Name_____Block_____

Lab 12: Solubility of Potassium Nitrate

Objective: to examine the change in solubility of a salt at different temperatures and construct a solubility curve for that salt.

Materials

400 ml beaker, ring stand, wire gauze, ring clamp, four 6' test tubes, KNO_3, thermometer, stirring rods.

Procedure

1. Number four test tubes 1-4 with a wax pencil. Weigh out the following amounts of KNO_3 and place them in corresponding test tubes:

Test Tube 1:	2.0 g	Test Tube 3:	6.0 g
Test Tube 2:	4.0 g	Test Tube 4:	7.0 g

2. Prepare a water bath using a 400 ml beaker that is around 2/3 full. Heat the water to near boiling (90-95°C) but **do not let it boil**.
3. Add 5.0 ml of water to each of the four test tubes.
4. Place test tubes in the waterbath; stir each solution to dissolve the salt. Wash and dry the stirring rod before using it in the next solution.
5. When the salt is dissolved in all of the test tubes, put the thermometer in test tube #4. Then remove the other test tubes and place them in a test tube rack to cool.
6. Record the temperature at which crystallization first appears in test tube #4. Then wipe the thermometer and place it in test tube #3 and record the temperature of crystallization. Repeat this with test tubes 2 and 1. You may want to hasten the cooling of test tube 1 with a beaker of cold tap water.
7. Record your data in the table below. Calculate the amount of solute that is soluble in 100 g of water at each temperature. Plot your points on a graph; temperature on the x axis, g/100 g water on the y-axis. To convert your results to g/100 g, you multiply the mass of potassium nitrate in the tube by 20. Make sure your graph has an appropriate title. Using another color, plot the table G values on the same graph. Be sure to include a key on your graph.

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Lab 12 Solubility of KNO_3: Data, Results and Conclusions

Data Table

Test Tube	g KNO_3/5 g water	Saturation Temperature (°C)	g KNO_3/100g water	Table G accepted value
1				
2				
3				
4				

Questions

1. How does temperature affect the solubility of potassium nitrate?

2. Compare your results to Table G for each of your four temperatures. Calculate % errors for each measurement. The formula for % error is in your reference tables.

3. What are some of the possible sources of error in this experiment?