

## ➤ Suspensions

Suspensions are heterogeneous mixtures in which solid particles are dispersed in a liquid or gas medium. Here are key points to understand about suspensions in chemistry:

### ❖ Characteristics of Suspensions:

#### 1. Heterogeneous Nature:

- Unlike solutions, suspensions are non-uniform and contain visibly distinguishable solid particles dispersed in a liquid or gas medium.

#### 2. Particle Size:

- Suspended particles are typically larger than those in colloids and solutions. They can range from a few micrometers to visible sizes.

#### 3. Settling:

- Due to gravity, suspended particles tend to settle at the bottom over time. This settling can be rapid or slow depending on the size and density of the particles.

#### 4. Separation:

- Unlike colloids, where particles do not settle, suspensions can be separated by allowing the particles to settle or by using mechanical means.

### ❖ Examples of Suspensions:

#### 5. Muddy Water:

- Natural water sources often contain suspended soil particles, giving the water a cloudy appearance.

#### 6. Orange Juice with Pulp:

- Fruit juices with pulp contain suspended solid particles (pulp) that settle over time.

#### 7. Paint:

- Paint is a suspension of pigment particles in a liquid medium. It needs to be stirred or shaken before use to redistribute the pigment.

#### 8. Medical Suspensions:

- Some pharmaceutical formulations, such as certain liquid antibiotics or antacids, are suspensions.

#### 9. Dust in the Air:

- Particles in the air, such as dust or pollen, can be considered suspended in the gas medium.

## ❖ **Properties and Behavior:**

### 10. **Tyndall Effect:**

- Similar to colloids, suspensions may exhibit the Tyndall effect, where the scattered light is visible when a beam of light passes through the mixture.

### 11. **Stability:**

- Suspensions are generally less stable than solutions and colloids. They require constant agitation or stirring to maintain a relatively uniform appearance.

### 12. **Separation Methods:**

- Filtration is a common method for separating solid particles from a liquid suspension. Sedimentation and decantation can also be used.

### 13. **Re-suspension:**

- Suspensions can be re-suspended by mechanical means, such as shaking or stirring, but they will eventually settle again due to gravity.

## ❖ **Industrial Applications:**

### 14. **Pharmaceuticals:**

- Some oral medications are formulated as suspensions to improve their palatability and ease of administration.

### 15. **Paint Industry:**

- Pigments in paint formulations are often in the form of suspended particles.

### 16. **Environmental Engineering:**

- In water treatment processes, the removal of suspended particles is a crucial step.

### 17. **Food Industry:**

- Some food products, like certain salad dressings, may be suspensions.