Food and Agriculture Organization of the United Nations

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Specification Monograph prepared by the meeting of the Joint FAO/WHO Expert Committee on Food Additives (JECFA), 33rd Meeting 1988

SACCHARIN

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SACCHARIN

Prepared at the 33rd JECFA (1988), published in FNP 38 (1988) and in FNP 52 (1992). Metals and arsenic specifications revised at the 57th JECFA (2001). A group ADI of 0-5 mg/kg bw for saccharin and its Ca, K, Na salts, expressed as Na saccharin, was established at 41st JECFA (1993)

SYNONYMS

INS No. 954(i)

DEFINITION

Chemical names

1,2-Benzisothiazole-3(2H)-one-1,1-dioxide, 3-oxo-2,3-dihydrobenzo[d]isothiazol-1,1-dioxide

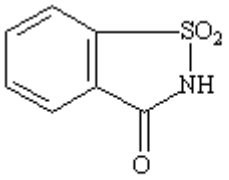
C.A.S. number

81-07-2

Chemical formula

$C_7H_5NO_3S$

Structural formula



Formula weight 183.18

Assay Not less than 99% and not more than 101.0% on the dried basis

DESCRIPTION

White crystals or a white, crystalline powder, odourless or with a faint, aromatic odour

FUNCTIONAL USES

Sweetener

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4) Slightly soluble in water; soluble in basic solutions; sparingly soluble in ethanol

Acidity A saturated aqueous solution is acidic

Derivation to salicylic acid Dissolve about 0.1 g of the sample in 5 ml of 5% sodium hydroxide solution. Evaporate to dryness and gently fuse the residue over a small flame until it no longer evolves ammonia. After the residue has cooled, dissolve it in 20 ml of water, neutralize the solution with dilute hydrochloric acid TS and filter.

	The addition of a drop of ferric chloride TS to the filtrate produces a violet colour.
Derivation to fluorescent substance	Mix 20 mg of the sample with 40 mg of resorcinol, add 10 drops of sulfuric acid, and heat the mixture in a liquid bath at 200º for 3 min. After cooling, add 10 ml of water and an excess of sodium hydroxide TS. A fluorescent green liquid is produced.
PURITY	
Loss on drying (Vol. 4)	Not more than 1% (105°, 2 h)
Melting range (Vol. 4)	226 - 230°
Sulfated ash (Vol. 4)	Not more than 0.2% Test 2 g of the sample (Method I)
Benzoic and salicylic acid	Add ferric chloride TS dropwise to 10 ml of a hot, saturated solution of the sample. No precipitate or violet colour appears.
Readily carbonizable substances (Vol. 4)	Dissolve 0.2 g of the sample in 5 ml of sulfuric acid TS. Keep at 48° to 50° for 10 min. The colour should not be darker than a very light brownish-yellow (*Matching Fluid A).*
Toluenesulfonamides (Vol. 4)	Not more than 25 mg/kg
Selenium (Vol. 4)	Not more than 30 mg/kg Test 0.2 g of the sample as directed in the Limit Test (Method I)
Lead (Vol. 4)	Not more than 1 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 about 0.5 g of previously dried sample, accurately weighed, in 75 ml of hot water. Cool quickly, add phenolphthalein TS, and titrate with 0.1 N sodium hydroxide. Each ml of 0.1 N sodium hydroxide is equivalent to 18.32 mg of $C_7H_5NO_3S$.