

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

METHODS OF CHEMICAL AND PHYSICAL TESTING FOR THE DAIRYING INDUSTRY

AS 2300.2.7
LIQUID MILKS—
DETERMINATION OF CALCIUM

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 5, *Determination of calcium*.

This Standard is technically identical with the superseded Standard but with some rearrangement of material to comply with the format of the AS 2300 series.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 routine method for the determination of the calcium content of liquid milks.

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

3 PRINCIPLE. The protein in the sample is precipitated with trichloroacetic acid. The calcium contained in the filtrate is precipitated as calcium oxalate which is separated by centrifuging, dissolved in sulphuric acid and the oxalate solution titrated with potassium permanganate.

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

- (a) *Acetic acid solution (20 percent V/V)*—dilute 20 mL of glacial acetic acid (ρ_{20} 1050 kg/m³) to 100 mL.
- (b) *Ammonia solution, strong*—mix equal volumes of ammonia (ρ_{20} approximately 900 kg/m³) and water.
- (c) *Ammonia solution, weak*—dilute 2 mL of ammonia (ρ_{20} approximately 900 kg/m³) to 100 mL with water.
- (d) *Ammonium oxalate solution*—saturated solution at room temperature.
- (e) *Methyl red solution*—0.5 g/L solution in 95 percent ethanol.
- (f) *Potassium permanganate solution* (0.004 mol/L)—standardized under acidic conditions.
- (g) *Sulphuric acid solution* (200 mL/L)—slowly add with stirring 200 mL of sulphuric acid (ρ_{20} 1840 kg/m³) to 500 mL of water. Cool and dilute to 1 L with distilled water.
- (h) *Trichloroacetic acid solution, weak*—120 g/L solution.
- (j) *Trichloroacetic acid solution, strong*—200 g/L solution.

5 APPARATUS. The following apparatus is required:

- (a) *Ashless filter paper*—for slow filtration (No. 42 or No. 44).
- (b) *Burette*—capacity 10 mL, graduated in 0.02 mL.
- (c) *Centrifuge*—capable of producing a force approximately 1400 times that of gravity.