

The equipment and chemicals listed below are the equivalent of the materials in the QSL Lab Kit.



Equipment:

- Battery, 9-volt
- Beakers, plastic: 15 mL, 50 mL, 150 mL (any plastic beaker that can measure out these amounts will do)
- Beaker, glass, 50 mL
- Capillary tubes (optional)
- Chromatography paper (or white filter paper)
- Conductivity tester (Digital voltmeter can be used for this.)
- Cotton swabs (optional)
- Electrolysis device (#2 pencils and wire alligator clip test leads can be used)
- 10-mL Graduated cylinder, plastic or glass
- Measuring spoon, 1.0 mL
- Plastic Pipets, graduated, mini, and thin stem
- 96 Well Plastic Microplate
- 24 Well Plastic Microplate
- Ruler, 15 cm
- Safety goggles
- Sandpaper, fine
- Spring clamp
- Test tubes: 6 × 50 mm, 12 × 75 mm or larger two of each
- Washing bottle (any plastic squirt bottle)
- Wire gauze
- Wood splints

## Chemicals

- Bromophenol blue indicator or bromothymol blue indicator
- Glycerin
- Magnesium sulfate (Epsom Salts)
- Phenolphthalein indicator paper or solution
- Potassium hydrogen phthalate
- Universal indicator paper or pH paper with a range of 1-12
- Cetyl alcohol or paraffin
- Palmitic acid or stearic acid (purified fat)

Metals strips: Copper, lead, nickel or tin (wine bottle foil), zinc

Solutions approximately 30 mL all 0.10 *M*

- Acetic acid (white vinegar can be diluted to this concentration)
- Calcium nitrate
- Copper nitrate
- Hydrochloric acid
- Nickel Nitrate
- Potassium hydroxide
- Sodium acetate
- Sodium hydroxide
- Sodium oxalate
- Sodium sulfate
- Sodium thiosulfate
- Zinc nitrate