

Chemical Equilibrium

Consider the reaction: $2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$

At equilibrium, the concentrations are:

$[SO_2] = 0.4 \text{ mol/L}$

$[O_2] = 0.2 \text{ mol/L}$

$[SO_3] = 0.8 \text{ mol/L}$

Calculate the equilibrium constant K_c .

$K_c = \frac{[SO_3]^2}{[SO_2]^2 [O_2]}$

$K_c = \frac{(0.8)^2}{(0.4)^2 (0.2)}$

$K_c = \frac{0.64}{0.16 \times 0.2}$

$K_c = \frac{0.64}{0.032}$

$K_c = 20$

Therefore, the equilibrium constant K_c is 20.

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