STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
METHODS OF CHEMICAL AND PHYSICAL TESTING FOR THE DAIRYING INDUSTRY

PART 2—LIQUID MILKS

AS 2300.2.3
DETERMINATION OF THE IODIDE CONTENT OF MILK—SELECTIVE ION ELECTRODE METHOD

1 SCOPE. This standard sets out a method, using an iodide-selective electrode, for the determination of the iodide content of liquid milk.

NOTE: The result may not include protein-bound iodine.

2 APPLICATION. The method is applicable to raw liquid milk which is fresh, or freshly thawed if the sample is frozen, and which contains no added preservative.

The method is *not* applicable to concentrated or reconstituted milks or high temperature-treated milk.

The method is not suitable for determining concentrations of iodide below 100 μg/L.

3 PRINCIPLE. The method uses an iodide-selective electrode in combination with a reference electrode. The interaction between the iodide ion and the iodide-selective electrode produces an electric potential which, under certain conditions, is related to the iodide concentration. A millivoltmeter may be used to measure this potential, from which the iodide concentration is calculated or, alternatively, a specific ion meter may be used to read iodide concentration directly.

4 REAGENTS.

4.1 General Requirements.

(a) Use only reagents of recognized analytical reagent grade and which, except for potassium iodide, are free of iodide.

(b) Water shall be freshly distilled and chlorine or other oxidizing agents removed by standing over granular activated carbon for 24 h before use. Use approximately 10 g of carbon for each litre of distilled water. The carbon may be reused for fresh batches of distilled water but should be replaced every month.

4.2 Reagents.

(a) *Ionic strength adjuster (ISA).* Dissolve 5.0 g potassium chloride (KCl) in water and make up to 100 mL.

(b) *Electrode soaking solution.* Add 5 mL of iodide standard stock solution A (see (d) below) to 100 mL of phosphate solution and make up to 1 L with water.

The phosphate solution used in the preparation of the electrode soaking solution is made by dissolving 50 g of disodium hydrogen phosphate (Na_2HPO_4) and 50 g of potassium dihydrogen phosphate (KH_2PO_4) in 1 L of water.

(c) *Electrode cleaning solution,* prepared as follows:

(i) Dissolve 4.5 ± 0.1 g of disodium dihydrogen ethylenediamine-NNN′N′-tetraacetate dihydrate in about 150 mL of water.

(ii) Add 10 ± 0.1 mL of a 67 g/L solution of sodium hydroxide.

(iii) Add, by pipette, 1.0 mL of non-ionic surfactant* solution. The surfactant solution is made by mixing 1 volume of surfactant with 9 volumes of water.

(iv) Make up to 1 L with water.

* The following are suitable:
Triton X-100, manufactured by Rohm and Haas Co., Philadelphia, U.S.A.
Mergital O.P., manufactured by Sipon Products Ltd, London, U.K.

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