

Chapter 15: Acids and Bases

Part II

Georgia Gwinnett College

Chem 1212K

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Conjugate Acids and Bases

- The conjugate of an acid (often an anion) **can** act as a base.
 - The stronger the acid, the weaker is its conjugate base.
- The conjugate of a base (often a cation) **can** act as an acid.
 - The stronger the base, the weaker is its conjugate acid.
- The K_a and K_b of a **conjugate acid/base pair** are related.

$$K_a \cdot K_b = K_w$$

	Acid	Base	
Strong	HCl	Cl ⁻	Neutral
	H ₂ SO ₄	HSO ₄ ⁻	
	HNO ₃	NO ₃ ⁻	
	H ₃ O ⁺	H ₂ O	
Weak	HSO ₄ ⁻	SO ₄ ²⁻	Weak
	H ₂ SO ₃	HSO ₃ ⁻	
	H ₃ PO ₄	H ₂ PO ₄ ⁻	
	HF	F ⁻	
	HC ₂ H ₃ O ₂	C ₂ H ₃ O ₂ ⁻	
	H ₂ CO ₃	HCO ₃ ⁻	
	H ₂ S	HS ⁻	
	HSO ₃ ⁻	SO ₃ ²⁻	
	H ₂ PO ₄ ⁻	HPO ₄ ²⁻	
	HCN	CN ⁻	
	NH ₄ ⁺	NH ₃	
	HCO ₃ ⁻	CO ₃ ²⁻	
	HPO ₄ ²⁻	PO ₄ ³⁻	
	H ₂ O	OH ⁻	
Negligible	HS ⁻	S ²⁻	Strong
	OH ⁻	O ²⁻	

Conjugates Continued

- Conjugates of Acids
 - The conjugate of a strong acid is neutral.
 - The conjugate of a weak acid is a weak base
- Conjugates of Bases
 - The conjugate or counter ion of a strong base is neutral
 - The conjugate of a weak base is a weak acid
 - Small highly charged cations are weak acids