Particle Model of solids, liquids and gases

The Three States of Matter

Matter can be in one of three "states". The three states of matter are SOLIDS, LIQUIDS and GASES.

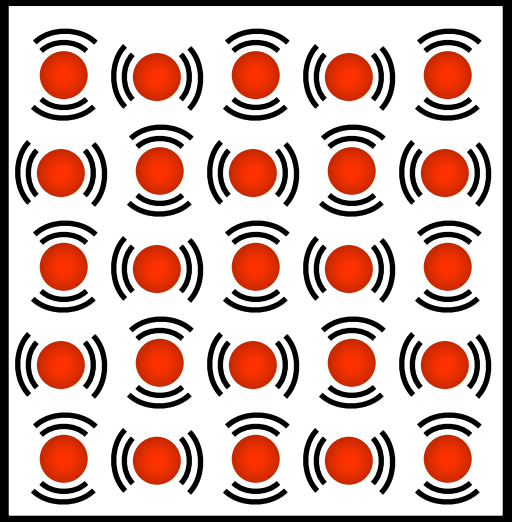
What are their properties?

Solid	Liquid	Gas
Very difficult to squash, can't be poured, can't change shape	Difficult to squash, can be poured, can change shape	Easy to squash, can be poured, can change shape

Particle theory

Particle theory is all about explaining the properties of solids, liquids and gases by looking at what the particles do.

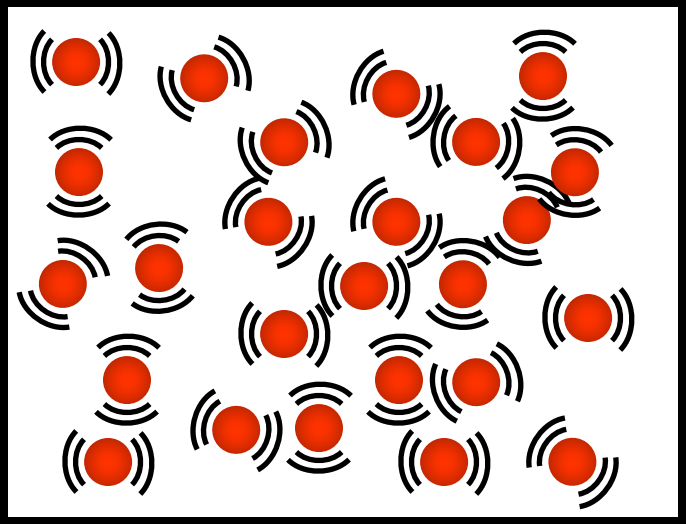
View animation



SOLIDS

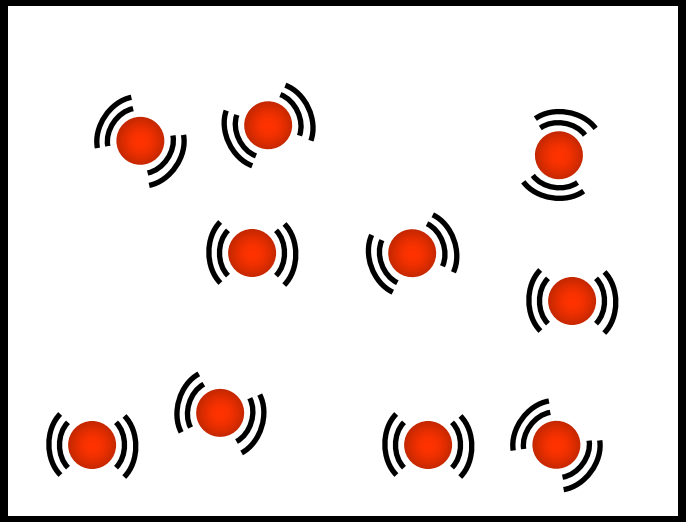
In a solid the particles _____ around a _____ position. There is a _____ force of attraction between each particle and they are very _____ together

***Words** – strong, close, vibrate, fixed*



LIQUIDS

In a liquid the particles are _____ together but can move in any direction. They won't keep a _____ shape like _____ do.



GASES

In a gas the particles are very far apart and move _____ in all directions. They often _____ with each other and because they are far apart they can be easily _____.

Words – *fixed, collide, quickly, close, very, solids*

Heating a solid

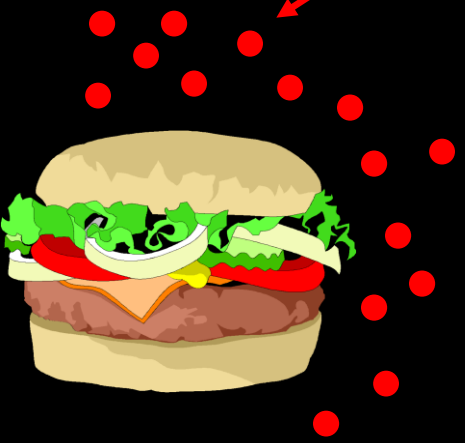
When a solid is heated it expands. We can use particle theory to explain why:

View animation

Diffusion

Diffusion is when something travels from an area of high concentration to an area of low concentration. For example, consider the scent from a hamburger…

The "scent particles" from this hamburger are in high concentration here:



Eventually they will "diffuse" out into this area of low concentration:

View hamburger animation

View diffusion animation

Gas pressure

Gas pressure is due to the effect of lots of particles colliding with the side of a container.

View gas pressure animation

In this experiment the bottle was crushed because there were more collisions on the outside of the bottle than on the inside, so the outside was "pushed in".