

Rocks and the Rock Cycle

Read P.289

208-2, 310-2B

Rocks are grouped into 3 major families:

- 1) Igneous Rock
- 2) Sedimentary Rock:
- 3) Metamorphic Rock

Earth Crust - (Pt2 Types of Rocks & Rock Cycle)

Before we start there are some terms you need to know.

Magma: is melted rock, formed under Earth's crust by high temperature and pressure: magma occasionally escapes to Earth's surface as lava

Intrusive Rock: is a type of igneous rock formed when magma cools and solidifies below Earth's crust

Lava: the term for magma when it breaks through Earth's crust, in a

Extrusive Rock: is a type of igneous rock formed when magma cools and solidifies above Earth's crust

Sediment: Loose material such as bits of rock, minerals, and plant and animal remains.

Sedimentary Rock: The most common type of rock on Earth's surface; formed by the compacting of sediment.

Metamorphic Rock: a type rock made when high pressure and heat act on another type of rock and change it into a new form.

Parent Rock: The original rock that was acted on by high pressure and heat to form a metamorphic rock.

Earth Crust - (Pt2 Types of Rocks & Rock Cycle)

<https://www.youtube.com/watch?v=KtbAEYwkC1E>

Song



<https://www.youtube.com/watch?v=6qaG3MqI-4o>

Definition with pictures



Earth Crust - (Pt2 Types of Rocks & Rock Cycle)

Igneous Rocks

This forms when hot magma and hot lava cool and solidify. Any rock that is heated at great depths can be melted. Magma can dissolve the other rocks around it and push up to the surface through cracks in the earth's crust.



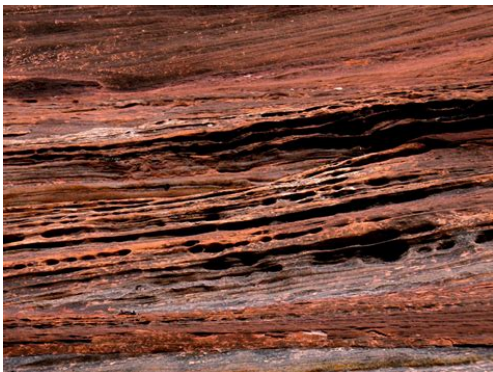
310-2B

Geologists classify igneous rocks based on whether they formed above or below the earth's surface.

Earth Crust - (Pt2 Types of Rocks & Rock Cycle)

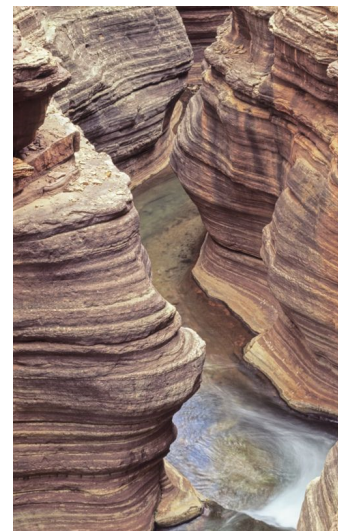
Formation of Sedimentary Rocks

Rock sediment eventually settle over years, most often in lakes and oceans. Larger, heavier fragments settle first and end up at the bottom.



BEDS

Eventually as the sediments settle over each other the rock takes on a layered appearance.

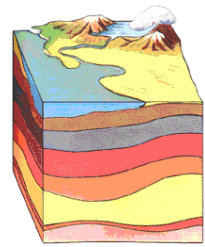


Earth Crust - (Pt2 Types of Rocks & Rock Cycle)

How does settled sediment become rock?

Each sediment layer squeezes together by the weight of the others and the water on top of it. This is called Compaction.

In some rocks minerals dissolve as the water soaks into the rock, forming a natural cement that sticks the larger pieces of seiment together..



How sedimentary rock form (2 min)

<https://www.youtube.com/watch?v=HIRicf2reX8>

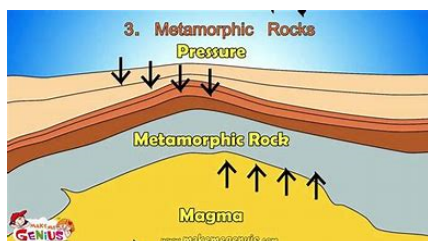


Earth Crust - (Pt2 Types of Rocks & Rock Cycle)

Metamorphic Rock

Once a rock is made it can change it's form.

Metamorphic rocks form below the earth's surface when high pressure and heat cause the original rock to change form.



