

# Physical and Chemical Properties



THE EARTH IS ONE LARGE  
MIXTURE OF MOLECULES IN  
GASES, LIQUIDS AND SOLIDS.

# Properties of Matter- Words to Know...



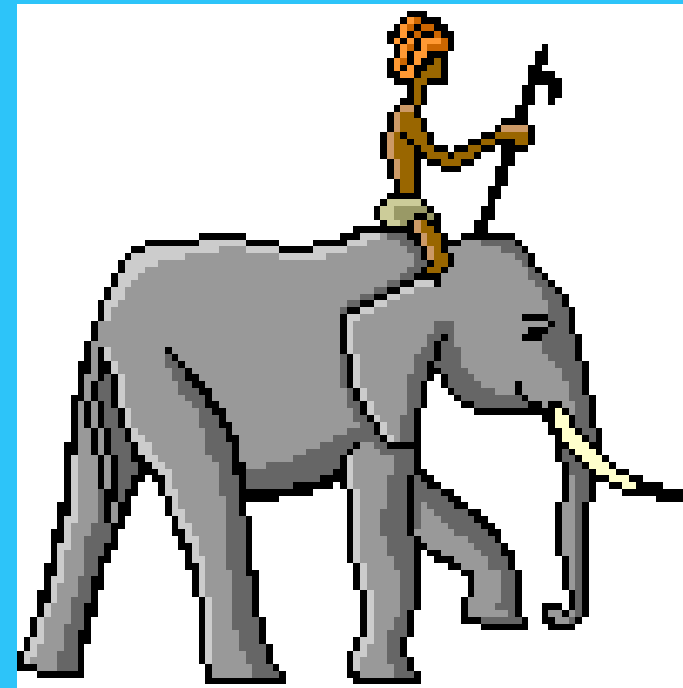
# Matter



Anything that has mass  
and takes up space!

# Mass

- A measure of how much matter is in an object.



# Weight

- A measure of the force of gravity on an object.




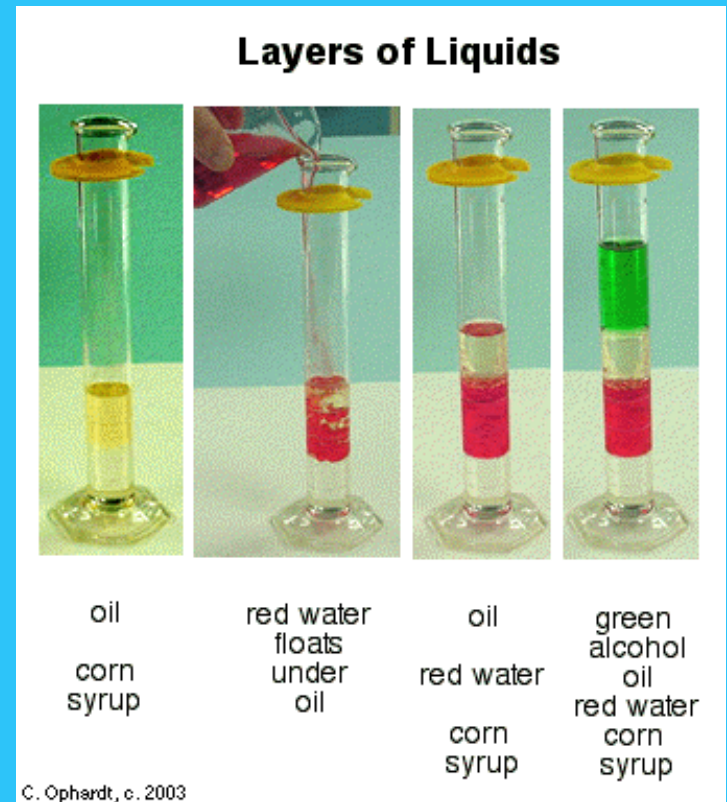
# Volume

- The amount of space that matter occupies.



# Density

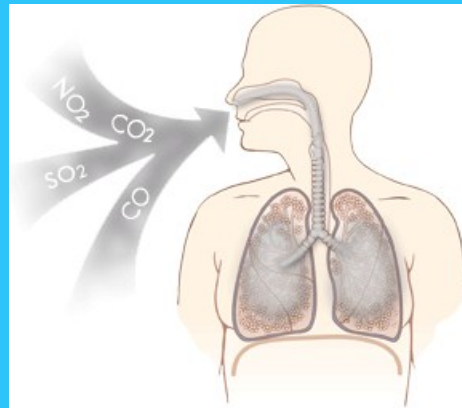
- The measurement of how much mass of a substance is contained in a given volume.
- Mass/Volume
- I  Density



# States of Matter

- There are different “states” of matter. No, not like Texas, Oklahoma, New Mexico. States of matter are also known as phases (a **physical state** of matter). Elements and compounds can move from one phase to another phase when special physical forces are present.

