

Sedimentary Rocks



May 7-8:49 PM

Quick Review:

Igneous ("fire rock")
Solidification of magma / lava
INTERLOCKING crystals
Vesicular
Glassy
TEXTURE based on crystal size
Non-crystalline, fine, coarse, very coarse

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Quick Review:

Metamorphic
Extreme Heat and Pressure
applied to pre-existing rocks.
Most easily identified by banding
and/or a shiny appearance.
Texture is either: Foliated
Nonfoliated

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Sedimentary Rocks

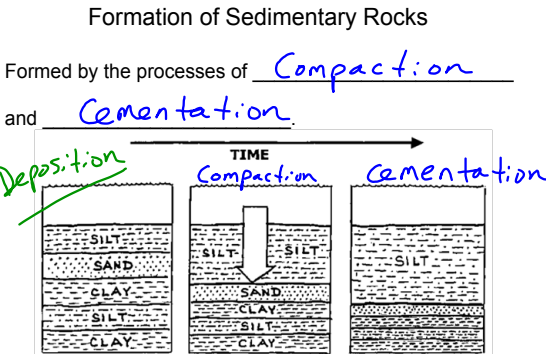
Sedimentary rocks are formed from:
1. Rock and mineral fragments
Called land derived sed. rocks
2. Chemical precipitates
Called chemically formed sed. rocks
3. Organic matter
Called organically formed sed. rocks

May 7-8:49 PM

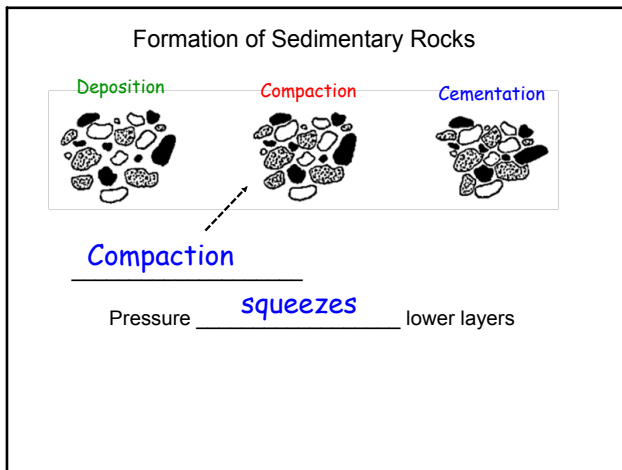
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Scheme for <u>Sedimentary Rock</u> Identification					
INORGANIC <u>LAND-DERIVED</u> SEDIMENTARY ROCKS					
TEXTURE	GRAIN SIZE	COMPOSITION	COMMENTS	ROCK NAME	MAP SYMBOL
Clastic (fragmental)	Pebbles, cobbles, and/or boulders embedded in sand, silt, and/or clay	Mostly quartz, feldspar, and clay minerals; may contain fragments of other rocks and minerals	Rounded fragments	Conglomerate	
	Sand (0.006 to 0.2 cm)		Angular fragments	Breccia	
	Silt (0.0004 to 0.006 cm)		Fine to coarse	Sandstone	
	Clay (less than 0.0004 cm)		Very fine grain	Siltstone	
			Compact; may split easily	Shale	
CHEMICALLY AND/OR ORGANICALLY FORMED SEDIMENTARY ROCKS					
TEXTURE	GRAIN SIZE	COMPOSITION	COMMENTS	ROCK NAME	MAP SYMBOL
Crystalline	Fine to coarse crystals	Halite	Crystals from chemical precipitates and evaporites	Rock salt	
		Gypsum		Rock gypsum	
		Dolomite		Dolostone	
Crystalline or bioclastic	Microscopic to very coarse	Calcite	Precipitates of biologic origin or cemented shell fragments	Limestone	
Bioclastic		Carbon	Compacted plant remains	Bituminous coal	

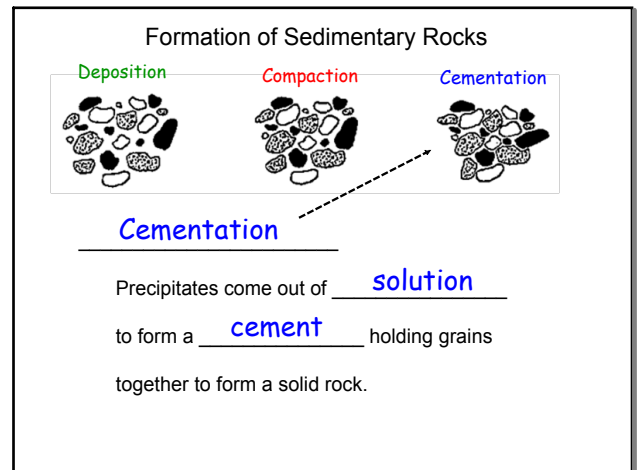
May 2-7:00 PM



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Sedimentary Rock TEXTURES

1. Clastic (Greek: klastos = "broken")
Used to describe land derived
sedimentary rocks
Fragments (or broken pieces) of minerals
or pre-existing rocks

