

# SOLUTIONS

Homogeneous mixture of a solvent and one or more solutes: solid, liquid or gas

The physical state of the solution is same as the physical state of the solvent.

GAS IN GAS

GAS IN LIQUID  
LIQUID IN LIQUID  
SOLID IN LIQUID

SOLID IN SOLID

**SOLUTE:** component of solution in smaller amount

**SOLVENT:** component of solution in greater amount

**MISCIBLE:** 2 components dissolve in all amounts of each

**IMMISCIBLE:** 2 components don't dissolve; stay as separate phases

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## SOLUBILITY

Maximum amount of solute that will dissolve in a quantity of solvent to form a **saturated solution** (dissolved solute in equilibrium with pure solute) at a given temperature

grams/100 mL

grams/100 g

moles/L

**CONCENTRATION:** amount of solute in a certain amount of solvent or solution

Molecule solubility depends upon similarity between adhesive and cohesive intermolecular forces ("like dissolves like")

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## ENTHALPY OF SOLUTION

Heat is generally absorbed or released when a solute dissolves in a solvent. When heat is released the solution process is exothermic and the solution temperature increases. When heat is absorbed, the solution process is endothermic and the solution cools as solute dissolves. Solubility generally increases with temperature for endothermic processes, and decreases with temperature for exothermic processes.

