Baking Soda Volcano

Build your own paper mache volcano to demonstrate the chemical reaction between baking soda and vinegar. We'll also learn about the rocks that are made from volcanoes

Materials

- Baking soda
- Vinegar
- Plastic or paper mache volcano (see this link for instructions: https://bit.ly/33xOpi9)
- Plastic tub
- White board with marker and eraser
- Igneous rock specimens: Granite, Basalt, Obsidian, and Pumice (can substitute with photos/videos found online)

Experiment

1. Ask yourself: what they know about volcanoes? What are igneous rocks? Write down your answers.
2. Look up photos or videos of different igneous rock specimens. Write down what you learn as you read more about this unique rock-type.
3. Once you've learned more about volcanoes and igneous rocks, it's time to experiment!
4. Place the plastic volcano in the plastic tub.
5. Add a spoonful of baking soda into the volcano.
6. Add a squirt of vinegar to the volcano.
7. Watch what happens!

How does it work?

NaHCO_3 + **H**$C_2H_3O_2$ → **Na**$C_2H_3O_2$ + **H**$_2O$ + CO_2

The reaction above shows that sodium (Na) ions and hydrogen (H) ions switch in the reaction. This causes the product from the chemicals in the baking soda to break apart into water and CO_2 gas, causing the bubbling.

RMSC Rochester Museum & Science Center reward your curiosity.

More about Igneous Rocks

Granite comes from the Latin word 'granum', a grain. This is because granite is made of lots of smaller bits of quartz and feldspar stuck together. Granite comes in different colors, usually pink to grey or sometimes black and is a very hard stone. Because granite is so hard, people sometimes use it for building stone or statues so it will last a long time but it is very hard to cut. In ancient Egypt, sculptors used granite to carve statues of pharaohs. Today it's often used in kitchen countertops.

Basalt forms when lava cools quickly. Most of the ocean floor and the Hawaiian Islands are made of basalt. It is also found on the Moon, Venus and Mars. Because it is a common rock and very hard, people used basalt for early choppers and for grinding stones to grind grains like millet and barley. Roman engineers paved a lot of Roman roads with basalt, and today engineers still use a lot of ground-up basalt to make asphalt to pave roads.

Obsidian rocks form when lava cools so quickly above ground that no crystallization takes place. Obsidian is actually glass and not a mixture of minerals. The edges of this rock are very sharp. Since the Stone Age, people have used obsidian to make cutting tools and tips for their arrows and spears.

Pumice rocks are also formed when lava cooled quickly above ground, therefore it has no crystallization. The little pockets of air can be seen in them. This rock is so light, that many pumice rocks will actually float in water. Pumice is actually a kind of glass and not a mixture of minerals. Because this rock is so light, it is used quite often as a decorative landscape stone. Ground to a powder, it is used as an abrasive in polish compounds and in soaps.