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Sedimentary Rock TEXTURES

2. Crystalline
Used to describe chemically
formed sedimentary rocks
Crystals formed from
deposited precipitates or left behind after
evaporation
(evaporites)

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Sedimentary Rock TEXTURES

3. Bioclastic

Used to describe organically
formed sedimentary rocks

Formed from _____ remains or
_____ fragments

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Sedimentary Rock TEXTURES

3. Bioclastic

Used to describe organically
formed sedimentary rocks

Formed from plant remains or
shell fragments

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Scheme for Sedimentary Rock Identification

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		Dolomite		Dolostone	
Crystalline or bioclastic	Microscopic to very coarse	Caliche	Precipitates of biologic origin or cemented shell fragments	Limestone	
		Carbon		Compacted plant remains	Bituminous coal

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GRAIN SIZE (CM)	COMMENT	ROCK NAME	MAP SYMBOL
Boulders	Various size rock		
Cobbles	Particles and mud		
Pebbles	Silt and sand cemented together		
Sand	Fine to coarse grains cemented together		
Silt	very fine grained		
Clay	compact, may split easily		








0.0004

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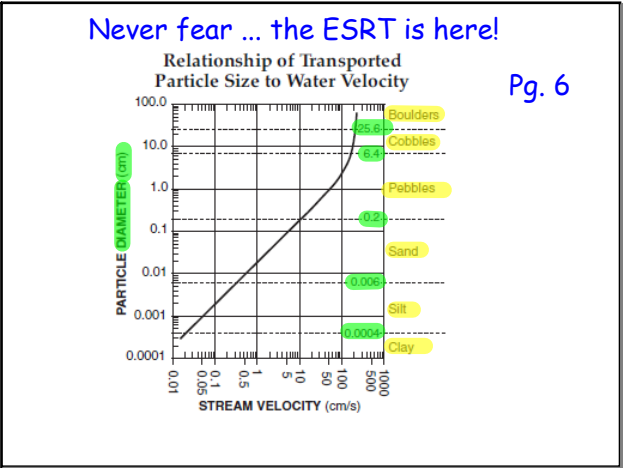
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May 2-7:45 PM



May 2-7:41 PM

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May 2-7:45 PM

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May 3-5:13 PM

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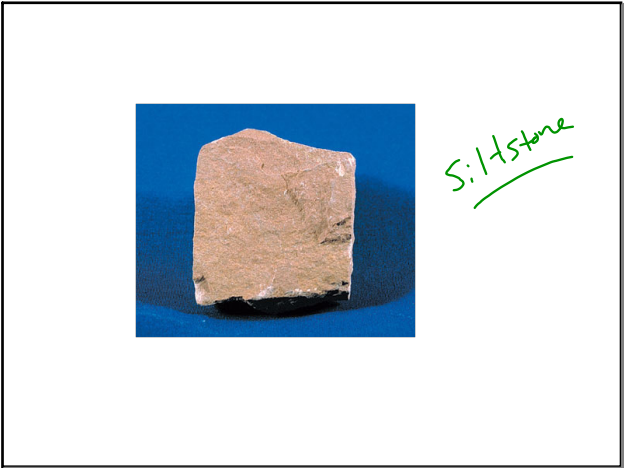
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Sand 0.006	very fine grained	Siltstone	
Silt 0.0004	compact, may split easily	Shale	
Clay			

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May 7-8:49 PM

Identification of Clastic Sedimentary Rocks

Some forms of sandstone will show signs of LAYERING (NOT banding)

Common colors:

/

/

May 7-8:49 PM



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Identification of Clastic Sedimentary Rocks

Some forms of sandstone will show signs of LAYERING (NOT banding)

Common colors:

Brown

/

Tan

Red

/

Pink

May 7-8:49 PM

Identification of Crystalline Sedimentary Rocks

Crystalline rocks are identified based on composition

COMPOSITION	ROCK NAME	COMMENT	MAP SYMBOL
Halite		Minerals dissolved in water precipitate out and form as crystals Includes evaporites	
Gypsum			
Dolomite			
Calcite			

Use your ESRT to fill in the rest...
Note: Can also use _____ to identify _____

May 7-8:49 PM

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CHEMICALLY AND/OR ORGANICALLY FORMED SEDIMENTARY ROCKS					
TEXTURE	GRAIN SIZE	COMPOSITION	COMMENTS	ROCK NAME	MAP SYMBOL
Crystalline	Fine to coarse crystals	Halite	Crystals from chemical precipitates and evaporites	Rock salt	
		Gypsum		Rock gypsum	
Crystalline or bioclastic	Microscopic to very coarse	Dolomite	Precipitates of biologic origin or cemented shell fragments	Dolostone	
		Calcite		Limestone	
Bioclastic		Carbon	Compacted plant remains	Bituminous coal	

