



Purpose

To demonstrate how viscosity affects the explosivity of volcanic eruptions and lava flow

Equipment

- 2 x transparent plastic cups
- 2 x small pieces of cling wrap
- 2 x elastic bands
- 2 x drinking straws (or more if everyone wants a try)
- ~3 Tablespoons of tomato sauce
- ~3 Tablespoons of hummus

Procedure

1. Try to mound up the sauce in the bottom of one cup and the hummus in the bottom of the other. Observe the shape after they settle.
2. Place the plastic over the top of each cup and secure with an elastic band.
3. Cut a small hole in the centre of the plastic just big enough to insert a straw.
4. Insert straw into the gap (use sticky tape if the hole is too big).
5. Blow gently into the cup containing tomato sauce and observe. You may want to increase the pressure and see what happens!
6. Blow gently into the cup containing hummus and observe. Next, blow as hard as possible.
7. Tip each cup on its side and observe how the substance flows.

Observations



Explanation (Don't forget to discuss viscosity – this is vital!)

Notes

The tomato sauce approximates a basaltic lava, so retains gases, erupts and flows in a similar style to shield volcanoes. You would have noticed that the sauce did not pile up easily, approximating the shape of a shield volcano.

The hummus approximates a more andesitic to rhyolitic lava, so retains gases, erupts and flows in a similar style to stratovolcanoes (composite). You will have observed that the humus piles up more, approximating the steeper sides of a stratovolcano.

	Basic		Acidic	
	Basaltic		Andesitic	
			Rhyolitic	
Silica (%)	40	50	60	70+
Viscosity	Low		High	
Gas	Least (1-2%)		Most (4-6%)	
Eruption	More frequent, but gentle		Less frequent but violent	
Material	Lava/steam		Pyroclastics, gases and lava	

(Tompkins, 2011)

References:

Concept drawn from experiments passed along by so many the original source is difficult to trace, thank you to all who have shared!

Tompkins, D.E. (Ed.), 2011, Exploring Earth and Environmental Science Stages 1, 2 and 3, Earth Science Western Australia

Resourced by

