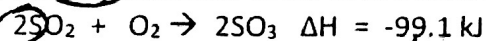


3. Calculate the heat released when 1.43 moles of SO_2 reacts according to the following equation.



$$\frac{1.43 \text{ moles SO}_2}{2 \text{ mole SO}_2} \times -99.1 \text{ kJ} = -70.8565 \text{ kJ} = \boxed{-70.9 \text{ kJ}}$$

4. Given the following reaction: $\text{C}_{(s)} + 2\text{S}_{(s)} + 89.3 \text{ kJ} \rightarrow \text{CS}_{2(l)}$ Reactant = endo
How many atoms (particles) of Carbon can be burned if 520.0 kJ of energy are available?

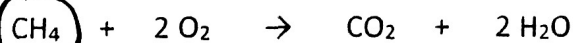
$$\frac{520.0 \text{ kJ}}{+89.3 \text{ kJ}} \times \frac{1 \text{ mole C}}{1 \text{ mole C}} \times \frac{6.02 \times 10^{23} \text{ atom C}}{1 \text{ mole C}} = 3.50549 \times 10^{24} \text{ atom C}$$

↑
Conversions
always 1 mole

$$= \boxed{3.51 \times 10^{24} \text{ atom C}}$$

5. a. If the following reaction produces energy ($\Delta H = -357 \text{ kJ}$)

is this an endo or exothermic reaction? exothermic b/c ΔH is negative



b. Is the energy written on the reactant or product side of the equation? product b/c exo is produce

c. If 15.0 grams of CH_4 reacts with excess oxygen how much energy is produced?

$$\frac{15.0 \text{ g CH}_4}{16.05 \text{ g CH}_4} \times \frac{1 \text{ mole CH}_4}{1 \text{ mole CH}_4} \times -357 \text{ kJ} = -333.6449 \text{ kJ}$$

↑
Conversion
molar mass
always 1 mole

↑
From
Rxn

$$= \boxed{-334 \text{ kJ}}$$