COEI-1-AMMCHL Ammonium chloride

Ammonia Hydrochloride

Ammonii Chloridum

NH_4Cl=53.50

SIN NO.: 510

1. Objective, Origin and Domain of Application

This product is used as a fermentation activator and is reserved for fermentation operations. It makes available ammonium ions which can be directly assimilated by the yeast.

Statutory limits regulate the amount of ammonium added.

2. Labeling

The concentration of this product should be indicated on the label, including cases in which it is mixed. In addition, safety and storage conditions should be stipulated.

3. Centesimal Composition

Cl	66.22
NH_3	31.78

4. Properties

Colorless, odorless crystals with a fresh, salty and piquant taste. It sublimes without decomposing and is stable in air.

5. Solubility

Water at 20 °C	350.8 g/l
Water at 100 °C	758 g/l

Alcohol, 95% by vol.	13.3 g/l

6. Identifying Characteristics

Aqueous solutions of ammonium chloride produce reactions of ammonium and those of chloride.

7. Testing

7.1. Sulfur Ash

When quantitifed as indicated in the Annex, the sulfur ash content of the ammonium chloride should not be greater than 0.2 per 100.

7.2. Preparing the solution for tests

Prepare an aqueous solution from NH_4Cl crystals at 10 per 100 (m/v).

7.3. Sulfates

To 1 ml of solution prepared for tests under paragraph 7.2, add 2 ml of hydrochloric acid diluted to 10 pp 100 (m/v) (R), 17 ml of water and 2 ml of barium chloride solution (R). The mixture should be clear, or else the opalescence observed after 15 minutes should be less than that of the control solution prepared as indicated in the Annex. (Sulfate content expressed in terms of sulfuric acid should be less than 1 g/kg).

7.4. Nitrates

Mix 5 ml of concentrated sulfuric acid (R) and 0.5 ml of an extemporaneously prepared iron (II) sulfate solution at 5 pp 100 in a test tube. Without mixing, pour 5 ml of the solution prepared under paragraph 7.2. No coloration should be observed at the surface line separating the two solutions.

7.5. Phosphates

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

7.6. Iron

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

If a red coloration appears, it should be less intense than that of a control prepared with 2.5 ml of an iron (III) solution containing 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 iron may also be quantitatively analyzed using atomic absorption spectometry, in accordance with the method detailed in the Compendium.

7.7. Arsenic

Using the method indicated in the annex, test for arsenic in the test solution prepared in accordance with Paragraph 7.2. (Arsenic content should be less than 3 mg/kg.)

7.8. Lead

Using the method described in the Compendium, quantify the lead in the solution obtained under Paragraph 7.2. (Lead content should be less than 2 mg/kg.)

7.9. Mercury

Using the method described in the annex, test for mercury in the solution prepared for testing under §7.2. (Mercury content should be less than 1 mg/kg.

7.10. Quantitative Ammonia Analysis

Dilute the solution prepared for testing under paragraph 7.2 to one-tenth strength, then place 10 ml of this dilute solution (i.e., 0.1 g of ammonium chloride) in a steam distillation device. Add 10 ml of 30% sodium hydroxide (R) and distill 100 ml. Quantify the distilled ammonia using 0.1 M hydrochloric acid. Let n be the number of milliliters used:

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

(Ammonia content greater than 31.5 pp 100).

7.11. Quantitative Hydrochloric Acid Analysis

Take a 10 ml sample of the solution prepared for testing under paragraph 7.2, which has been diluted to one-tenth strength. Place the sample in a cylindrical flask. Add 20 ml of 0.1 M silver nitrate solution, 1 ml of concentrated nitric acid (R), 5 ml of iron (III) sulfate solution and 10 pp 100 of ammonium (R). Titrate the excess silver nitrate with a 0.1 M potassium thiocyanate solution. Let n be the number of milliliters used:

100 g of ammonium chloride contains 3.65 (20-n) g of hydrochloric acid (HCl). (Hydrochloric acid content greater than 67.5 pp 100).

8. Storage

Ammonium chloride must be stored in water-tight containers away from heat.