

CONCEPT MAP

CHEMICAL EQUILIBRIUM

Equilibrium during chemical changes

Law of chemical equilibrium

For a reversible reaction at equilibrium, the ratio of the product of concentration of the products to the product of concentrations of the reactants is constant.

Equilibrium constant, K_C

The constant of ratio of concentrations of products and reactants.

Does not change with

- Concentration
- Catalyst

Changes with

- Stoichiometry
- Direction of reaction
- Temperature

T increases, K_C increases
(For endothermic reactions)

T increases, K_C decreases
(For exothermic reactions)

Types of chemical equilibrium

Homogeneous equilibrium : When all the reactants and products are in the same phase.

Heterogeneous equilibrium : When reactants and products are present in two or more different phases

Factors affecting equilibrium (Le Chatelier's principle)

Change in concentration :
If conc. of any reactant or product is increased, the equilibrium shifts in a direction where it is being consumed.

Change in temperature :
If temperature is increased reaction will proceed in the direction where heat is absorbed.

Change in pressure : If pressure is increased, then equilibrium will shift in a direction where number of moles reduces.

Addition of inert gas

At constant volume
No change in equilibrium

At constant pressure
Equilibrium will shift towards greater number of moles