

Volcano Variations 2 – Teacher Notes

When tectonic plates come together something has to give! If continental crust is forced down towards the mantle it takes sediments and water down with it. This means the lava will be viscous (not flow easily) and full of gas.



Materials

- Four materials of different viscosities E.g. margarine (high viscosity), tomato ketchup (medium viscosity), vegetable oil (low viscosity) and water (very low viscosity).
- Four drinking straws.
- Four beakers, glasses, bottoms of cool drink bottles or drinking cups (preferably transparent).
- Gladwrap or Cling wrap.
- Four elastic bands.

Method

1. Cover the bottom of each glass with 1cm of the material to be tested.
2. Cover each glass with film and seal tightly with an elastic band.
3. Four students each select one glass.
4. Each student pierces the film with the straw and pushes it down to the base of the glass.
5. Under the direction of their teacher, students blow strongly through the straws at the same time.
6. The class observes any difference in the explosive behaviour of the material as gas is injected.

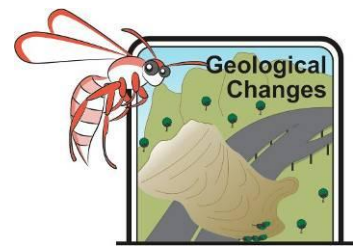
Observations

Material	Viscosity	Observation
1 Margarine	High	Explosive chunks blown about
2 Tomato ketchup	Medium	Much bubbling
3 Vegetable oil	Low	Not much disturbance
4 Water	Very low	Not much disturbance

Conclusion

Does volcanic gas affect the behaviour of a volcanic eruption? Explain your answer.

Yes. Gas gets trapped in viscous lava and escapes explosively.



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Vocabulary Strato volcano, shield volcano, lava, gas and viscosity

EXTENSION

When ash mixes with water from crater lakes, heavy rain or from glacial melt they form lahars that can splatter over kilometres almost instantly. They have been described as being like flows of lumpy concrete. They move at 10s of metres per second and can be 140 metres deep.

Could you outrun a lahar? **No.**

Lahars are the most common causes of death immediately following an eruption. During the eruption of Mt Pinatubo in the Philippines in 1995 only six people were killed by the initial eruption but subsequent lahars killed over 1,600 more.

Gasses such as superheated steam and carbon dioxide, which are vented from volcanos, are also responsible for deaths of humans and other animals during eruptions.

Volcanic Myths

Vulcan was the blacksmith to the Roman gods and he lived under the island of Vulcano near Sicily. When the volcano erupted they said Vulcan was working at his forge.

Blacksmiths were so valued in the ancient world that sometimes they had their heel tendon cut to make them lame like Vulcan, so they couldn't run away and take their precious skill to enemies. Metalworking and warfare go hand in hand.

Sulphur can be collected from fumaroles (gassy vents) on the side of volcanoes and it is still a major component of antibiotics. People thought that volcanoes went down to hell so the Devil was supposed to smell of sulphur.

