

## Roman Candle

### Purpose

To demonstrate a series of exothermic reactions accompanied with color changes, sparks, and smoke.

### Materials

Pyrex test tube (200 x 24 mm)	Powdered Iron
600 mL beaker with Sand	Strontium Nitrate
Sugar	Concentrated Sulfuric Acid
Potassium Chlorate	Dropper
Cupric Chloride	

### Procedure

1. Grind 35 g of potassium Chlorate and 10 g of Sugar separately.
2. Mix the potassium chlorate and sugar uniformly, but do not grind them together.
3. Immerse test tube into beaker of sand.
4. Starting at the base of the test tube, prepare four layers of chemicals as follows, being sure to mix each layer together.
  - a. A mixture of 3 g of strontium nitrate and 9 g of potassium chlorate/sugar
    - i. **Red Color**
  - b. A mixture of 2 g of cupric chloride and 10 g of potassium chlorate/sugar
    - i. **Blue Color**
  - c. A mixture of 3 g powdered iron and 9 g of potassium chlorate/sugar
    - i. **Yellow Color**
  - d. The remaining amount of the potassium chlorate/sugar mixture (~12g)
    - i. **White Color**
5. Dim the lights and add 1-2 mL of concentrated sulfuric acid to the test tube and **step back**.

### Additional Information

1. By altering the amounts of powdered iron and strontium salt, a more spectacular flame may result.

### Disposal

Once cool, the remaining solid can be removed from the test tube and placed in a solid waste container.

### Reference

Humphreys, David. Demonstrating Chemistry, 1983.