California State University of Bakersfield, Department of Chemistry

Expanding Soap

Standard:
2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

Introduction:

In this experiment we are going to have some fun while demonstrating how the heating of water inside a bar of Ivory Soap can cause a chemical reaction that results in the expansion of the soap.

Materials:

- Bar of Ivory brand soap (other soaps won't work for this experiment)
- Paper towel
- Water
- Bowl
- Microwave-safe plate
- Microwave

Safety:

- Always have an adult with you to help you during your experiment.
- Always wear eye protection and gloves when doing chemistry experiments

Procedure:

1. Fill the bowl with water so that it's about two-thirds full.
2. Place your bar of soap into the bowl of water. What happens? You may be surprised to find the Ivory soap bar floats rather than sinks. This happens because Ivory soap has air that is pumped into it when manufactured.
3. Place your paper towel on top of your microwave safe plate.

4. After a few minutes remove the soap from the bowl of water and place it on the plate with the paper towel on it. Allow it to dry for about 5 minutes (the results will be better with a drier bar of soap).
5. Place the plate with the soap on it in the middle of your microwave.
6. Heat the bar of soap on HIGH for about 1 1/2 to 2 minutes. Observe what begins to happen to the soap as it begins to heat. Slowly the soap will begin to expand before your very eyes into puffy white clouds!
7. When the heating cycle is done, wait a couple of minutes for the soap to cool. Once cooled, remove the plate and the soap from the microwave. You now have a huge fluffy cloud of soap that has expanded dozens of times beyond its initial size!

Data and Observations:
Record your observations in this space

What did you see? Anything you were not expecting? Describe it here.

Questions:
Why is it that the soap reacted the way it did?

Does the amount of water have an effect on the experiment?

What characteristic of the soap allowed it to expand? Explain.

References:

1. Sciencefairadventure.com. http://www.sciencefairadventure.com/ProjectDetail.aspx?ProjectID=183. (July 17, 2012).