Identification of Crystalline Sedimentary Rocks			
Crystalline rocks are identified based on <u>composition</u>			
COMPOSITION	ROCK NAME	COMMENT	MAP SYMBOL
Halite	Rock Salt	Minerals dissolved in water precipitate out and form as crystals Includes evaporites	
Gypsum	Rock Gypsum		
Dolomite	Dolostone		
Calcite	Limestone		

Note: Can also use acid to identify limestone

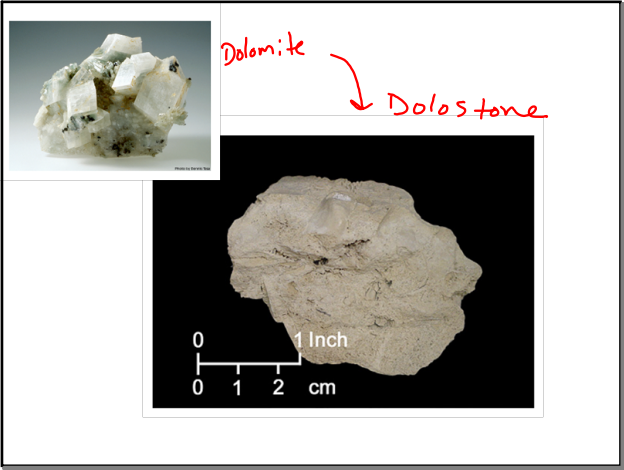
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May 7-8:49 PM

May 7-8:49 PM



May 7-8:49 PM

May 7-8:49 PM

Identification of Bioclastic Sedimentary Rocks

Bioclastic rocks are identified based on Composition

calcite &

COMPOSITION	ROCK NAME	MAP SYMBOL
Cemented shell fragments		
Carbon from plant remains		

Fill in using your ESRT

May 7-8:49 PM

Scheme for Sedimentary Rock Identification

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		Dolomite		Dolostone	
Crystalline or bioclastic	Microscopic to very coarse	Calcite	Precipitates of biologic origin or cemented shell fragments	Limestone	
Carbon		Compacted plant remains	Bituminous coal		

May 3-5:58 PM

Identification of Bioclastic Sedimentary Rocks

Bioclastic rocks are identified based on Composition

COMPOSITION	ROCK NAME	MAP SYMBOL
Cemented shell fragments	Limestone	
Carbon from plant remains	Coal	

Bituminous

Add to your notes: Only SEDIMENTARY ROCKS will contain FOSSILS

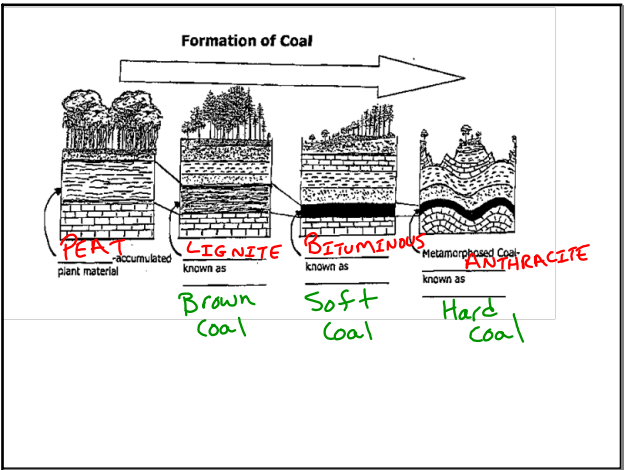
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May 7-8:49 PM

Sedimentary Rocks Summary

1. Rock fragments of SAME size cemented to together

(Shale, Siltstone, or Sandstone)

2. Rock fragments of Various sizes cemented to together

(Breccia or Conglomerate)

3. Layers of sediments cemented to together

4. Fossils are seen in the rock

May 7-8:49 PM

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Bioclastic		Carbon	Compacted plant remains	Bituminous coal	

May 8-8:18 AM

Scheme for Metamorphic Rock Identification						
TEXTURE	GRAIN SIZE	COMPOSITION	TYPE OF METAMORPHISM	COMMENTS	ROCK NAME	MAP SYMBOL
FOLIATED BANDING ALIGNMENT	Fine	MICA QUARTZ FELDSPAR GARNET PYROXENE	Regional (Heat and pressure increases)	Low-grade metamorphism of shale	Slate	
	Fine to medium			Foliation surfaces shiny from microscopic mica crystals	Phyllite	
	Medium to coarse			Platy mica crystals visible from metamorphism of clay or feldspar	Schist	
				High-grade metamorphism; mineral types segregated into bands	Gneiss	
NONFOLIATED	Fine	Carbon	Regional	Metamorphism of bituminous coal	Anthracite coal	
	Fine	Various minerals	Contact (heat)	Various rocks changed by heat from nearby magma/lava	Hornfels	
		Quartz	Regional or contact	Metamorphism of quartz sandstone	Quartzite	
	Fine to coarse	Calcite and/or dolomite		Metamorphism of limestone or dolostone	Marble	
	Coarse	Various minerals		Pebbles may be distorted or stretched	Metaconglomerate	

May 8-8:17 AM