ter, wash thoroughly, and ignite. Correct for the weight of barium sulfate obtained in a complete blank test.

Barium. Dissolve 4.0 g in 20 mL of water, filter if necessary, and divide into two portions. To one portion, add 2 mL of 10% sulfuric acid reagent solution and to the other, 2 mL of water. The solutions should be equally clear at the end of 2 h. (Limit about 0.001%)

Heavy Metals. (Page 36, Method 1). Dissolve 6.0 g in about 20 mL of water, and dilute with water to 30 mL. Use 25 mL to prepare the sample solution, and use the remaining 5.0 mL to prepare the control solution.

Iron. (Page 38, Method 1). Use 3.3 g.

Calcium, Magnesium, and Sodium. (By flame AAS, page 63).

Sample Stock Solution. Dissolve 5.0 g of sample in water, and dilute to the mark with water in a 100-mL volumetric flask (1 mL = 0.05 g).

Element	*Wavelength (nm)*	*Sample Wt (g)*	*Standard Added (mg)*	*Flame Type**	*Background Correction*
Ca	422.7	1.0	0.02; 0.04	N/A	No
Mg	285.2	1.0	0.01; 0.02	A/A	Yes
Na	589.0	0.10	0.005; 0.01	A/A	No

*A/A is air/acetylene; N/A is nitrous oxide/acetylene.

Potassium Chromate

K_2CrO_4 **Formula Wt 194.19** **CAS No. 7789-00-6**

GENERAL DESCRIPTION

Typical appearance: yellow solid
Analytical use: oxidizing agent
Change in state (approximate): melting point, 980 °C
Aqueous solubility: 62 g in 100 mL, cold

SPECIFICATIONS

Assay ..... ≥99.0% K_2CrO_4
pH of a 5% solution at 25.0 °C 8.6–9.8

	Maximum Allowable
Insoluble matter	0.005%
Chloride (Cl)	0.005%
Sulfate (SO_4)	0.03%
Calcium (Ca)	0.005%
Sodium (Na)	0.02%

TESTS

Assay. (By iodometric oxidation–reduction titration). Weigh, to the nearest 0.1 mg, about 0.25 g of sample, and dissolve in 200 mL of water in a 500-mL glass-stoppered iodine flask. Add 3 g of potassium iodide and 7 mL of hydrochloric acid, and allow to stand in the dark for 10 min. Titrate the liberated iodine with 0.1 N sodium thiosulfate volumetric solution, adding 5 mL of starch indicator solution near the end point. One milliliter of 0.1 N sodium thiosulfate corresponds to 0.006473 grams of K_2CrO_4.

$$\% K_2CrO_4 = \frac{(\text{mL} \times \text{N } Na_2S_2O_3) \times 6.473}{\text{Sample wt (g)}}$$

pH of a 5% Solution at 25.0 °C. (Page 49).

Insoluble Matter. (Page 25). Use 20 g dissolved in 150 mL of water.

Chloride. Dissolve 0.20 g in 10 mL of water, filter if necessary through a small chloride-free filter, and add 1 mL of ammonium hydroxide, 1 mL of silver nitrate reagent solution, and 2 mL of nitric acid. Any turbidity should not exceed that produced by 0.01 mg of chloride ion (Cl) in an equal volume of solution containing the quantities of reagents used in the test. The comparison is best made by the general method for chloride in colored solutions, page 35.

Sulfate. Dissolve 10.0 g of sample in 250 mL of water. Add 2.5 g of barium chloride in 15 mL of water and 5 mL of hydrochloric acid. Digest on low heat (≈100 °C) for 2 h, and allow to stand at room temperature for 12 h. If any precipitate is formed, filter, wash thoroughly, and ignite in a platinum crucible. Fuse the ignited residue with 1 g of anhydrous sodium carbonate, extract the fused mass with water, and filter off the insoluble residue. Add 5 mL of hydrochloric acid to the filtrate, dilute to about 150 mL with water, heat the solution to boiling, and add 10 mL of 95% ethyl alcohol. Digest on low heat until reduction of chromate is complete as indicated by the change to a clear green or colorless solution. Neutralize the solution with ammonium hydroxide, filter off any chromic hydroxide precipitate, and dilute to 200 mL in a volumetric flask. Use 10.0 mL of this solution for the sample (0.5 g). Dilute to 30 mL with water. For the control, take 0.15 mg of sulfate ion (SO_4) in 30 mL of water. To each, add 1 mL of (1 + 19) hydrochloric acid and 1 mL of 12% barium chloride reagent solution. Compare after 10 min. Sample turbidity should not exceed that of the control solution.

Calcium and Sodium. (By flame AAS, page 63).

Sample Stock Solution. Dissolve 5.0 g in water, and dilute to 100 mL in a volumetric flask with water (1 mL = 0.05 g).

Element	*Wavelength (nm)*	*Sample Wt (g)*	*Standard Added (mg)*	*Flame Type**	*Background Correction*
Ca	422.7	0.50	0.025; 0.05	N/A	No
Na	589.0	0.05	0.01; 0.02	A/A	No

*A/A is air/acetylene; N/A is nitrous oxide/acetylene.