

Unit 9 – SOLUTIONS – GLUE INS

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TABLE 12.5 Solution Concentration Terms

Unit	Definition	Units
Molarity (M)	amount solute (in mol) volume solution (in L)	$\frac{\text{mol}}{\text{L}}$
Molality (m)	amount solute (in mol) mass solvent (in kg)	$\frac{\text{mol}}{\text{kg}}$
Mole fraction (χ)	$\frac{\text{amount solute (in mol)}}{\text{total amount of solute and solvent (in mol)}}$	None
Mole percent (mol %)	$\frac{\text{amount solute (in mol)}}{\text{total amount of solute and solvent (in mol)}} \times 100\%$	%
Parts by mass	$\frac{\text{mass solute}}{\text{mass solution}} \times \text{multiplication factor}$	
Percent by mass (%)	Multiplication factor = 100	%
Parts per million by mass (ppm)	Multiplication factor = 10^6	ppm
Parts per billion by mass (ppb)	Multiplication factor = 10^9	ppb
Parts by volume (% , ppm, ppb)	$\frac{\text{volume solute}}{\text{volume solution}} \times \text{multiplication factor}^*$	

*Multiplication factors for parts by volume are identical to those for parts by mass.

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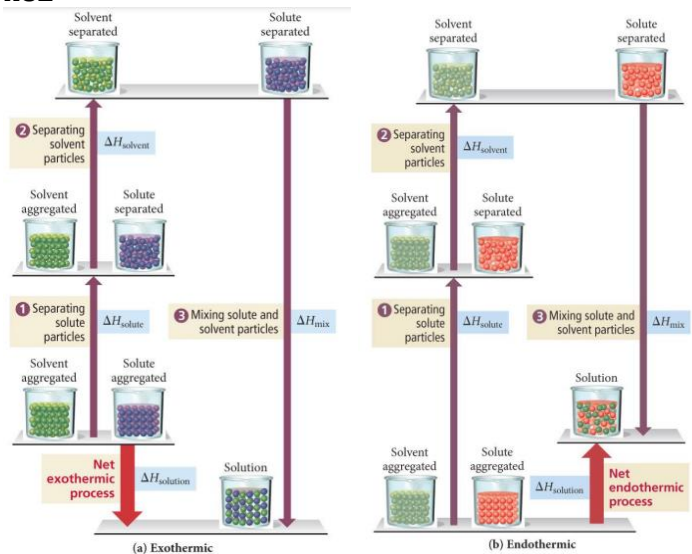
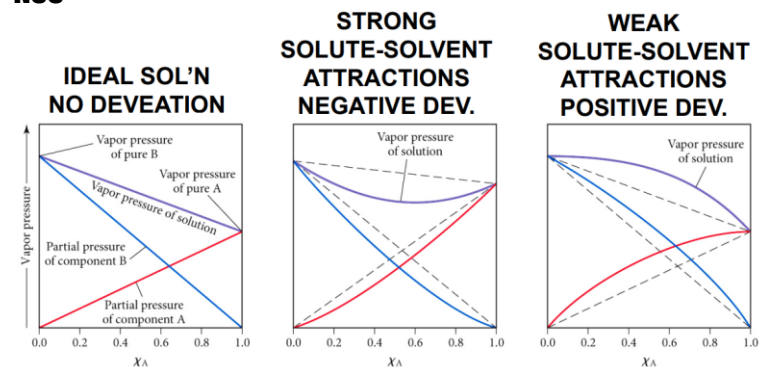


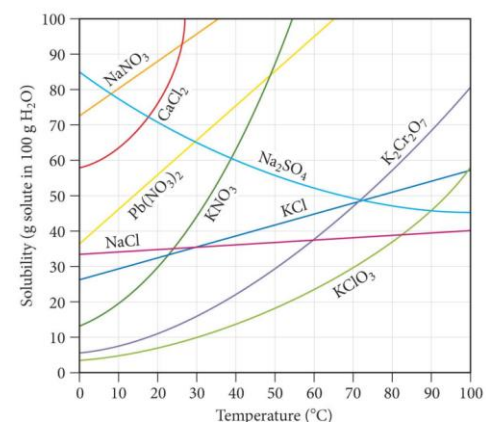
TABLE 12.2 Relative Interactions and Solution Formation

Solvent-solute interactions	>	Solvent-solvent and solute-solute interactions	Solution forms
Solvent-solute interactions	=	Solvent-solvent and solute-solute interactions	Solution forms
Solvent-solute interactions	<	Solvent-solvent and solute-solute interactions	Solution may or may not form, depending on relative disparity

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