

# Making Bioplastic

**Objective:** In this laboratory you will make bioplastic. You will also test your plastic's properties and compare them to a commercial plastic.

**Background Research:** Visit the website: <https://waste4change.com/7-types-plastic-need-know/> then collect at least three different types of plastic. Copy this data table into your lab report.

Code	Picture	Type of Plastic

**Observations:** As you continue to learn to observe chemical and physical changes remember to

- use descriptive adjectives e.g. pale, translucent yellow not just yellow
- look for color changes, texture changes, evolution of gases, luster\*

\*NOTE: luster is the way that light interacts with the surface of a material: shiny, dull, glassy...



## Materials

- 1 T Corn Starch
- 4 T Water
- 1 teaspoon **pure** glycerin
- 1 teaspoon white vinegar
- food coloring (optional - use any color you choose)
- wax paper

*This lab was written and photographed by Joy Walker.*

## The Experiment

### *Step One: Making the bioplastic*

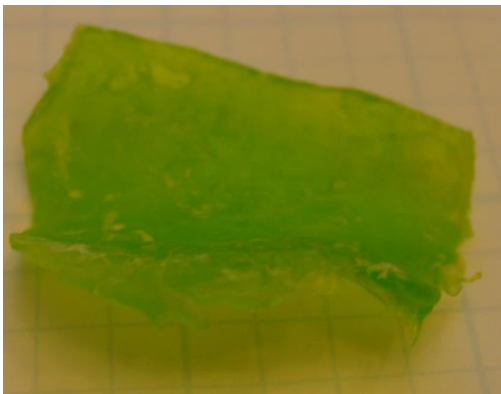
Mix all of the ingredients in a saucepan and warm over low heat.



Stir continuously until the liquid becomes thick. Spread material in a thin layer on wax paper.



Put your bioplastic somewhere where it can remain undisturbed for a week. During this time, it will dry. Peel it from the wax paper and rinse it in water. Take pictures of your plastic before and after it dries.



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## Step Two: Testing Your Bioplastic



To test your bioplastic, you will need to select some typical plastic such as that cut from a milk container and cut a few pieces. Also cut a few pieces of your plastic.

Some ideas for tests you can do include:

- a. **Solubility tests** such as putting the plastics into water or other household liquids (vinegar, fingernail polish remover, etc.)
- b. **Flexibility tests** - try bending, folding, stretching the plastic samples and compare the results.
- c. **Density tests** - do the plastics float or sink in water, in oil, in alcohol for example.
- d. **Burn test** - what happens when you burn a small sample (**caution:** do this over a sink with a small piece and use a long lighter such as the type used to light candles)

If you can think of other tests, then give them a try but be mindful of safety.

## Organizing your data

Copy the following chart into your lab report:

Tests Performed	Bioplastic	Commercial Plastic 1	Commercial Plastic 2	Commercial Plastic 3

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## **Analysis and Conclusions**

Write a conclusion that explains what you have observed about your plastic - does it behave like a typical plastic? How is it different? Why is your plastic a "bio" plastic?

## **Questions**

1. Using the Internet to find out where bioplastics are currently in use – e.g. what items use it?
2. List three advantages and three disadvantages you have discovered about bioplastics from your research.