

Le-Chatelier Principle

At the equilibrium of reversible reaction, if any of the factors (temperature, pressure and concentration) is changed, the position of the equilibrium will shift in such a direction that the effect of change of factors is relieved.

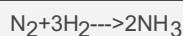
Effect of temperature (exothermic reaction)



Or, $A+B \rightleftharpoons C+D$; $\Delta H = -ve$

Temperature <i>increase</i>	Temperature <i>decrease</i>
Rate of forward reaction < Rate of backward reaction	Rate of forward reaction > Rate of backward reaction
Equilibrium shift left ward	Equilibrium shift right ward
Product concentration decrease	Product concentration increase

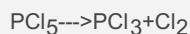
Effect of pressure



Total mol more on left side

Pressure <i>increase</i>	Pressure <i>decrease</i>
Rate of forward reaction > Rate of backward reaction	Rate of forward reaction < Rate of backward reaction
Equilibrium shift right ward	Equilibrium shift left ward
Product concentration increase	Product concentration decrease

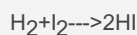
Effect of pressure



Total mol more on right side

Pressure <i>increase</i>	Pressure <i>decrease</i>
Rate of forward reaction < Rate of backward reaction	Rate of forward reaction > Rate of backward reaction
Equilibrium shift left ward	Equilibrium shift right ward
Product concentration decrease	Product concentration increase

Effect of pressure



Total mol equal on both side

Pressure <i>increase</i>	Pressure <i>decrease</i>
No effect	No effect

Effect of pressure

Only applicable for gasses as pressure doesn't affect solid or liquid.

Effect of concentration



Concentration <i>increase</i>	Concentration <i>decrease</i>
Rate of forward reaction > Rate of backward reaction	Rate of forward reaction < Rate of backward reaction
Equilibrium shift right ward	Equilibrium shift left ward
Product concentration increase	Product concentration decrease

Effect of temperature (endothermic reaction)



Or, $A+B \rightleftharpoons C+D$; $\Delta H = +ve$

Temperature <i>increase</i>	Temperature <i>decrease</i>
Rate of forward reaction > Rate of backward reaction	Rate of forward reaction < Rate of backward reaction
Equilibrium shift right ward	Equilibrium shift left ward
Product concentration increase	Product concentration decrease



