Lab 20 3/12/05 8:48 AM

LAB 20, HEAT OF FUSION

Name	Period
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The number of calories needed to melt one gram of any substance at its normal melting point without any temperature change is called its **heat of fusion**. In this experiment the heat of fusion of ice will be determined by using the method of mixtures. The temperature drop of a given amount of hot water in a calorimeter when a certain quantity of ice is added will be measured. The heat lost by the water does two things: (1) it melts the ice; (2) it warms the water formed by the melting ice from 0° C up to the final temperature.

OBJECTIVE:

After completing this experiment, you should be able to determine the heat of fusion of ice.

PROCEDURE:

1. Find the mass of the empty calorimeter cup and record it in the data table.

WARNING: Thermometers break very easily! Keep them away from the edges of the table! Do not leave them unattended in a beaker or cup!

- 2. Fill the cup **HALF FULL** of water that has a temperature of about **35** °C, and record the mass of the calorimeter cup and water. *Warm water may be obtained from the demo table*.
- 3. Now with a thermometer, stir the water in the calorimeter and record its exact temperature.
- 4. Take two ice cubes and put them into the calorimeter carefully so that there is no splashing.
- 5. Carefully stir until all the ice is melted and record the lowest temperature reached.
- 6. Mass the cup containing the water and the melt water and record it.

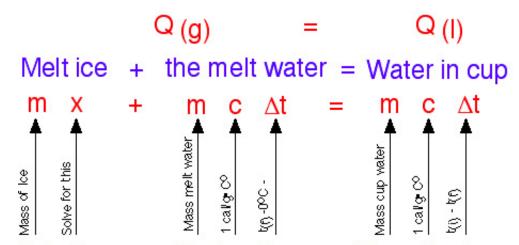
Data Table

Mass of Empty Cup (g)	Mass of Cup + Water (g)	Mass of Cup + water + melt water (g)	Initial temp of water °C	Final temp of water °C

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CALCULATIONS:

- 1. Calculate the temperature change, Δt , of the water in the cup and record it in the calculations table below.
- 2. Using the following equation, calculate on the back, SHOWING YOUR METHOD (1,2,3,4) the heat of fusion of ice (\mathbf{x}) :



Note: The mass of the ice = the mass of the melt water.

8. Calculate your percentage error.

HINT: Percent error = your error/accepted value X 100%. The accepted value is 80 calories/gram).

Calculations Table

Mass of water in cup	1	Calculated Ht of Fusion (cal/g)	Value	% Error
•			80 cal/g	

QUESTION:

1. Since heat of fusion does not result in a temperature change, where does the energy go?

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CRITIQUE: