

Factors:

① Temperature

- if forward reaction is exothermic ($-ve \Delta H$)
backward reaction is endothermic
- if $\uparrow T$, system opposes the change
- System try to $\downarrow T$ - moves in endothermic direction

e.g. if exo in forward direction, make more reactants

② Concentration

- if $\uparrow$ Conc. system opposes change, try to $\downarrow$ Conc. of that substance - move to side with less of that substance e.g. if $\uparrow$ conc. of reactant, equilibrium shifts to right + makes more products.

Definitions:

- dynamic equilibrium = rate of forward + backward reactions are the same (conc. of reactants and products is constant (same))
- $\rightleftharpoons$ = reversible reaction

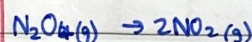
③ Pressure (gases only)

- if $\uparrow$ pressure, system opposes

change - System tries to $\downarrow P$

by moving to the side with

fewer gas molecules. e.g.



- if $\uparrow P$, system moves equilibrium

to left (more product) as fewer

moles of gas on left.

④ Catalyst

- increases rate of forward

and backward reaction

- reaches equilibrium quicker

- no effect on equilibrium (product + reactants)

Equilibrium

Examples:

