What Is Le Chatelier's Principle?

Worksheet

A system at equilibrium responds to stress (concentration, temperature, or pressure changes) by shifting to oppose the change: if pressure rises, equilibrium shifts to the side with fewer moles; if temperature rises, it shifts endothermic.

Questions

1. What does Le Chatelier's principle predict?

A) Equilibrium never occurs
B) System opposes applied stress
C) Products always increase
D) No shift happens

2. Removing a product from equilibrium shifts?

A) Left
B) Right
C) No shift
D) Depends on K

3. For CO(g) CO(g) + O(g), which stress favors products?

A) Increase pressure
B) Add CO
C) Decrease temperature
D) Decrease volume

4. Does a catalyst shift equilibrium?

A) Shifts right
B) Shifts left
C) No shift
D) Depends on temperature

5. The equilibrium N + 3H 2NH is disturbed by adding more N. Which way does it shift?

6. A system H + I 2HI is at equilibrium at 200 K. Temperature is raised to 400 K. The forward reaction is endothermic. Which way does it shift?

7. The reaction 2NO(g) NO(g) is at equilibrium in a sealed container. Pressure is increased by reducing volume. Which side has fewer moles?

8. Define: State Le Chatelier's principle.

9. Define: Three types of stress on equilibrium?

10. Define: Adding a reactant shifts equilibrium?

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Answer Key

1. B) System opposes applied stress - Le Chatelier's principle states equilibrium shifts to oppose any applied stress.

2. B) Right - Removing product shifts equilibrium RIGHT (forward) to produce more.

3. C) Decrease temperature - The forward reaction is endothermic; decreasing temperature (cooling) favors the reverse, but increasing temperature favors forward = products.

4. C) No shift - Catalysts speed up both directions equally; equilibrium position does not change.

5. Adding N increases reactant concentration. The system shifts RIGHT (forward) to consume excess N and restore equilibrium.

6. Raising temperature favors the endothermic direction (forward). The equilibrium shifts RIGHT.

7. Left: 2 moles of NO; Right: 1 mole of NO. Increasing pressure shifts equilibrium RIGHT (fewer moles).

8. A system at equilibrium responds to stress by shifting to oppose the change.

9. Concentration (adding/removing), temperature change, and pressure change.

10. Shifts RIGHT (forward) to consume the excess.

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