

Standard Laboratory Operating Procedure #4 Enzymatic Action of Bio-Based Cleaners (Protein Degradation)

Laboratory: Biotech/Bioresearch/Food Science
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Location: Food Science Lab
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General: Surfactants are involved in many aspects of our lives, including detergents, cosmetics, foods, and drinks. The world surfactant market is valued at approximately \$23 billion, and is projected to rise to over \$40 billion. 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 basic oleochemical feedstocks are plant oils and animal fats.

Safety: safety glasses, hot gloves

Materials:

Magnetic Stir Bars
Magnetic/Stirring Hot Plate
Plastic Test Tubes
Gelatin (Protein Source)
Hot Gloves
Test Tube Racks
Bio-Based Cleaners
Distilled Water
Weigh Boats
Serological Pipettes
Ruler
Sharpie

Procedure:

1. Prepare the gelatin samples by adding 5g of gelatin powder to 50ml of boiling water in a beaker on the magnetic stirring hot plate.
2. Using the stirring hot plate, stir the solution until a homogenous mixture is achieved.
3. Evenly pour 5 mL of the boiling gelatin solution into a test tube and allow gelatin to solidify.
4. Make a 100%, 75%, 50%, 25%, and 0% of each cleaning solution using distilled water.
5. Using a permanent marker draw a line at the gelatin level and record the amount of gelatin in the test tube in cm.
6. Label the tubes for each dilution.
7. Pipette 1 ml of each cleaning solution dilution into appropriately labeled test tubes.
8. Allow the tubes to sit for 24 hours in the refrigerator.
9. 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.
10. See reference pictures for steps 5-9.

Soy Fresh, Soy Clean

Reference Photos of Lab Set-Up:

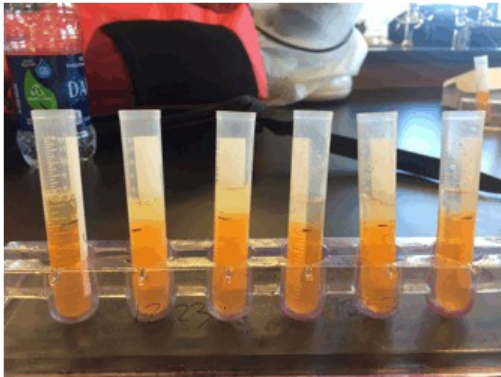


Photo of the lab start-up.

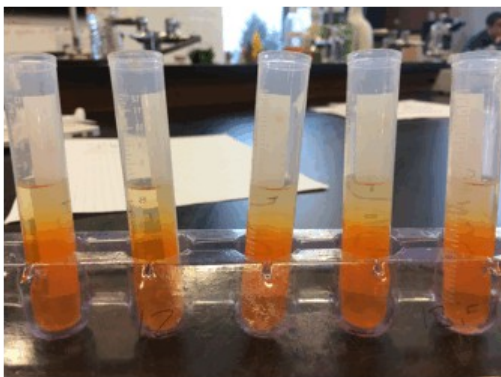


Photo of samples after 24 hours.

Example Data Table:

Title:

Trial	Initial Reading (cm)	24 hr Reading (cm)	Total Liquifaction (cm)
1			
2			
3			
4			
5			