**Where’s the Heat?**

**Heat and Phase Changes**

**Purpose**

To examine the temperature of water as it undergoes phase changes.

**Materials**

100 mL beaker **Plain Ice Ice with Salt**

|  |  |  |
| --- | --- | --- |
| **Time** | **Temperature** | **Phase** |
| 1 min |  |  |
| 2 min |  |  |
| 3 min |  |  |
| 4 min |  |  |
| 5 min |  |  |
| 6 min |  |  |
| 7 min |  |  |
| 8 min |  |  |
| 9 min |  |  |
| 10 min |  |  |
| 11 min |  |  |
| 12 min |  |  |
| 13 min |  |  |
| 14 min |  |  |
| 15 min |  |  |
| 16 min |  |  |
| 17 min |  |  |
| 18 min |  |  |
| 19 min |  |  |
| 20 min |  |  |

|  |  |  |
| --- | --- | --- |
| **Time** | **Temperature** | **Phase** |
| 1 min |  |  |
| 2 min |  |  |
| 3 min |  |  |
| 4 min |  |  |
| 5 min |  |  |
| 6 min |  |  |
| 7 min |  |  |
| 8 min |  |  |
| 9 min |  |  |
| 10 min |  |  |
| 11 min |  |  |
| 12 min |  |  |
| 13 min |  |  |
| 14 min |  |  |
| 15 min |  |  |
| 16 min |  |  |
| 17 min |  |  |
| 18 min |  |  |
| 19 min |  |  |
| 20 min |  |  |

50 mL of crushed ice

Thermometer

Hot Plate

**Part 1: Melting Ice**

**Procedure and Questions**

1. Place about 100 mL of crushed ice in a 100 mL beaker.

2. Use your thermometer to record the initial temperature (**IN CELSIUS!**) of the ice. Try not to let the thermometer touch the glass, otherwise you will end up measure the temperature of the glass rather than the ice/water.

3. Every minute, measure the temperature (**IN CELSIUS!**). On the data table, record the time, the temperature, and the phase or phases present in the beaker (phases include: solid, both solid and liquid, liquid, both liquid and gas).

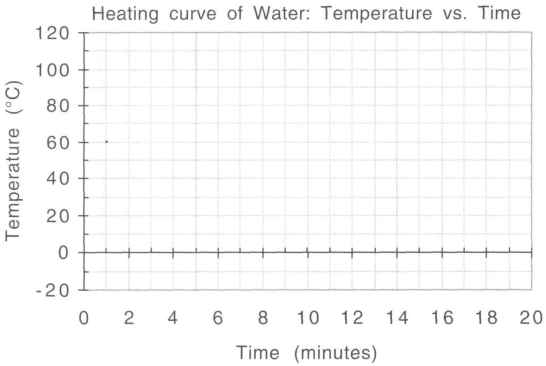
4. Perform the procedure again, but this time, add a small amount of salt (5 g) to your ice.

4. Graph the data according to the instructions on the back page.

**Processing the Data**

1. Make a graph that plots the temperature over time.

2. On the graph, label the areas where the following phase or phases are present: solid, both solid and liquid, liquid, both liquid and gas



1. Describe your graphs. How do the temperature of plain ice and ice with salt change over time?

2. Write a conclusion about what salt may do to ice.

3. The freezing point of water is 0°C and the boiling point is 100°C. What does the freezing point and boiling point of a substance tell you?

4. Would you say the freezing point is the same when you add salt?

**Making Sense**

What do you think it means when the graph isn’t a straight line?