# COEI-1-POTANH Potassium anhydrous sulfite

## Potassium pyrosulfite

## Potassium disulfite

## Potassium metabisulfite

## Kalii metabisulfis

## $K_2S_2O_5$= 222.3

## SIN No. 224

1. **Objective, Origin and Scope of Application**

   Potassium anhydrous sulfite, commonly called potassium metabisulfite, is used because of the sulfur dioxide it makes available. Potassium metabisulfite, which is sold in powdered form, contains 52-55% by weight $SO_2$.

   There are regulatory limits restricting the sulfur dioxide content of wines.

2. **Labelling**

   The label should indicate the product's purity as well as its safety and storage conditions.

3. **Centesimal Composition**

| | |
|---|---|
| Sulfur dioxide | 57.63 |
| Potassium | 35.17 |

4. **Solubility**

| | |
|---|---|
| Water at 20 °C | 454.5 g/l |

| | |
|---|---|
| Alcohol, 95% by vol. | insoluble |

**5. Identifying Properties**

5.1. 5 ml of aqueous 10 pp 100 (m/v) solution treated with 5 ml of 1/10 diluted sulfuric acid (R) releases sulfur dioxide and reduces iodine and potassium permanganate.

5.2. The 10 pp 100 (m/v) aqueous solution is acidic as indicated by methyl red (R) of (pHapproximately 5).

5.3. The 1 pp 100 (m/v) aqueous solution produces potassium-based reactions.

**6. Tests**

6.1. Preparing the Test Solution in a Concentration of 10 pp 100

Prepare a solution in a concentration of 10 pp 1000 (m/v).

6.2. Preparing a Test Solution in a Concentration of 1 pp 100

Prepare a 1 pp 100 (m/v) solution by diluting the previous solution (6.1) to 1/10.

6.3. Lead

Using the technique described in the Compendium, determine the lead content in the 10 pp 100 test solution (6.1). (Lead content should be less than 5 mg/kg.)

6.4. Mercury

Using the technique described in the annex, determine the mercury content in the 10 pp 100 test solution (6.1). (Content should be less than 1 mg/kg.)

6.5. Arsenic

Using the technique described in the annex, determine the arsenic content in the 10 pp 100 test solution (6.1). (Content should be less than 3 mg/kg.)

6.6. Selenium

Weigh 2.60 g potassium anhydrous sulfite, a quantity which contains 1.5 g sulfur dioxide. Dissolve it under heat in 7 ml of distilled water and 2 ml of concentrated hydrochloric acid (R). Let cool, then add 3 ml of formaldehyde solution (R). Let sit for 10 minutes. Place the tube in a 100 °C water bath and add 50 mg of pulverized potassium anhydrous sulfite which is free of selenium (R). Leave the tube in the 100 °C water bath for 15 minutes. If a pink coloration develops, it should be less intense than that of a control prepared in the same way using 2.60 g of selenium-free potassium anhydrous sulfite (R) to which was added 0.45 ml of a selenium dioxide solution in a concentration of 100 mg of selenium per liter (R). (Selenium content, with respect to the sulfur dioxide, should be less than 10 mg/kg).

6.7. Sodium

Prepare 10 ml of a 1 pp 100 (m/v) solution as indicated in paragraph 6.2 with 2 ml of acetic acid (R). Evaporate the solution in a 100 °C water bath until it is reduced to 1/2.

Pour into a 100 ml volumetric flask. Fill with water to the gauge line. Quantitatively analyze the sodium using flame photometry. (Sodium content should be less than 2 pp 100).

6.8. Chlorides

Place 0.5 ml (concentration: 10 pp 100) of solution as prepared under paragraph 6.1 in a dish with 10 ml of water and 3 ml of 10 pp 100 sulfuric acid solution (R). Evaporate in a 100 °C water bath to reduce the volume to 5 ml. Decant in a test tube. Bring the volume up to 15 ml, then add 5 ml of 10 pp 100 nitric acid (R) and 0.5 ml of 5 pp 100 silver nitrate solution (R). The liquid should remain clear; or else, any clouding which occurs should be less intense than that in a control prepared as indicated in the Annex. (Chloride content, expressed in terms of hydrochloric acid, should be less than 1 g/kg).

6.9. Iron

Using the technique described in the Compendium, determine lthe iron content in the 10 pp 100 (m/v) test solution (6.1) using atomic absorption spectrophotometry. (Iron content should be less than 50 mg/kg $SO_2$.)

## 7. Quantitative Analysis

Sulfur dioxide - Place 50 ml of a disodium ethylene diamine tetra-acetate solution (120 mg per liter) in a 200 ml conical flask. Add 10 ml of the freshly prepared 1 pp 100 potassium anhydrous sulfite solution and titrate with 0.05M iodine. Let n be the volume in ml ; 1 ml of 0.05M iodine corresponds to 3.2 mg of sulfur dioxide.

Sulfur dioxide content per 100 g: 3.2n

Potassium anhydrous sulfite should contain at least 51.8 pp 100 sulfur dioxide.

## 8. Storage

This product reacts with air and should be kept in hermetically sealed containers.