



Heat of Fusion of Ice

Lab #25

When ice is placed into a cup of warm water, an exchange of heat will take place between the water and the ice. The ice will absorb heat from the water and melt and the water will lose heat to the ice. If this process is conducted in a calorimeter, then the heat absorbed by the ice will be equal to the heat lost by the water. By assuming this to be the situation, we can calculate the heat of fusion of ice.

Materials:

Calorimeter cup	Tap water	Bunsen burner
Thermometer	Graduated cylinder	Ring stand with ring and wire gauze
Ice	250 mL beaker	Hot hands

Procedure:

Pour about 125 mL of water into the beaker and place the beaker on the ring stand. Heat the water to about 55°C. Turn off the burner.

Using the hot hands, remove the beaker from the ring stand and pour 100 mL of the hot water into the graduated cylinder. Accurately measure the volume of the water in the graduated cylinder and record this data. Pour the water into the calorimeter cup and record the temperature of the water.

Quickly place four or five ice cubes into the cup with the water and stir the mixture until all the ice is melted. When the ice has melted, record the temperature of the mixture, which is now all liquid.

Pour about 90 mL of the water into the graduated cylinder and accurately record this volume of water. Discard this water and then pour the water remaining in the cup into the graduated cylinder. Accurately record this volume of water and add it to the previous volume. Pour the second volume of water out and clean up.

Calculations:

- Determine the mass of warm water (assume the water to have a density of 1 g/mL).
- Determine the volume of water produced by the melted ice.
- Determine the mass of ice melted.
- Calculate the heat lost by the warm water.
- Calculate the heat of fusion of ice.