

Le Châtelier's Principle

Stress	System Response	Effect on the Equilibrium Constant
Increase in temperature	The system shifts to use up the added heat, favoring the endothermic reaction.	It changes because the equilibrium position shifts without any substances being added or removed. There is no heat related term in the mass action expression to maintain the ratio.
Decrease in temperature	The system shifts to produce more heat, favoring the exothermic reaction.	It changes because the equilibrium position shifts without any substances being added or removed. There is no heat related term in the mass action expression to maintain the ratio.
Increase in volume (decrease in pressure)	The system shifts to the side with the most gas particles, because solids and liquids are incompressible.	It does not change, because all reactant and product concentrations change, resulting in the same ratio.
Decrease in volume (increase in pressure)	The system shifts to the side with the fewest gas particles, because solids and liquids are incompressible.	It does not change, because all reactant and product concentrations change, resulting in the same ratio.
Increase in concentration	The system shifts to decrease the reactant or product that was added.	It does not change, because all reactant and product concentrations change, resulting in the same ratio.
Decrease in concentration	The system shifts to increase the reactant or product that was removed.	It does not change, because all reactant and product concentrations change, resulting in the same ratio.
Addition of a catalyst	No change. Catalysts increase the forward and reverse reactions to the same extent, so that they only serve to help bring systems to equilibrium faster.	It does not change.
Addition of an inert gas	No change, because it doesn't take part in the reaction.	It does not change.