Science 14

Unit A: Properties of matter

Solutions and solubility

Vinegar mixes, oil forms a layer

- Vinegar stirred into water becomes one liquid.
- Oil stirred into water returns to a separate layer.



Solute and solvent

- The solute is the substance that dissolves, such as salt.
- The solvent is the substance that does the dissolving, often water.

Key terms

solute

The substance that dissolves, present in the smaller amount in most classroom solutions.

solvent

The substance that does the dissolving, often water in this course.

solubility

The mass of solute that dissolves in a stated amount of solvent at a stated temperature.

concentration

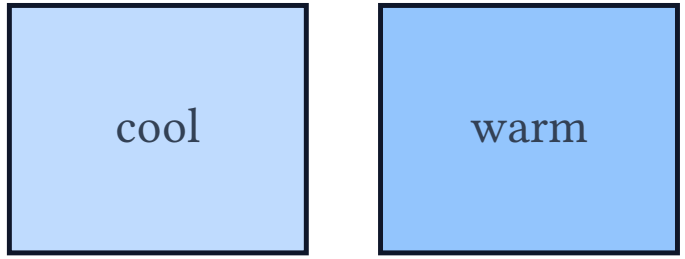
The amount of solute in a stated volume of solution, expressed here as mass per volume. (g/L)

Concentration and temperature

- Concentration in grams per litre is the solute mass divided by the solution volume.
- A warmer solvent often dissolves more solid solute because the particles move faster.

Concentration and temperature

c = mass solute ÷ volume (g/L)



Warmer solvent often dissolves more solid

Oil and vinegar

- Oil and water stay in layers, so that pair is insoluble.
- Vinegar and water stay mixed, so that pair is soluble.

A shaken oil bottle

- Shaking spreads the oil for a moment.
- After the bottle rests, the oil layer returns.

Salty water

- Salt is the solute and water is the solvent.
- Solubility is how much salt dissolves at a stated temperature.

Solubility graphs

- Pickle brine and canning syrup are concentration decisions with a temperature attached.
- A rising solubility graph lets you estimate a value between two measured points.

Image credits

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