

Methods for

Chemical analysis of liquid milk and cream —

Part 4: Determination of fat content of cream

[ISO title: Cream — Determination of fat content — Gravimetric
method (Reference method)]

NOTE This Part should be read in conjunction with Part 1 “*General introduction
including preparation of samples*”, published separately.

UDC [637.12 + 637.148].074:543

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Dairying Standards 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
- Dairy Trade Federation
- Department of Trade & 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

This British Standard, having been prepared under the direction of the Dairying Standards Committee, was published under the authority of the Board of BSI and comes into effect on 30 June 1987

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The following BSI references relate to the work on this standard:
Committee reference DAC/3
Draft for comment 84/54002 DC

ISBN 0 580 15959 0

Amendments issued since publication

Amd. No.	Date of issue	Comments

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National foreword

This Part of BS 1741, which has been prepared under the direction of the Dairying Standards Committee, is identical with ISO 2450:1985 *Cream — Determination of fat content — Gravimetric method (Reference method)*, prepared by ISO/TC 34, Agricultural food products, of the International Organization for Standardization (ISO) in cooperation with the International Dairy Federation (IDF) and the Association of Official Analytical Chemists (AOAC). It supersedes clause 18 of BS 1741:1963 which is deleted by amendment.

Terminology and conventions. The text of the International Standard has been approved as suitable for publication as a British Standard without deviation. Some terminology and certain conventions are not identical with those used in British Standards; attention is drawn especially to the following.

The comma has been used as a decimal marker. In British Standards it is current practice to use a full point on the baseline as the decimal marker.

Wherever the words “International Standard” appear, referring to this standard, they should be read as “Part of BS 1741”.

The symbol “l” has been used to denote litre (and in its submultiples). In British Standards it is current practice to use the symbol “L”.

Cross-references

International Standard	Corresponding British Standard
ISO 707:1985	BS 809:1985 <i>Methods for sampling of milk and milk products</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)
ISO 1211:1984	BS 1741 <i>Methods for chemical analysis of liquid milk and cream</i> Part 3:1987 <i>Determination of fat content of liquid milk</i> (Identical)

With reference to the NOTE to clause 1, the UK is participating in the preparation of ISO 8262-3 and consideration will be given later to implementing the resulting International Standard as a British Standard.

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 second edition of ISO 2450 has been prepared within the framework of producing a series of methods, which are harmonized to the greatest possible extent, for the gravimetric determination of the fat content of milk, milk products and milk-based foods.

This revision is based on the revised Röse-Gottlieb method for milk specified in ISO 1211¹⁾, comprising a number of modifications to improve the precision of that method.

A more complete explanation of these modifications to the basic Röse-Gottlieb procedure is given in the introduction to ISO 1211.

The addition of 5 ml of ethanol before the second extraction (see 8.5.10), in line with other revised methods, has made the dilution with 0,5 % (m/m) salt solution as prescribed in the first edition superfluous and has therefore been replaced by a dilution with water (see 8.5.1).

1 Scope and field of application

This International Standard specifies the reference method for the determination of the fat content of raw, processed and cultured cream in which no appreciable splitting of fat has occurred.

NOTE The method is not suitable for sour creams with starch or other thickening agents. In this case, and when splitting of fat occurs, recourse has to be made to a method utilizing the Weibull-Berntrop principle as in ISO 8262-3²⁾.

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 cream

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 , $\rho_{20} \approx 910$ 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 8.5.3). 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.

¹⁾ ISO 1211, *Milk — Determination of fat content — Gravimetric method (Reference method)*.

²⁾ ISO 8262-3, *Milk products and milk-based foods — Determination of fat content by the Weibull-Berntrop gravimetric method (Reference method) — Part 3: Special cases*. (At present at the stage of draft.)