

AQUEOUS ACID-BASE SUMMARY

PURE WATER

IONIZATION REACTION:



H⁺ loves OH⁻

Only 1 in 500,000 molecules ionized



AQUEOUS SOLUTIONS OF ACIDS [H⁺] > [OH⁻]

Acids are MOLECULAR COMPOUNDS that react with water to produce ions.

IONIZATION REACTION OF ACIDS:



STRONG ACIDS (HCl, HBr, HI, HNO₃, HClO₄, H₂SO₄)

Every molecule in solution reacts with water to produce ions. Solution is acidic because of H₃O⁺ (H⁺).

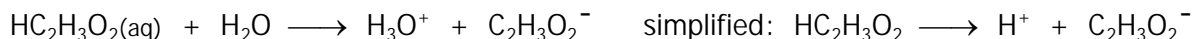


In solution, H⁺ hates Cl⁻

M SA \longrightarrow theoretical [H⁺]

WEAK ACIDS (all other acids)

FEW molecules in solution react with water to produce ions. Solution has very few H₃O⁺ (H⁺).



In solution, H⁺ likes C₂H₃O₂⁻

M WA $\not\longrightarrow$ theoretical [H⁺]

AQUEOUS SOLUTIONS OF BASES [OH⁻] > [H⁺]

STRONG BASES – SOLUBLE METAL HYDROXIDES (Group IA hydroxides & Ca(OH)₂, Sr(OH)₂, Ba(OH)₂)

Strong bases are IONIC COMPOUNDS that dissociate into ions upon dissolving in water. Solution is basic because of OH⁻.



In solution, Na⁺ hates OH⁻

M SB \longrightarrow theoretical [OH⁻]

WEAK BASES (NH₃)

Weak bases are MOLECULAR COMPOUNDS that react with water to produce ions.

IONIZATION REACTION OF NH₃:



FEW molecules in solution react with water to produce ions. Solution has very few OH⁻.

In solution, NH₄⁺ likes OH⁻

M WB $\not\longrightarrow$ theoretical [OH⁻]