EAST AFRICAN COMMUNITY

EDICT OF GOVERNMENT

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EAS 162-3 (2006) (English): Milk and milk products — Part 3: Ice-cream and milk ice Determination of total solids content (Reference method)

ISO INSIDE

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ICS 67.100.40

EAST AFRICAN STANDARD

Milk and milk products — Part 3: Ice-cream and milk ice — Determination of total solids content (Reference method)

EAST AFRICAN COMMUNITY

Second Edition 2006

Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to achieve this objective, the Partner States in the Community through their National Bureaux of Standards, have established an East African Standards Committee.

The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

East African Community

P O Box 1096

Arusha

Tanzania

Tel: 255 27 2504253/8

Fax: 255-27-2504481/2504255

E-Mail: eac@eachq.org

Web: www.each.org

INTERNATIONAL STANDARD

ISO 3728

IDF 70

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Ice-cream and milk ice — Determination of total solids content (Reference method)

Crème glacée et glace au lait — Détermination de la teneur en matière sèche totale (Méthode de référence)

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

International Dairy Federation
Diamant Building • Boulevard Auguste Reyers 80 • B-1030 Brussels
Tel. + 32 2 733 98 88
Fax + 32 2 733 04 13
E-mail info@fil-idf.org
Web www.fil-idf.org

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Contents

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 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 3728|IDF 70 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 5, *Milk and milk products*, and the International Dairy Federation (IDF), in collaboration with AOAC International. It is being published jointly by ISO and IDF and separately by AOAC International.

This edition of ISO 3728|IDF 70 cancels and replaces ISO 3728:1977, of which it constitutes a minor revision. Only editorial changes have been made.

Foreword

IDF (the International Dairy Federation) is a worldwide federation of the dairy sector with a National Committee in every member country. Every National Committee has the right to be represented on the IDF Standing Committees carrying out the technical work. IDF collaborates with ISO and AOAC International in the development of standard methods of analysis and sampling for milk and milk products.

Draft International Standards adopted by the Action Teams and Standing Committees are circulated to the National Committees for voting. Publication as an International Standard requires approval by at least 50 % of the National Committees casting a vote.

ISO 3728|IDF 70 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 5, *Milk and milk products*, and the International Dairy Federation (IDF), in collaboration with AOAC International. It is being published jointly by ISO and IDF and separately by AOAC International.

All work was carried out by the Joint ISO/IDF/AOAC Group of Experts, *Total solids* (E13), under the aegis of its project leader, Mr J.R. Fatin (FR).

This edition of ISO 3728|IDF 70 cancels and replaces IDF 70:1972. Only editorial changes have been made.

Ice-cream and milk ice — Determination of total solids content (Reference method)

1 Scope

This International Standard specifies a reference method for the determination of the total solids content of ice-cream, milk ices and similar products.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1
total solids content of ice-cream or milk ice
mass fraction of material remaining after drying by the procedure specified in this International Standard

3 Principle

A known quantity of the sample, diluted with water and mixed with sand, is dried at 102 °C, to constant mass, then reweighed to determine the mass of the residue.

4 Apparatus and materials

Usual laboratory apparatus and, in particular, the following.

4.1 Analytical balance, capable of weighing to the nearest 1 mg, with a readability of 0,1 mg.

4.2 Desiccator, containing an efficient drying agent.

4.3 Drying oven, well-ventilated and capable of being maintained at 102 °C ± 2 °C.

4.4 Flat dish, non-corrodible under the test conditions, about 25 mm deep and about 75 mm in diameter, with well-fitting lid.

4.5 Water bath, capable of being maintained at 45 °C ± 1 °C.

4.6 Boiling water bath.

4.7 Flat-ended glass rod, the total length of which shall be slightly less than the diameter of the dish (4.4).

4.8 Quartz sand or **sea sand**, which passes through a sieve with nominal size of aperture 500 µm but is retained on a sieve of nominal size of aperture of 180 µm (see ISO 565 [1]). The sand shall be washed successively with concentrated hydrochloric acid and distilled water, dried and ignited.

NOTE Acid-washed sand is commercially available.

The acid-washed sand shall pass the following test for suitability. Dry about 25 g of the sand to constant mass in the oven (4.3) set at 102 °C. Allow to cool. Weigh to the nearest 1 mg, recording the mass to four decimal places. Moisten the sand with distilled water, dry again to constant mass, cool and weigh to the nearest 1 mg, recording the mass to four decimal places. The difference between the two masses shall not exceed 1,0 mg.

