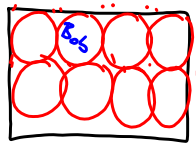


The particle model

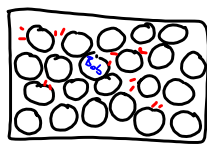


Solid

The particles in a solid are in a fixed, regular arrangement.

The particles vibrate, and the hotter the solid is, the more they vibrate.

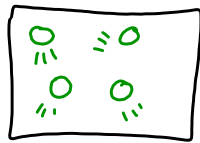
When a solid is heated it expands, because the vibrating particles push each other apart and take up more space. THE PARTICLES THEMSELVES DO NOT EXPAND.



liquid

The particles in a liquid are randomly arranged, and are free to move around.

The particles also vibrate, and the hotter the liquid is, the more they vibrate. Like solids, liquids expand when heated.



gas

The particles in a gas are randomly arranged, and move around quickly.

If a gas is heated, the particles move faster and it expands.

Expansion and density

If a sample of a solid, liquid or gas is heated, it will expand. This means the sample will become less dense. NOTE THAT THE PARTICLES THEMSELVES DO NOT BECOME LESS DENSE.

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

Floating and sinking

If an object is less dense than a liquid it will float. This is also true with gases - anything less dense than air will float in air.

Gases and liquids are called fluids because they can flow.