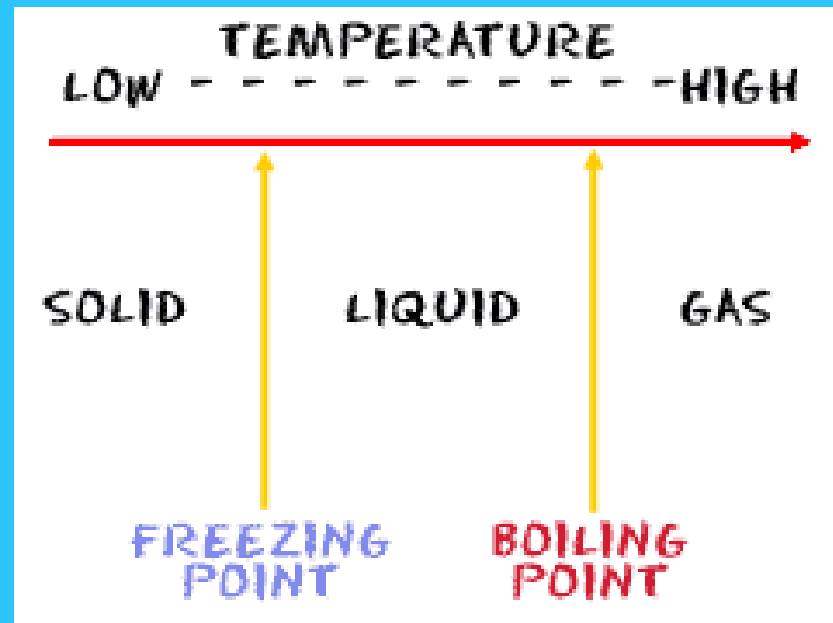
- **Solid**
- **Liquid**
- **Gas**





# Freezing point

- The temperature at which a liquid changes into a solid.



# Boiling point

- The boiling point of an element or compound means the temperature at which the liquid form of an element or compound is at equilibrium with the gaseous form.
- the boiling point of water is 100 degrees Celsius.



# Melting point

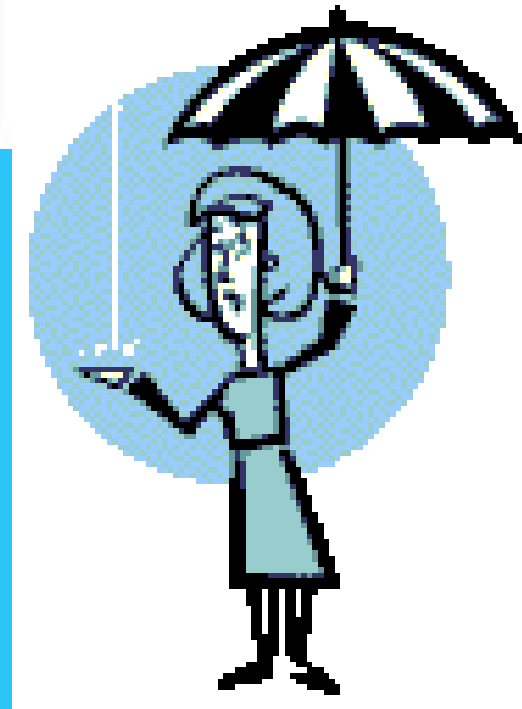
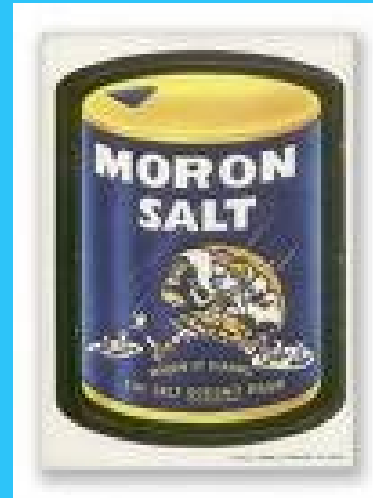
- The temperatures at which the solid form of the element or compound is at equilibrium with the liquid form.
- Basically the range at which the solid changes its state into a liquid.



• The melting point of water is 0 degrees Celsius

# Compound

- A substance made of two or more elements chemically combined in a set ratio.
  - Water and salt are 2 examples of compounds.





# All substances have properties... Including people!

**Example:**

**People can be identified by their ...**



Face (shape, expressions)	Voice	Height	Finger prints
Eye color	Hair color	Teeth	DNA

# What are properties?

- Matter has observable and measurable qualities.
- We can use general properties to identify substances.
- Two basic types of properties of matter: **Physical** properties and **Chemical** properties:



# Physical Properties

- Physical properties are used to identify, describe and classify matter.
  - Characteristic of a substance that can be observed (using your senses) without changing the substance into something else.

Hardness	Texture	Color
Odor	Taste	Temperature

# More EXAMPLES - Physical

- size, shape, freezing point, boiling point, melting point, magnetism, viscosity, density, luster and many more.
  - Viscosity - The resistance of a liquid to flowing.
  - Examples:
    - Low viscosity-water, rubbing alcohol
    - High viscosity-honey

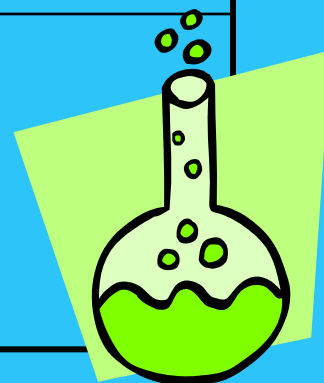




# Chemical Properties

- Chemical properties are characteristics involved when a substance interacts with another substance to **change** its chemical make-up.

Flammability	Rusting	Creating gas bubbles
Creating a new chemical product	Reactivity with water	pH



# Alike? Different?

- Draw a double bubble map in your notes to compare and contrast physical and chemical properties.

