

STANNOUS CHLORIDE

Prepared at the 22nd JECFA (1978), published in FNP 7 (1978) and in FNP 52 (1992). Heavy metals and arsenic specifications revised at the 61st JECFA (2003). A PTWI of 0-14 mg/kg bw for tin was established at the 33rd JECFA (1988).

SYNONYMS

Tin dichloride; INS No. 512

DEFINITION

Chemical names

Tin (II) chloride, stannous chloride dihydrate

C.A.S. number

7772-99-8

Chemical formula

$\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$

Formula weight

225.63

Assay

Not less than 98.0% and not more than 102.0%

DESCRIPTION

Colourless or white crystals, odourless or having slight odour of hydrochloric acid

FUNCTIONAL USES

Reducer or antioxidant in some bottled or lacquered canned vegetables

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4)

Soluble in water in less than its own weight of water, but it forms an insoluble basic salt with excess water; soluble in ethanol

Test for stannous ion

To a 1 in 20 solution of the sample in dilute hydrochloric acid TS add mercuric chloride TS dropwise. White or greyish precipitate forms

Test for chloride (Vol. 4)

Passes test

PURITY

Hydrochloric acid insoluble matter

Heat 5 g of the sample to 40° in a mixture of 5 ml of water and 5 ml of hydrochloric acid. The sample should dissolve completely, and the solution should be clear.

Sulfates

Not more than 30 mg/kg

Dissolve 5 g of the sample in 5 ml of hydrochloric acid, dilute to 50 ml with water, filter if not clear and heat the filtrate or clear solution to boiling. Add 5 ml of barium chloride TS, digest in a covered beaker on a steam bath for

2 h, and allow to stand overnight. No precipitate forms.

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

Transfer about 2 g of sample accurately weighed, to a 250 ml volumetric flask, dissolve in 25 ml of hydrochloric acid, dilute to volume with water, and mix well. Transfer 50 ml of this solution to a 500 ml conical flask, and add 5 g of potassium sodium tartrate, and then a cold saturated solution of sodium bicarbonate until the solution is alkaline to litmus paper. Titrate at once with 0.1 N iodine using starch TS as the indicator. Each ml of 0.1N iodine consumed is equivalent to 11.28 mg of $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$.

(Note: Stannous salts are readily susceptible to oxidation, yet the method of assay does not take account of this. Distilled water contains dissolved oxygen, therefore water used in the method of assay should be "oxygen free"; this may be achieved by purging the water with nitrogen or carbon dioxide or by boiling the air out. In addition to this the iodine solution used in the determination should be free from dissolved oxygen; ideally the iodine solution should be stored in a self-filling apparatus under carbon dioxide.)