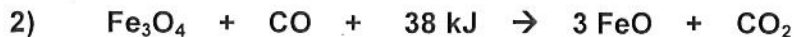


Chemical reactions can be exothermic (release of heat energy) or endothermic (absorb heat energy).



a) Is the reaction endothermic or exothermic and how do you know??

endo = HE on left

b) How much energy is needed to produce 200g of CO_2 ?

$200 \text{ g CO}_2 \times \frac{1 \text{ mol CO}_2}{44 \text{ g}} \times \frac{38 \text{ kJ}}{1 \text{ mol CO}_2} = 173 \text{ kJ}$

c) If 50 g of Fe_3O_4 are available for the reaction, how much energy will be needed?

$50 \text{ g Fe}_3\text{O}_4 \times \frac{1 \text{ mol Fe}_3\text{O}_4}{232 \text{ g}}$

d) If 100 kJ are available, how much FeO will be produced?

$100 \text{ kJ} \times \frac{3 \text{ mol FeO}}{38 \text{ kJ}} \times \frac{71.85 \text{ g FeO}}{1 \text{ mol FeO}} = 567 \text{ g FeO}$



a) Is this reaction endothermic or exothermic and how do you know?

exo = HE on right

b) What is the ΔH for this reaction?

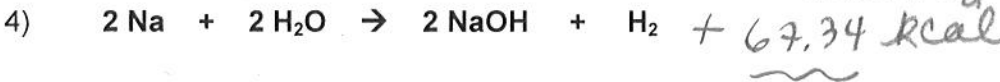
$\frac{-1299 \text{ kJ}}{1 \text{ mol C}_2\text{H}_2}$

c) How much heat energy is involved if 35 g of ethylene are burned?

$35 \text{ g C}_2\text{H}_2 \times \frac{1 \text{ mol C}_2\text{H}_2}{26 \text{ g}} \times \frac{-1299 \text{ kJ}}{1 \text{ mol C}_2\text{H}_2} =$

d) How many grams of oxygen would be required if $4.5 \times 10^8 \text{ J}$ of energy are evolved?

$-4.5 \times 10^8 \text{ kJ} \times \frac{5/2 \text{ mol O}_2}{-1299 \text{ kJ}} \times \frac{32 \text{ g O}_2}{1 \text{ mol O}_2} =$



a) Is this reaction endothermic or exothermic and how did you know from class?

exo = look it up!

b) What is the ΔH for this reaction?

$\frac{-67.34 \text{ kcal}}{1 \text{ mol Na}}$

c) How many grams of sodium would you have to react to produce $5.5 \times 10^6 \text{ kJ}$?

$-5.5 \times 10^6 \text{ kJ} \times \frac{1000 \text{ J}}{1 \text{ kJ}} \times \frac{1 \text{ kcal}}{4190 \text{ J}} \times \frac{2 \text{ mol Na}}{-67.34 \text{ kcal}} \times \frac{23 \text{ g Na}}{1 \text{ mol Na}} = 9.0 \times 10^9 \text{ g Na}$

1 kcal = 4190 J
Ask your American friends