

Work in Groups of NO MORE THAN THREE to answer each of the following.

The density of water in the liquid state at 0°C is 0.9999 g/mL and the density of ice at 0°C is 0.9164 g/mL. The heat of fusion of water is 333 J/g.

1. A graduated cylinder containing a thermo-equilibrium mixture of ice and water (0°C) had a volume reading of 53.500 mL.

a. How much heat in Joules must be added to melt 1.000 grams of ice?

b. What would the change in volume for the melting of 1.000 gram of ice (assume the temperature remains at 0°C)?

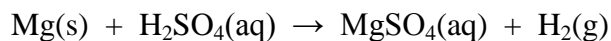
2. A chemical reaction was carried out in an apparatus as shown in the lab manual. The volume change of the ice/water mixture was found to be 0.5177 mL during the time of the reaction.

a. Determine the mass of ice that was melted.

b. Determine the quantity of heat (in Joules) generated by the reaction.

c. If 0.0040 moles of the limiting reactant was used in the reaction. Determine ΔH per mole of limiting reactant.

d. Use thermodynamic tables (CRC Handbook) to calculate the value of ΔH for the following reaction: (Be sure of the units in the CRC Handbook!)



e. Calculate the percent difference between 2c and 2d.