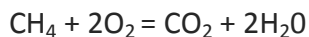


Answer on Question #82256, Chemistry/ General Chemistry

The following reaction evolves 1389 kJ of heat energy to the surrounding when 25.0g of CH₄ is combusted with excess O₂ as follows: CH₄ + 2O₂ = CO₂ + 2H₂O

what is the enthalpy of reaction (deltaH) in kilojoules per mole of methane?

Solution

$$n = m/M$$

$$n(\text{CH}_4) = 25.0 \text{ g} / 16 \text{ g/mol} = 1.56 \text{ mol}$$

when 1.56 mol of methane is combusted 1389 kJ of heat is evolved

when 1 mole of methane is combusted x kJ of heat is evolved

Solve the proportion:

$$\frac{1.56}{1} = \frac{1389}{x}$$

$$x = 890$$

$$\Delta H = 890 \text{ kJ/mol}$$

Answer: 890 kJ/mol

Answer provided by www.AssignmentExpert.com