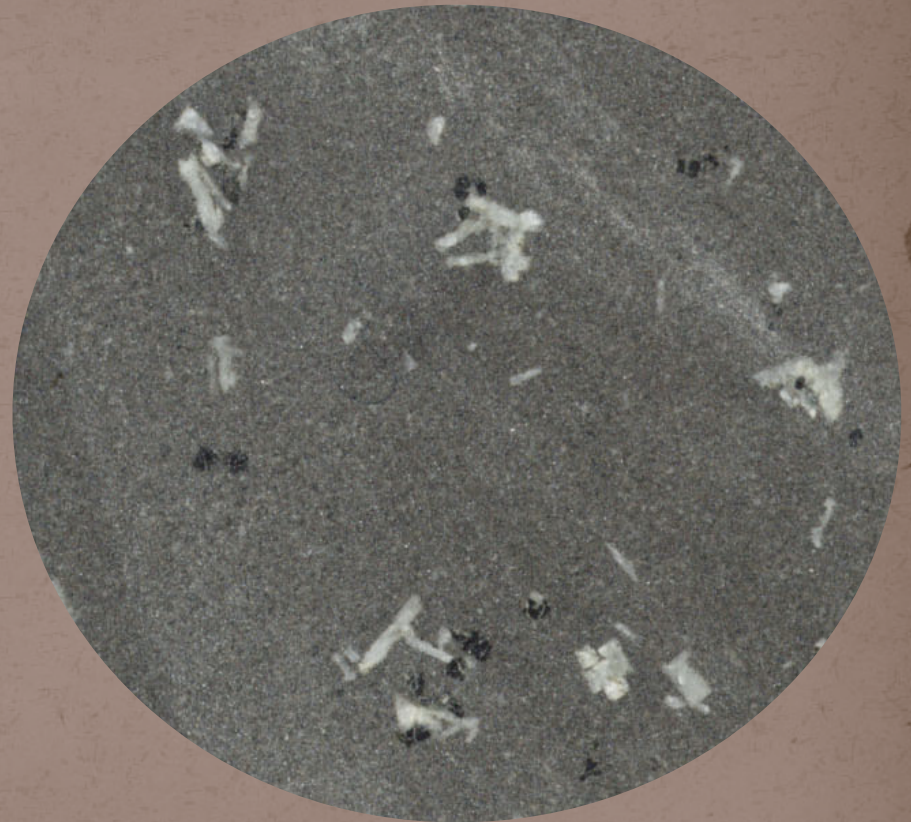
[Fine Grained](#)



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Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



# Rock Sample 13

Click the rock to  
begin!





# Sample 13

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn more about a rock's texture!





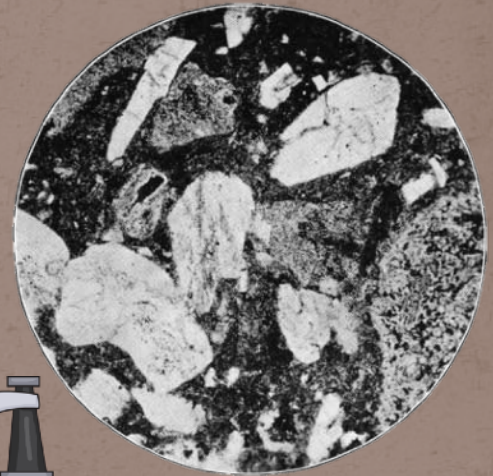
Table of Contents

## Sample 13

Actually, this rock has a Microcrystalline texture but you would need a microscope in order to tell.

(So just click on "crystalline" and we will move on)

Crystalline



Microcrystals (as seen under microscope)



# Sample 13

What size are the particles that make up the rock's texture?

Click the nail picture to test particle size or use a real nail if you have an actual rock sample

[Click nail to test](#)

Coarse Grained

Medium Grained

Fine Grained

A Mixture of particle sizes

If you have an actual rock sample:

Hold the rock over a sheet of white paper and scrape the rock with a steel nail. Look on the sheet of paper for the particles that came off of the rock (sand, silt, clay, etc.).

Tell me about rock texture again!  
(Click me)





Table of Contents

Sample 13

Actually, this sample is harder than the nail so no particles could be scraped off (just click "fine grained" and we can move on).



Fine Grained

No particles scraped off



Table of Contents

Sample 13

That's right! This rock has is fine grained.  
Does the rock have layers?

Yes

No



Examples of Rocks with layers

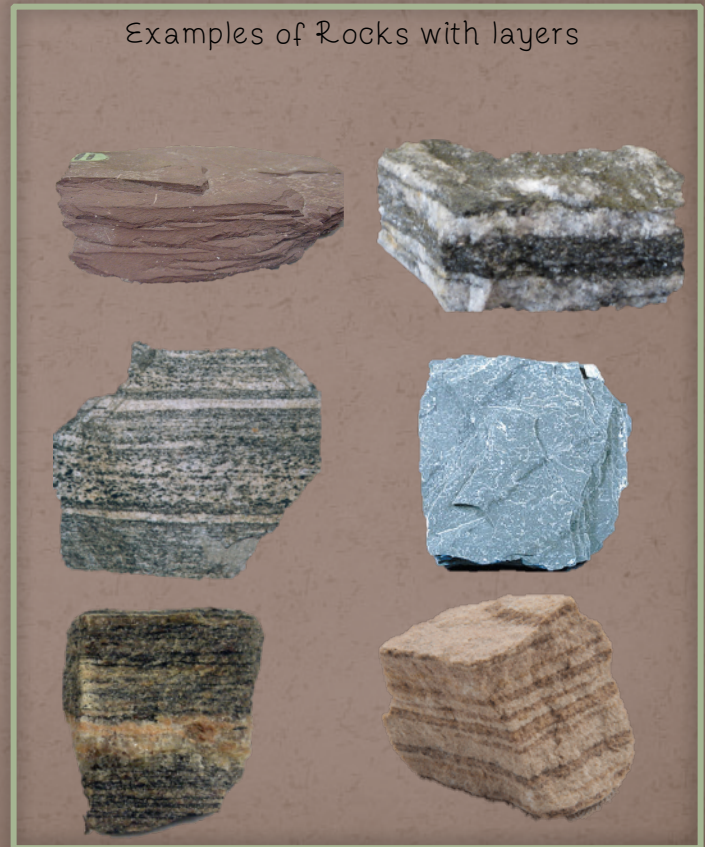




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# Sample 13

Correct! This rock *does not* have layers.

## Will this rock scratch glass?

Yes

No

Click the glass plate picture to test for a scratch or scratch a real glass plate with your actual sample.



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



## Sample 13

Next

Yes! Sample 13 will scratch glass.



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



Table of Contents

Sample 13

Will this rock fizz in hydrochloric acid?

Click the acid dropper to test for a effervescence (reaction to HCl). Or test an actual rock sample with a drop of 5% HCl.

See note below



Click the bottle to test

Yes, a lot!

Yes, a little

No Fizz

If you have an actual rock sample, carefully test with a drop of dilute (5%) Hydrochloric Acid. Scratch the rock surface to work up a powder and place the drop of acid on the powder. Wear goggles.

Note:

5% HCl is a 20 to 1 dilution of concentrated HCl to water (Example: 50 ml conc. HCL to make 1 liter)



No! This rock does not fizz in Hydrochloric Acid.



If you have an actual rock sample, carefully test with a drop of dilute (5%) Hydrochloric Acid. Scratch the rock surface to work up a powder and place the drop of acid on the powder. Wear goggles.

Note:

5% HCl is a 20 to 1 dilution of concentrated HCl to water  
(Example: 50 ml conc. HCl to make 1 liter)



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Sample 13

Fine grained microcrystalline texture

Not layered (this sample)

Will scratch glass

Does not fizz with HCl



Sample  
13 is ...



Click me



## Sample 13

Next

# Chert

Chert is a chemical sedimentary rock that forms from dissolved silicon dioxide limestone sediments. The silicon dioxide crystallizes as microcrystals. If enough microcrystals grow together, chert is formed.

Chert (also called flint) is harder than limestone or dolomite but will not fizz at all with Hydrochloric acid. Chert will break with sharp edges and will produce a spark when struck with steel.

Because of these properties, chert was widely used in the past as a cutting tool, in arrowheads, in flint lock rifles, and as a fire starter.




Chert has many varieties



Table of Contents

Sample 13

# Varieties of Chert

Pick another rock 





# Sample 13

[Back to Sample 13](#)



Oops! That's the wrong answer. Let's start this rock sample over again.



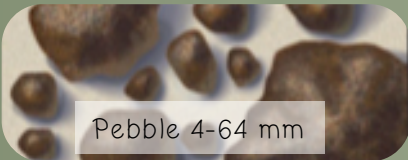


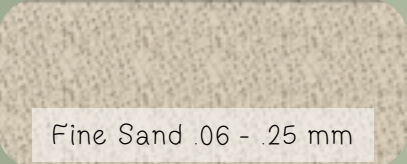
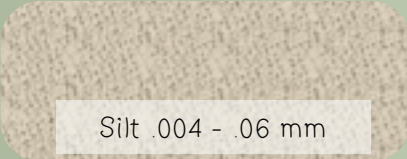



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**Glassy** - the rock's surface is smooth like glass. →

Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material

(sea shells, coral, plants, etc.). These rocks are usually fine grained. →





# Crystal Grains:

Use your  
hand lens!

[Back to Rock  
Texture](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Large crystals are "coarse grained" while smaller crystals are "fine grained".



Click any picture to  
[Enlarge](#)



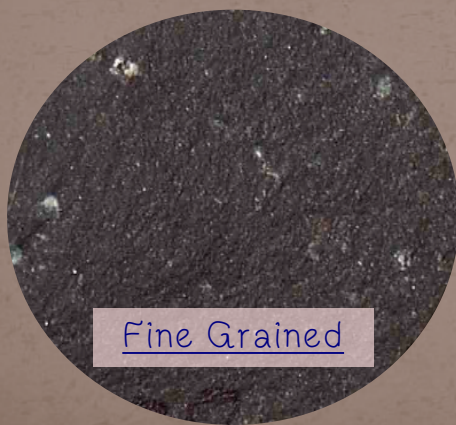
[Coarse Grained](#)



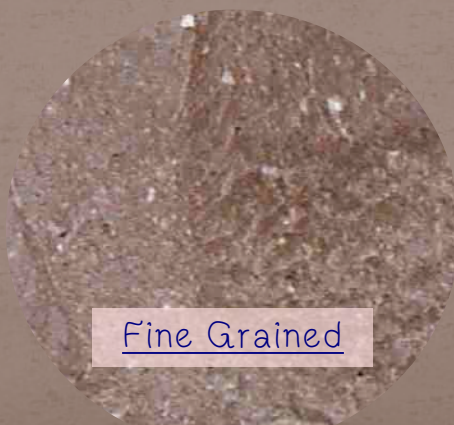
[Coarse Grained](#)



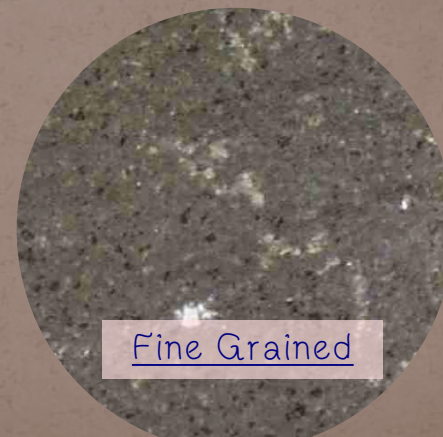
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



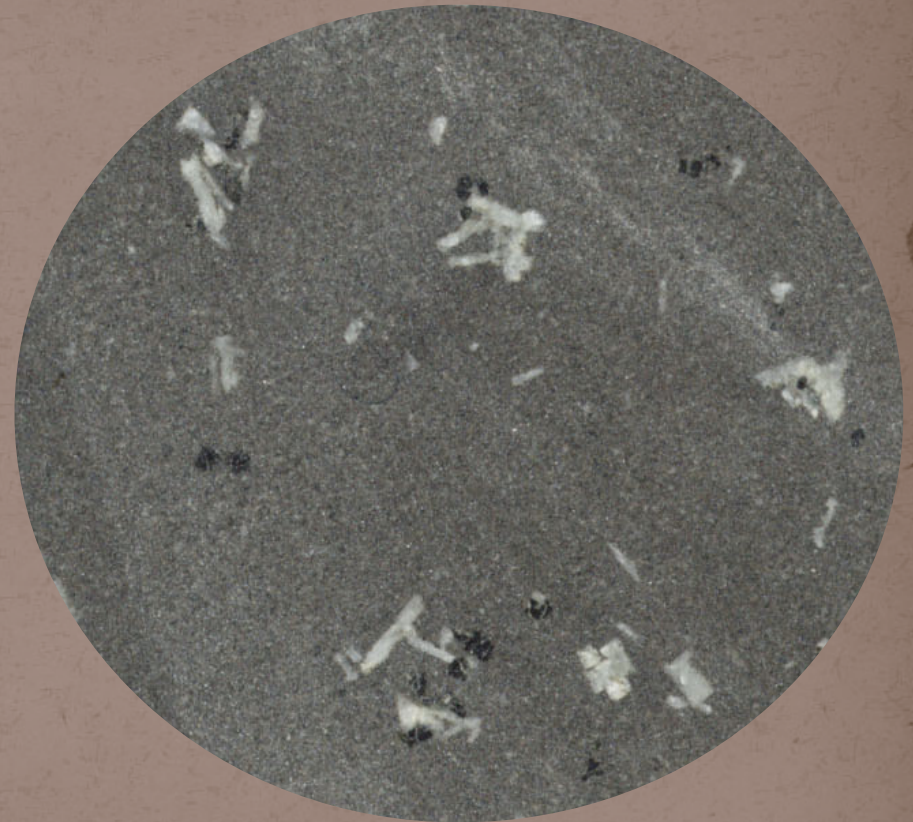
[Fine Grained](#)



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Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



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# Rock Sample 14

Click the rock to  
begin!

