

## Plastic from Milk Instructions

### Introduction

Plastics and proteins are made from polymers which are very long chains of carbon atoms joined together. Casein is a type of protein found in milk and can be used to make plastic buttons. In this experiment we will be extracting casein from milk and using it to make our own plastic.

### Equipment per person/pair/group

- 150ml milk
- 15ml vinegar
- 2 x 250ml Beakers
- Hotplate/stove/Bunsen burner with tripod and gauze
- Elastic bands
- Piece of linen or cloth
- Tissue
- Oven
- Stirrer/glass rod/spatula
- Measuring cylinder

### Instructions

1. Measure out 150ml of milk into a beaker and heat on a hotplate or stove or with a Bunsen burner.
2. When simmering, take off or turn off the heat and add 15ml of vinegar to the milk.
3. Stir for a few minutes. The mixture will separate out into a liquid and a solid known as "curds and whey". Leave to cool for a few more minutes.
4. Use elastic bands to secure the linen over the top of the other beaker in such a way that a deep dip in the middle is formed.
5. Pour mixture through the linen to filter off the solid from the liquid. This can be quite slow.
6. Gather up the solid in the linen and squeeze off as much liquid as possible by twisting.
7. Pat the solid as dry as possible with some tissue.
8. Squash it together and mould it.
9. Leave in an oven for a few days to dry out. You should be left with a brittle plastic



### Disposal

- Wash everything at the sink.