

Law of mass Action

Similarly

$$\text{Rate of backward reaction} \propto [C]^x [D]^y \\ \therefore = k_b [C]^x [D]^y$$

Where k_b is known as backward reaction rate constant.

At equilibrium

Rate of forward reaction = Rate of Backward reaction

$$k_f [A]^m [B]^n = k_b [C]^x [D]^y$$

$$\therefore \frac{k_f}{k_b} = \frac{[C]^x [D]^y}{[A]^m [B]^n}$$

$$\left[\text{Here } \frac{k_f}{k_b} = K_e \right]$$

$$K_e = \frac{[C]^x [D]^y}{[A]^m [B]^n}$$

Where K_e is known as equilibrium state constant.