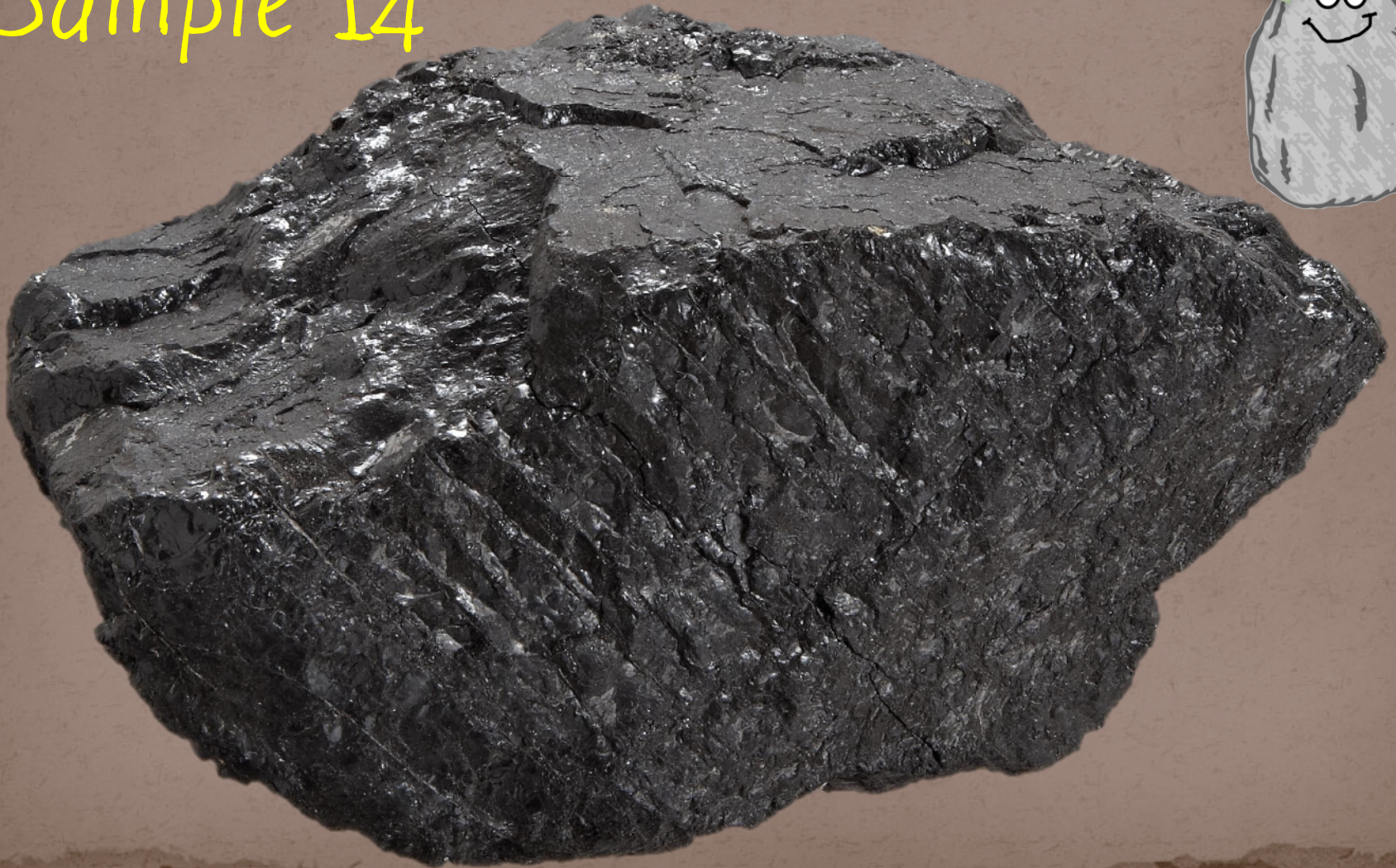
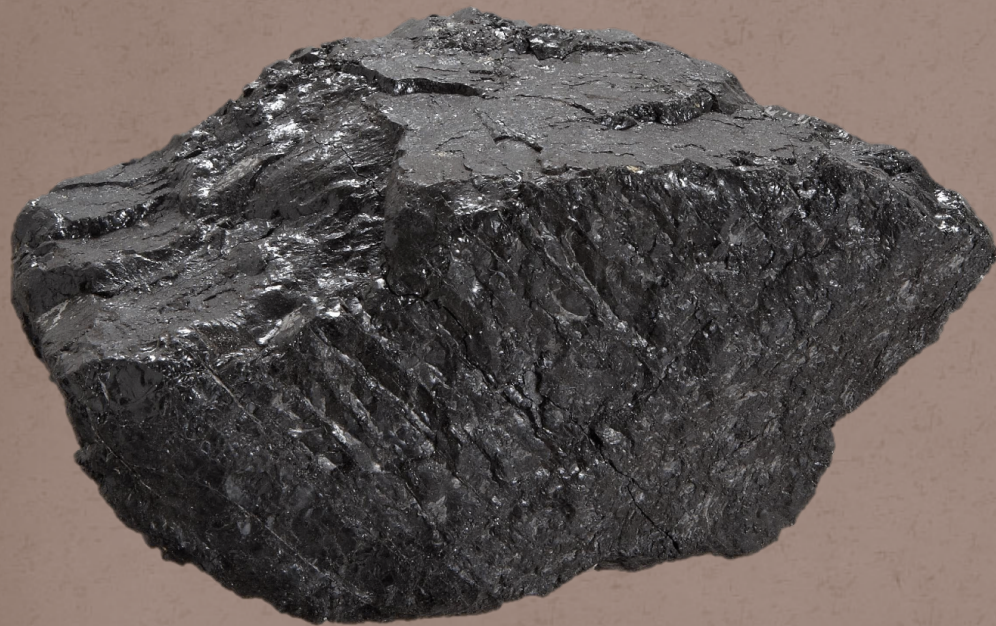




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Sample 14

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn  
more about a  
rock's texture!





Table of Contents

# Sample 14

Yes! Because this rock was formed from organic material, its texture fits into the "other" category.

## What size are the particles that make up the rock's texture?

Click the nail picture to test particle size or use a real nail if you have an actual rock sample

[Click nail to test](#)

Coarse Grained

Medium Grained

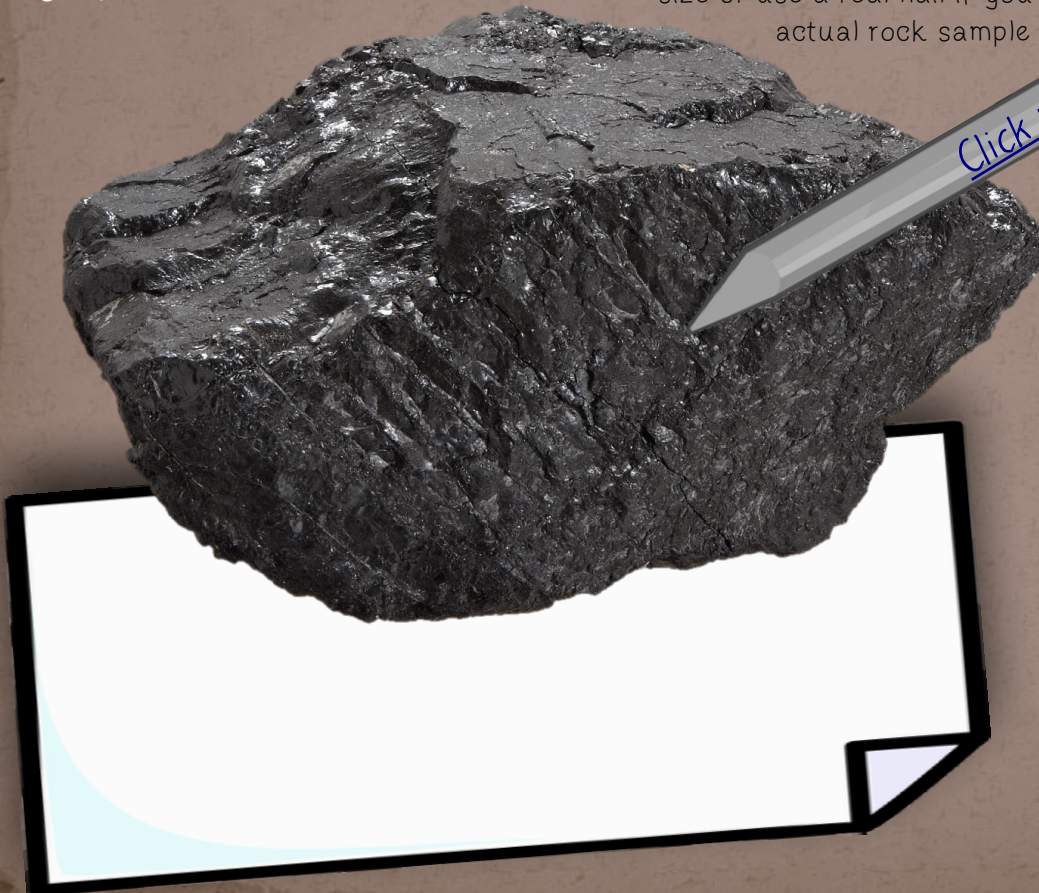
Fine Grained

A Mixture of particle sizes

If you have an actual rock sample:

Hold the rock over a sheet of white paper and scrape the rock with a steel nail. Look on the sheet of paper for the particles that came off of the rock (sand, silt, clay, etc.).

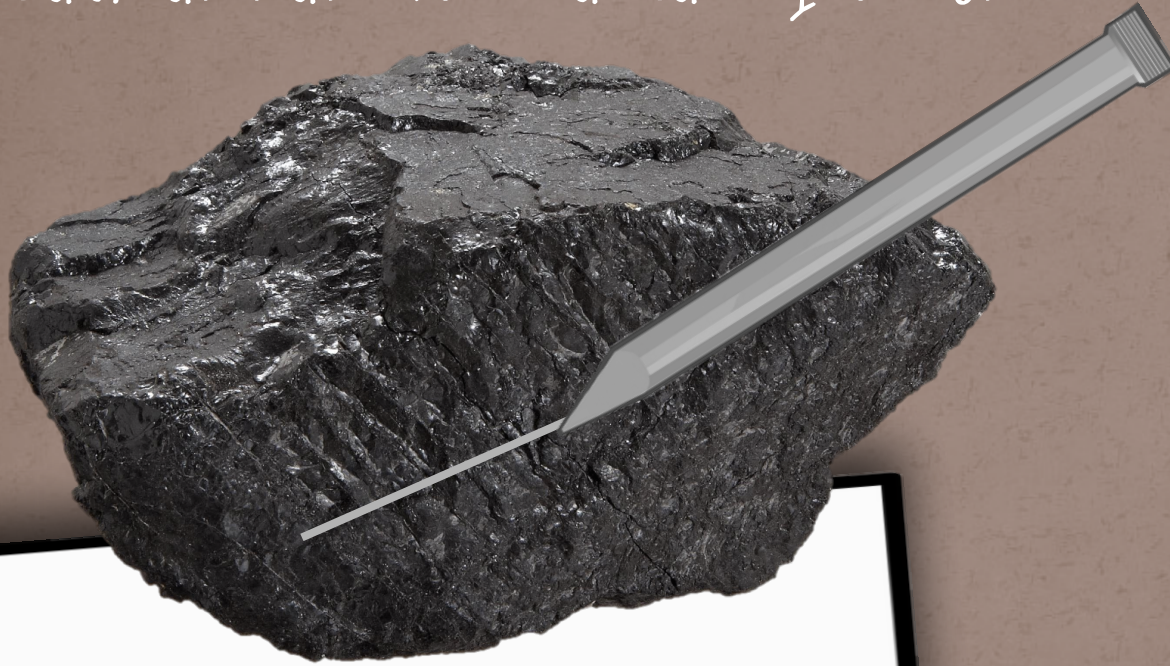
Tell me about rock texture again!  
(Click me)





# Sample 14

A fine black dust can be scraped off of this rock. Now go back and answer that last question.



Go Back



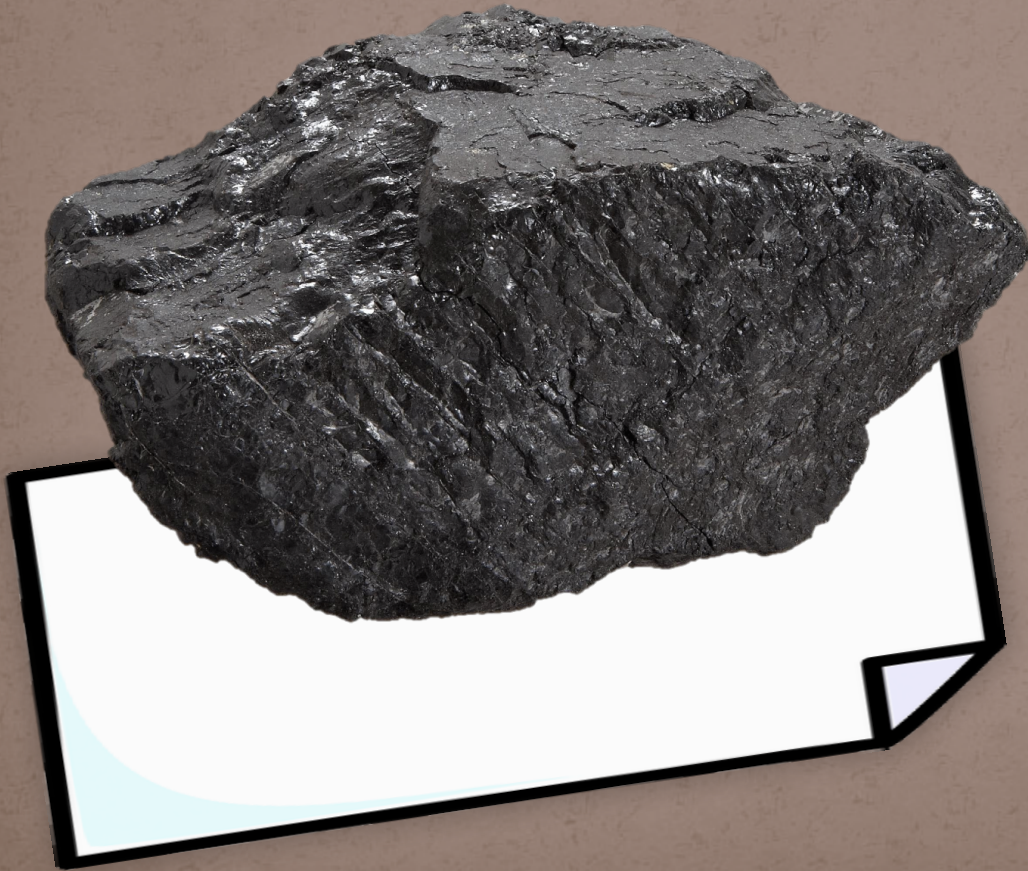
Black dust scrapes off



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## Sample 14

That's right! This rock has a *fine grained* texture.  
Now rub the rock against the paper.  
Will it rub off onto the paper?



Yes, a lot!

Yes, a little

Not at all

Click the paper to test

...Or rub your own sample on a piece of paper.



# Sample 14

Next

Yes! The rock will rub off a little onto the paper.



If you said it rubbed off "a lot" that's O.K. Some samples will rub off more than others.



The rock will rub off onto the paper and make it dirty.

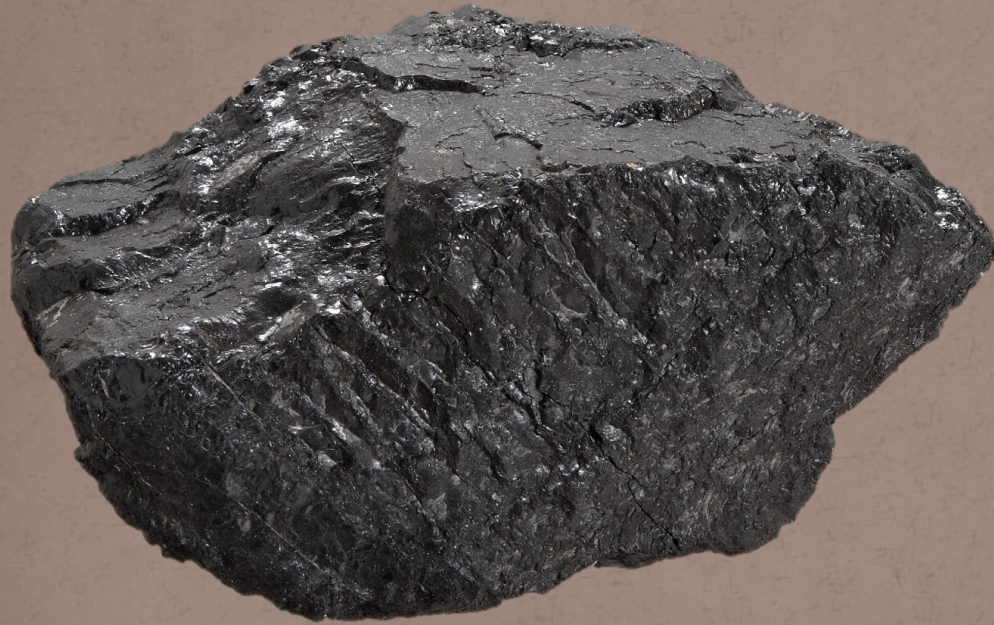


# Sample 14

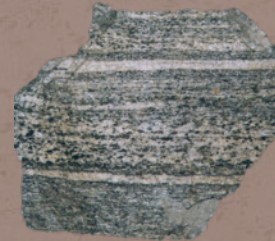
Does the rock have layers?

Yes

No



Examples of Rocks with layers





## Sample 14

Correct! The rock *does not* have layers.

# Will this rock scratch glass?

Click the glass plate picture to test for a scratch or scratch a real glass plate with your actual sample.

Yes

No



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



## Sample 14

Next

No! Sample 14 will not scratch glass.



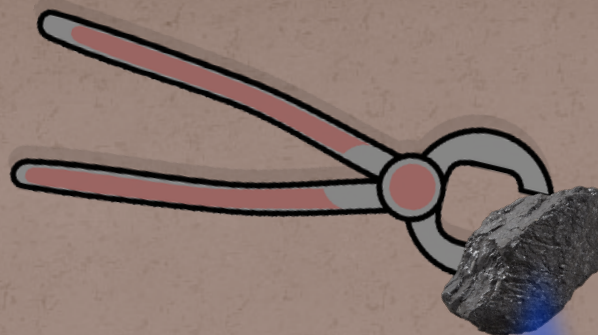
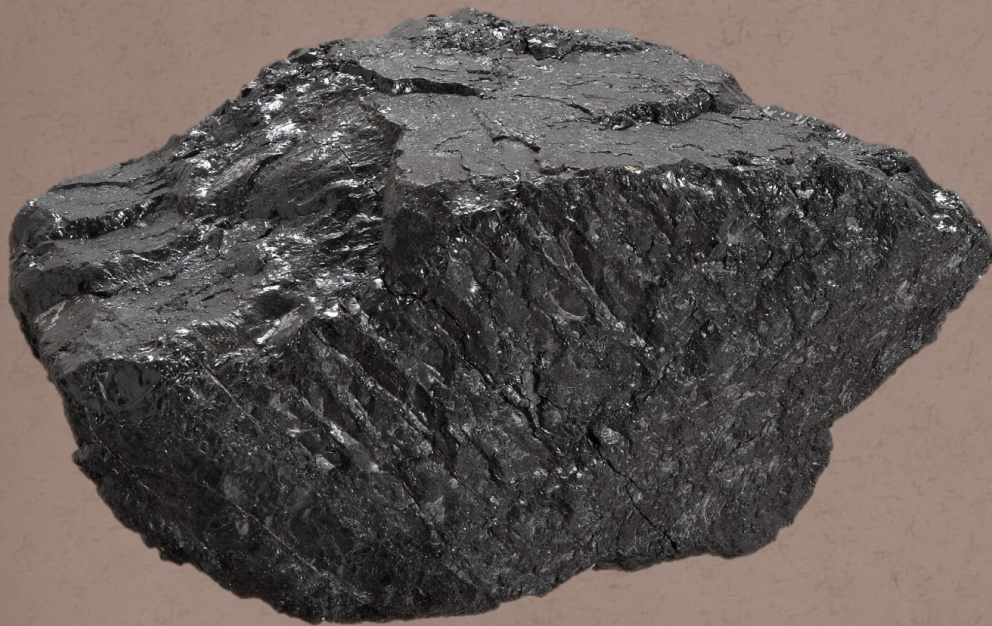
If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



# Sample 14

## Will this rock burn?

Click the Bunsen burner picture to test or test a real rock (ask your teacher).



Yes

No



Click the burner to test

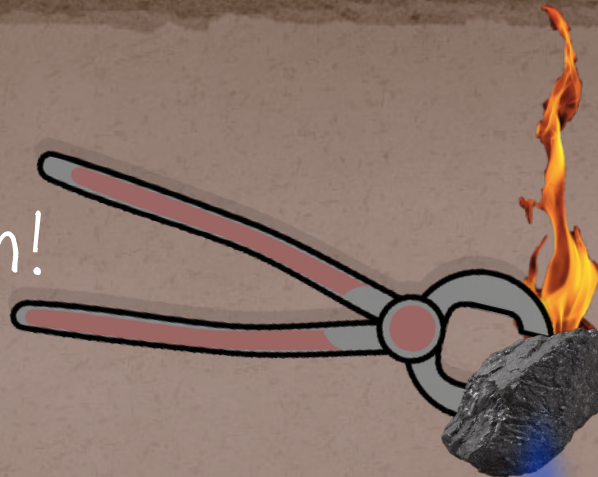
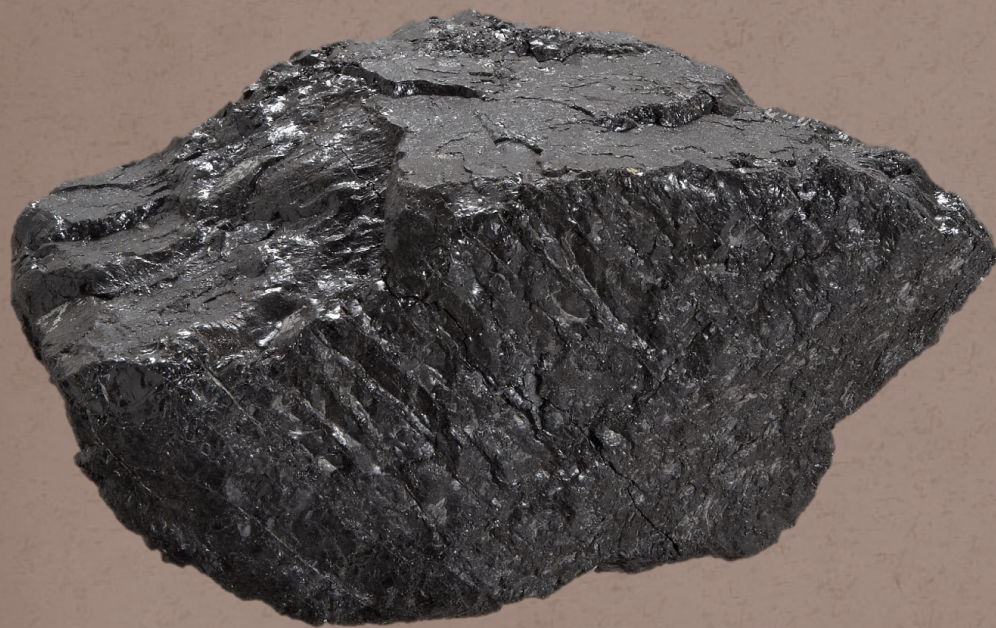
Ask your teacher if your lab is set up for this ... Carefully hold a small sample of this rock over a Bunsen burner flame. Be sure to wear goggles!



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## Sample 14

Yes, this rock will burn!



Next



Ask your teacher if your lab is set up for this ...  
Carefully hold a small sample of this rock over a  
Bunsen burner flame. Be sure to wear goggles!



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Sample 14

Black in Color

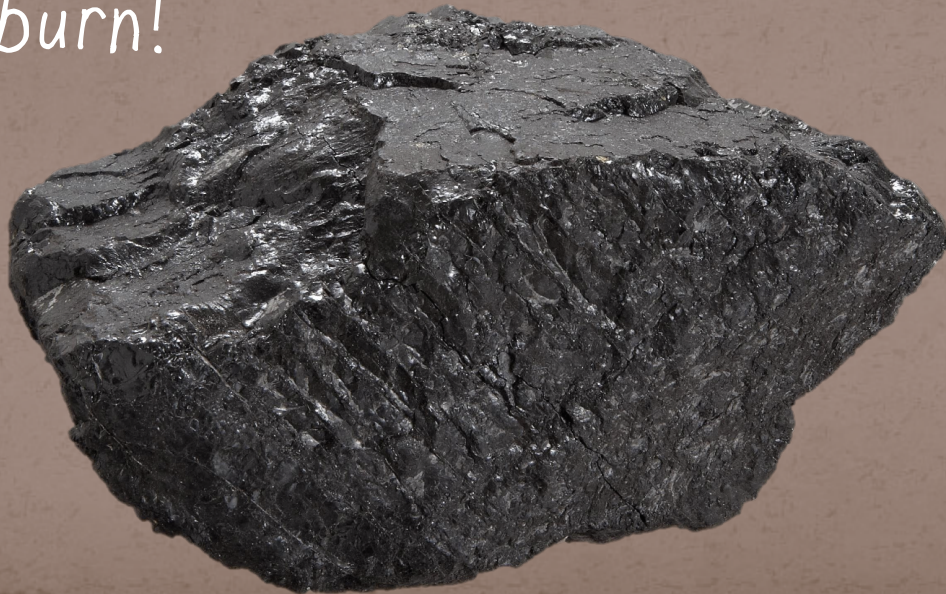
Fine grained

Not layered (this sample)

Will not scratch glass

Rubs off on paper and your hands

Will burn!



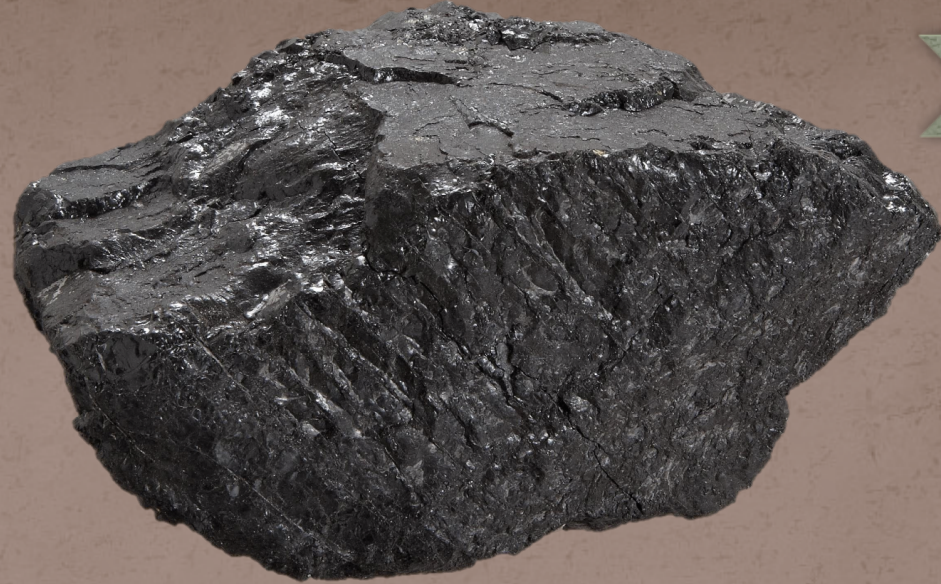
Sample  
14 is ...



Click me



# Coal




Coal is an organic sedimentary rock that forms from plant material that accumulated in an ancient swamp. Because the plants were buried in oxygen poor swamp water, they did not decay. Perfect conditions must exist for thousands of years in order for coal to form. Most of the coal we dig up today was formed millions of years ago.

Coal, also known as a fossil fuel, is used to produce electricity. Coal is also important in steel manufacturing, water purification, carbon fiber production, lubricants, water repellents, and thousands of other products.

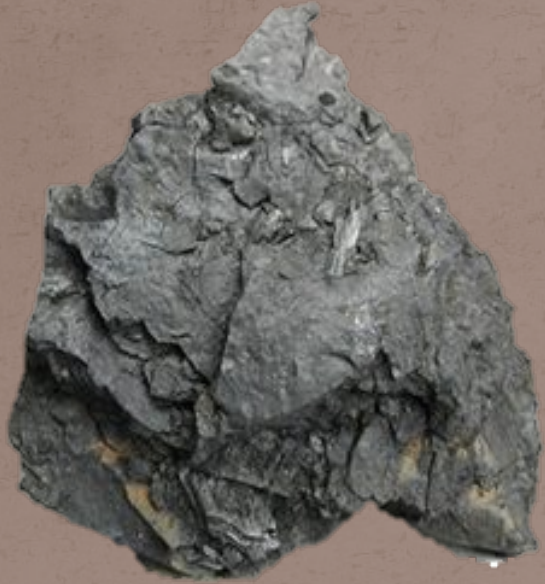
There are several types or ranks of coal.



