

Ch 14 Questions: Heat of Fusion and Heat of Vaporization

	Specific Heat (Cp)	Heat of Fusion (ΔH_{fus})	Heat of Vaporization (ΔH_{vap})
Water (H ₂ O)	4.18 J/g °C	6.00 kJ/mol	40.6 kJ/mol
Ethanol (C ₂ H ₅ OH)	2.44 J/g °C	5.02 kJ/mol	38.6 kJ/mol
Mercury (Hg)	0.14 J/g °C	2.29 kJ/mol	59.1 kJ/mol

- 1) How much heat is required to increase the temperature of 20 grams of water by 26 °C?
- 2) How much heat is required to melt 2.5 moles of ice?
- 3) How much heat is transferred when 57 grams of mercury cools from 76 °C to 18 °C?
- 4) If you have 27 grams of 100 °C liquid water, how much heat is required to turn it into water vapor?
- 5) How much energy is transferred when 70 grams of ethanol is heated from 21 °C to 68 °C?
- 6) How much heat is transferred when 400 grams of mercury (Hg) is vaporized?
- 7) How much heat is transferred when 400 grams of mercury is cooled from 280 °C to 30 °C?
- 8) How much heat is transferred when 230 grams of ethanol is frozen?
- 9) How much heat is transferred when 100 grams of ethanol condenses from a gas to a liquid?
- 10) How much heat is transferred when 1 mole of mercury is heated from 80 °C to 125 °C?
- 11) How much heat is required to melt 40 grams of ice and then increase its temperature from 0°C to 25°C?
- 12) How much heat is required to heat 2 moles of water from 25°C to its boiling point and then turn it into water vapor?
- 13) How much heat is required to melt 50 grams of ice, heat it to its boiling point, and then turn it into vapor?
- 14) The boiling point of ethanol is 78°C. How much heat is required to heat 100 grams of ethanol from 25°C to its boiling point and then to turn it into a vapor?