Name _____ Date _____ Period _____

Phase Change Diagram Lab: Changes of State for Salt Water

It is a well established fact that ice made from pure water will melt at 0 °C and boil at 100 °C. If impurities are added to the water then the melting point and the boiling point will change. The greater the amount of impurities the greater will be the change in the melting and boiling points.

Purpose: In this lab you will determine the Phase Diagram for salt water. You will start with a mixture of salt water and ice and proceed to turn the solution into a gas. Along the way you will record the temperature and then graph the data to develop a "Phase Diagram" for the solution.

*Hypothesis:*_____
_____

*Materials:*_____

Procedure:
1.) Set up a ring stand with a test tube clamp to hold the test tube. Place the alcohol burner under the test tube. DO NOT LIGHT THE BURNER.
2.) Half fill a test tube with equal amounts of the salt water and ice. Insert the test tube into the test tube holder. Place a thermometer into the solution and rapidly stir the solution for 30 seconds. Record the initial temperature when it reaches its coldest measurement. Continue to record the temperature every 30 seconds until the ice has completely melted. This takes about 5 minutes.
3.) AFTER all the ice is melted light the alcohol burner with a match. Put the alcohol burner under the test tube. Keep the flame in contact with the bottom of the test tube.
4.) Continue to stir the solution and record the temperature every 30 seconds. YOU MUST STIR RAPIDLY. When the solution boils continue recording for another 3 minutes then stop. DO NOT STOP STIRRING or the solution will boil over. Immediately remove the flame from under the test tube.
5.) **Graph the results** of the Temperature vs. Time on a piece of graph paper. Remember DO NOT connect the dots. Find the trend in the data and draw straight lines.

Data Table:

Time	Temp	Time	Temp	Time	Temp	Time	Temp	Time	Temp
0 sec		3:30		6:30		9:30		12:30	
0:30		4:00		7:00		10:00		13:00	
1:00		4:30		7:30		10:30		13:30	
1:30		5:00		8:00		11:00		14:00	
2:00		5:30		8:30		11:30		14:30	
2:30		6:00		9:00		12:00		15:00	

Results: (explain any patterns or trends that you see in the data)
_____
_____
_____
_____

Conclusion: be sure to restate your hypothesis, use the results to support your conclusion and then explain if your hypothesis was correct or incorrect.
_____
_____
_____
_____
_____
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_____