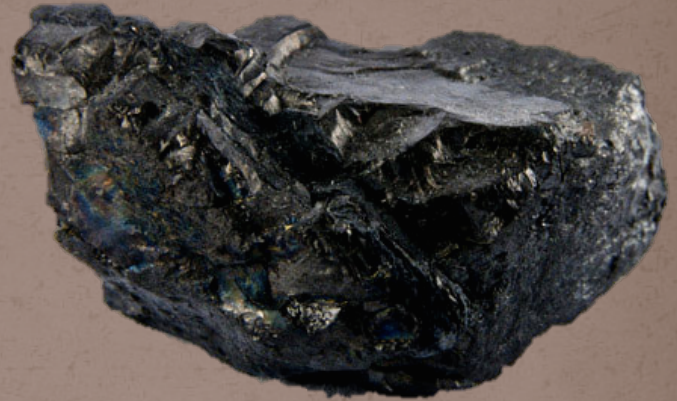
Sample 14

Pick another rock 

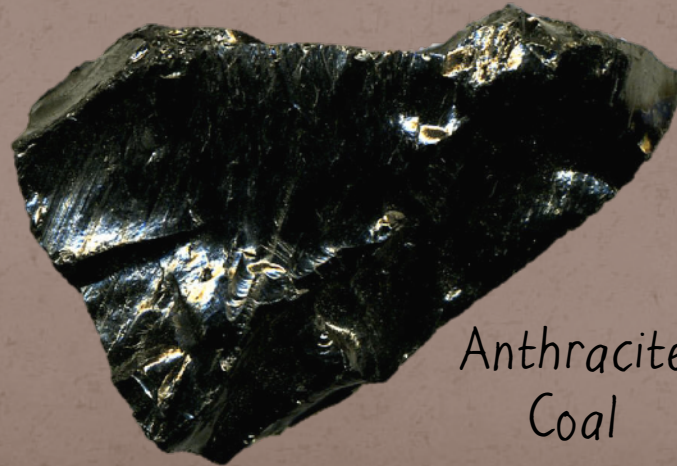
# Varieties of Coal



Lignite Coal



Bituminous  
Coal

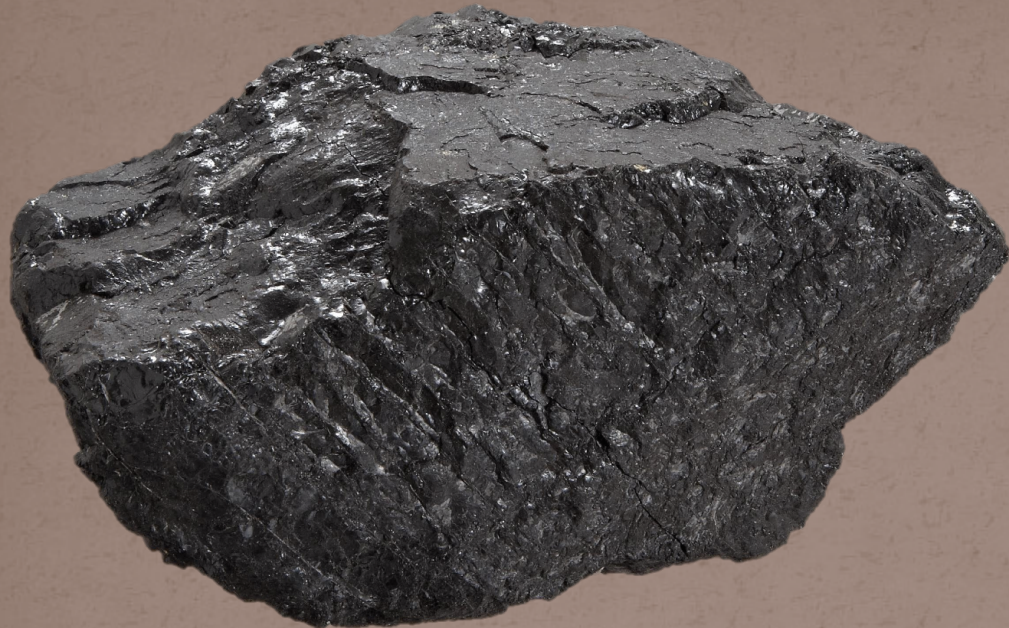


Anthracite  
Coal



# Sample 14

[Back to Sample 14](#)



Oops! That's the wrong answer. Let's start this rock sample over again.




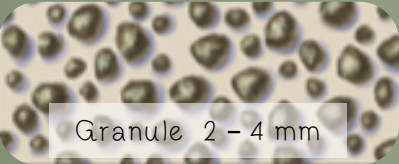

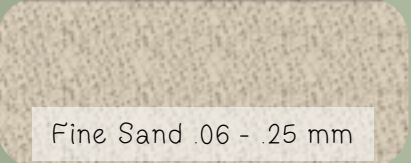
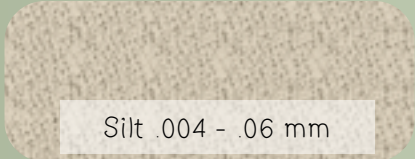



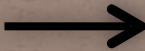
# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy

**Crystalline** - mineral crystals with flat shiny surfaces that reflect light like little mirrors. Crystals can be coarse grained or fine grained. [Read more](#)

**Clastic** - mineral or rock pieces that are stuck together to make up the rock. These pieces are named according to their size:

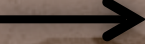


Coarse Grained	Medium Grained	Fine Grained
 <p>Pebble 4-64 mm</p>  <p>Coarse Sand .5 - 2 mm</p>  <p>Granule 2 - 4 mm</p>	 <p>Medium Sand .25 - .5 mm</p>  <p>Fine Sand .06 - .25 mm</p>	 <p>Silt .004 - .06 mm</p>  <p>Clay &gt; .004mm</p>

**Glassy** - the rock's surface is smooth like glass. 

Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material

(sea shells, coral, plants, etc.). These rocks are usually fine grained. 





# Crystal Grains:

Use your  
hand lens!

[Back to Rock  
Texture](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Large crystals are "coarse grained" while smaller crystals are "fine grained".

Click any picture to  
[Enlarge](#)



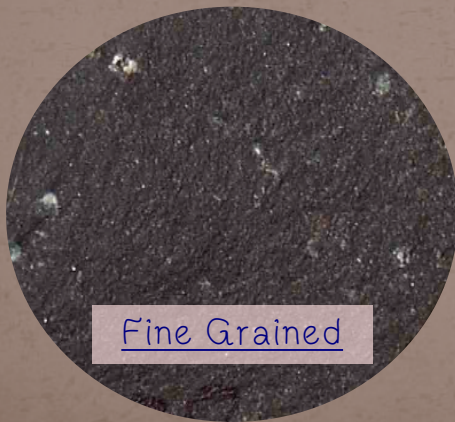
[Coarse Grained](#)



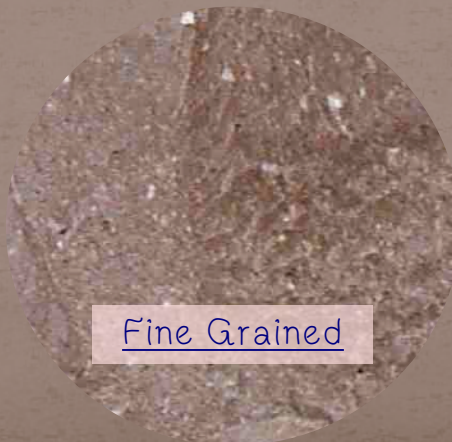
[Coarse Grained](#)



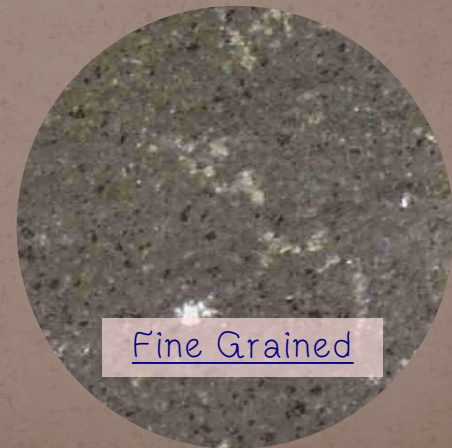
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



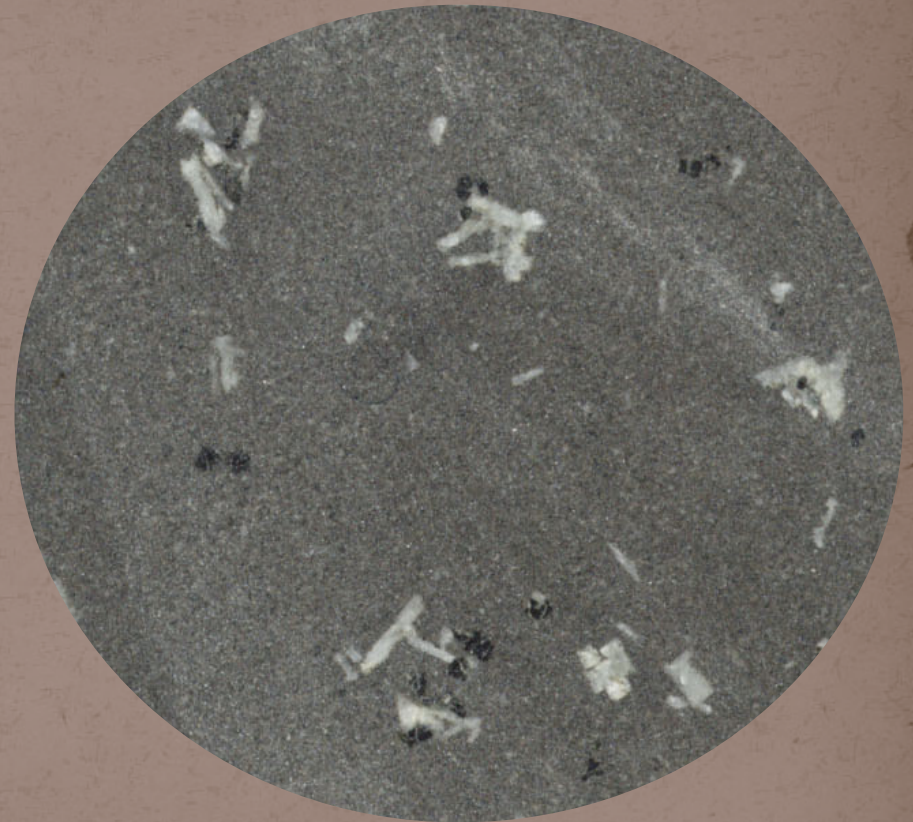
[Fine Grained](#)



# Table of Contents

[Back to Crystal Grains](#)

Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



# Rock Sample 15

Click the rock to  
begin!





Sample 15

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn  
more about a  
rock's texture!





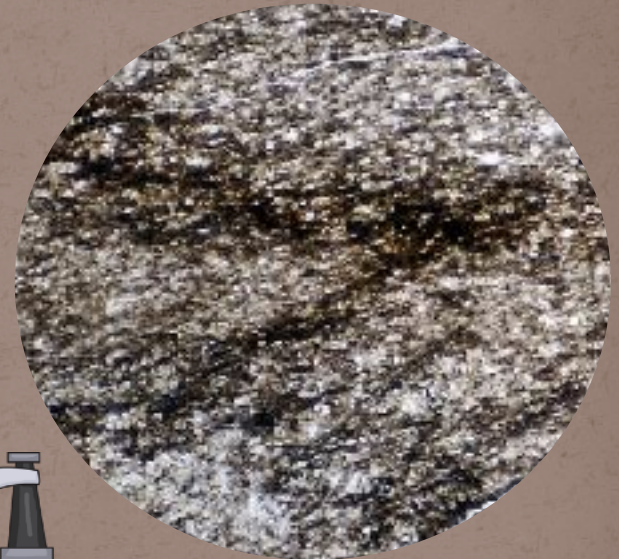
Table of Contents

## Sample 15

Actually, this rock has a Microcrystalline texture but you would need a microscope in order to tell.

(So just click on "crystalline" and we will move on)

Crystalline



Microcrystals (as seen under microscope)



Table of Contents

# Sample 15

## What size are the particles that make up the rock?

Click the nail picture to test particle size or use a real nail if you have an actual rock sample

Coarse Grained

Medium Grained

Fine Grained

A Mixture of particle sizes



If you have an actual rock sample:

Hold the rock over a sheet of white paper and scrape the rock with a steel nail. Look on the sheet of paper for the particles that came off of the rock (sand, silt, clay, etc.).

Tell me about rock texture again!  
(Click me)



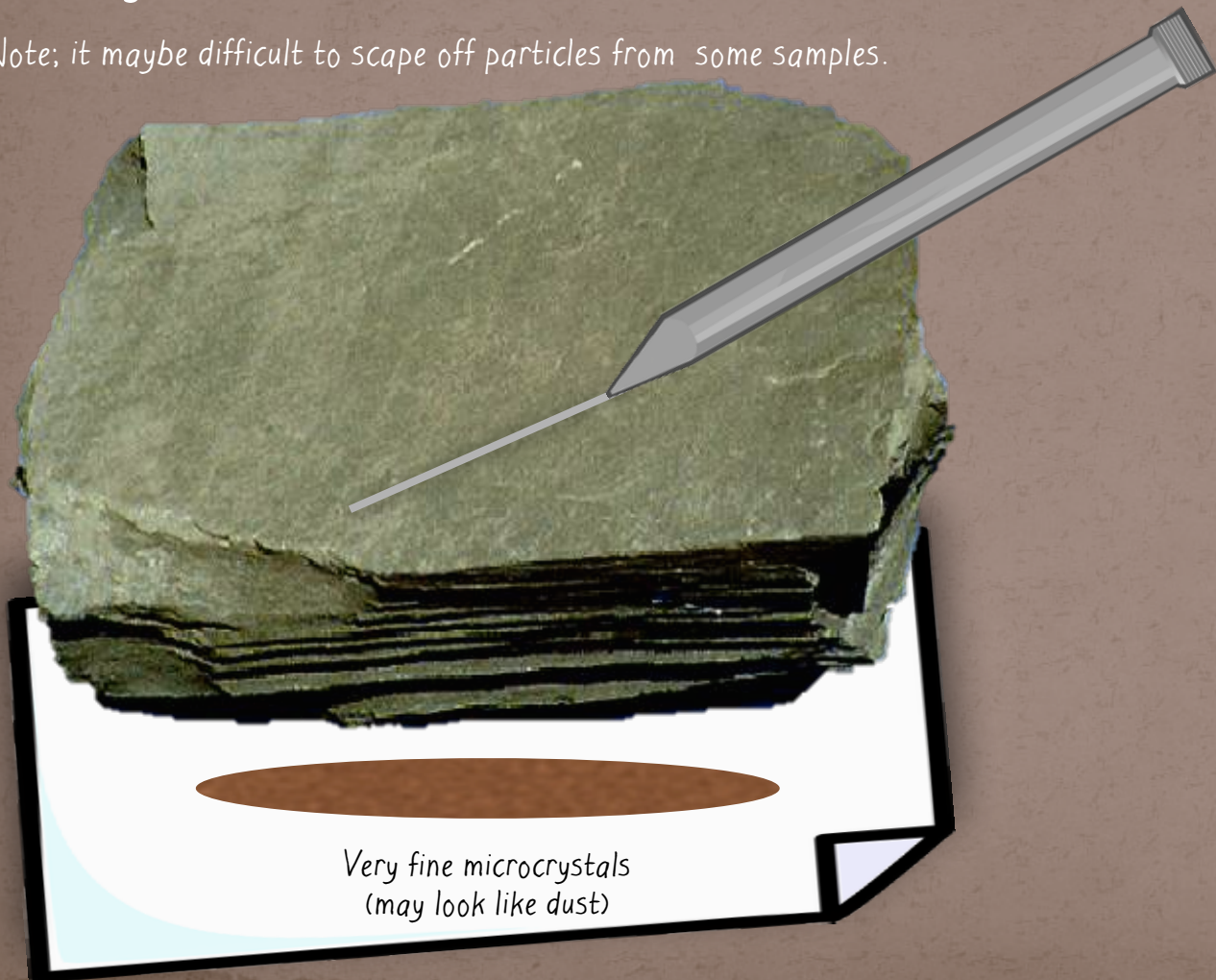


Table of Contents

Sample 15

Very fine grained crystalline particles scraped off this rock.  
Now go back and answer that last question.

Note; it maybe difficult to scape off particles from some samples.



Very fine microcrystals  
(may look like dust)

Go Back



Table of Contents

Sample 15

Yes! The rock is very fine grained.

Does the rock have layers?

Yes

No



Examples of Rocks with layers





Table of Contents

Sample 15

That's right. This rock has layers.  
Are the layers thick or thin?

Thick

Thin



Thin Layers

Thick Layers



Table of Contents

# Sample 15

Correct! This rock has *thin layers*.

Microcrystalline texture

Very Fine grained *(made of recrystallized silt and mud)*

Thin layers



Sample  
15 is ...



Click me



## Sample 15

Next

# Slate

Slate is a metamorphic rock that formed from shale that was changed by heat and pressure. Slate is a low grade metamorphic rock which means the amount of heat and pressure needed is low compared to other (high grade) metamorphic rocks.

The clay in the shale is changed to mica crystals that line up in flat layers. Slate will break more easily along these layers.

Slate is used as a building material in roofs, and in floor tiles. Slate is also used for chalkboards and billiard tables.





Sample 15

# Varieties of Slate

Pick another rock 



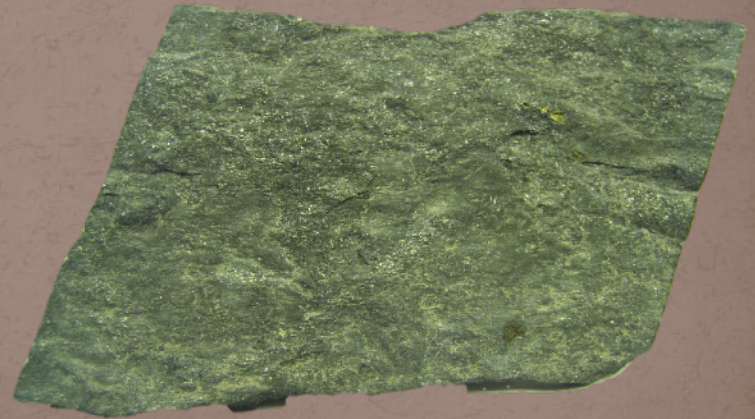
Gray Slate



Red or pink Slate



Blue Green Slate



Green Slate



# Sample 15

[Back to Sample 15](#)



Oops! That's the wrong answer. Let's start this rock sample over again.

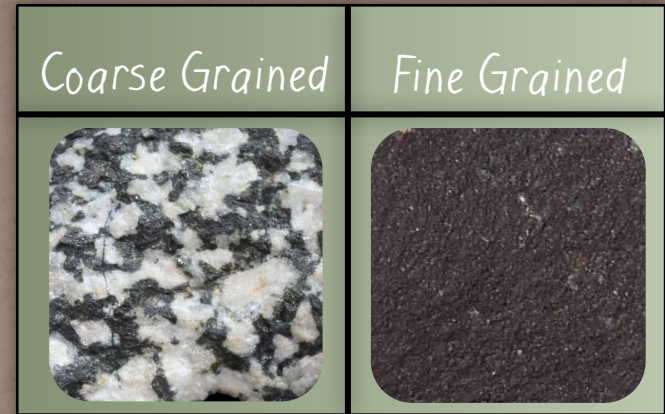




# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy

**Crystalline** - mineral crystals with flat shiny surfaces that reflect light like little mirrors. Crystals can be coarse grained or fine grained. [Read more](#)

**Clastic** - mineral or rock pieces that are stuck together to make up the rock. These pieces are named according to their size:



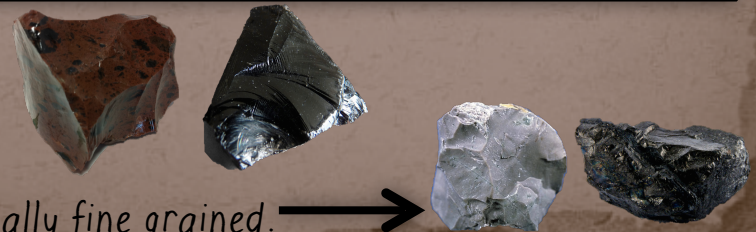
Coarse Grained	Medium Grained	Fine Grained
 <p>Pebble 4-64 mm</p>  <p>Coarse Sand .5 - 2 mm</p>  <p>Granule 2 - 4 mm</p>	 <p>Medium Sand .25 - .5 mm</p>  <p>Fine Sand .06 - .25 mm</p>	 <p>Silt .004 - .06 mm</p>  <p>Clay &gt; .004mm</p>

**Glassy** - the rock's surface is smooth like glass. →

Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material

(sea shells, coral, plants, etc.). These rocks are usually fine grained. →





# Crystal Grains:

Use your hand lens!



[Back to Rock Texture](#)

Click any picture to [Enlarge](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Large crystals are "coarse grained" while smaller crystals are "fine grained".



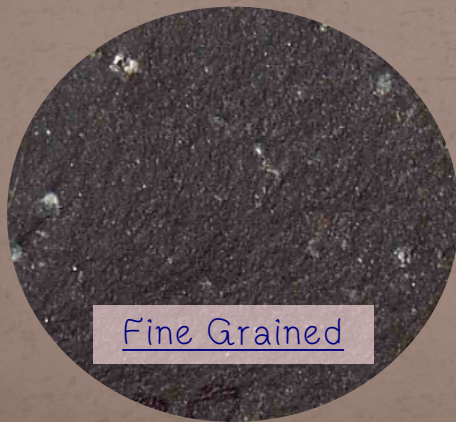
[Coarse Grained](#)



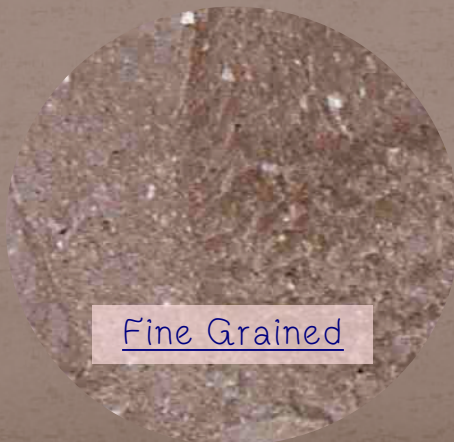
[Coarse Grained](#)



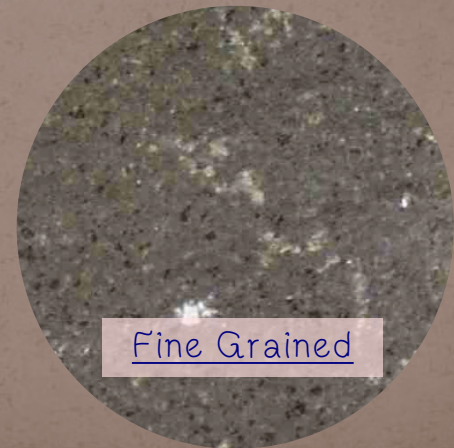
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



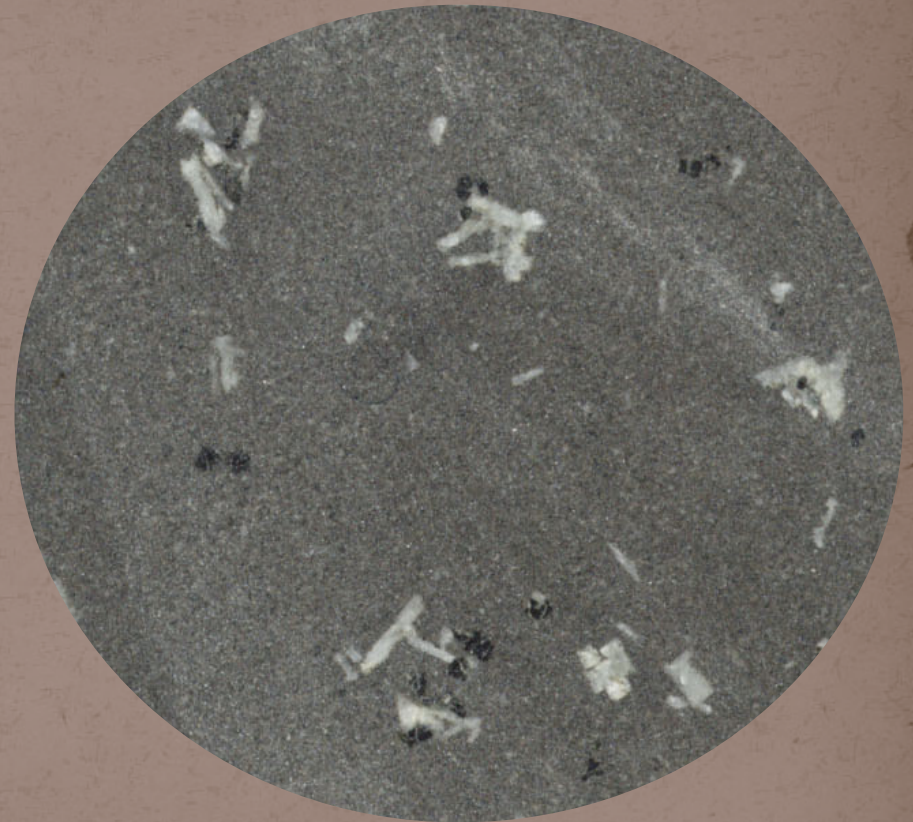
[Fine Grained](#)



# Table of Contents

[Back to Crystal Grains](#)

Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



# Rock Sample 16



Click the rock to  
begin!





Table of Contents

## Sample 16

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn  
more about a  
rock's texture!





Table of Contents

# Sample 16

Yes! This rock has a *crystalline* texture.

Are the crystal grains *large* (coarse grained) or *small* (fine grained)?

Large

Small



Examples of Coarse Crystal Grains



Examples of Fine Crystal Grains

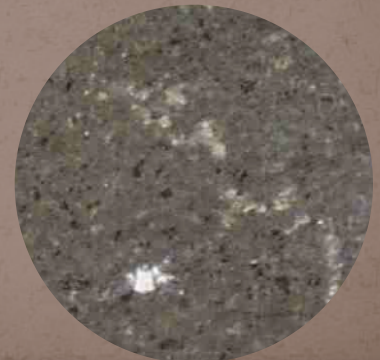
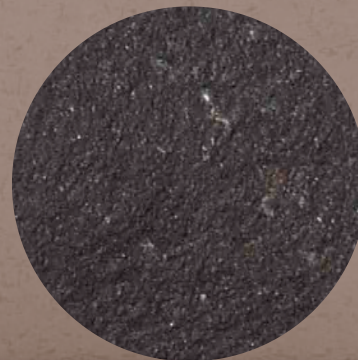




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Sample 16

Correct! The rock is coarse grained.

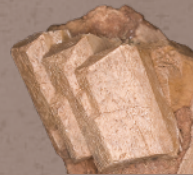
Does this rock contain light colored minerals (feldspar, quartz) or is made of mostly dark colored minerals (biotite, hornblende, olivine)?

Light

Dark



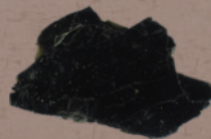
Plagioclase  
Feldspar



Orthoclase  
Feldspar



Quartz



Biotite



Hornblende



Olivine



Table of Contents

Sample 16

That's right. This rock *does* contain light colored minerals.  
Are the minerals lined up in stripes or bands (layers)?

Yes

No



Examples of Rocks with minerals lined up in stripes or bands (layers).



Table of Contents

Sample 16

Right again! The minerals *are* lined up in bands (layers).  
Will this rock scratch glass?

Yes

No

Click the glass plate picture to test for a scratch or scratch a real glass plate with your actual sample.



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



## Sample 16

Yes! Sample 16 will scratch glass.

Coarse grained  
Crystalline  
Light and dark colored minerals  
Minerals in bands (layers)  
Scratches glass



Sample  
16 is ...



Click me

If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



## Sample 16

# Gneiss

pronounced "nice"

Gneiss is metamorphic rock that formed from Granite that was changed by extreme heat and pressure. The minerals in the granite melted and recrystallized in layers or bands.

Gneiss has the same mineral content as the Granite from which it formed.

Granite is commonly used as a building material for floors, walls, countertops, and more.

There are many varieties of Gneiss.

Next



Orthoclase  
Feldspar



Quartz



Biotite




Hornblende

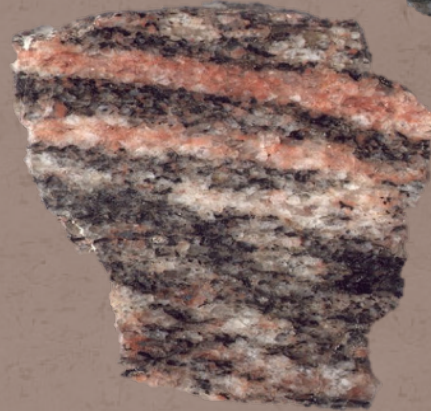
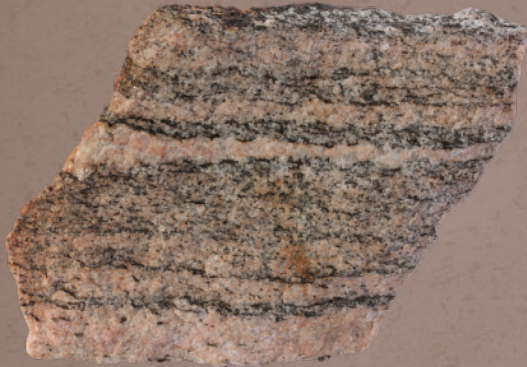


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Sample 16

# Varieties of Gneiss

Pick another rock 





# Sample 16

[Back to Sample 16](#)



Oops! That's the wrong answer. Let's start this rock sample over again.



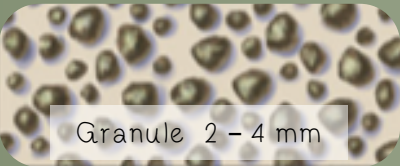


# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy

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Coarse Grained	Medium Grained	Fine Grained
 <p>Pebble 4-64 mm</p>  <p>Coarse Sand .5 - 2 mm</p>  <p>Granule 2 - 4 mm</p>	 <p>Medium Sand .25 - .5 mm</p>  <p>Fine Sand .06 - .25 mm</p>	 <p>Silt .004 - .06 mm</p>  <p>Clay &gt; .004mm</p>

**Glassy** - the rock's surface is smooth like glass. →

Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material

(sea shells, coral, plants, etc.). These rocks are usually fine grained. →





# Crystal Grains:

Use your hand lens!



[Back to Rock Texture](#)

Click any picture to [Enlarge](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Large crystals are "coarse grained" while smaller crystals are "fine grained".



