

Reinforcement

Chapter 5

BLM 5-2

Thermochemical Equations and Stoichiometry**Goal**

Reinforce your understanding of the stoichiometry of thermochemical equations.

Procedure

Answer the questions below in the spaces provided.

Questions

1. Consider the following thermochemical equation:



(a) How much heat is released when 3.0 mol $\text{ZnS}_{(s)}$ reacts in excess oxygen?

(b) How much heat is released when 2.3×10^{-2} mol $\text{ZnS}_{(s)}$ reacts in excess oxygen?

(c) What is the enthalpy change when 223.9 g $\text{ZnS}_{(s)}$ reacts in excess oxygen?

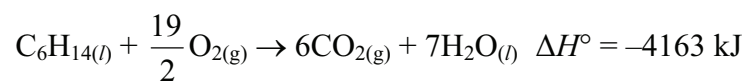
(d) What is the enthalpy change when 0.96 g $\text{ZnO}_{(s)}$ is produced?

2. Slaked lime ($\text{Ca(OH)}_{2(s)}$) is produced when lime (calcium oxide, $\text{CaO}_{(s)}$) reacts with liquid water. 65.2 kJ of heat is released for each mol of Ca(OH)_2 that is produced.

(a) Write a thermochemical equation for the reaction.

(b) What is the enthalpy change when 523.3 kg of lime reacts with excess water?

3. The following reaction represents the complete combustion of hexane, $C_6H_{14(l)}$, at SATP.



- (a) If 0.537 mol of carbon dioxide is produced in the reaction represented by the equation above, how much heat is released by the reaction?

- (b) If 25.0 kg of hexane is burned in sufficient oxygen, how much heat will be released?

- (c) What mass of hexane is required to produce 1.0×10^5 kJ of heat by complete combustion?