

Lab Report

Part One: Osmosis and Diffusion through Dialysis Tubing

Solute Identification Test

Sample	Test Water Result	Conclusion		
Water Bath (0 minutes)	Chloride ion test After adding 10 drops no ppt occurs	Present?	Yes	No
		Cl ⁻ ion		✓
	Starch test After adding 10 drops there is no ppt	Present?	Yes	No
		Starch		✓
Water Bath (30 minutes)	Chloride ion test	Present?	Yes	No
		Cl ⁻ ion	✓	
	Starch test The solution remain orange	Present?	Yes	No
		Starch		✓
Dialysis Bag contents	Chloride ion test	Present?	Yes	No
		Cl ⁻ ion	✓	
	Starch test the color turned dark green	Present?	Yes	No
		Starch	✓	

Dialysis Bag Mass Data

	Mass (g)	Changes in Mass (±g)
Initial Dialysis Bag Mass (0 minutes)	2.1867g	2.465g
Dialysis Bag Mass after 30 minutes	25.051 grams	0.407 grams

Part Two: Factors Affecting Solvation Rates

Mass of NaCl sample

Sample 1	0.603 grams
Sample 2	0.607 grams

Sample 3	0.609 grams
Sample 4	0.603 grams

Solvation Time

	Time to Complete Solvation
Room Temperature with NaCl crystals	185.5 sec
Ice Water Temperature with NaCl crystals	300 sec
Warm Water Temperature with NaCl crystals	110 sec
Room Temperature with NaCl powder	45.23 sec

QUESTIONS

1. Given the results of the identification tests performed in part one, describe the ability of chloride ions and starch molecules to pass the semipermeable membrane of the sealed dialysis bag.

2. Are the changes to the weight of the dialysis bag after 30 minutes consistent with osmosis occurring with the water? Cite your data to support your answer.

3. Using your data as support, explain (a) the effect on solvent temperature on the rate of solvation and (b) the effect on surface area of solute (NaCl crystals vs powder) on the rate of solvation.

4. Based upon the mass of the NaCl used in Part Two, Calculate the moles of NaCl used, the % concentration and molarity (M) for each of the solution created in each of the test tubes.

Sample	Moles of Solute NaCl	Volume of Solvent (H ₂ O)	Concentration (<i>show your work</i>)
1		20.0 mL	% concentration
			Molarity
2		20.0 mL	% concentration
			Molarity
3		20.0 mL	% concentration
			Molarity
4		20.0 mL	% concentration
			Molarity

5. Explain why it is necessary to have the dialysis bag completely sealed from the water bath. How might a "leak" in the dialysis bag change your results and conclusions in Part I?