

METAL ANALYSIS TEST I

REAGENTS/HARDWARE NEEDED

3N Hydrochloric Acid	RE2301
Sodium Hydroxide	RE2308
Flame Test Wire	HW4024

INSTRUCTIONS

1. **Liquid:** Add 12 drops of the unknown sample to a watch glass.
Solid: Add 1 level spoonful of the unknown sample to a watch glass. Add 12 drops of **RE2301**.
3. Stir the unknown sample on the watch glass with the looped end of a new, clean **HW4024** Flame Test Wire.
4. Put the looped end of the **HW4024** Flame Test Wire at the tip of the inner blue cone in the torch flame. Observe for color changes in the flame.

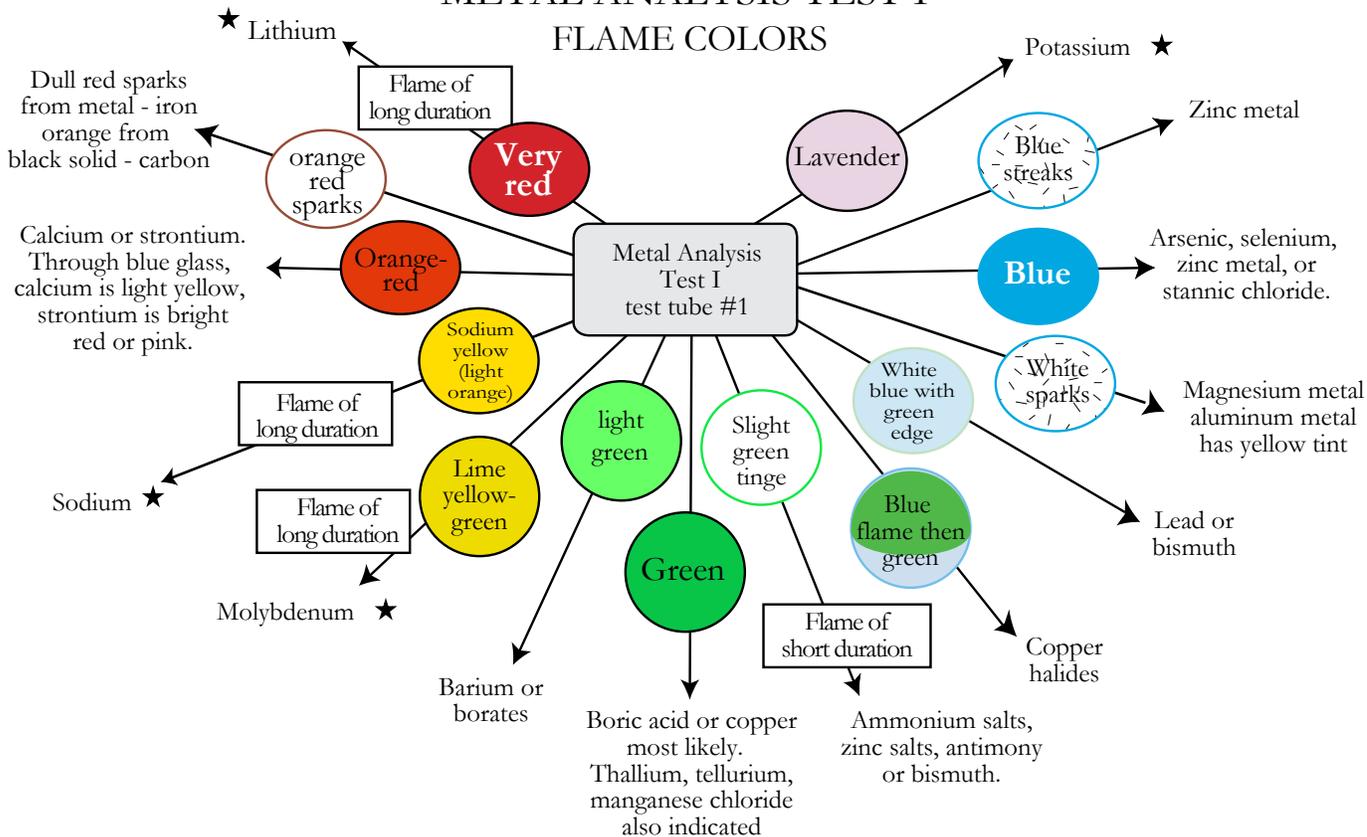
OBSERVATIONS

- a. **Very red:** Lithium. This is the best test for detecting lithium.
- b. **Yellow-orange:** Sodium. This is the best test for detecting sodium. The color typically has a long duration. Hold the Flame Test Wire in the flame for 1 min. If the color persists it is Sodium. Place 1 drop of **RE2308** on the end of a new Flame Test Wire and compare the color produced by the **RE2308** (which contains Sodium), to the color produced by the unknown.
- c. **Red-orange:** Calcium or strontium indicated. Observe the flame color through a blue glass. Calcium flame will be yellow, and the strontium flame will be a brighter red-pink color. The flame color often has a short duration.
- d. **Yellow-green:** Barium, molybdenum or a borate indicated. This is the best test for molybdenum.
- e. **Green:** Boric acid or copper indicated. Thallium, tellurium, and manganese indicated.
- f. **Slight green tinge:** Ammonium salts, antimony, bismuth, or zinc salts indicated.
- g. **Blue and green:** Copper indicated.
- h. **White-blue with green edge:** Bismuth or lead indicated.
- i. **Blue:** Arsenic, selenium, zinc or tin indicated.
- j. **Lavender:** Potassium, cesium or rubidium. The lavender, purple color is often very faint. This is the best test for detecting potassium. Cesium and rubidium are rarely encountered.
- k. **White sparks:** Magnesium.
- l. **Blue streaks:** Zinc.
- m. **White sparks with yellow tint:** Aluminum.
- n. **Red sparks:** Iron.
- o. **Red/orange sparks:** Carbon indicated.
- p. **Any other colors:** see Metal Analysis section.

Interferences: Sodium and potassium are common contaminants. The sodium yellow color may mask colors given by another metal.

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FLAME COLORS



Observe the flame color through the:
 Blue Glass - Calcium is light yellow, Strontium is brighter, Potassium is red/blue, Sodium is invisible
 Green glass - Calcium is orange, Strontium is yellow, Potassium is blue/green

