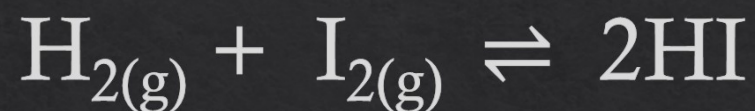


# Concentration Quotient $Q_c$

Stan Vincent

## Equilibrium Constant $K_c$



$$K_c = \frac{[\text{HI}]^2}{[\text{H}_{2(g)}][\text{I}_{2(g)}]} \text{ At } 448\text{K} = 50$$

If the value is 40 at 448K it means the system is not in equilibrium, then this number is referred to as the concentration quotient  $Q_c$

Concentration quotient  $Q_c$

$$K_c = \frac{[\text{HI}]^2}{[\text{H}_{2(\text{g})}][\text{I}_{2(\text{g})}]} \text{ At } 448\text{K} = 50$$

Interpretation of concentration quotient

$Q_c = K_c$  System is in equilibrium

$Q_c < K_c$  System is not in equilibrium

$Q_c > K_c$  System is not in equilibrium

Shift in equilibrium using  $Q_c$  values

$$K_c = \frac{[\text{HI}]^2}{[\text{H}_{2(\text{g})}][\text{I}_{2(\text{g})}]} \text{ At } 448\text{K} = 50$$

If  $Q_c = K_c$  System is in equilibrium

If  $Q_c$  is equal to  $K_c$  the ratio of concentration of the products to reactants is in a state of equilibrium. There is no shift in equilibrium.

Shift in equilibrium when  $Q_c < K_c$

$$K_c = \frac{[\text{HI}]^2}{[\text{H}_{2(\text{g})}][\text{I}_{2(\text{g})}]} \text{ At } 448\text{K} = 50$$

If  $Q_c < K_c$  System is not in equilibrium

If  $Q_c < K_c$  or  $Q_c = 40$  and  $K_c = 50$  we have more reactants than products, so the tendency would be to produce more products, “Equilibrium would shift right” →

Shift in equilibrium using  $Q_c$  values

$$K_c = \frac{[\text{HI}]^2}{[\text{H}_2(\text{g})][\text{I}_2(\text{g})]} \text{ At } 448\text{K} = 50$$

If  $Q_c > K_c$  System is not in equilibrium

If  $Q_c > K_c$  or  $Q_c = 60$  and  $K_c = 50$  we have more products than reactants, so the tendency would be to produce more reactants, “Equilibrium would shift left” ←



Stan Vincent

Copyrights ©