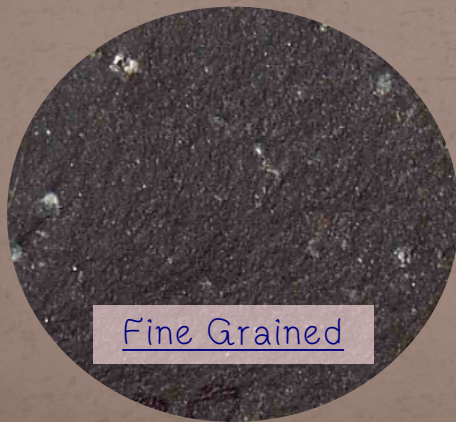
[Coarse Grained](#)



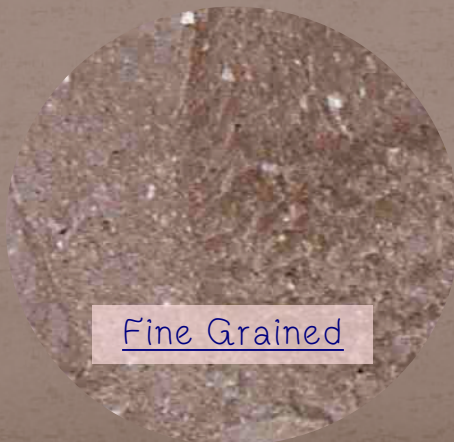
[Coarse Grained](#)



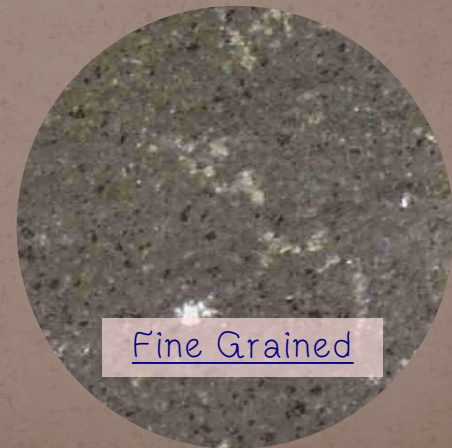
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



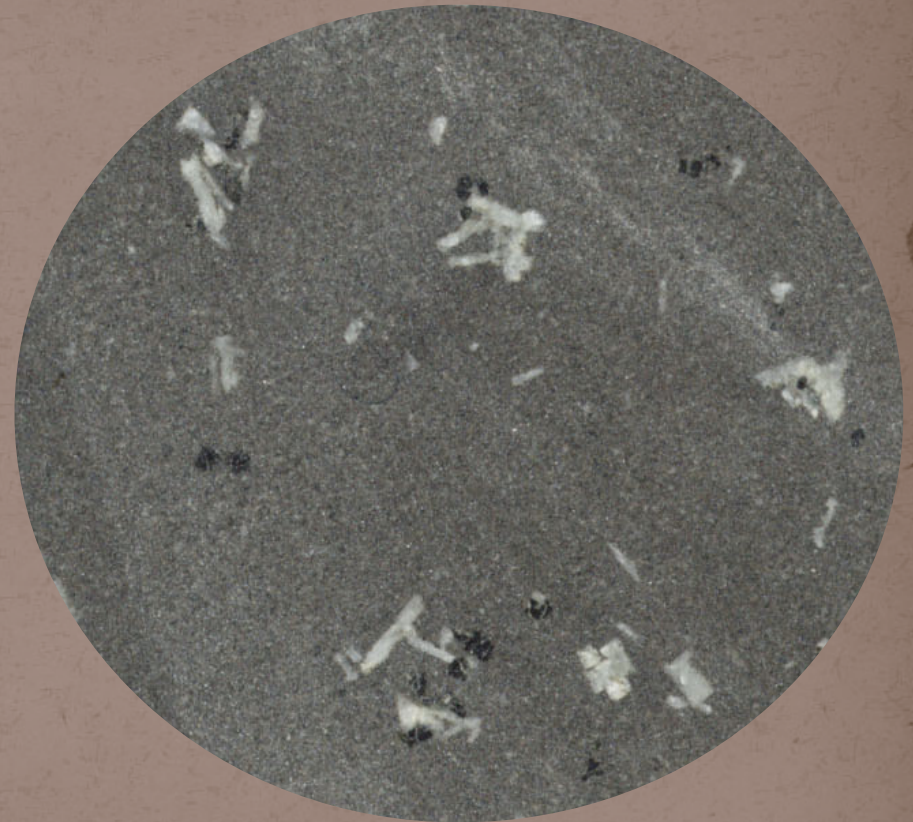
[Fine Grained](#)



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[Back to Crystal Grains](#)

Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



# Rock Sample 17

Click the rock to  
begin!





# Sample 17

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn more about a rock's texture!

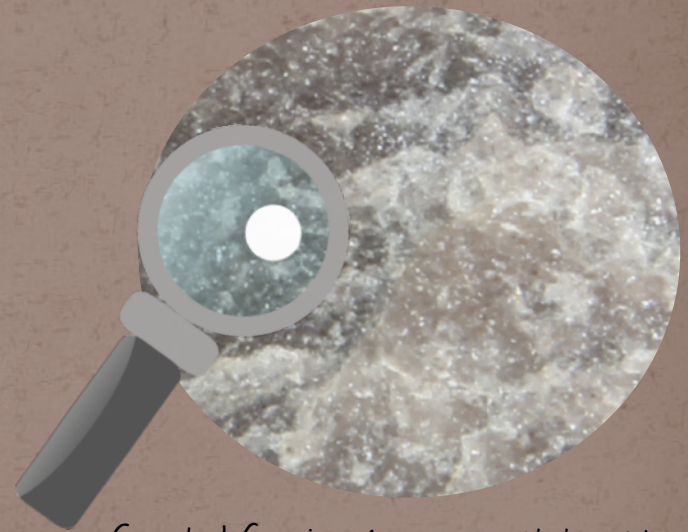




## Sample 17

Next

Yes! This rock has a *Crystalline texture* but the crystals look a bit different from crystals in other rocks (they have a “sugary” appearance).



Crystal Grains (as seen with hand lens)



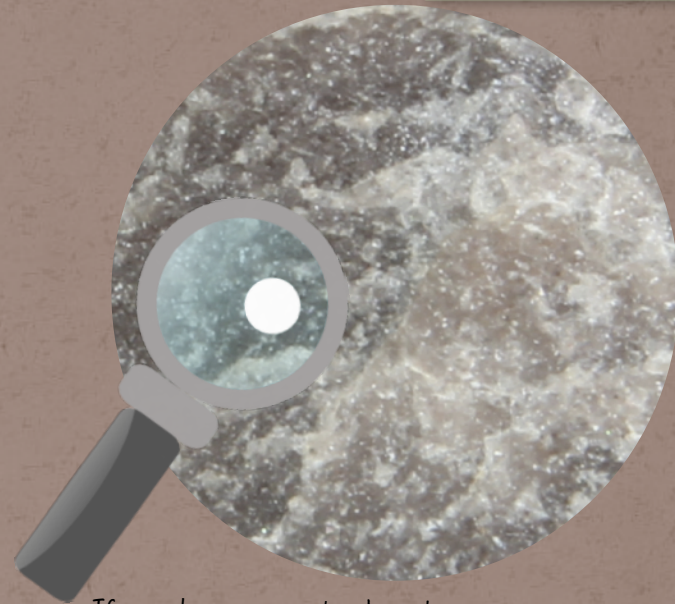
# Sample 17

What size are the crystals that make up the rock's texture?

Coarse Grained

Medium Grained

Fine Grained



If you have an actual rock sample, look at it with a hand lens. Otherwise, look closely at this picture.

Tell me about rock texture again!  
(Click me)





# Sample 17

That's right! The rock is medium to coarse grained.

Does the rock have layers?

Yes

No



Examples of Rocks with layers





Table of Contents

# Sample 17

Correct! The rock *does not* have layers.

## Will this rock scratch glass?

Click the glass plate picture to test for a scratch or scratch a real glass plate with your actual sample.



Yes

No



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



## Sample 17

Next

Yes! Sample 17 will scratch glass.



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



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Sample 17

Does this rock contain light colored minerals (feldspar, quartz) or is made of mostly dark colored minerals (biotite, hornblende, olivine)?

Light

Dark



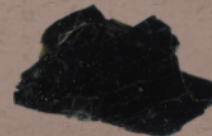
Plagioclase  
Feldspar



Orthoclase  
Feldspar



Quartz



Biotite



Hornblende



Olivine



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Sample 17

Right again! The rock contains *light colored* minerals.

Will this rock fizz in hydrochloric acid?

Click the acid dropper to test for a effervescence (reaction to HCl). Or test an actual rock sample with a drop of 5% HCl.

See note below



Click the bottle to test

Yes, a lot!

Yes, a little

No Fizz

If you have an actual rock sample, carefully test with a drop of dilute (5%) Hydrochloric Acid. Scratch the rock surface to work up a powder and place the drop of acid on the powder. Wear goggles.

Note:

5% HCl is a 20 to 1 dilution of concentrated HCl to water (Example: 50 ml conc. HCL to make 1 liter)



## Sample 17

Next

No! This rock does not fizz in Hydrochloric Acid.



If you have an actual rock sample, carefully test with a drop of dilute (5%) Hydrochloric Acid. Scratch the rock surface to work up a powder and place the drop of acid on the powder. Wear goggles.

Note:

5% HCl is a 20 to 1 dilution of concentrated HCl to water  
(Example: 50 ml conc. HCl to make 1 liter)



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Sample 17

Medium grained crystalline texture

Not layered (this sample)

Will scratch glass

Light colored minerals

Does not fizz with Hydrochloric Acid



Sample  
17 is ...



Click me



# Quartzite

Quartzite is a metamorphic rock that forms when quartz sandstone or chert is subjected to extreme heat and pressure. The minerals in the sandstone melt and recrystallize. Since quartzite is made of mostly quartz, there is no layering or banding of minerals.

Quartzite is sometimes confused with Chert and Marble.

- ◇ Quartzite does not break with sharp edges like Chert
- ◇ Quartzite will not produce a spark when struck with steel like chert
- ◇ Quartzite is harder than marble (quartzite scratches glass/marble does not)
- ◇ Quartzite will not fizz with HCl like marble.

Quartzite is used as a building material for buildings, countertops, decorative stone, and more.

Quartzite has many varieties.





Table of Contents

Sample 17

# Varieties of Quartzite



Pick another rock

Devil's Doorway rock formation  
made of Baraboo Quartzite (Devil's  
Lake State Park near Baraboo, WI).





# Sample 17

[Back to Sample 17](#)



Oops! That's the wrong answer. Let's start this rock sample over again.




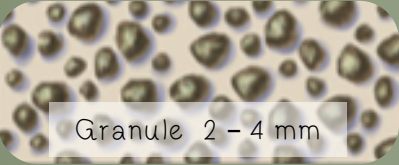
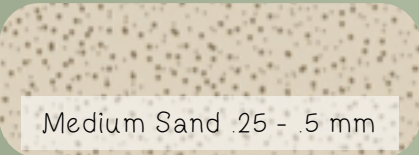
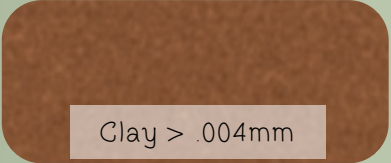


# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy

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**Glassy** - the rock's surface is smooth like glass. →

Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material

(sea shells, coral, plants, etc.). These rocks are usually fine grained. →





# Crystal Grains:

Use your  
hand lens!



[Back to Rock  
Texture](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Click any picture to  
[Enlarge](#)

Large crystals are "coarse grained" while smaller crystals are "fine grained".



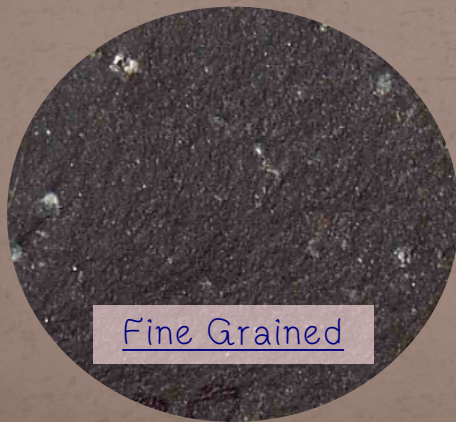
[Coarse Grained](#)



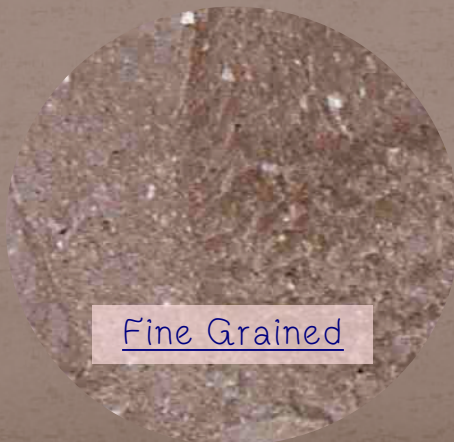
[Coarse Grained](#)



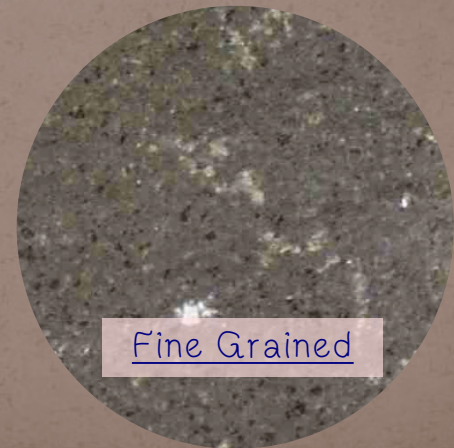
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



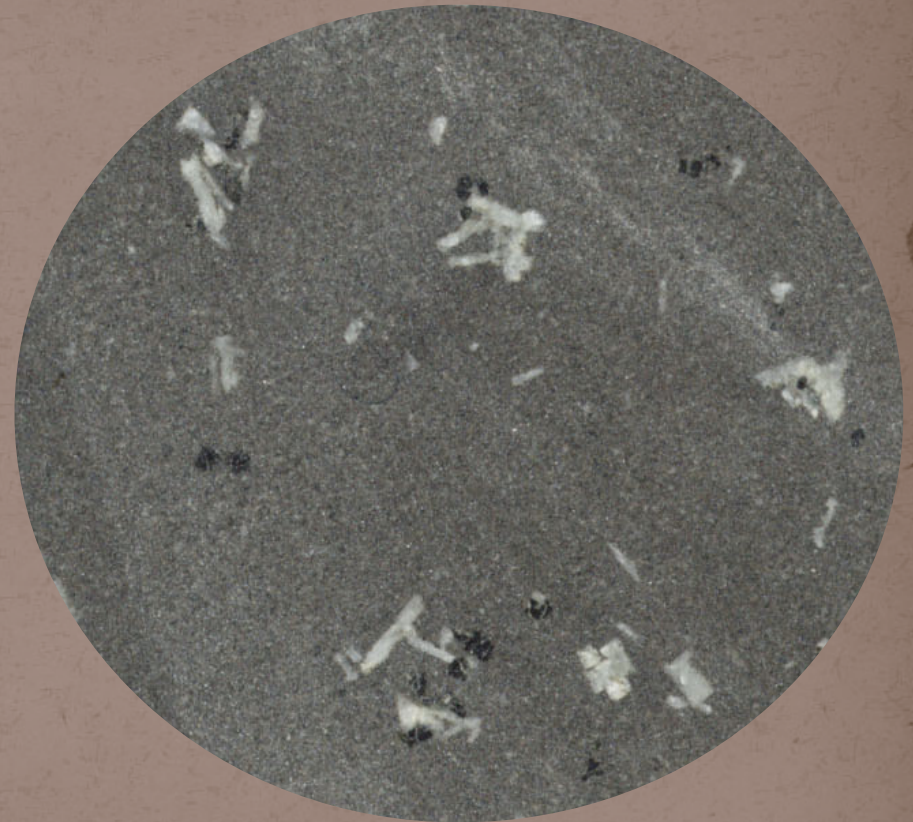
[Fine Grained](#)



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Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



Table of Contents

# Rock Sample 18

Click the rock to  
begin!





