



Turning Potatoes into Plastic

Method sheet

Extracting the starch from the potatoes

- 1) Wash and peel the potato.
- 2) Cut the potato up into cubes about 1cm²
- 3) Add about 250ml of water and the cubes to the blender, and turn it on high for a minute or two.
- 4) Strain off the cloudy water using a coffee filter or jelly bag.
- 5) If storing to make later, spread out on some greaseproof paper and leave to dry. This step can be omitted if using straight away.

Making the resin

- 1) Measure out 60ml (4 tbsp) of cold water and pour it into the beaker.
- 2) Measure out 10g (or about 1 tbsp) of starch from the potato or cornflour and add that to the water.
- 3) Add 5 ml (about 1tsp) of vinegar to the mixture.
- 4) Add 5ml (about 1tsp) of glycerin to the mixture, more glycerin will make it softer and more flexible, less will make it harder and stiffer but more brittle.
- 5) If a coloured plastic is desired, add about 5 drops of the food coloring now.
- 6) Turn the burner on low and constantly stir the mixture. When it starts to thicken up turn the heat up to medium and stir even more. When it starts to boil, keep boiling it for 5 minutes. It should be clear and sticky.
- 7) Pour the "gooey" substance into a mold, or pour it onto a sheet of aluminum foil or a silicone sheet to dry.
- 8) Depending on humidity, it should take about 1 day to dry in a sunny place. You can dry it faster by putting it in an oven set to 90°C for 1-2 hours.

Questions:

What shapes could you mould the resin into?

How could you change the consistency of the starch based plastic?

(Hint: glycerin makes the plastic more flexible)

What could you use the plastic for?

Can you think of an experiment to work out how long the plastic would take to break down in the environment?