Enthalpy Stoichiometry

The **molar enthalpy of reaction** (∆*Hrxn*) is the amount of heat transferred during a reaction. It is reported in kilojoules per mole of reactant. A reaction that produces heat is **exothermic** and has a negative -∆*Hrxn*. A reaction that absorbs heat is **endothermic** and has a positive +∆*Hrxn*.

**Answer the following questions. Show all work and answer with correct units.**

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| 1. How much heat will be released when 6.44 g of sulfur reacts with excess O2 according to the following equation?  2 S + 3O2  🡪 2SO3  ∆*H =* -791.4 kJ |  | 5. Calulate the ΔH for the reaction below, given that 1523.3 of propane, C3H8 must be burned to produce 76,000 kJ of energy?  C3H8 + 5O2 🡪 3CO2 + 4H2O ∆*H=????* kJ |
| 1. How much heat will be released when 4.72 g of carbon reacts with excess O2 according to the following equation?   C + O2 🡪CO2  ∆*H =* -393.5 kJ     1. How much heat will be absorbed when 38.2 g of bromine reacts with excess H2 according to the following equation?   H2 + Br2 🡪 2HBr ∆*H =* +72.80 kJ     1. Calculate the change in Enthalpy for the reaction below given that 3.69 kJ of heat is released will be released when 1.48 g of chlorine reacts with excess phosphorus.   2P + 5Cl2  🡪 2PCl5  ∆*H =* ??? kJ |  | 1. How much heat will be absorbed when 13.7 g of nitrogen reacts with excess O2 according to the following equation?   N2 + O2 🡪 2NO ∆*H =* +180 kJ   1. What mass of iron must react to produce 3600 kJ of energy?   3Fe + 2O2  🡪 Fe3O4 ∆*H =* -1120 kJ   1. How much heat will be released when reacts with 76.0 g of O2 according to the following equation?   2H2 + O2  🡪 2H2O ∆*H =* -571.6 kJ |
| 1. -79.4657 kJ 2. -154.6349 kJ 3. +17.4018 kJ 4. -886 kJ 5. 2,220 kJ  6. +88.1 kJ 7. 538.51 g Fe 8. -1357.6348 kJ | | |