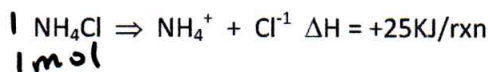


TS

Thermodynamic equations



1. If 1 mole of ammonium chloride is dissolved, how much energy is absorbed?

$$\Delta H = \rightarrow 25\text{KJ}$$

2. If 2 moles ammonium chloride is dissolved, how much energy is absorbed?

$$2 \times 25\text{KJ} = 50\text{KJ}$$

3. If 53 grams of ammonium chloride is dissolved how much energy is absorbed?

$$53\text{g} \cdot \frac{1 \text{ mol}}{53\text{g}} = 1 \text{ mol} \cdot \frac{25\text{KJ}}{1 \text{ mol}} = 25\text{KJ}$$

4. If 5.3g of ammonium chloride is dissolved in how much energy is absorbed?

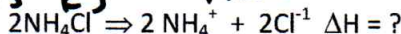
$$5.3\text{g} \cdot \frac{1 \text{ mol}}{53\text{g}} = 0.1 \text{ mol} \cdot \frac{25\text{KJ}}{1 \text{ mol}} = 2.5\text{KJ}$$

5. If 25g of ammonium chloride is dissolved, how much energy is absorbed?

$$25\text{g} \cdot \frac{1 \text{ mol}}{53\text{g}} \cdot \frac{25}{1} = 11.7\text{KJ}$$

6. If 90KJ of energy is absorbed, what is the mass of ammonium chloride dissolved?

$$90\text{KJ} \cdot \frac{1 \text{ mol}}{25\text{KJ}} \cdot \frac{53\text{g}}{1 \text{ mol}} = 190\text{g}$$



7. What is the enthalpy for reaction above? $+50\text{KJ}$

1 gram of glucose burns producing 15.5kJ of energy via the following reaction.



8. How much energy would be released if 2 grams of sugar were burned?

$$2 \times 15.5 = 31\text{KJ}$$

9. How much energy would be released if 180g were burned?

$$\frac{2\text{g}}{31} = \frac{180\text{g}}{?} \quad ? = 2790\text{KJ}$$

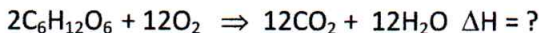
10. How much energy would be released if 2 moles were burned?

$$\frac{180}{1 \text{ mol}} = \frac{360}{2 \text{ mol}} \quad 2(2790) = 5580\text{KJ}$$

11. What is the enthalpy change for the reaction above?

$$\Delta H = -2790 \leftarrow \text{Energy for 1 mol}$$

12. What is the enthalpy change for the reaction below?



↑
2 moles

↑
excess

-5580

"-" due to exothermic