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Warm-Up | Solubility

Lesson Question What is solubility?

Lesson Goals

Define solubility .

Identify factors that affect the solubility of a substance .

Describe types of solutions .

Describe factors that affect the rate of dissolving .

Words to Know

Write the letter of the definition next to the matching word as you work through the lesson. You may use the glossary to help you.

_B_ solubility

_D_ concentration

_E_ saturated solution

_C_ unsaturated solution

_A_ supersaturated solution

A. a heated solution with more dissolved solute than the solution can hold at a lower temperature

B. the ability of one substance to dissolve in another

C. a solution that holds less dissolved solute than is possible at a given temperature

D. the amount of one substance in a certain volume of another substance

E. a solution with as much dissolved solute as the solution can hold at a given temperature

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Solutions

Solutions are mixtures made of a solute and a solvent.

- A solute is a substance that gets broken down in a solution.
- A solvent is a substance that breaks down a solute.

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Solubility

- Solubility is the ability of one substance to dissolve in another.
  - The more a solute can be dissolved, the greater its solubility.

Temperature and Solubility

- Each substance has its own level of solubility.
  - Example: About 6 times more sugar than salt can dissolve in water.
- The solubility of a substance will change depending on its:
  - temperature.
  - pressure.
  - chemical properties.

Solute	Temperature	g/100 g water
Sugar	20˚C	204
Sugar	100˚C	487
Salt	20˚C	36
Salt	100˚C	39
Nitrite salt	20˚C	81
Nitrite salt	100˚C	160

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Pressure and Solubility

- An increase in [pressure] results in increased solubility.
  - Example: More gas dissolves in liquid drinks with an increase in pressure.

Chemical Properties and Solubility

- Solutes and solvents must have similar chemical [properties] to form a solution.
  - Example: Water dissolves many substances and is called the universal solvent.

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Concentration

- [Concentration] is the amount of one substance in a certain volume of another substance.
  - A [diluted] solution has a small amount of solute compared to solvent.
  - A [concentrated] solution has a large amount of solute compared to solvent.

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Saturated Solutions

- A [saturated solution] is a solution with as much dissolved solute as it can hold at a given temperature.
  - Examples: honey and pancake syrup

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Unsaturated Solutions

- An [unsaturated solution] is a solution that holds less dissolved solute than is possible at a given temperature.
  - Examples: juice beverages, sodas, and sports drinks

Supersaturated Solutions

- A [supersaturated solution] is a heated solution that holds more dissolved solute than is possible at a lower temperature.

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Rate of Dissolving: Temperature

- The [higher] the temperature of the solvent, the [quicker] the solute will dissolve.

Rate of Dissolving: Surface Area

- The [greater] the surface area of the solute, the [quicker] the solute will dissolve.
  - Smaller particles have a greater surface area than larger particles.

Rate of Dissolving: Shaking or Stirring

- The [more] a solution is shaken or stirred after adding a solute, the [quicker] the solute will dissolve.

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Lesson Question

What is solubility?

Answer

(Sample answer) The ability of a substance to dissolve in another substance is solubility.

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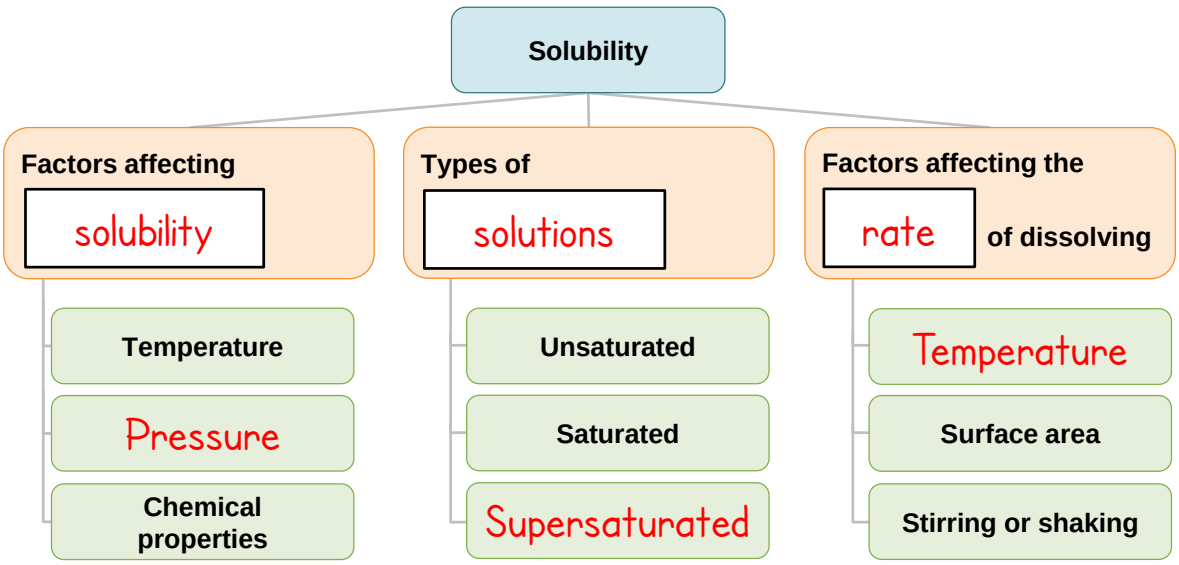
Review: Key Concepts



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Use this space to write any questions or thoughts about this lesson.

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