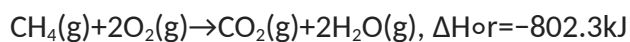


Answer on Question #66381 - Chemistry - General Chemistry

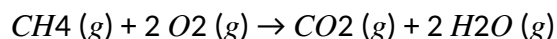
Task:

How much heat is produced by the complete combustion of 244 g of CH₄?



Solution:

Reaction:



$\Delta H_{\text{or}} = -802.3 \text{ kJ}$. The negative sign just means that it is releasing energy.

The enthalpy as a conversion factor:

$$\frac{-802 \text{ kJ energy}}{1 \text{ mol CH}_4 \text{ reacted}}$$

So,

$$n(\text{CH}_4) = \frac{m(\text{CH}_4)}{M(\text{CH}_4)} = \frac{244 \text{ g}}{16 \text{ g/mol}} = 15.25 \text{ mol.}$$

Then,

$$15.25 \text{ mol CH}_4 \cdot \frac{-802 \text{ kJ energy}}{1 \text{ mol CH}_4 \text{ reacted}} = -12230.5 \text{ kJ energy}$$

Answer: -12230.5 kJ energy produced by the complete combustion of 244 g of CH₄