

# Kitchen Chemistry

Much of the food and drink that you consume has some kind of chemistry attached. Maybe it has been developed by chemists in a lab or maybe it has an interesting chemical property.



In this activity you are going to examine some of the chemistry that we take for granted through a series of practical activities.

## Activity 1 – The Chemistry of Milk

► *Have you ever seen someone add vinegar to milk?*

In your groups, each of you needs to carry out this practical. Follow the instructions below – ask your mentors if you have any questions!

1. Measure out 75 ml of milk in a measuring cylinder
2. Heat this up to approximately 50°C using a microwave – **CARE!**
3. Add 10 ml of vinegar and stir using a glass rod
4. Observe what happens to the milk
5. Separate the two constituents in the beaker using a filter funnel and filter paper
6. Squeeze excess water out of the solid and keep kneading the solid until it is a flexible material.

You should have made a plastic. The event leader will now discuss with you what has happened and why it looks the way it does. Make some notes in the space below as you will need some of this information later!

Spend some time making something from this material – some ideas are pendants, buttons, plectrums etc. There are some other materials for you to add to these to decorate them as you see fit.

Once you are done, place your item on a piece of filter paper with your name on it and leave it by the window to dry overnight.

## Activity 2 – Investigating the Acid and Milk reaction

Now you are going to investigate the factors that affect this reaction.

- ▶ You will need to consider:
  - Temperature of milk
  - Type of milk
  - Type of acid
  - Quantity of acid

Spend about 10 - 15 minutes with your mentor and other members of your group planning how to carry out a fair test, and how to measure your outcomes quantitatively.



- ▶ You will need to:
  1. Decide what factor you are going to investigate
  2. Form a hypothesis based on this factor and your beliefs
  3. Write out an investigative procedure
  4. Check your procedure with a mentor or leader
  5. Carry out your investigation
  6. Analyse your results
  7. Evaluate your investigation

There are TASC wheels and planning boards to help you develop your activities and to help you with these steps and remember – if you don't understand something, **ASK!**

## Activity 3 – Making Glue from Household Chemicals

This activity enhances what you have looked at the previous two activities and takes it further, adding in aspects of acids and bases.

Your aim is to produce a glue following the same procedure that you carried out in the first activity. Once you have a wet solid, you then need to mix it with a little water and stir until you have a smooth mixture.

You need to neutralize the mixture by adding base – you need to investigate which base makes the best glue from:

- Sodium hydrogen carbonate
- Magnesium carbonate
- Calcium carbonate
- Milk of magnesia

What effect does altering the type of milk have?