

SPONTANIETY WITH RESPECT TO FREE ENERGY

$$\Delta G = \Delta H - T \Delta S \text{ (all variables refer to the system)}$$

1. Burning of ethanol .

Sign of ΔH : _____ Explanation: _____

Sign of ΔS : _____ Explanation: _____

Sign of ΔG _____ Spontaneity: _____

2. Burning magnesium.

Sign of ΔH : _____ Explanation: _____

Sign of ΔS : _____ Explanation: _____

Sign of ΔG _____ Spontaneity: _____

3. Ca metal and water.

Sign of ΔH : _____ Explanation: _____

Sign of ΔS : _____ Explanation: _____

Sign of ΔG _____ Spontaneity: _____

4. Heating $(\text{NH}_4)_2\text{CO}_3$

Sign of ΔH : _____ Explanation: _____

Sign of ΔS : _____ Explanation: _____

Sign of ΔG _____ Spontaneity: _____

5. Crystallization of sodium thiosulfate .

Sign of ΔH : _____ Explanation: _____

Sign of ΔS : _____ Explanation: _____

Sign of ΔG _____ Spontaneity: _____

6. Dissolving NH_4Cl .

Sign of ΔH : _____ Explanation: _____

Sign of ΔS : _____ Explanation: _____

Sign of ΔG _____ Spontaneity: _____