# Sample 18

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn more about a rock's texture!



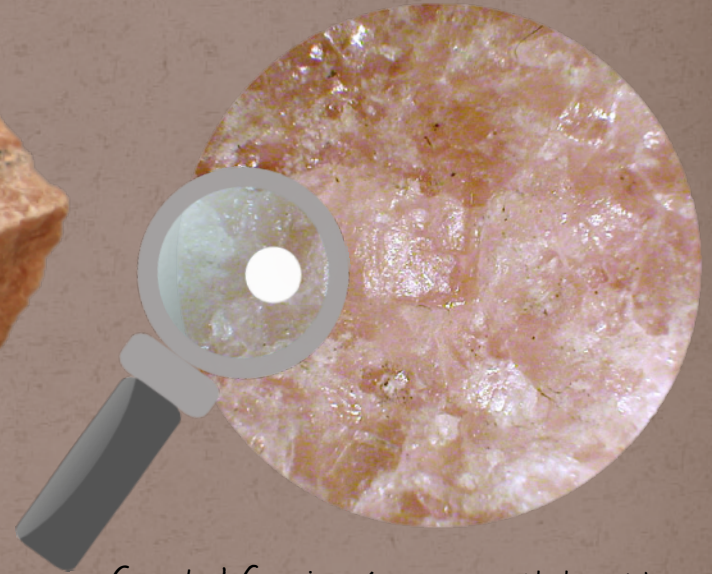


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# Sample 18

Next

That's Right! This rock has a *Crystalline* texture.



Crystal Grains (as seen with hand lens)



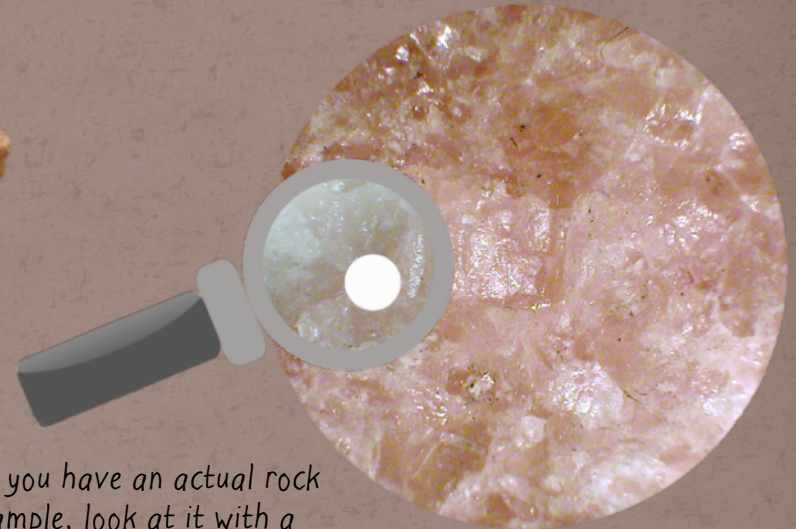
# Sample 18

What size are the crystals that make up the rock's texture?

Coarse Grained

Medium Grained

Fine Grained



If you have an actual rock sample, look at it with a hand lens. Otherwise, look closely at this picture.

Tell me about rock texture again!  
(Click me)





# Sample 18

That's right! The rock is medium to coarse grained.

Does the rock have layers?

Yes

No



Examples of Rocks with layers





Table of Contents

# Sample 18

That is correct! The rock *does not* have layers.

## Will this rock scratch glass?

Click the glass plate picture to test for a scratch or scratch a real glass plate with your actual sample.

Yes

No



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



## Sample 18

Next

No! Sample 18 will not scratch glass.



If you have an actual rock sample, carefully attempt to scratch the glass by rubbing the rock over the glass plate. Do not hold the glass in your hand. Do not press hard enough to break the glass.



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Sample 18

Does this rock contain light colored minerals (feldspar, quartz) or is made of mostly dark colored minerals (biotite, hornblende, olivine)?

Light

Dark



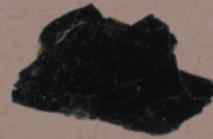
Plagioclase  
Feldspar



Orthoclase  
Feldspar



Quartz



Biotite



Hornblende



Olivine



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Sample 18

Right again! This rock contains light colored minerals.

Will this rock fizz in hydrochloric acid?

Click the acid dropper to test for a effervescence (reaction to HCl). Or test an actual rock sample with a drop of 5% HCl. See note below



Click the bottle to test

Yes, a lot!

Yes, a little

No Fizz

If you have an actual rock sample, carefully test with a drop of dilute (5%) Hydrochloric Acid. Scratch the rock surface to work up a powder and place the drop of acid on the powder. Wear goggles.

Note:

5% HCl is a 20 to 1 dilution of concentrated HCl to water (Example: 50 ml conc. HCL to make 1 liter)



## Sample 18

Next

Yes! This rock does fizz *a little* in Hydrochloric Acid.



If you have an actual rock sample, carefully test with a drop of dilute (5%) Hydrochloric Acid. Scratch the rock surface to work up a powder and place the drop of acid on the powder. Wear goggles.

Note:

5% HCl is a 20 to 1 dilution of concentrated HCl to water (Example: 50 ml conc. HCl to make 1 liter)



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Sample 18

Medium grained crystalline texture

Not layered (this sample)

Will not scratch glass

Light colored minerals

Does fizz (a little) with Hydrochloric Acid



Sample  
18 is ...



Click me



## Sample 18

Next

# Marble

Marble is a metamorphic rock that forms when limestone is subjected to extreme heat and pressure. The minerals in the limestone melt and recrystallize. Since marble is made of mostly quartz, there is no layering or banding of minerals.

Marble is sometimes confused with Quartzite and Limestone.

- ◇ Marble has crystals while limestone does not
- ◇ Marble will fizz a little with HCl but limestone fizzes a lot
- ◇ Marble is softer than Quartzite (quartzite scratches glass/marble does not)
- ◇ Quartzite will not fizz with HCl like marble.

Marble is used as a building material for buildings, countertops, floors, statues, decorative stone, and more.

Marble has many varieties.






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Sample 18

# Varieties of Marble

Pick another rock 





# Sample 18

[Back to Sample 18](#)



Oops! That's the wrong answer. Let's start this rock sample over again.





# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy

**Crystalline** - mineral crystals with flat shiny surfaces that reflect light like little mirrors. Crystals can be coarse grained or fine grained. [Read more](#)

**Clastic** - mineral or rock pieces that are stuck together to make up the rock. These pieces are named according to their size:



Coarse Grained	Medium Grained	Fine Grained
<p>Pebble 4-64 mm</p> <p>Granule 2 - 4 mm</p> <p>Coarse Sand .5 - 2 mm</p>	<p>Medium Sand .25 - .5 mm</p> <p>Fine Sand .06 - .25 mm</p>	<p>Silt .004 - .06 mm</p> <p>Clay &gt; .004mm</p>

**Glassy** - the rock's surface is smooth like glass.  $\longrightarrow$   
Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material (sea shells, coral, plants, etc.). These rocks are usually fine grained.  $\longrightarrow$





# Crystal Grains:

Use your  
hand lens!



[Back to Rock  
Texture](#)

Click any picture to  
[Enlarge](#)

Crystal Grains are pieces of mineral in the rock with flat shiny surfaces that reflect light like little mirrors.

Large crystals are "coarse grained" while smaller crystals are "fine grained".



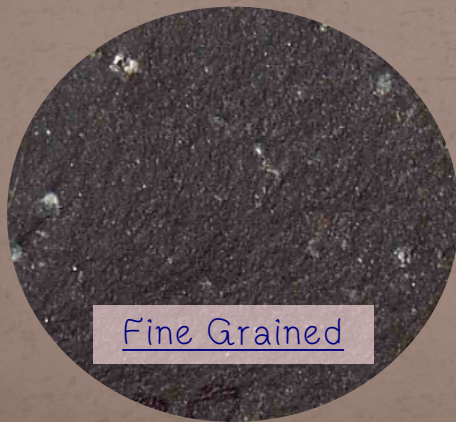
[Coarse Grained](#)



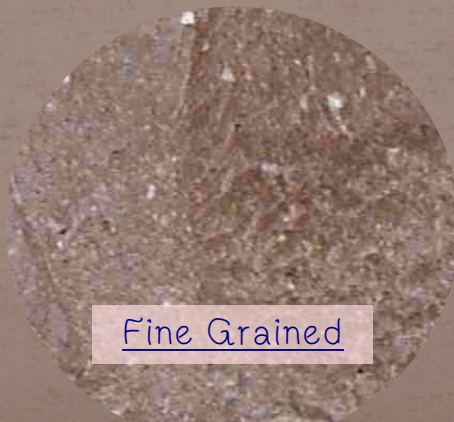
[Coarse Grained](#)



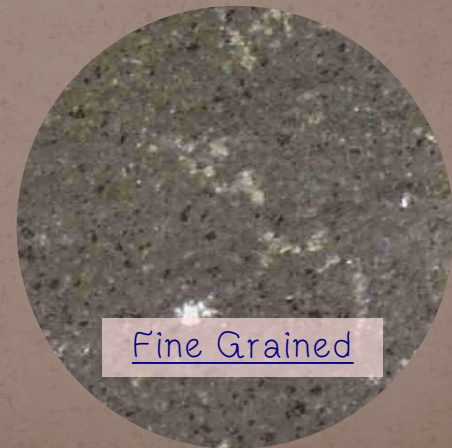
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



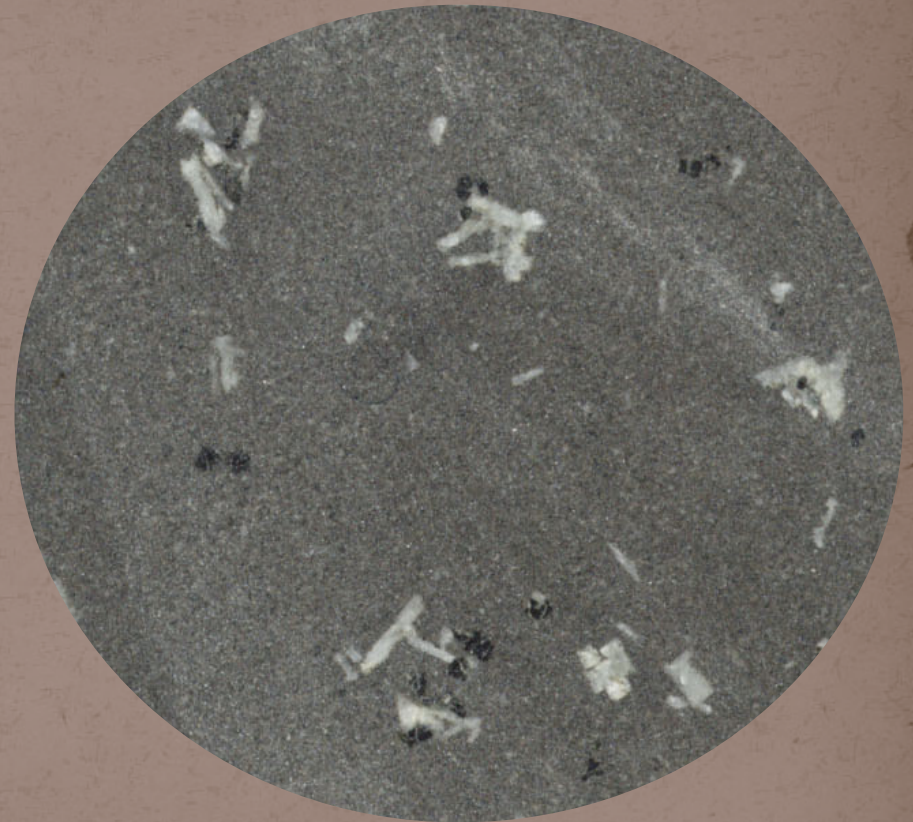
[Fine Grained](#)



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Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



# Rock Sample 1g

Click the rock to  
begin!





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Sample 19

The Texture of this rock is?



Crystalline

Clastic

Glassy

Other

Click me to learn  
more about a  
rock's texture!





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Sample 19

Next

That's Right! This rock has a Crystalline texture.



Crystal Grains (as seen with hand lens)



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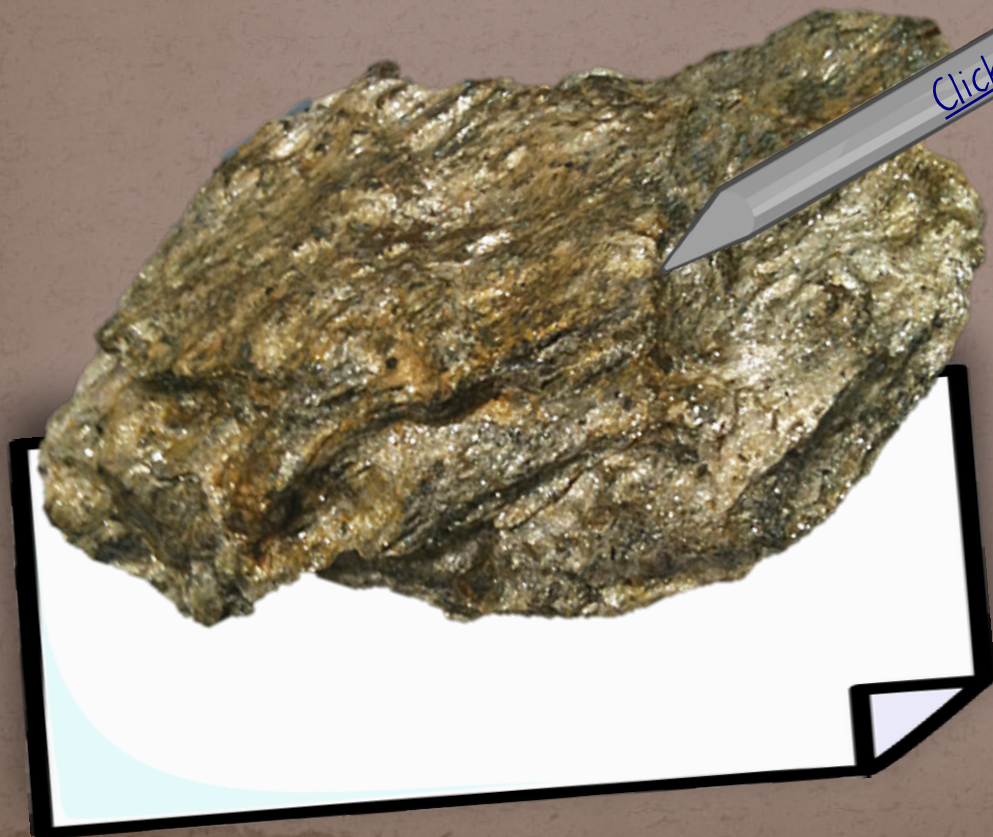
Sample 19

Does the rock crumble easily when scraped with a nail?

