

Methods for

Chemical analysis of ice cream —

Part 3: Determination of fat content

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The preparation of this British Standard was entrusted by the Dairying Standards Policy Committee (DAC/-) to Technical Committee DAC/3, upon which the following bodies were represented:

- AFRC Institute of Food Research (Reading Laboratory)
- Association of British Preserved Milk Manufacturers
- Association of Public Analysts
- Association of Public Analysts of Scotland
- Creamery Proprietors' Association
- Department of Trade and Industry (Laboratory of the Government Chemist)
- Ice Cream Alliance Limited
- Intervention Board for Agricultural Produce
- Joint Committee of the Milk Marketing Board and the Dairy Trade Federation
- Milk Marketing Board
- Milk Marketing Board for Northern Ireland
- Ministry of Agriculture, Fisheries and Food
- Royal Association of British Dairy Farmers
- Royal Society of Chemistry
- Society of Chemical Industry
- Society of Dairy Technology

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National foreword

This Part of BS 2472 has been prepared under the direction of the Dairying Standards Policy Committee. It is identical with ISO 7328:1984 *“Milk-based edible ices and ice-mixes-Determination of fat content-Rose-Gottlieb gravimetric method (Reference method)”*, prepared by the International Organization for Standardization (ISO).

The method described in ISO 7328 was developed jointly with the International Dairy Federation (IDF) and the Association of Official Analytical Chemists (AOAC). It supersedes clause 7 of BS 2472:1966, which is being deleted by amendment.

Cross-references

International Standard	Corresponding British Standard
ISO 707:1985	BS 809:1985 <i>Methods for sampling of milk and milk products</i> (Identical) BS 1741 <i>Methods for chemical analysis of liquid milk and cream</i>
ISO 1211:1984	Part 3:1987 <i>Determination of fat content of liquid milk</i> (Identical)
ISO 3889:1977	BS 5522:1977 <i>Specification for milk and milk products-Determination of fat content-Mojonnier-type fat extraction flasks</i> (Identical)
^a ISO 8262-2:1987	BS 7142 <i>Methods for analysis of milk-based products</i> Part 3:1989 <i>Determination of fat content of milk-based edible ices and ice-mixes by the Weibull-Berntrop gravimetric method</i> (Identical)

^a Referred to in the note to clause 1.

Additional information. Although not specified in the ISO text, it is strongly recommended that duplicate determinations are undertaken. Provided that the duplicate values, calculated as described in 9.1, comply with the repeatability requirement of 9.2.1, the result should be reported as the mean value, and in such cases, the test report (see clause 11) should include a reference to the fact that such a result has been reported.

When results reported are the mean of two values that comply with the repeatability requirements, the difference between the results reported for fat content, obtained on samples of the same test material by two different analysts in two different laboratories should not exceed the value stated in 9.2.2.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

0 Introduction

This first edition of ISO 7328 has been prepared within the framework of revising and/or harmonizing both the existing and new methods for the determination of the fat content of milk and a number of milk products that can be examined according to the Röse-Gottlieb procedure.

The method has been based on the revised Röse-Gottlieb method for milk specified in ISO 1211, the revision comprising a number of modifications to improve the precision of the method.

A more complete explanation of these modifications to the basic Röse-Gottlieb procedure is given in the introduction to ISO 1211, *Milk — Determination of fat content — Gravimetric method (Reference method)*.

1 Scope and field of application

This International Standard specifies the reference method for the determination of the fat content of most milk-based edible ices and ice-mixes and concentrated and dried ice-mixes.

NOTE In some milk-based edible ices and ice-mixes, the level of emulsifier, stabilizer or thickening agent or of egg yolk or of fruit, or of combinations of these constituents, makes the Röse-Gottlieb method unsuitable. With such products, recourse should be made to a method utilizing the Weibull-Berntrop principle. A suitable method will form the subject of a future International Standard.

2 References

ISO 707, *Milk and milk products — Methods of sampling*.

ISO 3889, *Milk and milk products — Determination of fat content — Mojonnier-type fat extraction flasks*.

3 Definition

fat content of milk-based edible ices and ice-mixes

all the substances determined by the method specified in this International Standard

it is expressed as a percentage by mass

4 Principle

Extraction of an ammoniacal ethanolic solution of a test portion with diethyl ether and light petroleum, removal of the solvents by distillation or evaporation, and determination of the mass of the substances extracted which are soluble in light petroleum. (This is usually known as the Röse-Gottlieb principle.)

5 Reagents

All reagents shall be of recognized analytical grade and shall leave no appreciable residue when the determination is carried out by the method specified. The water used shall be distilled water or water of at least equivalent purity.

To test the quality of the reagents, carry out a blank test as specified in 8.3. Use an empty fat-collecting vessel, prepared as specified in 8.4, for mass control purposes. The reagents shall leave no residue greater than 0,5 mg (see 10.1).

If the residue of the complete reagent blank test is greater than 0,5 mg, determine the residue of the solvents separately by distilling 100 ml of the diethyl ether and light petroleum respectively. Use an empty control vessel to obtain the real mass of residue which shall not exceed 0,5 mg.

Replace unsatisfactory reagents or solvents, or redistil solvents.

5.1 Ammonia solution, containing approximately 25 % (m/m) of NH_3 , ρ_{20} approximately 910 g/l.

NOTE If ammonia solution of this concentration is not available, a more concentrated solution of known concentration may be used (see 8.5.2).

5.2 Ethanol, or ethanol denatured by methanol, at least 94 % (V/V).

(See 10.5.)

5.3 Congo-red solution

Dissolve 1 g of Congo-red in water and dilute to 100 ml.

NOTE The use of this solution, which allows the interface between the solvent and aqueous layers to be seen more clearly, is optional (see 8.5.4). Other aqueous colour solutions may be used provided that they do not affect the result of the determination.

5.4 Diethyl ether, free from peroxides (see 10.3) and containing no or not more than 2 mg/kg of antioxidants and complying with the requirements for the blank test (see clause 5, and also 10.1 and 10.4).

5.5 Light petroleum, having any boiling range between 30 and 60 °C.

5.6 Mixed solvent, prepared shortly before use by mixing equal volumes of the diethyl ether (5.4) and the light petroleum (5.5).

6 Apparatus

WARNING — Since the determination involves the use of volatile flammable solvents, electrical apparatus employed shall be required to comply with legislation relating to the hazards in using such solvents.