CHEMISTRY



S is the entropy of a system. This is the measure of the freedom possessed by the particles in a substance. Entropy always wants to increase. All other factors being equal, a gas will have a higher entropy than a liquid, and a liquid will have a higher entropy than a solid. You can find the change in entropy by using the equation:

$$\Delta S = S_{products} - S_{reactants}$$

The feasibility of a reaction is governed by its Gibbs free energy (ΔG). If ΔG is positive, then the reaction won't happen spontaneously. If ΔG is negative, then the reaction is feasible. Gibbs free energy is calculated using the following formula:

$$\Delta G = \Delta H - T \Delta S$$

Where H is the enthalpy, T is the temperature, and S is the entropy. This shows how endothermic processes can occur. If ΔG is negative, then the process can occur spontaneously, no matter the change in enthalpy.



In an exothermic reaction, as temperature increases, product decreases, so K_c decreases too. In an endothermic reaction, as temperature increases, product increases, so K_c increases.

The pressure constant (K_p), for a reaction:

$$aA + bB \rightarrow cC + dD$$

is given by the equation:

$$K_c = \frac{PC^c PD^d}{PA^a PB^b}$$

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The larger the equilibrium constant, the more product is produced.