

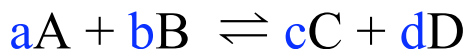
The Equilibrium Constant

Depends upon:

Balanced Chemical Equation
Temperature

Independent of Initial concentrations, Volume, Pressure

For the general chemical equation:



$$K = \frac{a_C^c a_D^d}{a_A^a a_B^b} = \frac{P_{\text{products}}^{\text{coef}}}{P_{\text{reactants}}^{\text{coef}}} \quad \text{for gases}$$
$$= \frac{[\text{prods}]^{\text{coef}}}{[\text{reacts}]^{\text{coef}}} \quad \text{for solutions}$$

Where all are *equilibrium concentrations*.

Note: The activities of pure liquids and solids are equal to 1.
They are not written in the equilibrium constant expression.

Relationship between K_p and K_c for gases:

$$K_p = K_c (RT)^{\Delta n_{\text{gas}}}$$

Manipulating K

1. Reverse reaction:	Take reciprocal of K	$K_{\text{new}} = 1/K$
2. Multiply reaction by n:	Raise K to power of n	$K_{\text{new}} = (K)^n$
3. Add reactions:	Multiply K's	$K_{\text{new}} = K_1 K_2$