Yes

No

Click the nail picture to test particle size or use a real nail if you have an actual rock sample



If you have an actual rock sample:

Hold the rock over a sheet of white paper and scrape the rock with a steel nail. Look on the sheet of paper for the particles that came off of the rock.

Tell me about rock texture again!  
(Click me)



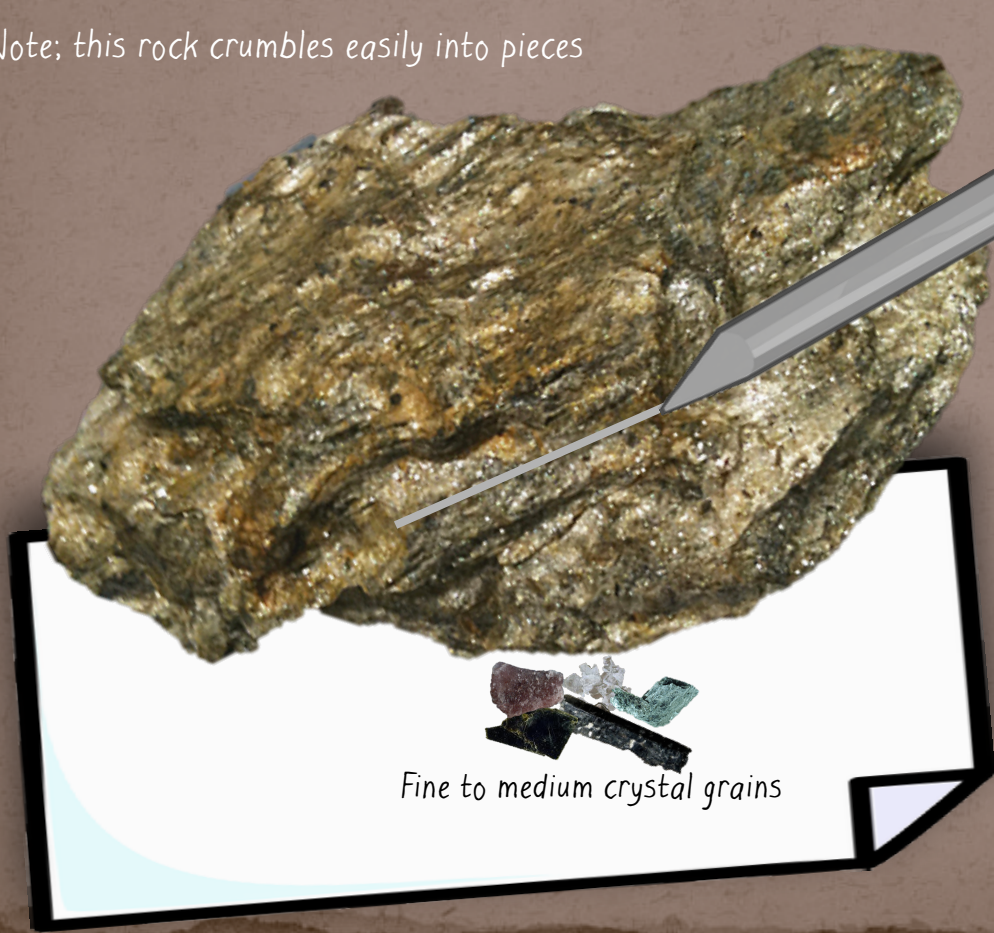


# Sample 19

Yes! The rock *crumbles easily*.

Fine to medium grained crystals of mica, hornblende, chlorite, garnet and other minerals break off of the rock.

Note; this rock crumbles easily into pieces



Minerals from this rock

 Garnet	 Muscovite Mica
 Biotite Mica	 Chlorite
 Hornblende	



# Sample 19

## Does the rock have brittle, wavy layers?

Yes

No

Note:

Wavy layers in rock is called foliation and is usually caused by intense pressure on the rock in different directions.



Examples of Rocks with wavy layers





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# Sample 19

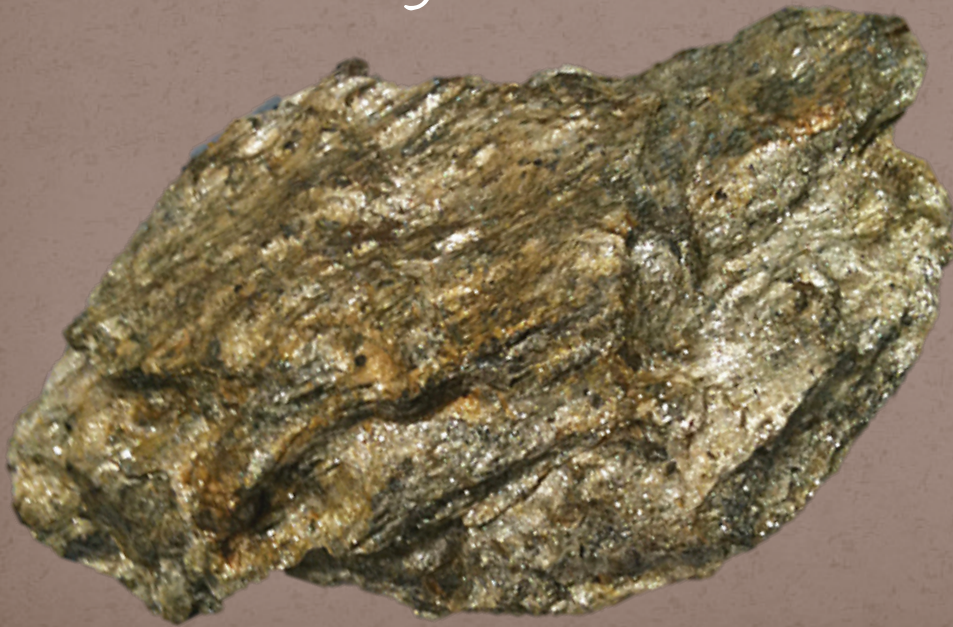
That's correct! The rock is *foliated* (wavy layers).

Crystalline texture

Fine to Medium grained (made of recrystallized minerals)

Foliated (wavy layers)

Crumbles easily



Sample 19  
is ...



Click me



# Schist

Schist is a metamorphic rock that formed from shale or various igneous rocks that were changed by heat and pressure. Schist is a medium grade metamorphic rock which means the amount of heat and pressure needed is higher than that needed to form shale but less than that needed to form Gneiss (a high grade metamorphic rock).

The minerals in the pre-existing rock were melted and recrystallized. Minerals like Biotite Mica, Muscovite Mica, Chlorite, and Hornblende are very common in schist.

Schist is used as decorative rock in walls and gardens. Schist is generally too fragile to use in roads and building construction.



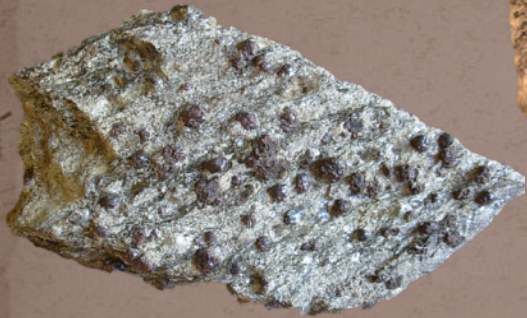


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Sample 19

# Varieties of Schist

Pick another rock 



Garnet Schist



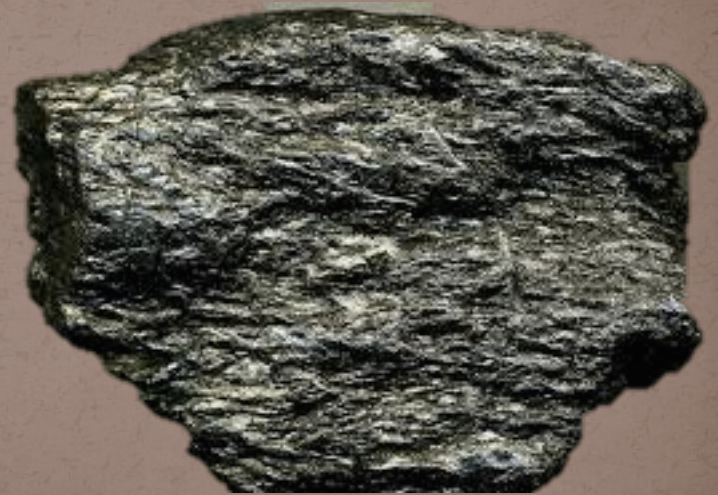
Mica Schist



Hornblende Schist



Chlorite Mica Schist



Graphite Schist



# Sample 19

[Back to Sample 19](#)



Oops! That's the wrong answer. Let's start this rock sample over again.





# Rock Texture: A rock's texture can be Crystalline, Clastic, or Glassy

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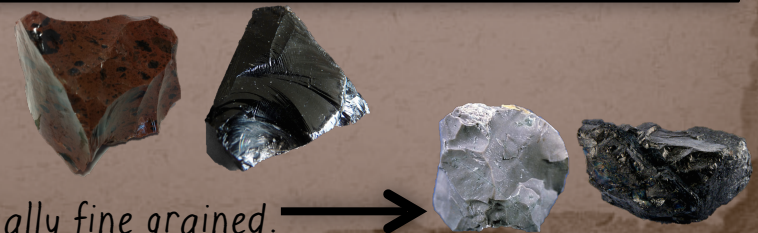
Coarse Grained	Medium Grained	Fine Grained
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Note: a Frothy glass only looks smooth under magnification

**Other** - formed from dissolved minerals or organic material

(sea shells, coral, plants, etc.). These rocks are usually fine grained. →





# Crystal Grains:

Use your  
hand lens!



[Back to Rock  
Texture](#)

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Click any picture to  
[Enlarge](#)

Large crystals are "coarse grained" while smaller crystals are "fine grained".



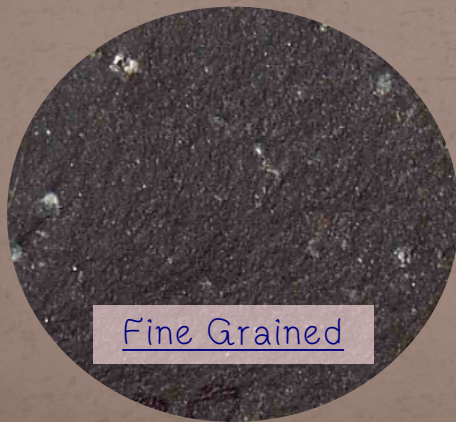
[Coarse Grained](#)



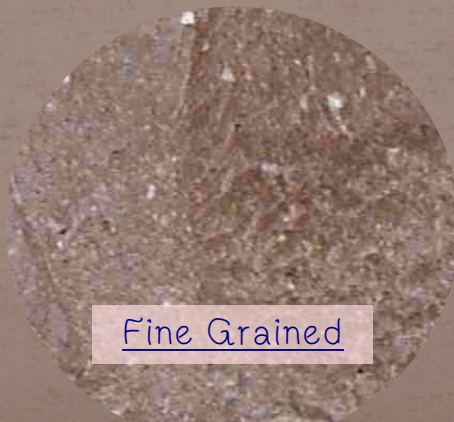
[Coarse Grained](#)



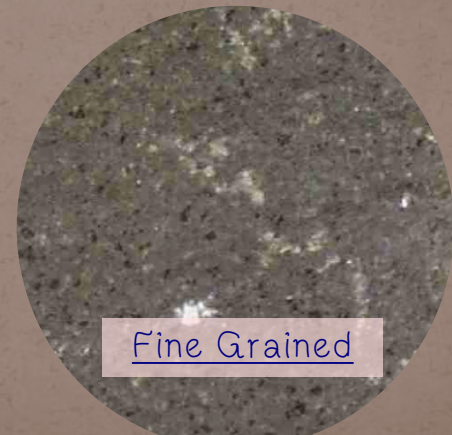
[Coarse Grained](#)



[Fine Grained](#)



[Fine Grained](#)



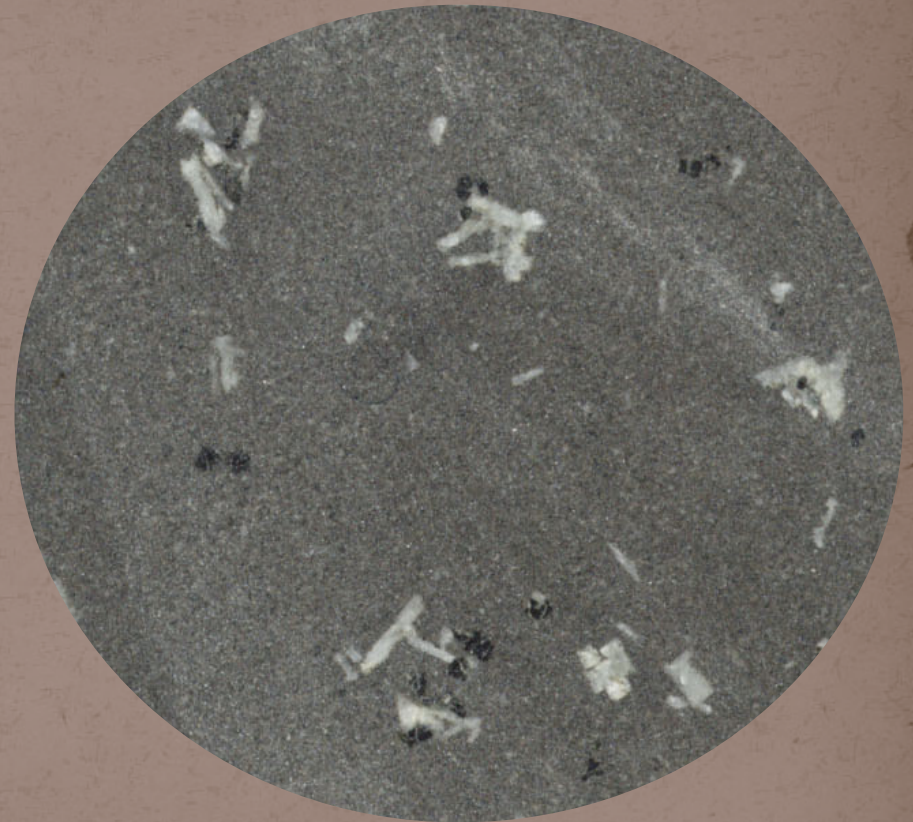
[Fine Grained](#)



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Course Grained ...rock cooled slowly



Fine Grained ...rock cooled quickly



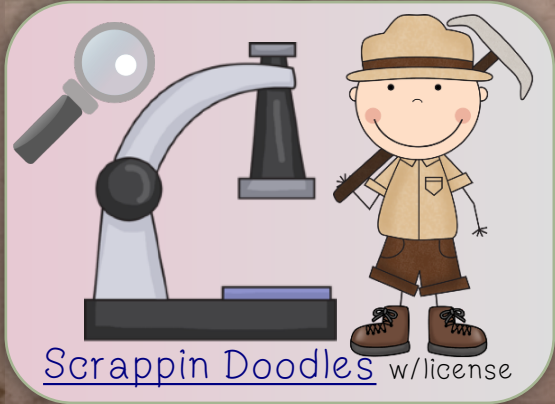
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