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Milk and milk products — Determination of fat content — General guidance on the use of butyrometric methods

Lait et produits laitiers — Détermination de la teneur en matière grasse — Directives générales pour l'utilisation des méthodes butyrométriques

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Foreword

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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.

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

International Standard ISO 11870 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*, Subcommittee SC 5, *Milk and milk products*.

International Standard ISO 11870 has been 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 AOAC International, and will also be published by these organizations.

Annex A of this international Standard is normative, providing additional information concerning the limitation of the butyrometric methods specified.

Introduction

The reference methods described to determine the fat content of milk and milk products are time-consuming to apply and require some experience if reliable results are to be obtained.

Butyrometric techniques, which are simpler to apply, make it possible to obtain fat contents for various milk products quickly. This is why they are used in a great number of industrial laboratories as a fast method for routine checks.

Two acid-butyrometric methods used in many countries to determine the fat content of milk (Gerber method) and of cheese (Van Gulik method) are the subject of International Standards. The apparatus has also been standardized (ISO and IDF).

In addition, there are other butyrometric methods and butyrometers which have been described or applied in various countries for other types of products (cream, milk powder, etc.).

Whilst only one procedure exists as a reference method for a particular product type, this is not the case for butyrometric methods. Depending upon the country, different butyrometric methods may exist for one single type of product, presenting many problems for the harmonization of such procedures.

The second problem relates to the applicability of such methods. Indeed, with evolving manufacturing technologies, the variety of milk products is such that it is not possible to determine a method which can be applied to all varieties of a single type of product (milk, cheese, cream, etc.). Tests have confirmed this and have shown that the butyrometric methods already standardized have been attributed fields of application which are far too wide ranging.

Thus this general guide has been prepared while maintaining the existing standards.

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1 Scope

This International Standard gives guidance on the following subjects:

— existing standardized methods (both reference and butyrometric) for the determination of the fat content of the various milk products;

— the principles underlying any acid-butyrometric analysis and the main operating requirements;

— a validation procedure for a butyrometric method in relation to the relevant reference method.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 2446:1976, *Milk — Determination of fat content (Routine method).*

ISO 3433, *Cheese — Determination of fat content — Van Gulik method.*

3 Principle

The principles of any butyrometric method remain constant independent of the product to be analysed. Protein is digested with sulfuric acid. The fat in the product is separated by centrifuging it in the butyrometer. The separation is enhanced by the addition of a small quantity of amyl alcohol. Direct reading of the butyrometer scale with or without correction.

4 Methods for the determination of fat content

Methods for the determination of fat content are based upon acid-butyrometric and reference gravimetric methods.

The Gerber method is specified in ISO 2446 and the Van Gulik method in ISO 3433. Existing butyrometric and reference methods for most dairy products are listed in Table A.1.

5 Reagents

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