

AMMONIUM CARBONATE

Prepared at the 26th JECFA (1982), published in FNP 25 (1982) and in FNP 52 (1992). Metals and arsenic specifications revised at the 59th JECFA (2002)

An ADI 'not specified' was established at the 26th JECFA (1982)

SYNONYMS	INS No. 503(i)
DEFINITION	Consists of ammonium carbamate, ammonium carbonate and ammonium hydrogen carbonate in varying proportions
C.A.S. number	10361-29-2
Chemical formula	CH ₆ N ₂ O ₂ , CH ₈ N ₂ O ₃ CH ₅ NO ₃
Structural formula	NH ₂ COONH ₄ (NH ₄) ₂ HCO ₃ NH ₄ HCO ₃
Formula weight	Ammonium carbamate 78.06 Ammonium carbonate 98.73 Ammonium hydrogen carbonate 79.06
Assay	Not less than 30.0% and not more than 34.0% of NH ₃
DESCRIPTION	White powder or hard, white or translucent masses of crystals with an odour of ammonia. On exposure to air it becomes opaque and is finally converted into white porous lumps or powder (of ammonium bicarbonate) due to loss of ammonia and carbon dioxide.

FUNCTIONAL USES Acidity regulator, raising agent

CHARACTERISTICS

IDENTIFICATION

<u>Solubility</u>	Soluble in water
<u>pH</u> (Vol.4)	About 8.6 (1 in 20 solution)
<u>Test for carbonate</u> (Vol. 4)	Passes test
<u>Test for ammonia</u> (Vol. 4)	Passes test
<u>Heat test</u>	When heated, it volatilizes without charring and the vapour is alkaline to moist litmus

PURITY

Non-volatile residue
(Vol. 4)

Not more than 500 mg/kg
Test 4 g of the sample in 10 ml of water

Chlorides

Not more than 30 mg/kg
Dissolve 500 mg of the sample in 10 ml of hot water, add about 5 mg of sodium carbonate, and evaporate to dryness on a steam bath. Test the residue as directed under the Limit Test. Any turbidity produced does not exceed that shown in a control containing 15 µg of chloride ion (Cl⁻).

Sulfates

Not more than 50 mg/kg
Dissolve 4 g of the sample in 40 ml of water, add about 10mg of sodium carbonate and 1 ml of 30% hydrogen peroxide, and evaporate the solution to dryness on a steam bath. Treat the residue as directed under the Limit Test. Any turbidity produced does not exceed that shown in a control containing 200 µg of sulfate ion (SO₄²⁻).

Lead

Not more than 2 mg/kg
Determine using an atomic absorption technique appropriate to the specified level. The selection of sample size and method of sample preparation may be based on the principles of the method described in Volume 4, "Instrumental Methods."

**METHOD OF
ASSAY**

Place about 10 ml of water in a weighing bottle, tare the bottle and its contents, add about 2 g of the sample and weigh accurately. Transfer the contents of the bottle to a 250-ml flask and slowly add, with mixing, 50 ml of 1 N sulfuric acid. When solution has been effected, wash down the sides of the flask, add methyl orange TS, and titrate the excess acid with 1 N sodium hydroxide. Each ml of 1 N sulfuric acid is equivalent to 17.03 mg of NH₃.