

# Solar Cells in Drinking Straws Equipment List

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## Equipment per person/pair/group

- Test tube rack
- 3 test tubes
- Clear drinking straw
- Multimeter with wires and crocodile clips
- Screw with about 5cm length thread, thin enough to fit into a drinking straw
- Lead-free solder wire, ~ 25cm
- Plastic coated copper wire, ~6cm. Either strip off the plastic at each end (about 1cm both ends) or provide wire-strippers/scissors that can do the job.
- Matches
- Tealight candle
- Heatproof mat
- Tweezers
- Pestle and mortar (or provide ready ground sodium hydroxide)
- Measuring cylinder (>10 ml)
- Teaspoon (or spatulas)
- Tissue
- Scissors
- Small beaker / flask for water
- 2 pipettes (>2 ml)
- Retort stand or similar support
- Food bag ties/cable ties/string
- Beaker/dish containing a few raspberries to be mashed and something to mash them up with eg spatula/glass rod.
- Bright light and electric socket
- Small LCD calculator
- Aluminium foil

## Chemicals for each person/pair/group in vials, bottles, beakers etc.

- copper sulphate (3g)
- ferrous sulphate (3g)
- zinc sulphate (8g)
- ammonia solution (5ml)
- sodium hydroxide pellets (?g) (already ground if they will not have access to a pestle and mortar)
- methylated spirit (30ml)

## Sourcing the equipment

- Methylated spirit: pharmacies, paint shops, hardware stores. (£1.92 for 500ml)
- LCD calculator: supermarkets, stationers. (60p at Sainsburys)
- Raspberries (£2.25)- bought frozen so you can only defrost amount required and keep rest for another time- , matches (59p), kitchen foil (30p) tealight candles (£1.47), straws (100 in a dispenser £2.49), food bag ties/string from supermarket
- Lead-free solder wire: Hardware stores. £11.29 for 250g (each cell requires about 2g) Resin core solder wire at Homebase was fine.
- Household ammonia: Hardware store (£1.99 from Homebase)
- Plastic coated copper wire: Hardware stores

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