Metamorphic Rocks



Metamorphic rocks

<https://vimeo.com/297078634> (2 min)

<https://www.youtube.com/watch?v=ANfiWY8VYnM> (1 min 38 sec)

Earth Crust - (Pt2 Types of Rocks & Rock Cycle)

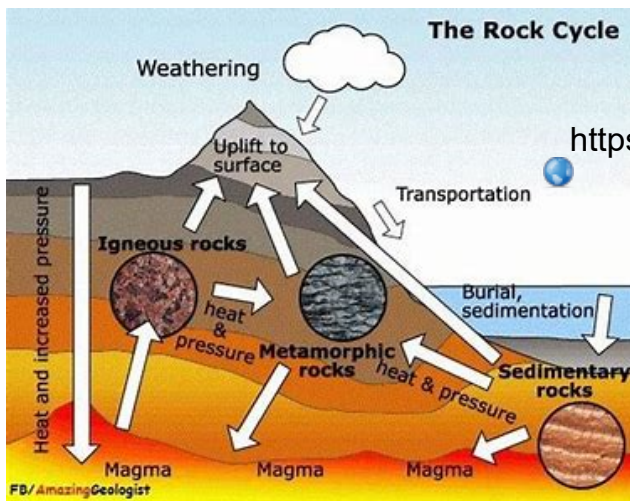
Read p. 295-296

The Rock Cycle

311-2

Weathering: Sediment comes from larger rocks that have broken down or worn away by a natural process called weathering.

This can happen mechanically, chemically or biologically.



[Bill Nye - The Science Guy - S03 - E04 - Rocks & Soil](https://www.dailymotion.com/video/x3jyuty)

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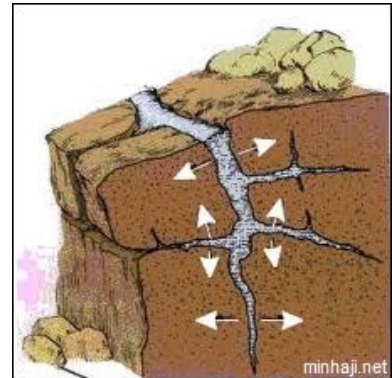
Earth Crust - (Pt2 Types of Rocks & Rock Cycle)

Mechanical Weathering

This is the physical break up or disintegration of rocks.

Ex: Rocks rolling down a slope or fast moving stream rub and bump against each other.

Climate change can also cause mechanical weathering. During the freeze thaw period (warm in day but temps drop below freezing at night) water seeps into the rocks freezes and expands. This causes cracks and eventually the rocks break apart.



Frost Wedging: Water seeps into rocks and freezes then expands cause rocks to break.

<https://www.youtube.com/watch?v=BxmAJMjJ5Nk>

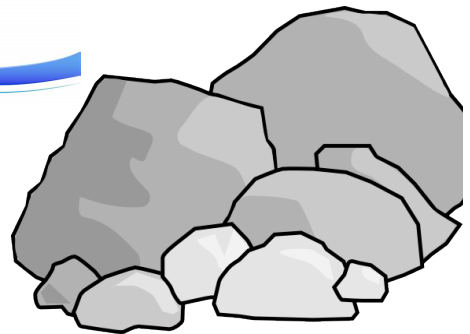
7 min.



Earth Crust - (Pt2 Types of Rocks & Rock Cycle)



Erosion is another form of mechanical weathering. Erosion is the process of moving soil and rocks from one place to another (wind/water)

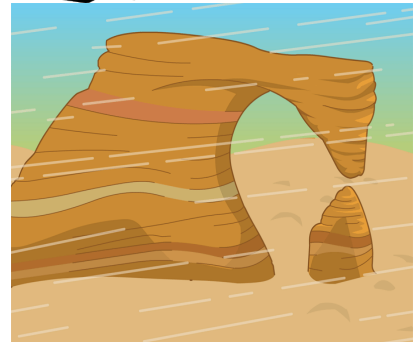


<https://www.youtube.com/watch?v=J-ULcVdeqgE>



Bill nye erosion 5 min

<https://www.youtube.com/watch?v=R-Iak3Wvh9c>



Earth Crust - (Pt2 Types of Rocks & Rock Cycle)

Chemical Weathering

Chemical vs Physical Weathering difference 6 min 34 sec

311-2

<https://www.youtube.com/watch?v=xKzYk4Siq68>


This involves the breakdown or decomposition of minerals as a result of a chemical reaction. This reaction can be with water, other chemicals dissolved in water or gasses in the air.

Ex: Chemical reaction in acid rain (contains chemical from air pollution).

Chemical Weathering

Effect of carbon dioxide

When carbon dioxide combines with water in the atmosphere, it forms carbonic acid that dissolves certain rocks, like limestone.

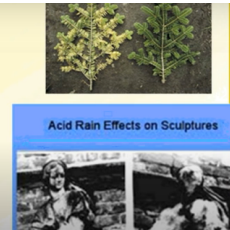


Chemical Weathering

Effect of acid

When sulfur dioxide, carbon dioxide, and nitrogen oxides mix with water they form acids that dissolve minerals and damage plants.


Acid Rain Effects on Sculptures



Chemical Weathering

Effect of oxygen

- Oxidation (rusting happens when oxygen mixes with iron.
- Hematite is a common example.



Earth Crust - (Pt2 Types of Rocks & Rock Cycle)

Biological Weathering

311-2

This is the physical or chemical breakdown of rock caused by living organisms.

Ex: a plant root wedges into rock by forcing its way into a crack. As the root grows the crack expands and the rocks eventually crumbles.



1 min

<https://www.youtube.com/watch?v=emnQJftCZrA>

