

Materials - Styrofoam cup, paper towel, thermometer, ice, plastic spoon, balance

Procedure -

1. Mass an empty cup and record your answer below.
2. Fill the cup half full of water and measure the mass. Record below.
3. Put your thermometer into the cup of water. Record the temperature as the initial temperature.
4. Pat dry several small ice cubes and immediately put them in the cup. Stir with your plastic spoon and record the initial temperature.
5. Add ice as needed until the temperature drops to approximately 0°C .
6. When the temperature stops falling (approximately 0°C) record the final temperature and quickly remove the remaining ice with your spoon. Pour any water left in your spoon back into the cup.
7. Mass the cup of water and melted ice and record.

Data -

mass of empty cup = _____
mass of cup & water = _____
mass of cup & water & melted ice = _____
initial temperature = _____
final temperature = _____

Calculations - Show your work!

- 1) Calculate the original mass of the water:
- 2) Calculate the mass of the melted ice:
- 3) Given the specific heat of water (4.184 J/g°C), calculate the energy lost by the original water:
- 4) Since the heat _____ by the water = the heat used to _____ the ice, the heat of fusion of ice (ΔH_{fus}) can be calculated by taking the heat lost by the water (calculated above) and dividing by the mass of the melted ice.

$$\Delta H_{\text{fus}} =$$

- 5) Obtain the correct value for ΔH_{fus} of ice from your teacher and calculate your percent error using the equation:

$$\% \text{ error} = \left(\frac{\text{experimental value} - \text{accepted value}}{\text{accepted value}} \right) \times 100\%$$