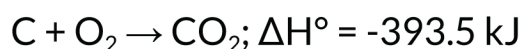


# ENTHALPY STOICHIOMETRY WORKSHEET

1. How much heat will be released when 4.72 g of carbon react with excess O<sub>2</sub>?



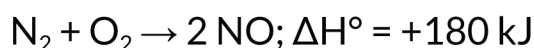
2. How much heat will be absorbed when 38.2 g of bromine react with excess H<sub>2</sub>?



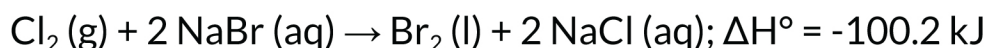
3. How much heat will be released when 1.48 g of chlorine react with excess phosphorus?



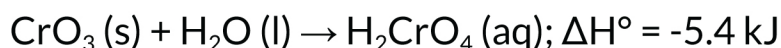
4. How much heat will be absorbed when 13.7 g of nitrogen react with excess O<sub>2</sub>?



5. Find the heat of reaction for the single displacement reaction in which 2 L of chlorine gas at STP react with sodium bromide.



6. A chemist runs an experiment where the following reaction occurs:

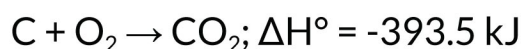


Careful measurement indicates that 6.18 kJ of energy were released. What mass of CrO<sub>3</sub> reacted?

# ENTHALPY STOICHIOMETRY WORKSHEET

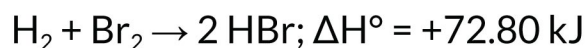
## Answers

1. How much heat will be released when 4.72 g of carbon react with excess O<sub>2</sub>?



$$4.72 \text{ g C} \times (1 \text{ mol C}/12 \text{ g C}) \times (-393.5 \text{ kJ}/1 \text{ mol C}) = -154.78 \text{ kJ}$$

2. How much heat will be absorbed when 38.2 g of bromine react with excess H<sub>2</sub>?



$$38.2 \text{ g Br} \times (1 \text{ mol Br}/160 \text{ g Br}) \times (+72.8 \text{ kJ}/1 \text{ mol Br}) = +17.4 \text{ kJ}$$

3. How much heat will be released when 1.48 g of chlorine react with excess phosphorus?



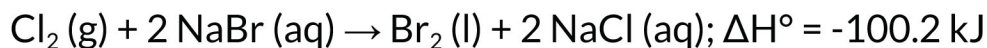
$$1.48 \text{ g Cl}_2 \times (1 \text{ mol Cl}_2/71 \text{ g Cl}_2) \times (-886 \text{ kJ}/5 \text{ mol Cl}_2) = -3.69 \text{ kJ}$$

4. How much heat will be absorbed when 13.7 g of nitrogen react with excess O<sub>2</sub>?



$$13.7 \text{ g N}_2 \times (1 \text{ mol N}_2/28 \text{ g N}_2) \times (+180 \text{ kJ}/1 \text{ mol N}_2) = +88 \text{ kJ}$$

5. Find the heat of reaction for the single displacement reaction in which 2 L of chlorine gas at STP react with sodium bromide.



$$2 \text{ L Cl}_2 \times (1 \text{ mol Cl}_2/22.4 \text{ L Cl}_2) \times (-100.2 \text{ kJ}/1 \text{ mol Cl}_2) = -8.946 \text{ kJ}$$

6. A chemist runs an experiment where the following reaction occurs:



Careful measurement indicates that 6.18 kJ of energy were released. What mass of CrO<sub>3</sub> reacted?

$$-6.18 \text{ kJ} \times (1 \text{ mol CrO}_3/-5.4 \text{ kJ}) \times (99.993 \text{ g CrO}_3/1 \text{ mol CrO}_3) = 114.4 \text{ g CrO}_3$$