STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

METHODS OF CHEMICAL AND PHYSICAL TESTING FOR THE DAIRYING INDUSTRY

AS 2300.2.9 LIQUID MILKS— DETERMINATION OF PHOSPHORUS

PREFACE

This Standard was prepared by the Association's Committee on Chemical Analysis of Dairy Products to supersede AS 1084—1974, *Methods for the analysis of liquid milk and cream,* Section 10, *Determination of phosphorus.*

This Standard is technically identical with the superseded Standard but with some rearrangement of material to comply with the format of the AS 2300 series.

METHOD

1 SCOPE. This Standard sets out a method for the determination of total phosphorus in liquid milks.

2 APPLICATION. The method is applicable to raw milk, pasteurized milk, homogenized milk, reconstituted milk, skim or low fat milk, UHT milk and sterilized milk.

3 PRINCIPLE. The organic substances in the milk sample are destroyed by dry ashing. Condensed phosphates are acid-hydrolysed to orthophosphate which is reacted with molybdic acid to form molybdophosphoric acid. The molybdophosphoric acid is selectively reduced by diaminophenol to form molybdenum blue and the absorbance of the complex is measured spectrophotometrically at 750 nm. The phosphorus concentration is calculated by reference to a standard curve prepared using standard orthophosphate solutions.

4 REFERENCED DOCUMENTS. The following documents are referred to in this Standard.

AS
2300 Methods of chemical and physical testing for the dairying industry
2300.1.5 Method 1.5: General methods and principles—Determination of ash

CK 19 Code of recommended practice for the chemical analysis of materials by ultraviolet visible spectrophotometry

BS
4309 Methods of measuring the performance of laboratory electric resistance furnaces

5 REAGENTS. Use only reagents of recognized analytical reagent quality, and freshly distilled water or water of equivalent purity. The following reagents are required:

(a) *Perchloric acid* (ϱ_{20} 1540 kg/m^3)—60 percent *m/m* to 62 percent *m/m*.

(b) *Hydrochloric acid* (100 mL/L)—dilute 100 mL of hydrochloric acid (ϱ_{20} 1160 kg/m^3) to 1 L with water.

(c) *Diaminophenol solution*—dissolve 1 g of 2,4-diaminophenol dihydrochloride ($(NH_2)_2C_6H_3OH.2HCl$) and 20 g of sodium metabisulphite ($Na_2S_2O_5$) in water and dilute to 100 mL. Prepare daily.

(d) *Molybdate solution*—dissolve 8.3 g of ammonium molybdate ($(NH_4)_6Mo_7O_{24}.4H_2O$) in water and dilute to 100 mL.

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