

Lesson - SPS03B

Mixtures and Solutions

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Why is this Important?



- ❑ Mixtures can be separated into individual things



- ❑ Solutions are a homogeneous mixture of two or more things chemically combined in one phase

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Do You Know?



- ❑ Air in our atmosphere is a solution of mostly Nitrogen and Oxygen

- ❑ Mixtures exist in solid, liquid and gas forms
- ❑ Mixtures are not the same throughout
- ❑ Mixtures can be mechanically separated
- ❑ Solutions are special mixtures that are the same throughout
- ❑ Solutions are not mechanically separated
- ❑ Some things can't remain mixed



- ❑ Solutions can also be solid
- ❑ Brass is a solution of copper and zinc

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What is important to know about mixtures and solutions?

Mixtures and Solutions

Mixture

- A collection of items
- Able to be mechanically separated



Solution


- Two or more things combined so that they cannot be easily separated



What is important to know about mixtures and solutions?

Mixture Characteristics

- A collection of items
- Not the same throughout
- Can be separated mechanically



What is important to know about mixtures and solutions?

Mixture Examples

Candies



Coins



People



Drawers



What is important to know about mixtures and solutions?

Solution Characteristics

- One thing is dissolved in another uniformly throughout (homogeneous)
- Cannot be separated mechanically

Solute

- The thing you are putting into something else
- Usually the smaller amount



Solvent

- Dissolve the solute
- Involve a large amount
- Mostly in liquid form



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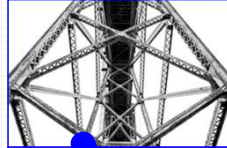
What is important to know about mixtures and solutions?

Solution Examples

- ❑ Solid into a Liquid



- ❑ Solid into solid



- ❑ Liquid into a Liquid



- ❑ Gas in a Liquid



What is important to know about mixtures and solutions?

Water is "Universal Solvent"

- ❑ Many things can be dissolved by water
- ❑ Water molecules are polar



What is important to know about mixtures and solutions?

Solutions, Colloids and Suspensions

Solutions

- ❑ Particle size: Small
- ❑ Appearance: Clear
- ❑ Separation: None
- ❑ Filter paper: None
- ❑ Light beam: Passes
- ❑ Example: Salt water

Colloids

- ❑ Particle size: Medium
- ❑ Appearance: Cloudy
- ❑ Separation: None
- ❑ Filter paper: None
- ❑ Light beam: Scattered
- ❑ Example: Mayonnaise

Suspensions

- ❑ Particle size: Largest
- ❑ Appearance: Cloudy
- ❑ Separation: Settles out
- ❑ Filter paper: Traps
- ❑ Light beam: Stopped
- ❑ Example: Muddy Water



What is important to know about mixtures and solutions?

Changing the Melting / Boiling Point

- ❑ Salt solution lowers the freezing temperature of ice
- ❑ Salt solution raises the boiling temperature of water



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What is important to know about mixtures and solutions?

Solution Characteristics

- ❑ One thing is dissolved in another uniformly throughout (homogeneous)
- ❑ Cannot be separated mechanically

Solute

- ❑ The thing **you** are putting into something else
- ❑ Usually the smaller amount



Solvent

- ❑ Dissolves the solute
- ❑ Most times a liquid
- ❑ Invites solute in



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What is important to know about mixtures and solutions?

Immiscibility



- ❑ Some things can not go into solution
- ❑ Oil and water will separate into layers with the least dense on top

Why is this Important?



- ❑ Mixtures can be separated into individual things



- ❑ Solutions are a homogeneous mixture of two or more things chemically combined in one phase

Mixtures and Solutions