

Density: Sink and Float for Liquids

Objective:

- To be able to determine whether a liquid will sink or float in water by comparing its density to the density of water.

Demonstration:

- Watch the demonstration as your teacher puts the candle in two different liquids. Answer the questions on your lab activity sheet.



What might be causing one candle to float and the other to sink?
Do you think these two liquids have the same or different densities?

Densities of Water and Alcohol

- Your teacher will weigh each of the containers of liquid.
- Both containers have the same volume.
- Which liquid is more dense?

Demonstration of Liquids Floating or Sinking in Other Liquids.

- Why does the alcohol float on the oil?
- Why does the water sink in the oil?

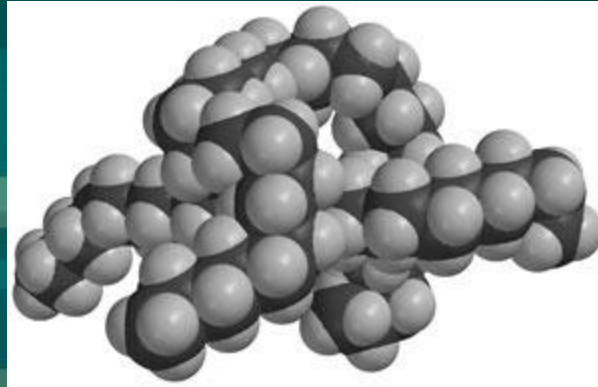
Activity:

- In the activity, you will compare the mass of equal volumes of each liquid.
- Which liquid do you think will have the most mass?
- Which liquid will have the least mass?

After the Activity

- You should be able to Explain it with Atoms and Molecules in your Interactive Notebook
- You should be able to complete the questions on your lab activity sheet.

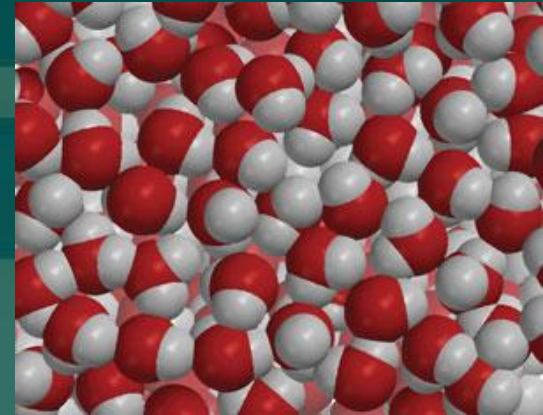
Processing: Oil



- The molecules that make up the oil are larger than those that make up water, so they cannot pack as tightly together as the water molecules can. They take up more space per unit area and are less dense.

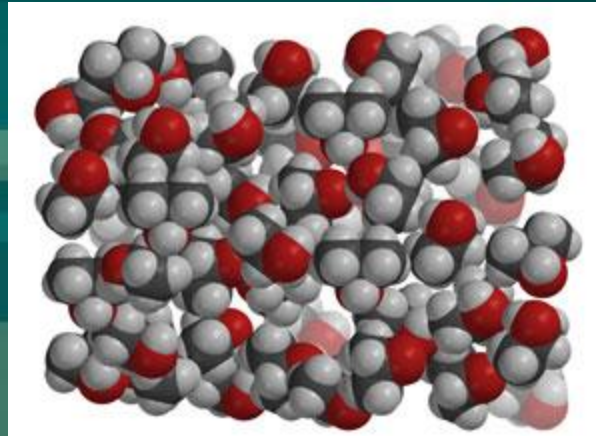
Processing: Water

- Water molecules are packed more closely together than the long molecules that make up oil.



- The oxygen atoms in water are also smaller and heavier than the carbon atoms in oil. This contributes to making water more dense than oil.

Processing: Alcohol



- Even though the molecules that make up alcohol contain a heavier oxygen atom, alcohol is less dense than oil because alcohol molecules do not pack closely together.

Key Concepts

- Since density is a characteristic property of a substance, each liquid has its own **characteristic density**.
- The **density** of a liquid determines whether it will **float** or **sink** in another liquid.
- A liquid will float if it is **less dense** than the liquid it is placed in.
- A liquid will sink if it is **denser** than the liquid it is placed in.