

# CALCIUM BENZOATE

Prepared at the 49th JECFA (1996), published in FNP 52 Add 4 (1996) superseding specifications prepared at the 27th JECFA (1983), published in FNP 28 (1983). Metals and arsenic specifications revised at the 63rd JECFA (2004). A group ADI of 0-5 mg/kg bw for benzoic acid and its salts was established at the 27th JECFA (1983) and was maintained at the 46th JECFA (1996)

## SYNONYMS

Monocalcium benzoate, INS No. 213

## DEFINITION

Chemical names

Calcium benzoate

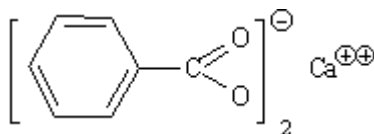
C.A.S. number

2090-05-3

Chemical formula

Anhydrous:  $C_{14}H_{10}CaO_4$   
Monohydrate:  $C_{14}H_{10}CaO_4 \cdot H_2O$   
Trihydrate:  $C_{14}H_{10}CaO_4 \cdot 3H_2O$

Structural formula



(anhydrous)

Formula weight

Anhydrous: 282.31  
Monohydrate: 300.32  
Trihydrate: 336.36

Assay

Not less than 99.0% on the dried basis

## DESCRIPTION

White or colourless crystals, or white powder

## FUNCTIONAL USES

Antimicrobial preservative

## CHARACTERISTICS

### IDENTIFICATION

Solubility (Vol. 4)

Sparingly soluble in water

Test for benzoate (Vol. 4)

Passes test

Test for calcium (Vol. 4)

Passes test

### PURITY

Loss on drying (Vol. 4)

Not more than 17.5% (105°, 4 h)

Water insoluble matter Not more than 0.3%  
Dissolve 10 g of the sample, weighed to the nearest mg, in 100 ml of hot water. Filter through a Gooch crucible, tared to an accuracy of  $\pm 0.2$  mg, and wash any residue with hot water. Dry the crucible for 2 h at 105°. Cool, weigh and calculate as percentage.

Acidity or alkalinity Passes test  
Dissolve 2 g of the sample, weighed to the nearest mg, in 20 ml of freshly boiled water. Not more than 0.5 ml of either 0.1N sodium hydroxide or 0.1N hydrochloric acid should be required for neutralization, using phenolphthalein TS as indicator.

Fluoride (Vol. 4) Not more than 10 mg/kg  
Weigh 5 g of the sample to the nearest mg and proceed as directed in the Limit Test (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."

Chlorinated organic compounds (Vol. 4) Not more than 0.07% (as Cl<sub>2</sub>)  
Test 0.25 g of the sample, using 0.5 ml of 0.01N hydrochloric acid in the control.

Readily oxidizable substances Passes test  
Add 1.5 ml of sulfuric acid to 100 ml of water, heat to boiling and add 0.1N potassium permanganate in drops, until the pink colour persists for 30 sec. Dissolve 1 g of the sample, weighed to the nearest mg, in the heated solution, and titrate with 0.1N potassium permanganate to a pink colour that persists for 15 sec. Not more than 0.5 ml should be required.

**METHOD OF ASSAY** Weigh accurately 0.6 g of the dried sample, dissolve in a mixture of 20 ml of water and 2 ml of dilute hydrochloric acid TS, and dilute to 100 ml with water. While stirring (preferably with a magnetic stirrer) add about 30 ml of 0.05M disodium ethylenediaminetetraacetate from a 50-ml buret, then add 15 ml of sodium hydroxide TS, 40 mg of murexide indicator preparation (an alternative indicator is hydroxynaphthol blue, of which 0.25 g is used - in this case the naphthol green TS is omitted) and 3 ml of naphthol green TS, and continue the titration until the solution is deep blue in colour. Each ml of 0.05M disodium ethylenediamine tetraacetate is equivalent to 14.116 mg of C<sub>14</sub>H<sub>10</sub>CaO<sub>4</sub>.