

Making Cleansing Cream

Introduction

Cleansing cream is an oil and wax emulsion in a large amount of water. The oil and wax are mixed in the water in tiny droplets of about 0.001 millimeters in diameter. When the cream is placed on the skin, the emulsion mixture separates, and dirt, grease, oil and makeup are dissolved by either the oil or the water. All of the offending matter is then lifted off the skin when the cream is rinsed or wiped away.



In this lab, you will prepare cleansing cream by melting paraffin wax and slowly pouring a warm solution of borax into it to create the emulsion. Borax is commonly used as a detergent, a fire retardant, and as a component of glass and ceramics. It has even been used as a preservative in foods such as a caviar, although this is not allowed in the United States.

Materials

borax (sodium borate)
mineral oil

paraffin wax
stearic acid

Equipment

beakers, 100-mL, 250-mL (2) and 600-mL
electronic balance
graduated cylinder, 100-mL

hotplate
stirring rod
thermometer

Safety Considerations

- Stearic acid can be irritating to the eyes; you must wear goggles for the entire lab.
- Sometimes chemicals from previous labs still remain in glassware and on other lab equipment; wash all lab equipment before and after performing this lab.
- Wash your hands thoroughly after completing this lab.

Procedure A – paraffin, mineral oil & stearic acid

1. Obtain 20 grams of solid paraffin and place in a 250-mL beaker.
2. Place the 250-mL beaker in a 600-mL or larger beaker halfway filled with water.
3. Using a hotplate, heat the larger beaker so that the temperature of the water bath remains around 70°C.
4. While waiting for the paraffin to melt, obtain 1.5 g of stearic acid.
5. Measure out 125 mL of mineral oil into a second 250-mL beaker.
6. When the paraffin has melted, add the mineral oil and stearic acid and mix well.
7. Keep the paraffin mixture in the hot water bath so that it stays around 70°C.

Procedure B – borax solution

1. Add 70 mL of water to a 100-mL beaker and heat it using a hotplate.
2. Obtain 1.5 g of borax powder.
3. When the water reaches a temperature of 70°C, add the borax to the water and stir until it all dissolves.
4. Once the borax has fully dissolved, remove the beaker from the hotplate and allow it to cool to 60°C.

Procedure C - emulsion

1. In order to successfully form the cleansing cream emulsion, the paraffin mixture must be at 70°C while the borax solution must be at 60°C.
2. While stirring the paraffin mixture constantly, slowly pour the borax solution into the paraffin mixture.
3. Continue to stir until the cleansing cream cools but is still a liquid.
4. Label your beaker and allow it to sit overnight to thicken.
5. Once the borax has fully dissolved, remove the beaker from the hotplate and allow it to cool to 60°C.

Clean-up

1. Dispose of any leftover paraffin in the trash, NOT THE SINK.
2. Dispose of any other remaining chemicals in the sink. Flush with lots of water!
3. Clean all used lab equipment with soap, water and a test tube brush.
4. Return all equipment to its proper location.
5. Wipe down your lab area and wash your hands before leaving the lab.

Questions

1. Test your cleansing cream by using it to wash your hands or face. How well does it work?

2. How does your cleansing cream compare with commercial cleansing cream?

3. What are two major differences between cleansing cream and soap? Which do you prefer?

4. Why do you think it was necessary to heat the paraffin in a water bath instead of using direct heat?

5. List one way you could change this lab and describe how your results might be different.
