

Australian Standard™

AS 2300.8.2

Methods of chemical and physical testing for the dairying industry

Method 8.2: Anhydrous milk fat—Determination of moisture—Karl Fischer method

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee FT-010, Chemical Analysis of Dairy Products to supersede AS 2300.8.2—1983, *Methods of chemical and physical testing for the dairying industry—Part 8.2: Anhydrous milk fat—Determination of moisture—Karl Fischer method*.

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee FT-010. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

After a periodic review, the Committee recommended a new edition. This edition confirms the method without technical change but updates the referenced documents and reflects the current editorial style.

METHOD

1 SCOPE

This Standard sets out a method for the determination of the moisture content of anhydrous milk fat based on a method developed by Karl Fischer.

2 APPLICATION

The method is applicable to anhydrous milk fat with a moisture content not exceeding 1 percent by mass.

3 REFERENCED DOCUMENT

The following document is referred to in this Standard:

AS

2300 Methods of chemical and physical testing for the dairying industry

2300.8.1 Part 8.1: Anhydrous milk fat—General requirements

BS

2511 Methods for the determination of water (Karl Fischer method)

4 PRINCIPLE

Water in either free or bound state is converted into H_2SO_4 and HI by titration with a solution of SO_2 and I_2 in methanol/pyridine, this solution being known as Karl Fischer reagent. The endpoint of the titration which detects the presence of free residual iodine is determined by an electrometric dead stop procedure.

5 REAGENTS AND MATERIALS

5.1 General requirements

All reagents shall be in accordance with AS 2300.8.1.

All reagents shall be anhydrous and shall be stored and handled to ensure minimal moisture absorption from the environment during the determinations. Gas streams shall be dried by passing through a suitable dehydration system before use.

5.2 Reagents

The following reagents are required and shall be in accordance with AS 2300.8.1:

- (a) *Methanol*, anhydrous.

NOTE: The water content of the methanol should be less than 0.01 percent and it is recommended that it is stored over an effective desiccant.

- (b) *Karl Fischer reagent*, 1 mL = at least 4 mg water (available commercially in Australia as pyridine free 1 or 2 component reagent).
- (c) *Chloroform/methanol solution*. Mix 60 volumes of chloroform with 40 volumes of anhydrous methanol.
- (d) *Methanol/water standard*. Weigh to the nearest 0.0001 g approx. 0.1 g of water into a 50 mL volumetric flask. Make up to volume with anhydrous methanol and mix. 5 mL of this solution will contain a known mass (m_1) of approximately 10 mg of water.
- (e) *Dry nitrogen*.

6 APPARATUS

Apparatus shall be in accordance with AS 2300.8.1.

Usual laboratory apparatus and the following apparatus are required:

Suitable electrometric titration apparatus designed for use with Karl Fischer reagent.

NOTES:

- 1 Either apparatus described in Parts 1 and 2 of BS 2511 is suitable. Sets of suitable apparatus are available commercially in Australia.
- 2 Ensure that all apparatus is clean and dry before use.

7 PROCEDURE

The procedure shall be as follows:

- (a) Assemble the apparatus and pass through it, for at least 5 min before Step (b), a steady stream of nitrogen dried by passage through an efficient desiccant then through Karl Fischer reagent. Maintain the agitation of the contents of the reaction vessel with nitrogen throughout the whole determination, the gas rate being such that good mixing is obtained without any splattering of the contents over the inside of the vessel.
- (b) Rapidly transfer 5.00 mL of the methanol/water standard to the reaction vessel and titrate with Karl Fischer reagent. Record the titre in millilitres (V_1). Drain the reaction vessel.