SODIUM DIACETATE

	Prepared at the 17th JECFA (1973), published in FNP 4 (1978) and in FNP 52 (1992). Metals and arsenic specifications revised at the 63rd JECFA (2004). An ADI of 0-15 mg/kg bw was established at the 17th JECFA (1973)
SYNONYMS	INS No. 262(ii)
DEFINITION	A molecular compound of sodium acetate and acetic acid
Chemical names	Sodium hydrogen diacetate
C.A.S. number	Sodium acetate: 127-09-3 Acetic acid: 64-19-7
Chemical formula	$C_4H_7NaO_4 \cdot xH_2O$
Formula weight	142.09 (anhydrous)
Assay	39-41% of free acetic acid; 58-60% of sodium acetate
DESCRIPTION	White, hygroscopic crystalline solid with an acetic odour
FUNCTIONAL USES	Antimould and antirope agent, sequestrant
CHARACTERISTICS	
IDENTIFICATION	
Solubility (Vol. 4)	Freely soluble in water
Ignition test	Ignite the sample. An alkaline residue is formed which effervesces on acidification.
Test for acetate (Vol. 4)	Passes test
Test for sodium (Vol. 4)	Passes test
PURITY	
Water (Vol. 4)	Not more than 2% (Karl Fischer Method)
pH (Vol. 4)	4.5 - 5.0 (1 in 10 soln)
Formic acid and oxidizable impurities	Not more than traces Dissolve 2.5 g of the sample in 5 ml of water. Add 2.5 ml of 0.1 N potassium dichromate and 6 ml of sulfuric acid, and allow to stand for 1 min. Add 20 ml of water, cool to 15^{o} and add 1 ml of potassium iodide TS. A faint yellow or brown colour should be produced immediately.
Aldehydes	Not more than 0.2% (as propanal) Dissolve 5 g of the sample in 10 ml of water and distil. To the first 5 ml of the distillate, add 10 ml of mercuric chloride TS and make alkaline with N

sodium hydroxide. Allow to stand for 5 min, and acidify with dilute sulfuric acid TS. The solution should show no more than a faint turbidity.

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

Sodium acetate
Weigh 0.5 g of the sample to the nearest mg and dissolve in 50 ml of glacial acetic acid. Dry the exterior of a glass-calomel electrode assembly of a pH meter and place the electrodes in the solution. Set the pH meter on the + mV circuit, and add 0.1 N perchloric acid in large increments until the mV-changes with each addition shows that the titration is nearing the end-point (the deflection of the needle becomes noticeable). Then reduce the added fractions to 0.1 ml until there is a further decrease in the mV-changes after each addition. Plot the curve obtained by the milliliters added against the mV- readings and determine the quantity of the titrant corresponding to half-way up the steepest gradient.

$$\%\ sodium\ diacetate = \frac{V \times N \times 0.1421}{w} \times 100$$

where
V = ml of the perchloric acid
N = exact normality of the perchloric acid
w = weight (in grams) of the sample

Free acetic acid
Weigh 4 g of the sample to the nearest mg and dissolve in 50 ml of distilled water. Titrate the solution with N sodium hydroxide using phenolphthalein TS as indicator.

$$\%\ free\ acetic\ acid = \frac{V \times N \times 0.060}{w} \times 100$$

where
V = ml of the sodium hydroxide
N = exact normality of the sodium hydroxide
W = weight (in grams) of the sample