

Chem 1710 Math Problems on Matter and Kinetic Theory

Energy and Matter

For water, the following are the heat constants: $C_p(\text{solid}) = 2.06 \text{ J/gC}^\circ$, $C_p(\text{liquid}) = 4.18 \text{ J/gC}^\circ$,
 $C_p(\text{gas}) = 2.03 \text{ J/gC}^\circ$, $H_f = 333 \text{ J/g}$, $H_v = 2260 \text{ J/g}$

Sample

How much heat is needed to change 50.0 g of ice at 0.0°C to steam at 100.0°C ?

1. How much heat (in Joules) is required to raise the temperature of 787 g of water from 18.0°C to 100.0°C ? ($2.70 \times 10^5 \text{ J}$) How much in units of calories? ($2.70 \times 10^5 \text{ J}$) ($6.46 \times 10^4 \text{ cal}$)
2. How much heat is required to raise the temperature of 50.0 g of water at -25° (ice) to steam at 125°C ? ($1.56 \times 10^5 \text{ J}$)