

Heating and Cooling Curves – AP practice

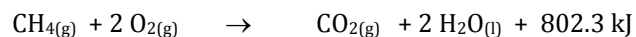
Given the following data for N₂:

normal melting point: -210°C
normal boiling point: -196°C
Heat of fusion: 0.70 kJ/mol
Heat of vaporization: 5.60 kJ/mol

Specific heat of liquid: 2.0 J/g °C
Specific heat of gas: 1.0 J/g °C
Specific heat of solid: 1.6 J/g °C

- a) Calculate how much energy (in kJ) is required to convert 1.00x10³g of N₂ initially at -216°C to a final temperature of 20.0°C. Assume a closed system. Start by sketching a heating diagram.

- b) Calculate how many grams of CH₄ would have to be burned to generate the heat necessary to cause this change. Assume all of the heat goes into the system (nitrogen).



Continued on the back....

If $3.00 \times 10^2 \text{ kJ}$ of heat is removed from a $1.00 \times 10^3 \text{ g}$ sample of nitrogen initially stored at -100.0°C , what would be the final temperature of the sample?