

Properties of Ionic Compounds Lab

Objectives Predict and observe several properties of ionic compounds including hardness, crystal shape, conductivity, and melting point.

Materials NaCl, salt of choice, conductivity tester, hand lens, crucible, bunsen burner, ring stand, triangle or wire gauze, beaker, stirring rod, scale

Procedure

1. Read entire lab.
2. Complete pre-lab questions using complete sentences.
3. Write hypotheses answering the following questions.
 1. If a compound is ionic, will it be hard?
 2. If a compound is ionic, how will its particles be arranged (in what pattern)?
 3. If a compound is ionic, will it have a high or low melting point.
 4. If more of an ionic compound is added to a solution, will conductivity increase, decrease, or stay the same?

Test for structure

4. Using a hand lens or microscope, examine both coarse and fine NaCl grains. Record your observations in your data table.
5. Gently tap a coarse grain with a hammer. Note the shape of the broken pieces and record your observations.
6. Repeat with another salt selected by your teacher.

Test for melting point

7. Measure a 1.0 gram sample of NaCl in a crucible.
8. Heat it with a low flame until it melts or for 2 minutes. If the salt melts, record its melting point as low. If it does not melt, record its melting point as high.
9. Repeat with the second salt.

Test for conductivity-tap water vs. distilled water

10. Place the conductivity probe in the tap water and record the data.
11. Place the conductivity probe in the distilled water and record the data.

Test for conductivity-effect of increasing masses of NaCl in a solution

12. Dissolve 0.2 grams of NaCl in 125 ml of water.
13. Place the conductivity probe in the tap water and record the data.
14. Add 0.2 more grams of NaCl to the solution.
15. Place the conductivity probe in the tap water and record the data.
16. Add 0.2 more grams of NaCl to the solution.
17. Place the conductivity probe in the tap water and record the data.
18. Complete the Analysis and Conclusion questions using complete sentences.

Data and Observations

Observations of coarse and fine NaCl	
Observations of coarse and fine _____	

Observations about the melting point of NaCl	
Observations about the melting point of _____	

Substance	Results of conductivity test
Tap water	
Distilled water	
Solution of 0.2 grams NaCl and water	
Solution of 0.4 grams NaCl and water	
Solution of 0.6 grams NaCl and water	

Analysis

1. Describe the structure of the two salts when you examined them using a hand lens.
2. Were you able to melt the two salts? Explain why or why not.
3. Was tap water or distilled water a better conductor? Explain why one was a better conductor than the other.
4. As the amount of NaCl increased, what happened to the conductivity of the solution? Explain these results.