CALCIUM OXIDE

Prepared at the 19th JECFA (1975), published in NMRS 55B (1976) and in FNP 52 (1992). Metals and arsenic specifications revised at the 59th JECFA (2002). An ADI 'Not limited' was established at the 9th JECFA (1965).

SYNONYMS Lime; INS No. 529

DEFINITION

Chemical names	Calcium oxide
C.A.S. number	1305-78-8
Chemical formula	CaO
Formula weight	56.08
Assay	Not less than 95.0% after ignition

DESCRIPTION Odourless, hard, white or greyish white masses or granules, or white to greyish white powder

FUNCTIONAL USES Alkali, dough conditioner, yeast food

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4)	Slightly soluble in water, insoluble in ethanol, soluble in glycerol (Caution: Protect eyes when adding water)
Reaction with water	Moisten the sample with water; heat is generated (Caution: Protect eyes when adding water).
Test for alkali	The sample is alkaline to moistened litmus paper
Test for calcium (Vol. 4)	Passes test

PURITY

Loss on ignition (Vol. 4)	Not more than 10% (1 g, about 800^{o} to constant weight)
Barium	Not more than 0.03% Cautiously mix 1.5 g of the sample with 10 ml water, add 15 ml of dilute hydrochloric acid TS, dilute to 30 ml with water and filter. To 20 ml of the filtrate add 2 g of sodium acetate, 1 ml of dilute acetic acid TS and 0.5 ml of potassium chromate TS and allow to stand for 15 min. The turbidity of the

solution is not greater than that of a control prepared by adding water to 0.3 ml of barium standard solution (1.779 g barium chloride in 1000 ml of water) to make to 20 ml, adding 2 g of sodium acetate, 1 ml of dilute acetic acid TS and 0.5 ml of potassium chromate TS and allowing to stand for 15 min.

Magnesium and alkali salts

Not more than 3.6%
Dissolve 500 mg of the sample in 30 ml of water and 15 ml of dilute hydrochloric acid TS. Heat the solution and boil for 1 min. Add rapidly 40 ml of oxalic acid TS and stir vigorously. Add 2 drops of methyl red TS and neutralize the solution with ammonia TS to precipitate the calcium completely. Heat the mixture on a steam bath for 1 h, cool, dilute to 100 ml with water, mix well and filter. To 50 ml of the filtrate carefully add 0.5 ml of concentrated sulfuric acid, evaporate to dryness and ignite to constant weight in a tared platinum crucible.

Acid insoluble matter

Not more than 1%
Slake 5 g of the sample, mix with 100 ml of water and sufficient hydrochloric acid, added dropwise, to effect solution. Boil the solution, cool, add hydrochloric acid, if necessary, to make the solution distinctly acid, and filter through a tared crucible. Wash the residue with water until free of chlorides, dry at 105^{o} for 1 h, cool, and weigh.

Fluoride (Vol. 4)

Not more than 50 mg/kg (Method I or III)

Lead (Vol. 4)

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

Ignite at approximately 800^{o} about 1 g of the sample to constant weight, accurately weigh the residue and dissolve it in 20 ml of dilute hydrochloric acid TS. Cool the solution, dilute with water to 500 ml and mix. Pipet 50 ml of this solution into a suitable container and add 50 ml of water, then add 15 ml of sodium hydroxide TS, 40 mg of murexide indicator preparation and 3 ml of naphthol green TS, and titrate with 0.05 M disodium ethylenediamine tetraacetate until the solution is deep blue in colour. Each ml of 0.05 M disodium ethylenediamine tetraacetate is equivalent to 2.804 mg of CaO.