

# Solutions and Suspensions



# Learning Objectives

- Define the following terms: mixture, solution, solute, solvent, suspension, homogeneous, heterogeneous
- Identify a mixture as either a homogeneous or heterogeneous

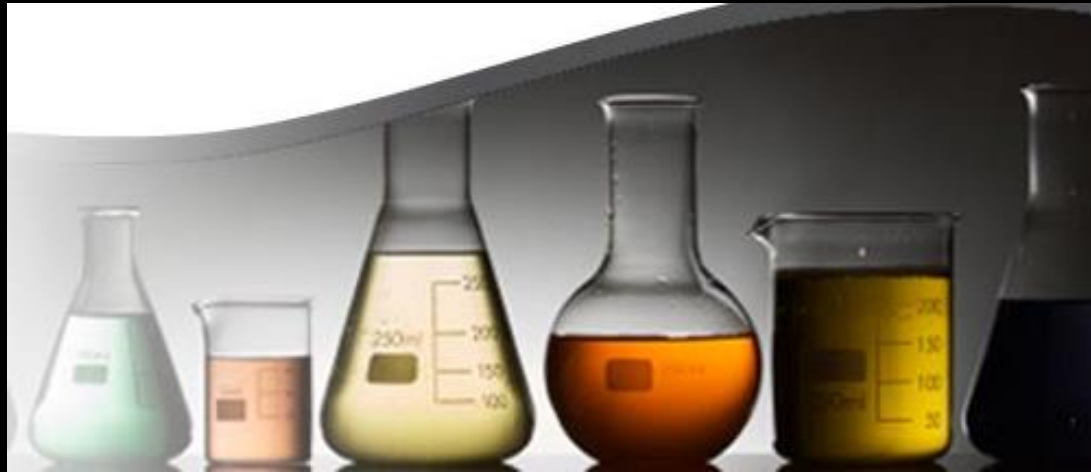
# Mixture



A mixture is a material composed of two or more different substances which are mixed together but not chemically combined.

# Solution

A solution is a mixture composed of only one phase. One substance is completely dissolved in another substance.



All components of a solution are evenly distributed throughout the solution. Usually transparent.

# Solute and Solvent



**Solute** - the substance being dissolved. ex. salt

**Solvent** - the substance in which the solute dissolves. ex. water

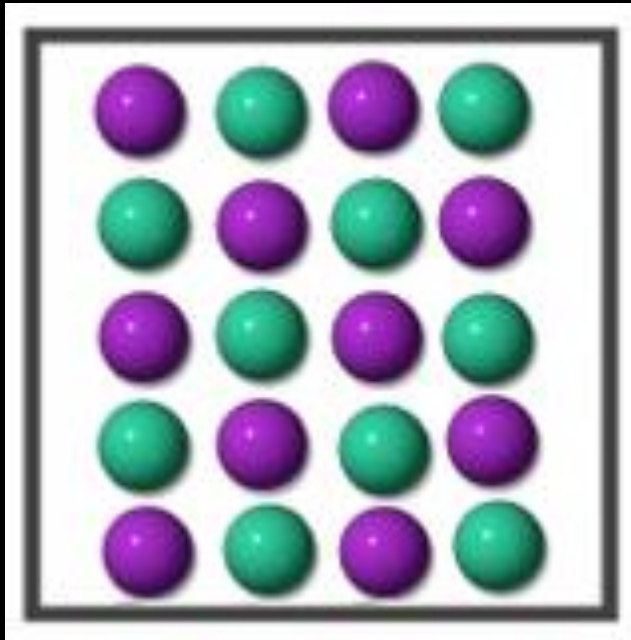
# Suspension



Suspension is a mixture of a liquid and non-dissolved material.

The non-dissolved material settles over time.

# Homogeneous Mixture



Examples:

Gas in Gas - Air ( $N_2$ ,  $O_2$ ,  $CO_2$ )

Gas in Liquid - Soda Pop

Liquid in Liquid - Gasoline

Solid in Liquid - Sea Water

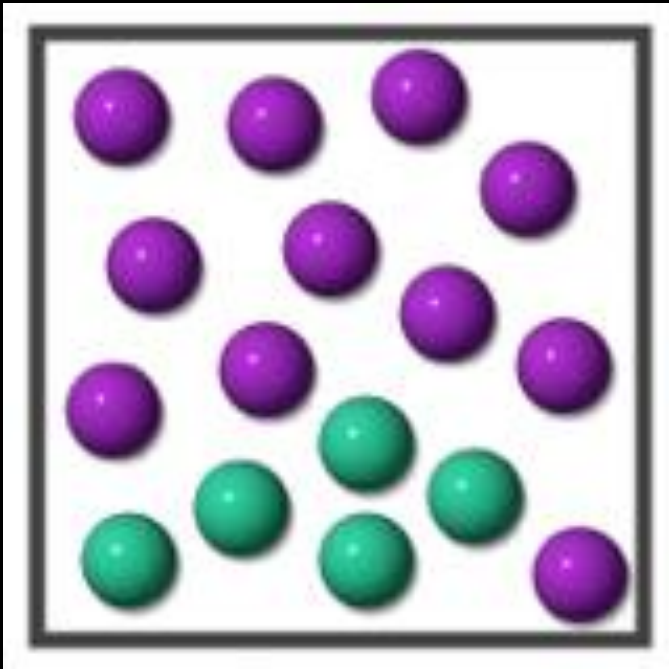
Gas in Solid -  $H_2$  in Platinum

Liquid in Solid - Dental Amalgams

Solid in Solid - Alloys

A mixture where the components are uniformly distributed throughout the mixture.

# Heterogeneous Mixture



Examples:

Cereal with milk

Soil in water

Oil and water

Orange juice with pulp

Chicken noodle soup

Trail mix

A mixture that is made of different substances that remain physically separate. Not uniform



# Solution or Suspension?



# Solution or Suspension?



# Solution or Suspension?



# Solution or Suspension?



# Homogeneous or Heterogeneous?





# Homogeneous or Heterogeneous?



Heterogenous vs.  
Homogenous song

Stop Here





# Solution

Particle size less than  $10^{-7}$  cm



# Suspension

Particle size more than  $10^{-5}$  cm

