

Safety:

safety glasses



Remove the needle points with the pair wire cutters. Be careful not to crush the tube while doing this. Lithium chloride and barium chloride are poisonous and health-threats. Do not taste these substances or touch your mouth, nose, eyes, etc. if you have contaminated hands! Wash them immediately.

Instruments:

- 3 5ml syringes
- 3 (yellow) needles (0,9 / 40 mm)
- Bunsen burner
- matches or igniter
- cobalt glass
- 1 pair wire cutters

Chemicals:

- lithium chloride (LiCl; H: 302-315-319; P: 302+352-305+351+338)
- sodium chloride (NaCl)
- when desired, other alkali metal or alkali earth metal solutions

Preparation:

Mix each of the metal salts with some water in a very small beaker. Carefully label the beakers, so that the name of the salt is clearly shown. Snip the end off a needle and prepare a one beaker of clean "rinse" water. Make a table on a piece of paper with two columns: one for the names of the metal salt solutions and the other for the resulting flame colors.

Experiment:

This experiment should aid learners in identifying the various alkali and alkaline earth metals through their characteristic colors in a flame.

- Light the Bunsen burner and adjust until the flame is colorless, then dip the cut-off needle into one of the salt solutions.
- Carefully pull 5 ml of air into the syringe.
- Quickly spray the air and drop of liquid directly into the Bunsen flame. Observe which color the flame changes to. Repeat, if necessary to decide on the color.
- You can use the cobalt glass as a lens to help observe the flame.
- Carefully write down your results, then clean out the needle using the rinse water in order to avoid any false results due to contamination.
- Repeat the above process, until all of the salts have been evaluated.

Observations: The alkali and alkaline earth metals yield the following color changes:

lithium	brick red
sodium	yellow
potassium	violet
strontium	red
barium	pale green

Results: The flame test is one analytical method of identifying chemical elements or ions. It is based on the fact that each element/ion emits a specific color when held in an otherwise colorless flame. These individually-determined wavelengths of light are characteristically emitted by that substance every time the

Disposal: The remaining solutions can be stored for future use.
