Food and Agriculture Organization of the United Nations

World Health Organization

Specifications Monograph prepared by the meeting of the Joint FAO/WHO Expert Committee on Food Additives (JECFA), 92nd Meeting 2021

Potassium benzoate

This monograph was also published in: Compendium of Food Additive Specifications. Joint FAO/WHO Expert Committee on Food Additives (JECFA), 92nd meeting 2021. FAO JECFA Monographs 27

POTASSIUM BENZOATE

Prepared at the 92nd JECFA (2021) published in FAO JECFA MONOGRAPHS 27 (2021) superseding specifications prepared at the 46th JECFA (1996), published in FNP 52 Add 4 (1996). Metals and arsenic specifications were revised at the 63rd JECFA (2004). A group ADI of 0 - 5 mg/kg bw for benzoic acid and its calcium, potassium and sodium salts, expressed as benzoic acid, was established at the 27th JECFA (1996). Benzyl alcohol was evaluated at the twenty-third and forty-sixth meetings (Annex 1, references 50 and 122); benzyl acetate was evaluated at the eleventh, twenty-seventh, twenty-ninth, thirty-first, thirty-fifth, forty-first, and forty-sixth meetings (Annex 1, references 14, 62, 70, 77, 88, 107, and 122); benzyl benzoate was evaluated at the fifteenth and forty-sixth meetings (Annex 1, references 26 and 122); benzaldehyde was evaluated at the eleventh and forty-sixth meetings (Annex 1, references 14 and 122); and benzoic acid was evaluated at the sixth, ninth, seventeenth, twenty-seventh, and forty-sixth meetings (Annex 1, references 6, 11, 32, 62, and 122). At its forty-sixth meeting, the Committee evaluated the five benzyl derivatives as a group and maintained the group ADI of 0 – 5 mg/kg bw as benzoic acid equivalents (Annex 1, reference 122). At its nighty-second meeting the group ADI of 0 - 5 mg/kg bw was withdrawn and re-established to 0 – 20 mg/kg bw for benzoic acid, its salts (calcium, potassium and sodium), benzaldehyde, benzyl acetate, benzyl alcohol and benzyl benzoate, expressed as benzoic acid equivalents (2021).

SYNONYMS Potassium salt of benzenecarboxylic acid, potassium salt of phenylcarboxylic acid, INS No. 212

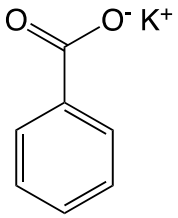
DEFINITION

Chemical names: Potassium benzoate

C.A.S. number: 532-25-2 (anhydrous)

Chemical formula: $C_7H_5KO_2$ (anhydrous)
$C_7H_5KO_2 \bullet 3H_2O$ (trihydrate)

Structural formula:



Formula weight: 160.22 (anhydrous)
214.27 (trihydrate)

Assay: Not less than 99.0% on the dried basis

DESCRIPTION White crystalline powder

FUNCTIONAL USES Antimicrobial preservative

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4)	Freely soluble in water, soluble in ethanol
Test for benzoate (Vol. 4)	Passes test Use a 10% solution of the sample
Test for potassium (Vol. 4)	Passes test Use a 10% solution of the sample

PURITY

Loss on drying (Vol. 4)	Not more than 26.5% (105˚, 4 hours)
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 0.1 N sodium hydroxide or 0.1 N hydrochloric acid should be required for neutralization, using phenolphthalein TS as indicator.
Readily carbonizable substances (Vol. 4)	Passes test Dissolve 0.5 g of the sample, weighed to the nearest mg, in 5 ml of sulfuric acid TS. The colour produced should not be darker than a light pink ("Matching Fluid Q")
Chlorinated organic compounds (Vol. 4)	Not more than 0.07% (as Cl_2) Test 0.25 g of the sample using 0.5 ml of 0.01 N 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 0.1 N potassium permanganate, dropwise, 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 0.1 N potassium permanganate to a pink colour that persists for 15 sec. Not more than 0.5 ml should be required.
Lead (Vol. 4)	Not more than 2 mg/kg Determine using a method 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	Weigh to the nearest 0.1 mg, 2.5 to 3 g of the dried sample, and transfer to a 250-ml Erlenmeyer flask. Add 50 ml of water to dissolve the sample. Neutralize the solution, if necessary, with 0.1 N hydrochloric acid, using phenolphthalein TS as indicator. Add 50 ml of ether and a few drops of bromophenol blue TS and titrate with 0.5 N hydrochloric acid, shaking constantly the flask, until the colour of the indicator begins to change. Transfer the lower aqueous layer to another flask. Wash the ethereal layer

with 10 ml of water, and add the washing and an additional 20 ml of ether to the separated aqueous layer. Complete the titration with the 0.5 N hydrochloric acid, shaking constantly the flask.
Each ml of 0.5 N hydrochloric acid is equivalent to 80.11 mg of $C_7H_5KO_2$.