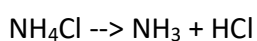


Answer on Question #71075, Chemistry / General Chemistry

Question:

When solid ammonium chloride dissociates at a certain temperature in a 0.500 dm³ container, ammonia and hydrogen chloride are formed:



The initial amount of ammonium chloride was 1.00 mol, and when the system had reached equilibrium there was a 0.300 mol of ammonium chloride.

What is the numerical value of K_c for this reaction under these conditions?

Solution:

Amount of dissociated ammonium chloride: 0.700 mol

Concentration of ammonia: $[\text{NH}_3] = 0.700\text{mol} / 0.500\text{dm}^3 = 1.4 \text{ mol/dm}^3$

Concentration of hydrogen chloride: $[\text{HCl}] = 0.700\text{mol} / 0.500\text{dm}^3 = 1.4 \text{ mol/dm}^3$

Assume that mixture of gases is ideal gas:

$$K_c = [\text{NH}_3] \cdot [\text{HCl}] = 1.4 \cdot 1.4 = 1.96$$

Answer:

$$K_c = 1.96$$