COEI-1-AMMSUL Ammonium sulfate

Ammonium sulfuricum

(NH4)2SO4 = 132.10

SIN NO. 517

1. Objective, Origin and Scope of Application

This product is used as a fermentation activator and is reserved for fermentation operations. It adds ammonium ions that can be directly assimilated by the yeast. The sulfates added are completely soluble in wine.

Statutory restrictions govern the addition of ammonium.

2. Labelling

The concentration of this product should be indicated on the label, including mixtures. In addition, safety and storage conditions should be noted.

3. Centesimal Composition

H_2SO_4	74.22
NH_3	25.78
SO_3	60.59
N	21.20

4. Properties

Transparent, anhydrous crystals with a bitter, pungent taste, which are similar to potassium sulfate crystals, with which this salt is isomorphous.

5. Solubility

Water at 20 °C	509 g/l

Water at 100 °C	1040 g/l
Alcohol, 90% by vol.	Insoluble
Acetone	Insoluble

6. Identifying Characteristics

Solutions of this salt in water in a concentration of 1 pp 100 (m/v) has a pH of approximately 5.5. This solution allows reactions of ammonium and those involving sulfates.

7. Tests

7.1. Sulfur Ash

The concentration of sulfur ash of ammonium sulfate prepared as explained in the annex in a test sample of 1 g must not exceed 5 g/kg.

7.2. Preparing the Solution for Tests

Prepare a 10 pp 100 (m/v) solution.

7.3. Chlorides

To 0.5 ml of the solution prepared for testing under paragraph 7.2, add 14.5 ml of water, 5 ml of nitric acid (R) diluted to a concentration of 10 pp 100 and 0.5 ml of 5 pp 100 silver nitrate solution (R). After 15 minutes at rest in the dark, there should be no clouding; or else, any clouding visible should be less intense than that observed in the control prepared as indicated in the annex. (Hydrochloric acid content must be less than 1 g/kg).

7.4. Phosphates

To 0.5 ml of the solution prepared for tests under paragraph 7.2, add 5 ml of water and 10 ml of nitro-vanadomolybdic reagent (R). Leave in contact for 15 minutes at 20 °C. If a yellow coloring appears, it should be less intense than that obtained by adding, to 0.5 g of a solution containing 0.05 g phosphorous per liter, 5 ml of water and 10 ml of nitro-vanadomolybdic reagent. (Phosphate content expressed in terms of phosphorous should be less than 500 mg/kg).

7.5. Nitrates

Mix 5 ml of concentrated sulfuric acid (R) and 0.5 ml of an previously prepared iron (II) sulfate solution in a concentration of 5 pp 100 (m/v) in a test tube. Without mixing, pour 5 ml of the solution obtained by dissolving 2 g of ammonium sulfate in 10 ml of water. No coloring should be observed at the surface separating the two solutions

7.6. Iron

To 5 ml of the solution prepared for testing under paragraph 7.2, add 1 ml of concentrated hydrochloric acid (R), one drop of 2 pp 100 potassium permanganate (R) and 2 ml of 5 pp 100 potassium thiocyanate solution (R).

If a red coloring appears, it should be less intense than that of a control prepared with 2.5 ml of an iron (III) solution in a concentration of 0.01 g of iron per liter (R), 2.5 ml of water and the same quantities of the same reagents. (Iron content should be less than 50 mg/kg).

The proportion of iron may also be quantified by atomic absorption spectometry, using the technique detailed in the Compendium.

7.7. Lead

Use the quantitative analysis technique detailed in the Compendium on the solution prepared for testing under paragraph 7.2.

(Lead content should be less than 5 mg/kg.)

7.8. Mercury

Test for mercury concentration in the solution prepared for testing (7.2), using the method explained in the annex. (Mercury content should be less than 1 mg/kg.)

7.9. Arsenic

Using the method indicated in the Annex, test for arsenic concentration in the test solution prepared in accordance with paragraph 2. (Arsenic content should be less than 3 mg/kg.)

7.10. Quantitative Analysis of Ammonia

Dilute the test solution prepared under paragraph 7.2 to one-tenth strength, then place 10 ml of this dilute solution (0.10 g of ammonium sulfate) in a steam distillation device (described in the Annex). Add 20 ml of 30% sodium hydroxide (R) and distill 100 ml. Quantitatively analyze the distilled ammonia using 0.1 M hydrochloric acid. Let n be the number of milliliters used:

100 g of ammonium sulfate contains 1.7 n g of ammonia (NH_3).

(Ammonia concentration greater than 25 pp 100.)

7.11. Quantitative Analysis of Sulfuric Acid

Dilute the test solution prepared for testing under paragraph 7.2 to one-tenth strength, then take 25 ml of this solution and add 75 ml of water and 1 ml concentrated hydrochloric acid (R). Bring to a boil while slowly adding a small excess of barium chloride solution (R). Let the precipitate form for 30 minutes in a 100 °C water bath.

Collect the precipitate, then wash, calcine in an oven at 600 °C and weigh. Let *p* be the weight of the barium sulfate precipitate:

100 g of ammonium sulfate contains 16.80 *p* g of sulfuric acid (H_2SO_4). (Sulfuric acid content greater than 73.5 pp 100.)

8. Storage

Ammonium sulfate should be stored in a dry place in hermetically sealed containers, away from heat.