

Enzymatic Action of Bio-Based Cleaners (Protein Degradation)

Standard Operating Procedure

Laboratory: Biotech/Bioresearch/Food Science
SOP prepared by: R.Sanders, J. Foudray

Location: Food Science Lab
Last Revision: 02 October 2024

General

Surfactants are involved in many aspects of our lives, including detergents, cosmetics, foods, and drinks. The world surfactant market is valued at over \$43 billion with a projection to grow an additional 5% over the next few years. Increased demand for personal care goods, including skincare, haircare, and cosmetics has primarily caused this growth.

Surfactants can be produced both from oleochemical and petrochemical feedstocks. The concerns over the supply, price and environmental impact of petrochemicals greatly stimulate the use of safer, naturally based surfactants to replace petrochemical surfactants. The main oleochemical feedstocks are plant oils and animal fats.

Safety

safety glasses, hot gloves

Materials

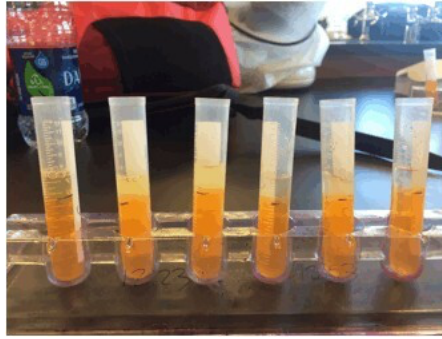
magnetic stir bars	bio-based cleaners
magnetic/stirring hot plate	distilled water
plastic test tubes	weigh boats
gelatin (protein source)	serological pipettes
hot gloves	ruler
test tube racks	marker

Procedure

1. Bring 50 mL of water to boiling in a beaker on the hot plate
2. Prepare the gelatin samples by adding 5g of gelatin powder to 50 mL of boiling water in a beaker on the magnetic stirring hot plate.
3. Using the stirring hot plate, stir the solution until a homogenous mixture is achieved.
4. Evenly pour 5 mL of the boiling gelatin solution into each of 5 test tubes and allow gelatin to solidify.
5. Make a 100%, 75%, 50%, 25%, and 0% dilution of each cleaning solution using distilled water.
6. Using a permanent marker draw a line at the gelatin level and record the amount of gelatin in the test tube in cm.
7. Label the tubes for each dilution.

This document may be reproduced for educational purposes, but it may not be reposted or distributed without crediting GrowNextGen and the Ohio Soybean Council and soybean checkoff.

- Pipette 1 ml of each cleaning solution dilution into appropriately labeled test tubes.



- Allow the tubes to sit for 24 hours in the refrigerator.
- Measure the amount of gelatin left in each of the test tubes, the following day, by drawing a line at the top of the remaining gelatin.

