Milk — Determination of calcium content — Titrimetric method

Lait — Détermination de la teneur en calcium — Méthode titrimétrique
Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 12081 was prepared by Technical Committee ISO/TC 34, Agricultural food products, Subcommittee SC 5, Milk and milk products, in collaboration with the International Dairy Federation (IDF) and the Association of Official Analytical Chemists (AOAC International), and will also be published by these organizations.
Milk — Determination of calcium content — Titrimetric method

1 Scope

This International Standard specifies a titrimetric method for the determination of the calcium content of milk and of milk reconstituted from evaporated, condensed or dried milk.

2 Term and definition

For the purposes of this International Standard, the following term and definition apply.

2.1 calcium content of milk
mass fraction of substances determined by the procedure specified in this International Standard

NOTE The calcium content is expressed as a percentage by mass.

3 Principle

The protein substances in a test portion are precipitated by trichloroacetic acid, then filtered. The calcium in the filtrate is precipitated as calcium oxalate and is separated by centrifuging. The washed and dissolved precipitate is titrated with potassium permanganate.

4 Reagents and materials

Use only reagents of recognized analytical grade, unless otherwise specified, and distilled or demineralized water or water of equivalent purity.

4.1 Trichloroacetic acid solution I, 200 g/l.

4.2 Trichloroacetic acid solution II, 120 g/l.

4.3 Ammonium oxalate, saturated solution, cold.

4.4 Methyl red solution.

Dissolve 0.05 g of methyl red in 100 ml of ethanol (96 % volume fraction).

4.5 Acetic acid solution, 20 % volume fraction.

4.6 Ammonia solution I.

Mix equal volumes of ammonia solution (25 % mass fraction) and water.

4.7 Ammonia solution II.

Dilute 2 ml of ammonia solution (25 % mass fraction) with water to 100 ml.
4.8 Sulfuric acid.

Add 20 ml of sulfuric acid (98 % mass fraction) to 80 ml of water.

4.9 Potassium permanganate standard volumetric solution, $c(K\text{MnO}_4) = 0,004 \text{ mol/l} \pm 0,0001 \text{ mol/l}$.

Check the titre by normal laboratory procedure using oxalic acid or sodium oxalate.

5 Apparatus

Usual laboratory equipment and, in particular, the following.

5.1 Analytical balance, capable of weighing to the nearest 0,01 g, with a readability of 0,001 g.

5.2 Volumetric flask, of nominal capacity 50 ml.

5.3 Pipette, of nominal capacity 20 ml.

5.4 Centrifuge, capable of producing a radial acceleration of $1400 \times g$.

5.5 Centrifuge tubes, cylindrical and round bottomed, of capacity about 30 ml, graduated at 20 ml.

5.6 Pipettes, to deliver 2 ml and 5 ml.

5.7 Suction device, with capillary tube.

5.8 Water bath, capable of boiling water.

5.9 Burette, graduated in 0,02 ml.

5.10 Filter paper, ashless, for slow filtration.

6 Sampling

Sampling is not part of the method specified in this International Standard. A recommended sampling method is given in ISO 707 [1].

It is important that the laboratory receive a sample which is truly representative and has not been damaged or changed during transport or storage.

7 Preparation of test sample

Bring the test sample of milk or reconstituted milk to a temperature of 20 $^\circ$C $\pm$ 2 $^\circ$C and mix carefully. If a homogeneous dispersion of the fat is not obtained, heat the sample slowly to 40 $^\circ$C, then mix gently by repeated inversion and cool to 20 $^\circ$C $\pm$ 2 $^\circ$C.

8 Procedure

8.1 Test portion

Transfer approximately 20 g of the prepared test sample (clause 7) to the volumetric flask (5.2), using the pipette (5.3). Weigh the sample to the nearest 0,01 g.
Bestelformulier

Stuur naar:

NEN Standards Products & Services
t.a.v. afdeling Klantenservice
Antwoordnummer 10214
2600 WB Delft

Ja, ik bestel

Titrimetrische methode

Wilt u deze norm in PDF-formaat? Deze bestelt u eenvoudig via www.nen.nl/normshop

Gratis e-mailnieuwsbrieven
Wilt u op de hoogte blijven van de laatste ontwikkelingen op het gebied van normen, normalisatie en regelgeving? Neem dan een gratis abonnement op een van onze e-mailnieuwsbrieven. www.nen.nl/nieuwsbrieven

Gegevens

Gegevens

Bedrijf / Instelling

T.a.v. O M O V

E-mail

Klantnummer NEN

Uw ordernummer BTW nummer

Postbus / Adres

Postcode Plaats

Telefoon Fax

Factuuradres (indien dit afwijkt van bovenstaand adres)

Postbus / Adres

Postcode Plaats

Datum Handtekening

Normalisatie: de wereld op één lijn.