5 Sampling

A representative sample should have been sent to the laboratory. It should not have been damaged or changed during transport or storage.

A recommended sampling method is given in Annex A. See also ISO 707 [2].

6 Preparation of test sample

For samples taken in small packages, remove the packaging and place the sample in a clean, dry container fitted with an airtight closure.

For samples taken from bulk or from large packages, keep them in their sampling containers.

In either case, melt the sample by standing the container in the water bath (4.5), set at 45 °C, for just enough time to allow the sample to become a homogeneous, smooth paste.

7 Procedure

7.1 Place about 25 g of the prepared sand (4.8) in the dish (4.4) and place the flat-ended glass rod (4.7) on the lid.

7.2 Transfer the dish, with the lid and glass rod alongside, to the oven (4.3), set at 102 °C, and leave for about 2 h.

7.3 Place the lid and rod on the dish and transfer to the desiccator (4.2). Allow to cool to room temperature. Remove from the desiccator and weigh to the nearest 1 mg, recording the mass to four decimal places.

7.4 Tilt the dish until the sand moves to one side, then place in the available space 3 g to 4 g of the melted and well-mixed test sample (see Clause 6). Weigh, together with the lid and glass rod, to the nearest 1 mg, recording the mass to four decimal places.

7.5 Add about 3 ml of distilled water, mix the test portion using the rod, then mix the diluted test portion thoroughly with the sand. Leave the stirring end of the rod in the mixture, with the other end resting on the side of the dish. Place the dish on the boiling water bath (4.6) for about 30 min, carefully stirring during the early part of this period so that the mass when dry will not form a cake but will be well aerated and in the form of a crumbly mixture. Lay the rod flat in the dish.

7.6 Transfer the dish, with the lid alongside, to the oven (4.3), set at 102 °C, and leave for about 2 h.

7.7 Place the lid on the dish and transfer it to a desiccator. Allow to cool to room temperature as before, remove from the desiccator and weigh to the nearest 1 mg, recording the mass to four decimal places.

7.8 Repeat the heating for periods of 1 h, cooling and weighing until the mass of the closed dish decreases by 2,0 mg or less. If, before constant mass is reached, the mass shows an increase, record the lowest mass obtained.

8 Calculation and expression of results

8.1 Calculation

The total solids content, w_s, expressed as a mass fraction in percent, is given by the equation

$$w_s = \frac{m_2 - m_0}{m_1 - m_0} \times 100\ \%$$

where

m_0 is the mass, in grams, of the dish containing the sand, together with the lid and glass rod (7.3);

m_1 is the mass, in grams, of the dish containing the sand and the test portion, together with the lid and glass rod (7.4);

m_2 is the mass, in grams, of the dish, sand and residue, together with the lid and glass rod, after drying (7.8).

8.2 Expression of results

Express the obtained results to two decimal places.

9 Repeatability

The absolute difference between two independent single test results, obtained using the same method on identical test material in the same laboratory by the same operator using the same equipment within a short interval of time, will in not more than 5 % of cases be greater than 0,20 %.

10 Test report

The test report shall specify:

a) all information necessary for the complete identification of the sample;

b) the sampling method used, if known;

c) the test method used, with reference to this International Standard;

d) all operating details not specified in this International Standard, or regarded as optional, together with details of any incidents which may have influenced the test results;

e) the test results obtained, or, if the repeatability has been checked, the final quoted result obtained.

Annex A
(informative)

Sampling

A.1 With ice-cream or milk ices in small packages, sample complete units in their original wrapping.

A.2 With ice-cream and milk ices

— in bulk (for sale in tea-rooms, in restaurants, in the street or from soft-ice vending machines), or

— in large packages,

take 30 g to 50 g of the product, or more if necessary. The samples should be taken from as many spots as possible. They should be kept in wide-necked flasks with screw caps.

A.3 The samples (A.1 and A.2) should be maintained in the frozen state before analysis and should be transported to the laboratory in refrigerated containers. If the analysis is not carried out immediately, they should be kept under refrigeration at a maximum temperature of −5 °C.

See ISO 707 for details.

Bibliography

[1] ISO 565, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*

[2] ISO 707, *Milk and milk products — Guidance on sampling*[1)]

1) Equivalent to IDF 50.

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