



LAVA IN A CUP

OVERVIEW

In this activity, campers will explore how the density of substances can affect the resulting mixture and the properties of the substances that contribute to the “lava” cup effect. Campers will be making their very own lava in a cup.

TOPIC AREA(S)

Chemistry

GRADE LEVEL

Grades 7 and 8

QUESTIONS PRIOR TO THE LESSON/GETTING EXCITED

- Are all liquids miscible in one another? Do they all mix easily?
- Who knows an example of liquids that don't mix well together?
- Why do some substances float on top of others? (i.e. ice cubes)
- Why do some things sink rather than float?
- Why are some liquids not miscible in others?

BACKGROUND INFORMATION FOR INSTRUCTORS (INCLUDE QUESTIONS W/ ANSWERS)

Miscibility is a property of substances to allow for mixing in all proportions, forming a homogeneous solution; it is most often applied to liquids but sometimes to solids and gases. What makes some things miscible and others immiscible? There are a few factors contributing to this including the polarity of the molecules. For example, polar substances will dissolve in polar solutions; likes dissolve likes.

Oil is immiscible in water, that is, it will not mix with water. When added together the oil always floats on top of the water, this is because oil is lighter (less dense) than water. Oil molecules are larger than water molecules so they cannot pack as tightly together as the water molecules can, therefore oil is less dense than water.

Salt is heavier than oil, so when added to a mixture of oil and water it sinks to the bottom. While sinking to the bottom, the salt will carry some oil with it but when the salt dissolves in the water, the oil rises back up. This creates a lava like effect.

Many salts dissolve in water but not all of them. Recall that polarity affects solubility. With that said, not all salts would function appropriately for this experiment.



RELEVANCE TO THE CURRICULUM			
Grade 1 and 2	Grade 3 and 4	Grade 5 and 6	Grade 7 and 8
Needs & Characteristics of Living Things Growth and Changes in Animals Materials, Objects and Everyday Structures Movement Energy in Our Lives Properties of Liquids and Solids Daily and Seasonal Changes Air and Water in the Environment	Growth and Changes in Plants Habitats and Communities Strong and Stable Structures Pulleys and Gears Forces Causing Movement Light and Sound Soils in the Environment Rocks and Minerals	Human Organ Systems Biodiversity Forces Acting on Structures and Mechanisms Flight <ul style="list-style-type: none"> ▪ Properties of and Changes in Matter Electricity and Electrical Devices Conservation of Energy and Resources Space	Interactions in the Environment Cells Form and Function Systems in Action <ul style="list-style-type: none"> ▪ Pure Substances and Mixtures ▪ Fluids Heat in the Environment Water Systems

MATERIALS (SPECIFY WHETHER PER CAMPER, GROUP OR CLASS)
Per Camper: -A clear drinking glass -1/4 cup vegetable oil -1 tsp salt -Water -Food colouring

SAFETY CONSIDERATIONS
Handle with care to ensure limited spilling of oil

PROCEDURE
1. Distribute all required materials to each camper.



2. Fill the glass about $\frac{3}{4}$ full of water
3. Add about 5 drops of food colouring
4. Slowly pour the vegetable oil into the glass. Notice how the oil floats on top
5. Sprinkle the salt on top of the oil
6. Watch the blobs of lava move up and down in your glass
7. Another teaspoon of salt can be added to keep the effect going

REFERENCES

<https://sciencebob.com/try-some-lava-in-a-cup/>