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Processing Conditions and Preparation of Biofoam via Thermopressing Method

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Fiber Plant Biofoam



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We use this protocol and it's working

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Abstract

This protocol outlines the preparation of biofoam using a thermopressing method, including ingredient mixing, thermopressing at specific temperatures, and post-processing steps to achieve a homogenous biofoam product with optimal foam expansion and structural integrity

Materials

- **Solid Ingredients:** Cassava starch, PLA, Magnesium stearate, Bagasse
- **Liquid Ingredients:** Chitosan, PVA, Distilled water
- **Equipment:** Mixer, Thermopressing molding machine, Smoothing device, Scissors

Safety warnings

Safety Precautions:

- Handle hot equipment, such as the molding machine, with care to avoid burns.
- Wear appropriate **PPE** (Personal Protective Equipment) such as gloves and lab coats while working with chemicals and machinery.

Mixing Ingredients

- 1 Prepare PLA (5 g), magnesium stearate (15 g), bagasse (40 g), chitosan (5 ml), distilled water (5 ml), and starch (200 g).
- 2 Prepare PVA concentration in Formula 1: 35g, Formula 2: 30g; Formula 3: 25g; Formula 4: 20g
- 3 Begin by preparing solid ingredients: Measure and combine **cassava starch**, **PLA**, **magnesium stearate**, and **bagasse**.
- 4 Use a **mixer** to blend the ingredients thoroughly until a homogeneous mixture is achieved.
- 5 Gradually add the **liquid ingredients: chitosan, PVA** (according to the respective formula), and **distilled water**). Stir the mixture continuously to ensure it becomes smooth and consistent.

Thermopressing the Dough

- 6 Prepare Molding Machine/Thermopressing at 180°C
- 7 Take a **35g portion** of the prepared dough.
- 8 Place the dough into a **molding machine**
- 9 Thermopress the dough for **4 minutes** to promote **starch gelatinization** and foam expansion. Ensure the dough is evenly distributed in the mold during this time.

Post-Processing of Biofoam

- 10 After removing the biofoam from the mold, allow it to cool at **room temperature** for uniform cooling.



- 11 Trim the edges of the biofoam samples using **scissors** or another cutting tool to ensure consistent shape.
- 12 Use a **mechanical smoothing device** to smooth the surface of the biofoam, ensuring a uniform finish.

Protocol references

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