Activity 4: How Is Making Bubbles Affected by Adding Substances?

Introduction
You know that it’s easy to make bubbles with liquid dishwashing detergent. But will adding a substance affect your ability to blow bubbles? We’ll find out using sugar and salt as examples. The substance that we add to a solution is called the solute. The substance to which it is added is called the solvent.

(This activity is based on Prentice Hall Chemistry "Quick Lab: Bubbles," p. 23.)

You will need: 3 250-ml beakers, graduated cylinder, teaspoon, water, liquid dish detergent, table sugar, table salt, drinking straws, tray, and paper towels.

Procedure
1. Put on your apron and safety goggles.
2. Measure and pour one teaspoon of liquid dish detergent into each beaker. Measure and pour 100 ml of water into each beaker. Swirl the beakers to form a clear mixture. (Be careful to wipe up any spills immediately.)
3. One beaker (#1) will be left unchanged and used as the “control” for comparison. Add a half-teaspoonful of table sugar to beaker #2, and a half-teaspoonful of table salt to beaker #3. Swirl each cup to mix.
4. Dip the drinking straw into beaker #1, remove it, and blow gently into it to make a bubble. Practice making the largest bubble you can. (If you work in a group, more than one person can try this.)
5. Repeat Step 4 using the mixtures on beakers #2 and #3.
6. After you have recorded your observations in the table on the other side of this sheet, clean up by pouring the mixtures into the sink, rinsing the beakers out three times, and putting everything back into the tray.
Observations – Record what happened with each mixture in the table below:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 Water + detergent</td>
<td>#2 Water, detergent + sugar</td>
<td>#3 Water, detergent + salt</td>
</tr>
</tbody>
</table>

Analyze and Conclude

1) Describe any differences you noticed in your ability to produce bubbles using the mixtures in beakers #1 (control) and #2 (table sugar).

2) Describe any differences you noticed in your ability to produce bubbles using the mixtures in beakers #1 (control) and #3 (table salt).

3) What can you conclude about the effects of table sugar and table salt on your ability to blow bubbles?

Enrichment: Propose another hypothesis related to bubble making and design an experiment to test your hypothesis.
Notes

Applicable Standard(s): NJCCCS 5.1A, B, and C; 5.6B

Materials needed per group:

- 3 250-ml beakers
- graduated cylinder
- teaspoon
- water
- liquid dish detergent
- table sugar
- table salt
- drinking straws
- tray
- paper towels