Dynamic Equilibrium

A reversible Reaction (⇌) may reach equilibrium in a sealed container when:

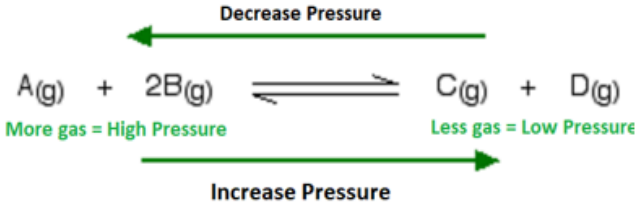
* Forward & backward rate are equal
*Concentrations stay constant

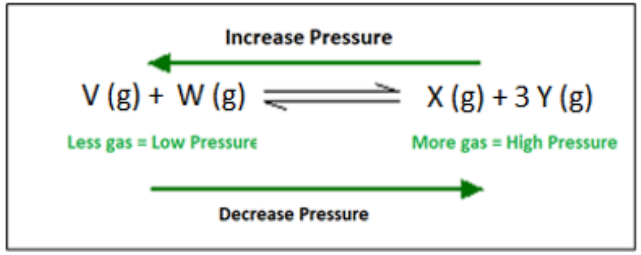
Changing Conditions #1

Changing conditions moves equilibrium left or right to oppose change.

Increase Pressure:
Equilibrium moves to side with less gas

Decrease Pressure:
Equilibrium moves to side with more gas



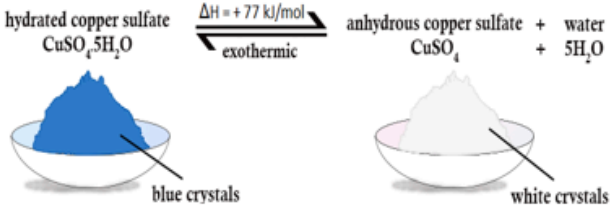


Changing Conditions #2

Negative ΔH means exothermic (forwards)
Positive ΔH means endothermic (forwards)

Increase Temperature:
Reduce Temp by favouring Endothermic

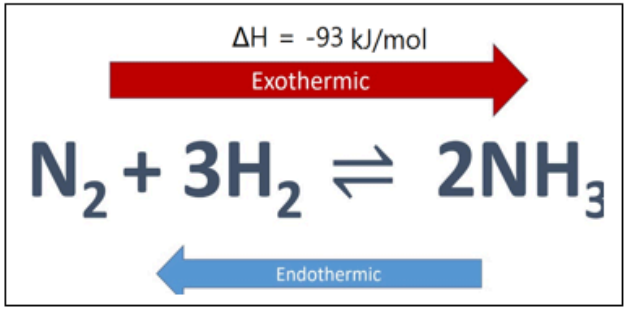
Decrease Temperature:
Increase Temp by favouring Endothermic



Forwards reaction is endothermic

Increase Temperature:
Favours Endothermic – moves right

Decrease Temperature:
Favours Exothermic – moves left



Forwards reaction is exothermic

Increase Temperature:
Favours Endothermic – moves left

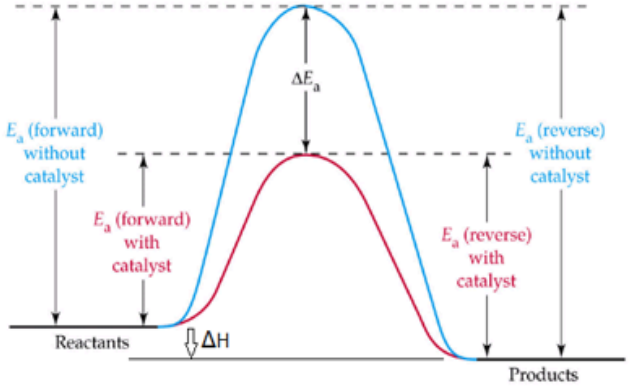
Effect of Catalysts

Forward & backward Activation energy both lowered

Increases forward & backward rate equally

Doesn't affect the position of equilibrium.

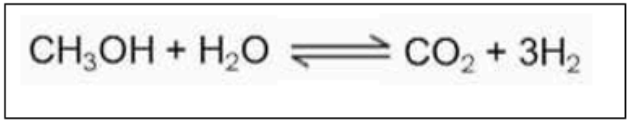
Only affects rate



Rate & Yield

If ΔH is negative the reaction is exothermic

*Heating it will move it left – lower yield
*But the rate will be faster



This reaction will be faster at high Pressure

But will move left = low yield