

Plastic from Milk

This is a really simple, but effective science experiment to try at your club, and amazingly, uses just two ingredients.

Ingredients

250ml full fat milk per person
4 tbsp distilled malt vinegar (white vinegar)
Food colouring (optional)

Equipment

Mixing bowl
Wooden spoon
Sieve
Kitchen paper
Microwave - or other method to heat the milk

Method

1. Put the milk into a microwave-safe mixing bowl, and heat in the microwave for approximately one and a half minutes, so it's hot, but not boiling.
2. Remove from the microwave and add 4 tablespoons of vinegar, then stir continuously for about a minute. You will notice that the milk is reacting with the acid of the vinegar, causing the proteins (casein) to separate.
3. Pour the mixture through a sieve, then using a wooden spoon, start to squeeze any residual liquid out of the blobs of plastic.
4. When you've removed as much liquid as possible, gather the blobs of plastic and press them firmly together.
5. Place onto kitchen paper, and continue to squeeze out any remaining liquid. Once the plastic is quite dry and beginning to firm up, you can add some food colouring.
6. Knead the plastic to mix the colour in thoroughly.
7. Now shape the plastic, we pressed it out, then used a cookie cutter to create a heart shape, but you could make balls or other shapes, as you choose.
8. Place in a warm dry place to dry out. You may have to leave it overnight.

Variations

You can take the experiment a step further and see if it works if you change a few things, eg: use low fat or soya milk; add more vinegar; use a different type of vinegar; or other acids, such as orange or lemon juice.

Areas of learning and development:

EAD Expressive arts and design
UW Understanding the world
PSED Personal, social and emotional development

