

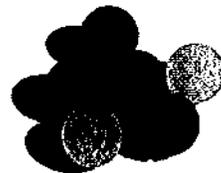
Soy Plastic

Objective:

Explore how soybeans can be made into biodegradable products.

Materials:

- Cornstarch
- Soybean Oil
- Sandwich-sized sealable bag
- Food coloring (liquid)
- Microwave
- Water
- Pipette or eye dropper
- Tablespoon measuring spoon



Safety Notes:

1. Caution! The bags and plastic will be HOT after time in microwave.
2. The mixture must be thoroughly mixed or plastic will be chalky.

Procedure:

1. Place 1 Tbs of cornstarch into the plastic bag.
2. Add 2 drops of soybean oil.
3. Add 1 Tbs of water.
4. Close bag and knead it, mixing the contents.
5. Add two drops of food coloring.
6. Seal bag leaving a corner of the bag open to vent the contents.
7. Heat bag in the microwave for 20-25 seconds on high.
8. CAUTION: Bag will be hot!
9. Remove the cornstarch and oil mixture and see what shapes you can form.

What's going on?

The chemistry is that the starch in the cornstarch is binding with the soybean oil, when exposed to heat which forms the plastic. This is considered a bioplastic because it is produced from a biological source.

Soy Plastic

Seeds for Thought...

1. What products could be made from biodegradable soy plastic?

Let them use their imaginations...Refer to the chart on page 16 for other items soybeans can aid in producing.

2. Explore Henry Ford's Plastic Car and his contribution to the soybean industry.

Henry Ford is known for his automobile, but did you know that he once made a car with all the plastic made from soybeans - even the automobile's exterior? Mr. Ford owned a large research facility. He came to the lab one day with a huge bag of soybeans. He dumped them out on the floor and told the scientists, "You guys are supposed to be smart. You ought to be able to do something with them." In time, the scientists in Ford's labs made a strong enough plastic for the gearshift knobs, horn buttons, window frames, accelerator pedals, light-switch assemblies and ignition-coil casings. They also fashioned the exterior of an automobile from "soybean plastic." By 1935 Mr. Ford was using one bushel of beans for every car he manufactured. (60 pounds = 1 bushel)

3. This is chemistry at work. How do you think the plastic was formed?

The starch in the cornstarch binds to the oil when the cornstarch and oil mixture is heated.