

OPERATING INSTRUCTIONS

Flame Spectra Kit No. 32168

1. Purpose

The Flame Spectra Kit provides individual students with a low-cost method of spectral analysis. The kit has a selection of chemicals that give striking examples of the brilliance of spectral emission lines that are characteristically identifiable.

2. Description

The kit contains four test tubes with about 10 grams each of these chemicals: sodium chloride, lithium chloride, strontium nitrate and cupric chloride. Each test tube has its own cork with a nichrome wire attached. The test tubes are packaged in a clear plastic box, 12 x 10mm, that also has a foam "rack" included. Each tube is labeled by code so that your students will not know the identity of the tube's contents. A reference chart is glued to the bottom of the box that identifies the coded tubes' contents.

3. Operation

Pick up a few crystals of a chemical with the loop of its own nichrome wire. (Care should be taken not to interchange the wire loops and the vials.) If the crystals do not easily adhere to the loop, then wet the loop with deionized water before picking up the crystals. Hold the loop in the lower edge of the oxidizing flame of a Bunsen burner. Analyze the flame spectra produced with a quantitative analysis spectroscope. (Our Catalog No. 30105 is recommended).

With any lab exercise involving flame spectra, such spectra are difficult to analyze due to their flickering nature and therefore require some patience on the part of the student. The sodium emission line may be a common contaminant in all flame spectra and may insidiously become part of any spectrum due to wetting of the wire loops or due to perspiration transferred by bodily contact with the wire loops. Thus, the sodium line contaminant should be anticipated.

4. Discussion

The more usual flame spectra determinations are simple color analyses, but in lab investigations employing the quantitative analysis spectroscope, numerical analysis of flame spectra can be used to specifically identify the elements. As some elements become volatile in a Bunsen burner flame, they emit a characteristic flame that can be used as a means of identification for the element. The bright emission lines for the chemicals in this kit are:

Vial A	Sodium Chloride	5890 A
Vial B	Lithium Chloride	6708 A
Vial C	Strontium Nitrate	6060 A
Vial D	Cupric Chloride	4300 A to 6300 A
Contaminant	Sodium	5890 A

5. Maintenance

The Flame Spectra Kit contents should be kept separate from each other and protected from moisture. If you have any difficulty with one of these kits, contact Central Scientific Company, giving details of the problem. So that we can serve you better, please do not return any item to Central Scientific Company until we have sent you a written authorization.

Written 11/88