Concentration Quotient Qc

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Equilibrium Constant Kc

$$H_{2(g)} + I_{2(g)} \rightleftharpoons 2HI$$

$$Kc = \frac{[HI]^2}{[H_{2(g)}][I_{2(g)}]} \text{ At } 448K = 50$$

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 Qc

Concentration quotient Qc

$$Kc = \frac{[HI]^2}{[H_{2(g)}][I_{2(g)}]} \text{ At } 448K = 50$$

Interpretation of concentration quotient

Qc = Kc System is in equilibrium

Qc < Kc System is not in equilibrium

Qc > Kc System is not in equilibrium

Shift in equilibrium using Qc values

$$Kc = \frac{[HI]^2}{[H_{2(g)}][I_{2(g)}]} \text{ At } 448K = 50$$

If Qc = Kc System is in equilibrium

If Qc is equal to Kc 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 Qc < Kc

$$Kc = \frac{[HI]^2}{[H_{2(g)}][I_{2(g)}]} \text{ At } 448K = 50$$

If Qc < Kc System is not in equilibrium

If Qc < Kc or Qc = 40 and Kc = 50 we have more reactants than products, so the tendency would be to produce more products, "Equilibrium would shift right" →

Shift in equilibrium using Qc values

$$Kc = \frac{[HI]^2}{[H_{2(g)}][I_{2(g)}]} \text{ At } 448K = 50$$

If Qc > Kc System is not in equilibrium

If Qc > Kc or Qc = 60 and Kc = 50 we have more products than reactants, so the tendency would be to produce more reactants, "Equilibrium would shift left" ←

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