

Activity Sheet Answers

Chapter 5, Lesson 3

Why Does Water Dissolve Salt?

INTRODUCTION

1. What is it about water molecules and the ions in salt that might make water able to dissolve salt?

Because water molecules have areas of slight positive and negative charge (polar) they are attracted to ions which also have positive and negative charges. The areas of slight positive charge in water are attracted to negatively charged ions, and the areas of slight negative charge in water are attracted to the positively charged ions.

2. Describe what happens when water dissolves salt.

Areas of positive and negative charge on a water molecule are attracted to negative and positive ions that make up salt. As water molecules associate with the salt crystal, the attractions between water molecules and ions begin to overcome the attractions that the salt ions have for one another. The water pulls away the ions, dissolving the salt.

ACTIVITY

3. Select two variables and explain how they are controlled in this procedure.

Answers will vary by student, but might include amount of water and alcohol, amount of salt, time swirled, etc.

4. Is alcohol just as good, better, or worse than water at dissolving salt? How do you know?

Alcohol does not dissolve salt as well as water does. The experiment conducted showed that more salt dissolved in water than dissolved in alcohol.

EXPLAIN IT WITH ATOMS & MOLECULES

5. Think about the polarity of water and alcohol to explain why water dissolves salt better than alcohol does.

While both alcohol and water are polar molecules, water is better able to dissolve salt because it is more polar and is a smaller molecule which more easily associates with the positive and negative ions of the salt crystal. Though alcohol molecules also have a polar area, they have a large non-polar area that does not help in dissolving the salt.

TAKE IT FURTHER

6. Do all ionic substances dissolve in water? How do you know?

No, all ionic substances do not dissolve in water. This was demonstrated in the activity. Calcium carbonate is an ionic substance but did not dissolve in water.