CALCIUM PROPIONATE

Prepared at the 49th JECFA (1997), published in FNP 52 Add 5 (1997) superseding specifications prepared at the 44th JECFA (1995), published in FNP 52 Addendum 3 (1995). These specifications were reviewed and maintained at the 51st JECFA (1998) and republished in FNP 52 Add 6 (1998). ADI "not limited"established at the 17th JECFA in 1973.

SYNONYMS Calcium propanoate, INS No. 282

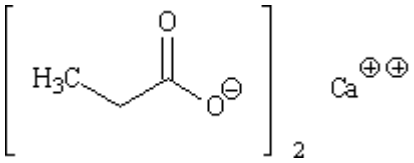
DEFINITION

Chemical names: Calcium propionate

C.A.S. number: 4075-81-4

Chemical formula: $C_6H_{10}CaO_4$

Structural formula:



Formula weight: 186.22

Assay: Not less than 98.0% on the dried basis

DESCRIPTION White crystals, powder or granules with not more than a faint odour of propionic acid

FUNCTIONAL USES Preservative, antimould and antirope agent

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4): Freely soluble in water, soluble in ethanol

Test for calcium (Vol. 4): Passes test

Test for propionate: Warm the sample with sulfuric acid. The propionic acid evolved may be recognized by its odour.

Test for alkali salt of organic acid: Ignite the sample at a relatively low temperature. The alkaline organic acid residue effervesces with acid.

PURITY

Loss on drying (Vol. 4): Not more than 4% (105^{o}, 2 h)

pH (Vol. 4): 7.5 - 10.5 (1 in 10 soln)

Water insoluble matter — Not more than 0.3%
Weigh 5 g of the sample to the nearest mg, transfer into a 100-ml beaker and add 50 ml of water. Stir until all the sample appears to be completely dissolved. Filter through a Gooch crucible, tared to an accuracy of ±0.2 mg. Rinse the beaker with 20 ml of water. Dry the crucible with its contents in a 60^{o}-oven to constant weight. Cool in a desiccator, weigh, and calculate as percentage.

Fluoride (Vol. 4) — Not more than 30 mg/kg
Weigh 5 g of the sample to the nearest mg and proceed as directed in the Limit Test (Method I or III)

Iron (Vol. 4) — Not more than 50 mg/kg
Test 0.5 g of the sample as described in the Limit Test using 2.5 ml of Iron Standard Solution (25 µg) in the control

Lead (Vol. 4) — Not more than 5 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

Dissolve in a beaker 2.5 g of the sample, weighed to the nearest mg, in 5 ml of hot dilute hydrochloric acid TS. Cool, transfer to a 250-ml volumetric flask, dilute to volume with water, and mix. Transfer 50 ml of the solution to a 400-ml beaker, add 100 ml of water, 25 ml of sodium hydroxide TS, 40 mg of murexide indicator preparation and 3 ml of naphthol green TS. An alternative indicator is hydroxynaphthol blue, of which 0.25 g is used. In this case the naphthol green TS is omitted. Titrate with 0.05 M disodium ethylenediaminetetraacetate until the solution is deep blue in colour. Each ml of 0.05 M disodium ethylenediaminetetraacetate is equivalent to 9.311 mg of $C_6H_{10}CaO_4$.