



# Properties of Matter

## Chapter 2.3



# Chemical Properties

- ❖ The way a substance reacts with others to form new substances with different properties
- ❖ Chem. Properties are related to the specific elements that make up a substance

# Reactivity

- ❖ The ability of a substance to combine chemically with another substance
  - ❖ Ex.:  
Iron atoms in steel react to form iron (III) oxide and other compounds (rust).





# Physical Properties

- ❖ A characteristic of a substance that can be observed or measured without changing the composition of the substance.
  - ❖ Some can be observed using senses:
    - ❖ Ex: odor, texture, color, shape
  - ❖ Some can be measured:
    - ❖ Ex: melting point, boiling point, strength, electricity



# Density

- ❖ Density is the mass an object has per unit of volume

Density = mass/volume

$$D = m/v$$



# Buoyancy

- ❖ The force with which a more dense fluid pushes a less dense substance upward
  - ❖ Ex:
  - ❖ Styrofoam floating on H<sub>2</sub>O





# Chemical Change

- ❖ A change that occurs when a substance changes composition by forming one or more new substances
  - ❖ Example: Gasoline changes in the presence of  $O_2$  and ignition to form  $CO_2$ , etc.

$O_2$  is chemically changed by our lungs to form  $CO_2$



# Physical Change

- ❖ A change in the physical form or properties of a substance without a change in composition
  - ❖ Ex: Liquid H<sub>2</sub>O to Water Vapor
  - Peanuts into Peanut Butter
  - Dissolving one substance in another