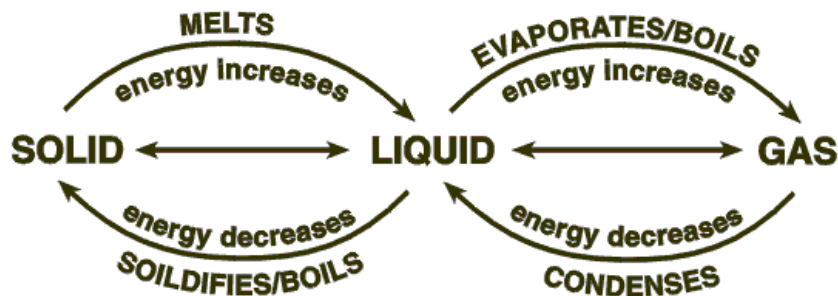


PHYSICAL AND CHEMICAL CHANGES

PHYSICAL CHANGES involve changing the form or state of matter.

Changing the State of Matter:

Matter can be changed from one state to another. This is accomplished by adding (or removing) energy. It is important to note that only the state has changed, the type of matter is still the same! Water is still water (H_2O), whether it is a solid, liquid or gas!



CHEMICAL CHANGES are changes that result in the formation of a new substance with unique properties (e.g. colour, boiling point, density, smell etc.). There are several signs that suggest a chemical change has occurred:

1. Energy is released or absorbed.
2. Gas formation without raising the temperature.
3. Precipitate formation (a solid product is created when 2 substances are mixed).
5. A colour change occurs.

PHYSICAL AND CHEMICAL PROPERTIES

A **physical property** is a characteristic description of a substance that can be used to identify it.

A **chemical property** is the characteristic behavior of a substance when it interacts with another to form a new substance.

Some common physical and chemical properties are listed below.

PHYSICAL PROPERTIES OF MATTER

1. **State:** solid, liquid, or gas.
2. **Colour:** blue, green, red, blue-green, colourless (lacking colour), etc.
3. **Clarity:** how much light can pass through an object: clear, (transparent) lets all light pass through; cloudy (translucent) lets some light pass through; opaque does not let any light pass through.
4. **Lustre:** how shiny or dull something is.
5. **Hardness:** use a scale to describe something as very hard to very soft.
6. **Brittleness:** how easy it is to break something; use the words brittle and flexible.
7. **Form:** regular-shaped materials can be crystalline; irregularly shaped materials are amorphous.
8. **Texture:** how does an object feel? (fine, coarse, waxy, slippery, smooth, rough etc.)
9. **Malleability:** the ability to flatten a material; we say it is malleable or nonmalleable.
10. **Ductility:** the ability to make a material into a wire; we say it is ductile or nonductile.
11. **Viscosity:** this applies only to liquids; a runny liquid has a low viscosity and a thick and slow pouring liquid has a high viscosity.
12. **Odour:** odourless, stinky, sharp, pleasant, flowery, putrid etc. Only smell things if you are instructed to do so; use the hand wave method or wafting method.
13. **Taste:** sweet, sour, bitter and salty. **NEVER** taste something in the lab unless instructed to do so.
14. **Conductivity:** some solids and liquids have the ability to conduct heat and others do not.

CHEMICAL PROPERTIES OF MATTER

1. **Combustibility (Does it burn?)**
2. **Reactivity with Acids**
3. **Reactivity with Water**
4. **Reactivity of Oxygen**