

D2: Electrolysis of Red Cabbage Water

- Preparation time 30 minutes
- Demonstration time 30 minutes



TOXIC
chlorine

Requirements

Universal indicator	filter funnel
shredded red cabbage (about 30 g)	filter paper
salt (sodium chloride)	ring clamp for filter funnel
250 cm ³ glass beaker	U-tube (calcium chloride absorption tube 130mm high and 15mm bore or similar)
150 cm ³ glass beaker	2 carbon electrodes
large spatula	variable dc power pack capable of supplying a current of at least 1 A at 12V
Bunsen burner	connecting leads and crocodile clips
tripod	clamp
gauze	clamp stand
heat proof mat	

Method

- 1 Put about 30 g shredded red cabbage into the 250 cm³ beaker, so that it is about one third full. Add tap water so that the cabbage is covered.
- 2 Boil the mixture to extract the juice from the red cabbage.
- 3 Allow to cool to room temperature.
- 4 Filter, collecting the filtrate in the small beaker.
- 5 Pour some of the filtered juice into the U-tube and add two large spatulas of salt.
- 6 Clip a crocodile clip onto one end of a carbon electrode and put the other end into the red cabbage juice in the U-tube. Use the crocodile clip to support the carbon rod by balancing it across the opening in the U-tube.
- 7 Repeat with the other electrode.
- 8 Connect the power pack, using about 10 volts.
- 9 After about 10 minutes the juice should start to change colour, giving three separate bands of red, blue and green.

Safety advice

Chlorine (**toxic**) will be produced. Take care not to breathe this. Do not run the electrolysis for longer than necessary to achieve the result. Be particularly aware of the sensitivity of asthmatic pupils.

Extension

Add Universal indicator to 100 cm³ potassium iodide solution (0.1 mol dm⁻³). Using the same apparatus try the experiment with this solution instead of the red cabbage juice.