



Curiosity Guide #506

Bioplastics

Accompanies Curious Crew, Season 5, Episode 6 (#506)

Gelatin Plastic

Investigation #3

Description

Easy peasy! Try making some bioplastic, using a simple recipe.

Materials

- Gelatin or Agar
- Water
- Glycerin
- Food Coloring
- Stove
- Cooking pot
- Spoon
- Whisk
- Candy thermometer
- Measuring spoons
- Cookie sheet
- Clay mold, optional
- Wax paper

Procedure

- 1) Cover a cookie sheet with wax paper. Set aside.
- 2) In a cooking pot, combine 4 teaspoons gelatin with $\frac{1}{4}$ cup water and $\frac{1}{2}$ teaspoon glycerin.
- 3) Heat the mixture on the stove at medium to high heat, stirring constantly.

- 4) You may need to whisk the mixture to get rid of the clumps.
- 5) Add several drops of food coloring.
- 6) Monitor the temperature of the mixture with a candy thermometer.
- 7) When the mixture begins to get foamy, at 95 degrees Celsius or 203 degrees Fahrenheit, remove from heat.
- 8) Continue to stir the mixture.
- 9) Pour the plastic mixture on the paper or into a clay mold.
- 10) Allow the plastic to dry for 2 days.
- 11) You can try shaping the plastic while it is still warm, and then let it set.

My Results

Explanation

Gelatin is a protein collected from boiling bones or ligaments in water, and is a natural polymer that consists of long chains of molecules linked together. Gelatin can be combined with other ingredients like glycerin to make a material with many of the same properties as oil-based plastics have. Because this gelatin substance is made from organic materials, it is a kind of bioplastic. You can also substitute the gelatin with agar, which comes from seaweed.

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